PACIFIC SARDINE STOCK ASSESSMENT AND MANAGEMENT MEASURES

At this meeting, the Council is scheduled to review the current Pacific sardine stock assessment update and adopt harvest specifications and management measures for the 2010 Pacific sardine fishing season. Due to the potential variability of coastal pelagic species (CPS) populations, assessment updates are conducted annually and full assessments and their accompanying Stock Assessment Review (STAR) process typically occur every third year. The last full assessment for Pacific sardine occurred in 2007. At that time, in response to concerns about the resource and the potential for new aerial survey data, the Council sped up the normal process and requested a full assessment in 2009, a year ahead of the three-year cycle.

Two CPS STAR Panels were convened in 2009. In May, a STAR Panel reviewed proposed methodology for an industry-sponsored aerial survey of Pacific sardine from Cape Flattery, Washington to Monterey Bay, California. The 2009 survey was an expansion of a pilot survey conducted in Oregon and Washington in 2008. In June 2009, the Council approved the survey methodology and recommended the issuance of an exempted fishing permit (EFP) to conduct the research outside of the directed fishery. The National Marine Fisheries Service issued an EFP and the survey was conducted in August.

The second CPS STAR Panel occurred in September to review the results of the 2009 aerial survey (Agenda Item I.1.b, Attachment 1), review the 2009 full assessment of Pacific sardine conducted by the NMFS, Southwest Fisheries Science Center (Agenda Item I.1.b, Attachment 2), and to explore ways to incorporate the new survey data into the current assessment. Although the amount of survey data collected was limited by factors including available time and bad weather conditions resulting in a point estimate with considerable uncertainty, the STAR Panel was supportive of the methodologies and analyses used (Agenda Item I.1.c, STAR Panel Report). The STAR Panel, the aerial survey principal investigators, and the stock assessment team were able to characterize the uncertainty and combine the aerial survey results with the more traditional survey of Pacific sardine reproductive success in southern California, the age and length compositions from recent catch data into an agreed base assessment model. Because it is a single data-point, the new aerial survey data provided no information on the estimated trend in Pacific sardine biomass which continues to suggest that the stock is declining. However, the new survey data did provide valuable data on the northern portion of the stock and increased the magnitude of current and past estimates of overall Pacific sardine abundance.

The September STAR Panel was generally supportive of continuing the aerial survey work and briefly discussed ways to improve the survey and its results in the future. The West Coast Aerial Sardine Survey group has provided recommendations on setting aside a portion of the 2010 Pacific sardine harvest for the continuance of the aerial survey work. The industry has also been exploring the possibility of using satellite rather than aerial imaging in future survey efforts (Agenda Item I.1.b, Attachment 3).

At the November Council meeting, the SSC will review aerial survey results, the Pacific sardine assessment, and the STAR Panel recommendations before making its recommendations on harvest levels for the 2010 Pacific sardine fishery. The CPS Management Team (CPSMT) and the CPS Advisory Subpanel (CPSAS) will also be in session at the November meeting and will provide recommendations on management measures for the 2010 Pacific sardine fishery

including harvest set-asides for incidental landings of Pacific sardine in other CPS fisheries and for continued research activities.

Mr. Tom Jagielo, a principal investigator with the West Coast Aerial Survey, will provide a brief overview of the survey results as well as recommendations for future survey work. Dr. Kevin Hill, lead assessment author, will provide an overview of the current assessment.

Future aerial survey work, if conducted in 2010, will likely again require an EFP. Additionally, if survey methods change significantly, a STAR Panel may need to be convened to review the new methods and the application of results to a full assessment of Pacific sardine. The Council may provide guidance on a schedule for approving an EFP in 2010 and may again alter the cycle of full Pacific sardine assessments which would otherwise occur in 2012.

Council Action:

1. **Adopt Pacific Sardine Assessment, Harvest Specifications, and Management Measures for 2010, including consideration of set-asides for incidental landings and research.**
2. **Provide guidance on future exempted fishing permit and stock assessment schedules.**

Reference Materials:

1. Agenda Item I.1.b, Attachment 1, *West Coast Aerial Sardine Survey,* (Text, Tables and Figures, for Appendices see electronic files on the Briefing Book CD or Council website).
2. Agenda Item I.1.b, Attachment 2, *Assessment of the Pacific Sardine Resource in 2009 for U.S. Management in 2010.* (Executive Summary, for full document see electronic files on the Briefing Book CD or Council website).
3. Agenda Item I.1.b, Attachment 3, *Satellite Sardine Imaging Report*. (Color images in this report are best viewed electronically from the Briefing Book CD or the Council website).
4. Agenda Item I.1.c, STAR Panel Report.
5. Agenda Item I.1.c, Supplemental SSC Report.
6. Agenda Item I.1.c, Supplemental CPSMT Report.
7. Agenda Item I.1.c, Supplemental CPSAS Report.
8. Agenda Item I.1.d, Public Comment.

Agenda Order:

a. Agenda Item Overview **Mike Burner**
b. Survey and Assessment Report **Tom Jagielo, Kevin Hill**
c. Reports and Comments of Management Entities and Advisory Bodies
d. Public Comment
e. **Council Action**: Adopt Pacific Sardine Harvest Guideline and Management Measures for 2010

PFMC
10/16/09

West Coast Aerial Sardine Survey

Sampling Results in 2009

Prepared by

Tom Jagielo[1]
Doyle Hanan[2]
and
Ryan Howe

for

California Wetfish Producers Association
c/o Diane Pleschner-Steele, Executive Director
PO Box 1951
Buellton, Ca 93427

and

Northwest Sardine Survey, LLC
c/o Jerry Thon, Principal
12 Bellwether Way, Suite 209
Bellingham, Washington 98225

[1] Tom Jagielo, Consulting (TomJagielo@msn.com)
[2] Hanan and Associates, Inc.

Introduction

Advisory bodies of the Pacific Fishery Management Council (PFMC), including the Coastal Pelagic Species Advisory Subpanel (CPSAS), Coastal Pelagic Species Management Team (CPSMT) and the Scientific and Statistical Committee (SSC), have recommended that additional fishery-independent indices of abundance be developed for the assessment of Pacific Sardine.

Members of the advisory panel, fishermen, and professional spotter pilots have been testifying for years that they were witnessing large numbers of schools and schools that were huge in dimension: These phenomena have occurred in the Monterey area, the Pacific Northwest coast, and in Canadian waters. Fishing effort in each of these three areas produced sardine sizes that suggested these fish were different year classes in each area. These reports began in 2000 and have consistently indicated strong abundance from those who make their living on the water. This visual evidence, though anecdotal, was in strong contrast to the abundance trend the Sardine stock assessments were signifying.

To meet the stated need for a credible comparative index, an aerial survey was developed by a consortium formed by the West Coast sardine industry and was conducted in the summer of 2009 as part of an Exempted Fishery Permit granted by the National Marine Fisheries Service (NMFS).

Aerial survey methods have been used previously in S. Africa to assess sardine stock abundance (Misund et al. 2003), and Hill et al. (2007) described how aerial survey indices were developed from spotter pilot logs and a contracted line transect survey conducted in 2004 and 2005 for sardine in Southern California.

This paper reports the first year of the coordinated coast wide aerial survey, which incorporated effort from both north and south industry components; the Northwest Sardine Survey (NWSS), and California Wetfish Producers Association (CWPA), respectively. The survey conducted in 2009 builds on methods developed through pilot study work conducted in the northwest in 2008 (Wespestad et al. 2008), which were reviewed at a Stock Assessment Review (STAR) panel in May of 2009.

The survey employed a two-part approach, involving 1) quantitative photographs collected by fishery spotter airplanes to estimate sardine school surface areas, and 2) fishing vessels operating at sea to capture a sample of photographed and measured schools to determine the relationship between sardine school biomass and school surface area.

Materials and Methods

I. Survey Design

A two-stage survey sampling design was employed. Stage 1 consisted of aerial transect sampling to estimate the surface area (and ultimately the biomass) of individual sardine

schools from quantitative aerial photogrammetry; Stage 2 involved at-sea sampling to quantify the relationship between individual school surface area and biomass. Sampling was coordinated on a coastwise basis. Pilots from both NWSS and CWPA participated in coast wide transects. Vessels from NWSS conducted point sets in the north, and vessels from CWPA conducted point sets in the south. Logistical details of the survey are provided in Appendix I (Operational Plan).

Stage 1: Aerial Transect Survey

Logistics

The 2009 aerial survey employed the belt transect method using a systematic random sampling design, with each transect comprising a single sampling unit (Elzinga et al. 2001). Three alternative fixed starting points five miles apart were established, and from these points, three SETs of 51 transects were delineated for the survey. The order of conducting the three replicate SETs was chosen by randomly picking one SET at a time without replacement. The first SET chosen was labeled SET A; the positions for these transects are given in Appendix I - Tables 1a-1c and Figures 1a-1c.

Parallel transects were conducted in an east-west orientation, generally parallel to the gradient of sardine schools distributed along the coast. To fully encompass the expected westward (offshore) extent of the sardine school distribution, transects originated three miles from the shoreline and extended westward for 35 miles. Additionally, the segment from the coastline to the transect east end (3 miles offshore) was also photo-documented for future evaluation. The spatial coverage of the survey design extended from the Canadian border in the north to the Monterey Bay area in the south. Transects were spaced 15 nautical miles apart. A total of 52 transects were planned with 26 off Washington and Oregon, and 26 off California. Three replicate SETS, or 156 transects in total were planned.

Three airplanes participated in the 2009 survey. Frank Foode and Merrill Danna each flew 185 Piper Super Cubs (with camera systems mounted internal to the fuselage). John Huelman teamed with Geno Zandona to operate a Cessna 182 (with a camera system mounted in an external pod under the aircraft). Doyle Hanan flew along as observer.

A transect SET was conducted as follows. Survey pilots operated as a coordinated team starting with transect number 1 at Cape Flattery, Washington, and proceeding southward. The prevailing conceptual model of west coast sardine movement holds that fish tend to move in a northward direction during summer. A "leap-frog" approach was taken such that southward progress was continually maintained using the three airplanes. The southward-moving "leap frog" approach enabled relatively rapid southward progress in order to avoid double counting of sardine schools, which were presumably travelling northward during the survey time period. Once a transect (or a portion of a transect) had been flown, neither that transect, nor any transects to the north of that transect, were flown again during the SET. It was acceptable to skip transects or portions of transects if conditions required it (e.g. if better weather was available to the south of an area), but transects could not be "made up" once skipped during the sampling of a transect SET.

Once begun, the goal was to cover the full 52-transect SET in as few days as possible. Transects were flown at the nominal survey altitude of 4,000 ft, and could be flown starting at either the east end or the west end. At the beginning of each potential survey day, the survey pilots conferred by telephone to jointly determine if conditions could permit safe and successful surveying that day. Factors taken into consideration included sea condition, the presence of cloud or fog cover, and other relevant factors as determined by the survey pilots. The goal was to conduct sampling on days when prevailing conditions could permit clear visibility of sardine schools on the ocean surface from an altitude of 4000 ft.

Data Collection and Reduction

Each of the three survey planes was equipped with the same photogrammetric aerial digital camera mounting system and data acquisition system used in the 2008 pilot study work (Aerial Imaging Solutions, Appendix II). This integrated system was used to acquire digital images and to log transect data. The system recorded altitude, GPS position, and spotter observations, which were directly linked to the time stamped quantitative digital imagery. At the nominal survey altitude of 4000 feet, the approximate width-swept by the camera with a 24 mm lens was 1829 m (1.13 mi). Digital images were collected with 60% overlap to ensure seamless photogrammetric coverage along the transects.

A Transect Flight Log Form was kept during the sampling of each transect for the purpose of documenting the observations of the pilot and/or onboard observers. Key notations included observations of school species identification and documentation of any special conditions that could have an influence on interpreting the photographs taken on the transect.

In order to provide ground truth information and a cross comparison between survey aircraft, digital imagery of certain objects of known size (e.g. an airplane hangar and a set of tennis courts) was collected at a series of altitudes ranging from 500 ft. to 4000 ft. The observed vs. actual sizes of the objects were subsequently compared to evaluate photogrammetric error.

Digital images were analyzed to determine the number, size, and shape of sardine schools on each transect. Adobe *Photoshop Lightroom 2.0* software was used to bring the sardine schools into clear resolution and measurements of sardine school size (m^2) and shape (circularity) were made using Adobe *Photoshop CS3-Extended*. Transect width was determined from the digital images using the basic photogrammetric relationship:

$$\frac{I}{F} = \frac{GCS}{A}$$

and solving for *GCS*:

$$GCS = \frac{I}{F}A$$

where *I* = Image width of the camera sensor (e.g. 36 mm), *F* = the focal length of the camera lens (e.g. 24mm), *A* = altitude, and *GCS* = "ground cover to the side" or width of the field of view of the digital image. Transect width was obtained by taking the average of *GCS* for all images collected on the transect. Transect length was obtained from the distance between start and stop endpoints using the GPS data logged by the data acquisition system.

Data Analysis

Estimation of total sardine biomass for the survey area was accomplished in a 3 step process, and required 1) measurement of individual school surface area on sampled transects, 2) estimation of individual school biomass (from measured school surface area and estimated school density), and 3) transect sampling design theory for estimation of a population total.

Individual school surface area (a_i) was measured on the photo-documented transects using the measurement tool feature of *Adobe Photoshop,* and employed the photogrammetric relationships described above. Individual school density (d_i) is specific to school size and was determined from the empirical relationship between surface area and biomass obtained from Stage 2 (point-set) sampling (described below). Individual school biomass (b_i) was estimated as the product of school density and surface area ($b_i = d_i a_i$). The sum of individual school biomass (b_u) was then determined for each transect (u). The mean sampled biomass for the study area ($\bar{b}$) was computed as

$$\bar{b} = \sum_{u=1}^{n} b_u \ / \ n \ .$$

Total biomass for the study area $\left(\hat{B}\right)$ was estimated using the unbiased estimator for a population total (Stehman and Salzer 2000),

$$\hat{B} = N\bar{b} \ ,$$

with estimated variance

$$\hat{V}\left(\hat{B}\right) = \frac{N^2\left(1 - \frac{n}{N}\right)s_e^2}{n}$$

where N = the total number of transects possible in the region, *n* = the number of transects sampled in the region, and s_e^2 is the sample variance of $\bar{b}$ (Cochran, 1977). The total number of transects possible in the region (N) is calculated by dividing the width of the entire region (W) by the average transect width (w).

Stage 2: At-Sea Point Set Sampling

Logistics

Point sets were the means used to determine the relationship between individual school surface area (as documented with quantitative aerial photographs, described above) and the biomass of individual fish schools. Empirical measurements of biomass were obtained by conducting research hauls or "point sets" at sea. Two purse seine vessels participated in the survey in the north (NWSS), and two in the south (CWPA). The gear configuration of the participating vessels is given in Table 1.

For the purposes of the aerial survey, a point set was defined as a sardine school first identified by a survey pilot and subsequently captured in its entirety by a survey purse seine vessel. Most point sets were first identified at an altitude of 4,000 ft, which was also the nominal altitude specified for survey transects; however, poor weather conditions necessitated lower altitudes for several point sets conducted near the end of the study period. The criteria used for determining the acceptability of transects for the school density analysis are given in Table 2.

Point sets were collected following the July, 2009 open fishing period and were completed by September 14th, 2009. Most of the point sets were conducted in close proximity to 1) the mouth of Columbia River in the northern area (by NWSS), and 2) Monterey Bay in the southern area (by CWPA).

For fully captured schools, the 1) total weight of the school, 2) numbers per unit weight, and 3) species composition was determined, based on biological sampling of the point set hauls. Additionally, school height information was recorded from vessel sonar and down-sounder equipment (Table 1).

The point set sampling design was based on school size, with the goals of 1) obtaining a range of sizes representative of schools photographed on the transects and 2) keeping within a size range consistent with the safe operation of the vessels participating in the survey. Thus, point sets were generally not attempted for schools larger than approximately 130 mt. Point set sampling was distributed between the northern and southern areas, with 1200 mt available for point sets for each area. A total of n = 54 schools were planned for the north, and 54 for the south (Table 3).

Biological Sampling

Fish were collected at fish processing plants upon landing. Fishermen participating in the survey were asked to keep the point set hauls in separate holds upon capture so the tonnage of each aerially photographed and measured haul could be determined separately upon landing. Samples were collected from the unsorted catch while being pumped from the vessels. Fish were taken systematically at the start, middle, and end of each delivery as it was pumped. The three samples were then combined and a random subsample of fish was taken from the pooled sample. Length, weight, sex, and maturity data were collected for each sampled fish. Sardine weights were taken using an electronic scale accurate to 0.5 gm; sardine lengths were taken using a millimeter length strip provided attached to a measuring board. Standard length was determined by measuring from sardine snout to the last vertebrae. Sardine maturity was documented by referencing

maturity codes (female- 4 point scale, male- 3 point scale) supplied by Beverly Macewicz NMFS, SWFSC (Table 4).

Survey Results

Stage 1: Aerial Transect Survey

The aerial sampling effort in 2009 was successful in conducting transects 1-41 of replicate SET A (Figure 1). Transect summary data are presented in Table 5; transect detail data are reported in Appendix III. Transect 1 was completed on 8/19/2009, and transect 41 was completed on 9/3/2009. Weather and time constraints precluded completing the last 11 transects of SET A (transects 42-52), and the additional two replicate SETs B and C. Additionally, the full westward extension of transects 33, and 37-40 could not be surveyed due to poor weather conditions (fog).

Sardine schools were found on 16 of the 41 transects (Figure 2). Most of the sardine schools observed were found on transects conducted off Washington and Oregon. While the majority of individual school sizes were less than 2000 m^2 (57.2%), some schools exceeded 10,000 m^2 in size (11.6 %) (Figure 3 – Top). Most of the individual school biomass values were less than 100 mt (91.3%) (Figure 3 – Bottom).

Stage 2: At-Sea Point Set Sampling

The at-sea sampling effort in 2009 resulted in the landing of 80 point sets between 7/28/2009 and 9/10/2009; 33 from the north and 47 from the south. A summary of point set parameters, and a description of the species composition of point set landings is given in Tables 6 and 7 for the north, and Tables 8 and 9 for the south, respectively. The size distribution of point sets sampled is given in Table 10 (north) and Table 11 (south).

Biological data from the point set samples is reported in Appendix IV (north) and Appendix V (south). Biological samples were collected for 1660 fish in 33 samples from the north, and for 2300 fish and 47 samples from the south. On average, fish sampled in the north were larger (Figure 4) and more advanced in maturity (Figure 5) than fish sampled in the south.

In 2009, the stringent qualifying criteria established for point sets intended to be used for density determination (Table 2) were met in 28 cases, all landed in the north (Table 12). Specific reasons for not using point sets in the density analysis are summarized in Table13 (north) and Table 14 (south).

The 28 qualifying point set observations from 2009 were examined with the 8 qualifying observations from 2008 using a likelihood ratio test ($P > 0.38$) and were subsequently pooled to yield 36 schools for the regression analysis (Table 15). Schools used in the analysis ranged in size from 204.5 m^2 to 9,308.4 m^2 and from 2.7 mt to 128.2 mt. A plot showing the relationship between observed and predicted density (mt/m^2) and surface

area (m^2) is given in Figure 6. The confidence interval on the prediction is reported in Table 16 and plotted in Figure 7.

The nonlinear regression model and regression parameters for the surface area – density relationship are summarized in Table 16. The raw data were log (base 10)-transformed and the model used to estimate density from surface area was:

$$\log(\text{Density}) = -2.2013 + 0.7528 \log(\text{Area}) - 0.18006 \log(\text{Area})^2$$

This regression model was used to estimate individual school biomass for photographed schools ranging up to 10,000 m^2 on the survey transects, by multiplying the measured school surface area and the estimated density.

In lieu of an estimated value for schools over 10,000 m^2 in size, an arbitrary value was assigned to represent school density. The density value used was the lowest value of density observed in 2008-2009 sampling (0.0077 mt/m^2). Thus, for schools over 10,000 m^2 in size, this value was multiplied by school surface area to calculate individual school biomass.

Estimation of quantities for stock assessment

Total Biomass

The individual components used to estimate total biomass are summarized in Table 17. The point estimate for the coast wide survey was 1,403,504 mt, +/- 1,368,637 mt. (CV=0.4975). Sardine biomass observed on the transects averaged 2,343 mt. Separate analysis of the northern area yielded a point estimate of 1,361,012 mt, +/- 1,317,943 mt (CV=0.4941).

Weighted length composition

A weighted length frequency composition was prepared for input to the SS3 stock assessment model by Hill et al. (2009). The raw length frequency data were weighted by the landed point set weights; little difference was observed between the raw vs. weighted length composition frequencies (Figure 8). Only point set data from the north were used to derive the weighted length frequency since 1) the southernmost 11 transects were not sampled in 2009, and 2) most of the observed biomass from the 41 transects sampled (98.8%) occurred in the north.

Discussion

In 2009, we were successful in coordinating industry resources on a coast wide basis to achieve a synoptic West Coast sardine survey. The Exempted Fishing Permit (EFP) granted by the National Marine Fisheries Service allowed for a well controlled and methodical survey, separate from the race for fish which occurs during the open fishing periods.

The 2009 survey was successful in computing an estimate of the minimum sardine biomass for a large portion of the west coast. Factors that can contribute to make the survey a minimum estimate of biomass were enumerated by the May 2009 STAR Panel and include incomplete detection due to: 1) schools too deep, 2) schools lost in glare, 3) marginal cloud cover - reduced visibility, 4) sea state, and 5) weather that is consistently prohibitive to sampling (limiting to full area coverage during the survey time window). In addition, the survey design did not encompass the full range of the west coast sardine population. The area south of Monterey Bay was excluded in survey design, in part to minimize uncertainty of potential interaction with the southern stock, thought to co-occur with the northern stock in southern California during summer months.

Weather negatively impacted survey results in 2009. In the limited time available for the survey, we could not complete a full transect SET, nor could we complete replicate sets – which would have aided greatly in determining the uncertainty of the survey biomass estimate. We also found that the final permit condition limiting the research project to only two EFP vessels per 24-hour period in each region hampered operations when fish were available, increasing both the duration of the project and resultant costs. These problems were particularly vexing in the south (see discussion of California sampling in 2009, below).

The estimate of minimum sardine biomass, and a weighted length composition derived from point set samples, were provided to Hill et al. (2009) for input to the sardine stock assessment model developed in SS3. The September, 2009 STAR Panel observed that inclusion of the aerial survey data into the SS3 model was not inconsistent with other model data components, and had the effect of scaling the estimate of total biomass. Future surveys will afford the opportunity to develop a time series of relative abundance, which should further improve model stability and estimation of sardine biomass in the stock assessment.

Modifications Following the September 2009 STAR panel

The September, 2009 STAR Panel review process was very constructive. The aerial survey methods and results from 2009 were closely examined and helpful suggestions were made by the Panel members to improve both 1) analysis of the 2009 data, and 2) sampling in the future.

Among other issues, the Panel addressed statistical error propagation from the point of school density estimation forward -- to the ultimate goal of biomass estimation from the transect data. To this end, a bootstrap procedure was developed with the assistance of the Panel. This procedure (developed in *R* statistical modeling software) was able to better characterize some (but not all) of the uncertainty in the final estimate of biomass obtained from the aerial survey. For instance, the use of a Michaelis-Menten model assuming log-normal error to describe the sardine surface area – density relationship was a clear improvement, as it provided for estimation of an asymptote value to assist with density estimation for the largest schools observed, in lieu of an arbitrary (fixed) density value.

Still unaccounted for in the *R* code at the end of the STAR Panel week (and thus not made available in time for use in the Hill et al (2009) stock assessment model), was an additional bootstrapping component to model the effect of variability in the school surface area – density relationship on the final biomass estimate. Addition of this and further modifications to the *R* code will help to better characterize uncertainty in the final biomass estimate, and will also be useful to develop sample size recommendations for future work.

California Portion of the West Coast Aerial Sardine Survey during 2009

Experimental Fishing Permits were issued on 7/27/2009; the final day for field work in California was 9/13/2009.

Aerial Transects

Weather played an important and confounding role in both the north and the south this season, with an unusually large number of cloudy or foggy days. El Niño conditions likely contributed to the large number of days when neither aerial transects nor point sets could be accomplished. El Niño conditions can and do cause behavioral changes in sardines, resulting in movement nearshore. The principals, PI, and coordinators checked NOAA weather prediction sites daily to ascertain flying conditions. In early September the marine layer lifted sufficiently in the Monterey Bay area to contemplate flying the remaining 11 transects. Since Monterey was clear, a suggestion was made to fly the last 11 transects from the clearing in Monterey northward. This plan was rejected as it did not conform with the operational guidelines calling for transects to be flown from north to south. The California plane then flew northward immediately to begin the transects, but the marine layer returned by the time the plane reached the designated launch point, and the fog raced down coast faster than the plane could fly any of the transects. The marine layer persisted for the duration of the project, resulting in incompletion of the last 11 transects from Gulf of the Farallons to Monterey, an area old-timers called the ‘mother

lode' of the sardine resource in California, and an area where sardines were being reported offshore by albacore and blackcod fishermen during the time of this research.

California pilots and coordinating scientist completed 6 of 26 transects in the north (CA personnel present August 6- August 22 in Oregon to assist NWSS with aerial survey) and completed 9 of 15 total transects in the south (NWSS pilot present August 25- September 10 to assist with southern transects, but returned to Oregon due to the persistent, unrelenting marine layer).

Point Sets

The Operational Plan (Appendix V) initially called for aerial transects to be conducted from 3 miles offshore to 35 miles offshore; however, following discussion with fishermen and pilots the 0-3 mile segment was also included in the July 15 draft and Final August 11 plan as follows: [page 2] "… the 3 mile segment directly eastward from the east end of the transect to the shore will also be flown and photographed …" and [page 3]: "… Attempts will be made to conduct point sets over as wide an area as feasible; however, point sets may occur in any area covered by aerial transects where sardine schools of the desired size are found…" (Appendix V).

The rationale for this modification was the understanding that NOAA had confirmed El Niño conditions in California waters before this research project began, and sardines are known to move from offshore to inshore waters during such conditions. This finding was confirmed by aerial surveys in areas where the marine layer lifted above the 4,000 foot ceiling required for aerial photography. Point sets were conducted as prescribed in the operational plan within the 0-3 mile range in California.

A total of 47 point sets were made by two of the four CWPA-contracted EFP vessels in Monterey Bay (see Table 6). We note that the final permit condition limiting the research project to only two EFP vessels per 24-hour period in the north and south hampered operations when fish were available, increasing both the duration of the project and resultant costs.

The pilot selected schools of appropriate size as directed by scientists, and photographs were taken of most schools prior to setting and during the set. School size was estimated by the pilot and the fishing vessel skippers as required in the operational plan. Estimates of the percentage captured were also made by the pilot and skipper. We note differences in these percentages and assume this to be caused by perspective (from the air above the school compared to at sea level from the fishing vessel and even using vessel sonar when possible). The skippers could not always see (visually or acoustically) the school on which the pilot was setting them. Also, at times the pilot did not see schools below the surface, although fishermen saw sardines on their sonar.

One consistent problem that we noted in California during 2009 was that as the vessel approached the school, the pilot shifted from photographing and focused on setting the vessel. During the last minutes prior to the set, this resulted in tilting the plane to view the fish school and vessel, thus precluding photographs of the vessel approaching the sardine

school from the belly-mounted camera, which was then pointed away from both vessel and school. Due to time constraints involved in completing the point sets and collecting biological samples (September 14 deadline), as well as the time lag in transmitting the data to the Project Data Coordinator for analysis, we did not discover this problem until the photographs were being analyzed. We are investigating the possibility of using latitude and longitude coordinates and time, both recorded on skippers' and pilots' logs as well as photographs, to link photos of schools and designated point sets. In the future the pilot will be directed to fly a course specifically to provide a visual link between identified school and related point set by leveling the plane out periodically to allow photographs as the vessel approaches the school and during the set, with the camera operating continuously.

Biological Samples

We successfully sampled, weighed, measured, determined sex and maturity of 2,300 sardines from the California point sets. We also removed and stored otoliths from about 1,100 of those sardines. Size and weight data were transmitted to NWSS for use in the aerial assessment.

Bioacoustic assessments

As described in the operational plan, acoustic assessments were conducted aboard permitted vessels to record in skipper vessel logs the height and depth of sardine schools during point sets. F/V King Phillip also had a Simrad© ES 60 installed to continuously record upon leaving port to fish. These data are available for the period September 2-September 14.

To further test bioacoustics for detecting schools and school density, two additional transducers were deployed during five days of point sets in Monterey Bay. These were BioSonics© Digital Scientific Split Beam transducers operating at 200 KHz with six degree beams, one viewing downward and one viewing sideward. The transducers were mounted on a biofin/towing sled deployed along-side a chartered vessel, F/V Pacific Star, at about 4-5 knots. Due to nearshore water conditions, and the skittish behavioral pattern of the sardines, which were continuously harassed by California sea lions, we suspended use of the BioSonics gear as it or the vessel appeared to exacerbate avoidance behavior of sardine schools. However, during one instance we successfully completed an acoustic survey of a school of sardines, measuring and recording the outside edge of the school with the side-looking transducer while F/V Pacific Star identified the sardines with onboard acoustics, and the aerial crew was able to take photographs of the vessel and the sardine school.

CWPA transmitted the acoustic data file and pertinent photographs to Biosonics Inc. for analysis with Echoview software. The report is in preparation and will be submitted as soon as it is available.

Hydroacoustic techniques provide a promising method to survey the density of sardine schools too large to capture in point sets. We hope to further explore acoustic assessment techniques, coupled with experiments in night photography of bioluminescence. Sardine

abundance is thought to be more apparent at night in California, and perhaps also throughout the range of the sardine population.

Predator Impacts

During aerial surveys and during point set operations, California sea lions were observed feeding on schooled sardines. When schools were at or near the surface, sea lions feeding from below the school caused sardines to boil to the surface as small balls of fish. This occurred even when the school was not obvious to the naked eye. Sea lions were also observed feeding on sardine schools in the northeast section of Monterey Bay where many of the CWPA point sets were conducted. These feeding activities seemed to make the sardine schools more agitated and thus more difficult to observe, photograph and capture as school shapes and sizes changed frequently in response to the sea lions' foraging activity.

Conclusion

Despite the difficulties encountered in 2009, our results were found to be useful in the sardine stock assessment model (Hill et al 2009). We are encouraged that continuation and further development of the aerial survey method will be beneficial for the sardine stock assessment process, improving understanding of sardine resource abundance of the northern sardine stock.

Acknowledgements

This work was the result of the coordinated efforts of two components of the West Coast sardine industry: The California Wetfish Producers Association (Diane Pleschner-Steele, Executive Director) and the Northwest Sardine Survey (Jerry Thon, Principal). Jerry Thon collaborated with Doyle Hanan almost daily regarding weather and survey activities – working together to make the best of a trying sampling season. We also collectively thank Vidar Wespestad for his inspiration and guidance.

Literature Cited

Cochran, W.G. 1977. Sampling Techniques (3rd edition). John Wiley, New York, NY, USA.

Elzinga, C. L, D. W. Salzer, J. W. Willoughby, and J. P. Gibbs. 2001. Monitoring Plant and Animal Populations. Blackwell Science, Inc., Maiden, MA.

Hill, K. T., E. Dorval, N. C. H. Lo, B. J. Macewicz, C. Show, and R. Felix-Uraga. 2007. Assessment of the Pacific sardine resource in 2007 for U.S. management in 2008. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-413. 178 p.

Hill, K.T., N. C. H. Lo, B. J. Macewicz, and P. Crone. 2009. Assessment of the Pacific Sardine Resource in 2009 for U.S. Management in 2010. STAR Panel Review Draft, September 21-25, 2009. NOAA National Marine Fisheries Service, Southwest Fisheries Science Center, La Jolla, California.

Misund., O. A., J. C. Coetzee, P. Fréon, M. Gardener, K. Olsen, I. Svellingen And I. Hampton. 2003. Schooling Behaviour Of Sardine Sardinops Sagax In False Bay, South Africa. Afr. J. Mar. Sci. 25: 185–193

Stehman, S. and D. Salzer. 2000. Estimating Density from Surveys Employing Unequal-Area Belt Transects. Wetlands. Vol. 20, No. 3, pp. 512-519. The Society of Wetland Scientists, McLean, VA.

Wespestad, V., Jagielo, T. and R. Howe. 2008. The Feasibility Of Using An Aerial Survey To Determine Sardine Abundance Off The Washington-Oregon Coast In Conjunction With Fishing Vessel Observation Of Surveyed Schools And Shoals. Report Prepared For: Northwest Sardine Survey, LLC. 12 Bellwether Way, Suite 209, Bellingham, WA 98225.

Table 1. Gear configuration of vessels participating in the 2009 Aerial Sardine Survey.

NWSS Vessel Equipment Information

Echo Sounder

Vessel	Manufacturer	Model	Frequency
Lauren L Kapp	Simrad	ES60	50/200
Pacific Pursuit	Simrad	ES60	50/200

Sonar

Vessel	Manufacturer	Model	Frequency
Lauren L Kapp	Furuno	CH37	165
Pacific Pursuit	Furuno	CH250	60/88/150

Net Dimensions

Vessel	Length (m)	Depth (m)	Mesh Size
Lauren L Kapp	265	1650	1¼"
Pacific Pursuit	275	220	1¼"

CWPA Vessel Equipment Information

Echo Sounder

Vessel	Manufacturer	Model	Frequency
King Philip	Simrad	ES60	50/200
Ocean Angel IV	Furuno	620	50

Sonar

Vessel	Manufacturer	Model	Frequency
King Philip	Furuno	800	110
Ocean Angel IV	Furuno	600	160

Net Dimensions

Vessel	Length (m)	Depth (m)	Mesh Size
King Philip	240	35	11/16"
Ocean Angel IV	195	30	11/16"

Table 2. Criteria for excluding point sets from the density analysis (reasons used to deem a point set “unacceptable”).

1	Percent captured	School is judged to be less than 90% captured
2	No photograph -1	No photograph of vessel was documented (camera off)
3	No photograph -2	No photograph of vessel was documented (camera on)
4	No photograph -3	Photograph available, but late (vessel is already pursing the catch)
5	School not discrete	Sardine captured was only a portion of a larger school ("cookie cutter")
6	Mixed hauls	Multiple point sets were mixed in one hold

Table 3. Requested size (mt) and area (m^2) of point set sardine schools

Requested Size Class/Area

Size (mt)	Requested Size Class	Surface Area (m^2)
0 - 5	0	200
5 - 10	20	300
10 - 20	20	600
20 - 40	10	1200
40 - 60	3	2600
60 - 80	1	6000
80 +	0	
	54	

Table 4. Sardine visual maturity codes. Source: Beverly Macewicz NMFS, SWFSC.

Female maturity codes	Male maturity codes
1. Clearly immature- ovary is very small; no oocytes present	1. Clearly immature- testis is very small thin, knifed-shaped with flat edge
2. Intermediate- individual oocytes not visible but ovary is not clearly immature; includes maturing and regressed ovaries	2. Intermediate- no milt evident and is not a clear immature; includes maturing or regressed testis
3. Active- yolked oocytes visible; any size or amount as long as you can see them with the unaided eye in ovaries	3. Active- milt is present; either oozing from pore, in the duct, or when testis is cut with knife.
4. Hydrated oocytes present; yolked oocytes may be present	

Table 5. Transect summary data from 2009 Aerial Sardine Survey.

Transect No.	Survey Date	West End		East End		Transect Length (km)	Transect Avg Width (m)	Sardine Total Biomass (mt)
1	8/19/09	N48−09.996'	W125−31.278'	N48−09.984'	W124−46.016'	55.95	1850.30	43.1
2	8/19/09	N47−55.014'	W125−25.023'	N47−55.037'	W124−39.877'	56.07	1846.05	5.3
3	8/19/09	N47−39.986'	W125−09.753'	N47−39.992'	W124−24.891'	55.99	1827.07	0.0
4	8/19/09	N47−25.090'	W125−06.429'	N47−24.767'	W124−21.877'	55.87	1880.83	6782.3
5	8/22/09	N47−10.044'	W124−58.343'	N47−09.851'	W124−13.771'	56.16	1873.85	14665.0
6	8/22/09	N46−55.026'	W124−55.096'	N46−54.907'	W124−10.823'	56.05	1910.10	43352.0
7	8/22/09	N46−40.285'	W124−51.270'	N46−40.125'	W124−07.446'	55.73	1884.69	3774.5
8	8/22/09	N46−24.948'	W124−49.118'	N46−25.032'	W124−05.448'	55.79	1892.27	657.2
9	8/22/09	N46−10.037'	W124−44.601'	N46−09.840'	W124−01.075'	55.87	1819.55	0.0
10	8/22/09	N45−54.957'	W124−43.914'	N45−54.904'	W124−01.000'	55.33	1824.14	1664.1
11	8/22/09	N45−39.911'	W124−40.780'	N45−40.041'	W123−57.947'	55.47	1826.21	21316.9
12	8/22/09	N45−25.029'	W124−42.796'	N45−24.605'	W123−59.921'	55.78	1836.79	471.9
13	8/22/09	N45−10.038'	W124−43.463'	N45−09.919'	W124−00.938'	55.56	1839.21	30.0
14	8/22/09	N44−54.794'	W124−46.440'	N44−55.115'	W124−03.927'	55.80	1852.21	0.0
15	8/23/09	N44−40.003'	W124−48.267'	N44−39.950'	W124−05.843'	55.92	1841.59	32.6
16	8/23/09	N44−24.816'	W124−49.945'	N44−24.985'	W124−07.701'	55.92	1914.94	0.0
17	8/23/09	N44−09.666'	W124−51.785'	N44−09.992'	W124−10.022'	55.52	1848.34	0.0
18	8/23/09	N43−54.966'	W124−53.646'	N43−54.667'	W124−11.567'	56.18	1910.73	2074.5
19	8/23/09	N43−40.002'	W124−56.565'	N43−40.045'	W124−14.695'	56.13	1869.95	0.0
20	8/23/09	N43−24.724'	W125−00.580'	N43−24.748'	W124−21.654'	52.40	1883.80	0.0
21	8/24/09	N43−09.984'	W125−09.033'	N43−10.010'	W124−27.601'	56.00	1884.03	0.0
22	8/24/09	N42−55.061'	W125−14.852'	N42−54.933'	W124−33.601'	55.99	1887.47	0.0
23	8/24/09	N42−40.074'	W125−08.868'	N42−40.044'	W124−26.136'	58.23	1888.85	0.0
24	8/24/09	N42−25.278'	W125−07.981'	N42−25.099'	W124−27.527'	55.35	1844.96	0.0
25	8/25/09	N42−10.025'	W125−05.186'	N42−09.979'	W124−24.837'	55.42	1866.24	0.0
26	8/25/09	N41−54.967'	W124−54.026'	N41−54.993'	W124−13.552'	55.82	1917.03	0.0
27	8/25/09	N41−40.023'	W124−49.955'	N41−39.888'	W124−10.054'	55.24	1882.35	0.0
28	8/25/09	N41−25.036'	W124−45.870'	N41−25.130'	W124−10.705'	48.87	1886.07	0.0
29	9/2/09	N41−09.994'	W124−50.601'	N41−10.081'	W124−10.534'	55.90	1854.92	0.0
30	9/2/09	N40−54.884'	W124−50.474'	N40−54.922'	W124−10.550'	55.91	1858.72	236.2
31	9/2/09	N40−39.997'	W124−59.221'	N40−40.204'	W124−19.364'	56.03	1840.50	0.0
32	9/2/09	N40−25.008'	W125−04.235'	N40−25.277'	W124−24.437'	56.15	1861.29	0.0
33	9/3/09	N40−10.107'	W124−26.906'	N40−10.031'	W124−14.578'	17.46	1842.74	0.0
34	9/3/09	N39−54.859'	W124−36.665'	N39−55.071'	W123−57.923'	55.07	1852.64	161.6
35	9/3/09	N39−39.934'	W124−28.816'	N39−40.209'	W123−49.353'	56.30	1852.79	799.0
36	9/3/09	N39−24.951'	W124−21.142'	N39−25.079'	W123−50.167'	44.35	1845.45	0.0
37	9/3/09	N39−09.966'	W124−11.622'	N39−10.087'	W123−45.270'	37.86	1834.98	0.0
38	9/3/09	N38−54.772'	W123−51.103'	N38−55.033'	W123−44.473'	9.57	1827.57	0.0
39	9/3/09	N38−39.969'	W123−45.359'	N38−40.007'	W123−28.133'	24.93	1823.98	0.0
40	9/3/09	N38−24.820'	W123−30.551'	N38−24.971'	W123−07.806'	33.03	1813.59	0.0
41	9/3/09	N38−10.251'	W123−37.003'	N38−10.423'	W122−59.222'	55.05	1808.61	0.0

Table 6. West Coast Sardine Survey Vessel Form Information for NWSS Vessels (Weather Condition Codes: 1- calm, clear; 2 – light wind, good visibility; 3 – moderate wind, fair visibility; 4 – poor fish conditions).

Point-set #	Date	Vessel	Time	Depth to Top of School (fath)	Depth to Bottom of school (fath)	Ocean Depth (fath)	Temp.	Weather Cond.	Latitude	Longitude	Landed Weight (mt)	% Capture Vessel	% Capture Pilot
1	7/28/2009	Pacific Pursuit	1210	3	6	19	58	1	46.02.20	124.00.90	29.42	95	n/a
2	7/28/2009	Lauren L Kapp	1230	2	6	20	55.8	1	46.30.50	124.1.70	22.41	90	n/a
3	7/28/2009	Pacific Pursuit	1330	3	6	20	58	1	46.01.30	124.00.50	19.36	100	n/a
4	7/28/2009	Lauren L Kapp	1430	2	6	19	55.6	1	46.01.30	124.00.70	34.98	100	n/a
5	8/13/2009	Pacific Pursuit	1145	2	9	60	62	2	46.06.60	124.20.20	128.15	96-97	95
6	8/13/2009	Lauren L Kapp	1530	0	2	61	62	2	46.40.00	124.20.00	2.68	100	100
7	8/14/2009	Pacific Pursuit	1150	3	7	54	62	3	46.04.10	124.16.10	42	98	100
8	8/14/2009	Lauren L Kapp	1200	0	3	53	61	2	46.60.00	124.16.00	50.1	95	95
9	8/14/2009	Pacific Pursuit	1406	3	7	55	62	3	46.02.70	124.17.50	32.57	98	100
10	8/16/2009	Lauren L Kapp	1300	1	6	27	61	1	46.26.00	124.14.00	56.43	95	n/a
11	8/16/2009	Pacific Pursuit	1440	1	6	27	62	1	46.28.25	124.12.92	27.25	100	n/a
12	8/22/2009	Pacific Pursuit	1202	n/a	n/a	37	60	3	46.41.50	124.18.40	7.15	99	n/a
13	8/22/2009	Pacific Pursuit	1310	n/a	n/a	38	60	3	46.41.90	124.19.10	26.56	100	n/a
14	8/22/2009	Lauren L Kapp	1330	2	4	33	60	2	46.42.00	124.18.00	10.17	100	n/a
15	8/22/2009	Pacific Pursuit	1450	n/a	n/a	37	60	3	46.42.70	124.18.20	15.87	100	n/a
16	8/22/2009	Lauren L Kapp	1530	2	5	30	60	2	46.42.00	127.17.00	39.14	100	n/a
17	8/23/2009	Pacific Pursuit	1230	n/a	n/a	20	62	3	46.33.50	124.11.60	18.6	100	n/a
18	8/23/2009	Lauren L Kapp	1230	0	2.5	20	60	1	46.33.00	124.12.00	13.55	100	n/a
19	8/23/2009	Lauren L Kapp	1430	2	6	20	60	1	46.33.00	124.12.00	48.89	100	n/a
20	8/23/2009	Pacific Pursuit	1450	n/a	n/a	20	62	3	46.33.90	124.10.70	15.08	100	n/a
21	8/24/2009	Pacific Pursuit	1500	2	4	25	58	3	46.27.90	124.10.90	26.4	98	n/a
22	8/24/2009	Lauren L Kapp	1300	2	4	25	59	1	46.32.00	124.13.00	28.55	100	n/a
23	8/25/2009	Pacific Pursuit	1220	n/a	n/a	25	58.8	3	46.26.10	124.13.50	41.79	98	n/a
24	8/25/2009	Lauren L Kapp	1230	2	7	24	59	1	46.25.00	124.14.00	68.18	90	n/a
25	9/1/2009	Pacific Pursuit	930	n/a	n/a	33	58	3	46.09.20	124.08.20	29.85	99	n/a
26	9/1/2009	Lauren L Kapp	1000	2	6	27	55	2	46.90.00	124.80.00	39.4	100	n/a
27	9/1/2009	Lauren L Kapp	1230	2	6	28	55	2	46.80.00	124.70.00	39.85	100	n/a
28	9/1/2009	Pacific Pursuit	1230	n/a	n/a	23	58	3	46.09.20	124.06.30	45.03	95	n/a
29	9/2/2009	Lauren L Kapp	1000	1	3	40	58	1	46.60.00	124.11.00	22.29	100	100
30	9/2/2009	Pacific Pursuit	1000	n/a	n/a	45	59	3	46.06.10	124.10.80	80.43	95	100
31	9/2/2009	Lauren L Kapp	1130	1	3	40	58	1	46.60.00	124.11.00	29.31	100	100
32	9/3/2009	Lauren L Kapp	1600	2	4.5	37	59	3	45.58.00	124.05.00	34.99	60	n/a
33	9/3/2009	Pacific Pursuit	1600	n/a	n/a	35	59	3	45.59.10	124.04.20	51.61	100	n/a

Table 7. Summary of point set species composition in 2009 Aerial Sardine Survey (NWSS).

Point-set #	Date	Vessel	Total Weight (mt)	Total Weight (lbs)	Sardine (lbs)	% Sardine	Mackerel (lbs)	% Mackerel	Salmon (lbs)	% Salmon	Flatfish (lbs)	% Flatfish
1	7/28/2009	Pacific Pursuit	29.43	64875.22	64865	0.9998	0	0	8.82	0.0001	1.4	2.16E-05
2	7/28/2009	Lauren L Kapp	22.41	49406	49406	1.0000	0	0	0	0	0	0
3	7/28/2009	Pacific Pursuit	19.36	42690	42690	1.0000	0	0	0	0	0	0
4	7/28/2009	Lauren L Kapp	34.98	77116	77116	1.0000	0	0	0	0	0	0
5	8/13/2009	Pacific Pursuit	76.27	168142	167030	0.9934	1112	0.0066	0	0	0	0
5 cont.	8/13/2009	Lauren L Kapp	51.88	114382	113838	0.9952	544	0.0048	0	0	0	0
6	8/13/2009	Lauren L Kapp	2.68	5908	5908	1.0000	0	0	0	0	0	0
7	8/14/2009	Pacific Pursuit	50.10	110453	109753	0.9937	700	0.0063	0	0	0	0
8	8/14/2009	Lauren L Kapp	42.00	92595	92460	0.9985	135	0.0015	0	0	0	0
9	8/14/2009	Pacific Pursuit	32.57	71811	71609	0.9972	202	0.0028	0	0	0	0
10	8/16/2009	Lauren L Kapp	58.25	128410	127295	0.9913	1115	0.0087	0	0	0	0
11	8/16/2009	Pacific Pursuit	27.25	60077	60047	0.9995	30	0.0005	0	0	0	0
12	8/22/2009	Pacific Pursuit	7.15	15770	15665	0.9933	105	0.0067	0	0	0	0
13	8/22/2009	Pacific Pursuit	26.56	58545	58545	1.0000	0	0	0	0	0	0
14	8/22/2009	Lauren L Kapp	10.17	22425	22425	1.0000	0	0	0	0	0	0
15	8/22/2009	Pacific Pursuit	15.87	34984	34732	0.9928	252	0.0072	0	0	0	0
16	8/22/2009	Lauren L Kapp	39.14	86296	86194	0.9988	102	0.0012	0	0	0	0
17	8/23/2009	Pacific Pursuit	18.78	41407	40995	0.9900	412	0.0100	0	0	0	0
18	8/23/2009	Lauren L Kapp	13.65	30098	29863	0.9922	235	0.0078	0	0	0	0
19	8/23/2009	Lauren L Kapp	49.31	108705	107795	0.9916	910	0.0084	0	0	0	0
20	8/23/2009	Pacific Pursuit	15.39	33924	33250	0.9801	674	0.0199	0	0	0	0
21	8/24/2009	Pacific Pursuit	26.42	58253	58211	0.9993	42	0.0007	0	0	0	0
22	8/24/2009	Lauren L Kapp	28.56	62971	62941	0.9995	30	0.0005	0	0	0	0
23	8/24/2009	Pacific Pursuit	41.94	92456	92123	0.9964	333	0.0036	0	0	0	0
24	8/24/2009	Lauren L Kapp	68.35	150685	150302	0.9975	383	0.0025	0	0	0	0
25	9/1/2009	Pacific Pursuit	29.91	65942	65799	0.9978	143	0.0022	0	0	0	0
26	9/1/2009	Lauren L Kapp	39.45	86970	86862	0.9988	108	0.0012	0	0	0	0
27	9/1/2009	Lauren L Kapp	39.89	87946	87857	0.9990	89	0.0010	0	0	0	0
28	9/1/2009	Pacific Pursuit	45.12	99464	99279	0.9981	185	0.0019	0	0	0	0
29	9/2/2009	Lauren L Kapp	22.31	49187	49137	0.9990	50	0.0010	0	0	0	0
30	9/2/2009	Pacific Pursuit	80.49	177456	177323	0.9993	133	0.0007	0	0	0	0
31	9/2/2009	Lauren L Kapp	29.32	64635	64621	0.9998	14	0.0002	0	0	0	0
32	9/3/2009	Lauren L Kapp	34.99	77139	77139	1.0000	0	0	0	0	0	0
33	9/3/2009	Pacific Pursuit	51.62	113791	113791	1.0000	0	0	0	0	0	0

Table 8. West Coast Sardine Survey Vessel Form Information for CWPA Vessels (Weather Condition Codes: 1- calm, clear; 2 – light wind, good visibility; 3 – moderate wind, fair visibility; 4 – poor fish conditions).

Point-set #	Date	Vessel	Vessel Time	Depth to Top of School (fath)	Depth to Bottom of school (fath)	Ocean Depth (fath)	Temp. (°F)	Weather Cond.	Latitude	Longitude	Landed Weight (mt)	% Capture Vessel	% Capture Pilot
1	8/23/2009	King Philip	1400	1	1.5	3	60	1	36.57.95	122.54.71	24	50	100
2	8/23/2009	King Philip	1700	1.4	1	3	60	1	36.57.44	122.00.80	71	10	100
3	8/24/2009	Ocean Angel IV	1410	1	6	6	61	3	36.57.45	122.00.82	47.41	80	100
4	8/24/2009	King Philip	1550	1.4	3	34	59	2	36.57.46	122.00.75	29.85	25	100
5	8/25/2009	King Philip	1245	1.5	2.5	3	59.9	1	36.57.81	122.54.25	20.01	100	100
6	8/25/2009	Ocean Angel IV	1251	2	5	35	61	2	36.57.36	122.00.67	8.12	40	25
7	8/25/2009	King Philip	1500	2	3	4	58	2	36.57.32	122.00.75	7.08	20	50
8	8/26/2009	King Philip	1200	3	2	1.5	58.8	1	36.57.43	122.00.60	13.6	50	60
9	8/26/2009	King Philip	1500	3	1.5	3	60.8	1	36.58.31	121.56.07	42.63	50	100
10	8/26/2009	Ocean Angel IV	1545	1	2.5	4	61	2	36.58.41	121.56.18	40.78	90	80
11	8/27/2009	King Philip	1030	1	2	2.5	61.7	1	36.58.29	121.55.99	16.33	70	90
12	8/27/2009	King Philip	1200	1.5	2.75	4	59.5	2	36.57.77	122.00.57	38.1	80	80
13	8/27/2009	King Philip	1500	1	2	3	60.1	1	36.55.95	121.52.20	18.14	40	75
14	8/27/2009	Ocean Angel IV	1515	2	5	20	61	2	36.55.31	121.51.95	17.23	90	90
15	8/27/2009	Ocean Angel IV	1625	3	5	15	61	2	36.56.89	121.51.95	20.2	90	100
16	8/28/2009	King Philip	1130	1	2	3	59.5	1	36.57.75	121.54.12	9.1	60	50
17	8/28/2009	King Philip	1300	1	2	3	60	1	36.58.39	121.56.04	36.28	80	75
18	8/28/2009	Ocean Angel IV	1315	10	15	19	61	2	36.58.36	121.55.46	5.53	25	25
19	8/28/2009	King Philip	1700	2	4	4	58.8	2	36.55.88	121.52.24	31.74	70	100
20	8/30/2009	King Philip	1200	1	2.5	3	60	1	36.57.47	122.00.54	40.8	60	100
21	8/30/3009	Ocean Angel IV	1320	2.5	4.5	28	61	2	36.57.4	122.00.5	9.07	90	30
22	8/30/2009	King Philip	1350	1	2.5	2.5	63	1	36.58.38	121.56.04	27.2	70	80
23	8/30/3009	Ocean Angel IV	1410	1.5	2.5	3	61.5	2	36.58.2	121.56.0	13.6	100	80
24	8/30/3009	Ocean Angel IV	1545	2.5	5.5	11	61	2	36.53.91	121.52.9	16.33	90	90
25	8/30/2009	King Philip	1600	1	2	4	60	1	36.53.48	121.50.69	2.47	10	40
26	8/31/2009	King Philip	1400	2	3	4	60.1	1	36.51.47	121.49.47	15.65	100	100
27	8/31/2009	Ocean Angel IV	1635	1.8	3.8	35	62	2	36.57.75	121.54.83	3.52	15	15
28	9/7/2009	King Philip	1130	2	3	3.5	59	1	36.57.22	121.53.56	36.29	100	100
29	9/7/2009	Ocean Angel IV	1330	2	5	5	62	2	36.57.88	121.54.20	27.22	100	100
30	9/7/2009	King Philip	1400	2	3	3	60.6	1	36.57.99	121.54.85	18.14	100	100
31	9/7/2009	Ocean Angel IV	1435	3	6	6	62	2	36.57.92	121.54.72	22.68	100	100
32	9/8/2009	Ocean Angel IV	1145	3	3	6.5	61	2	36. 55.10	121. 51.61	12.7	100	50
33	9/8/2009	King Philip	1230	1.5	3	3	57	1	36.54.52	121.51.19	42.64	100	100
34	9/8/2009	Ocean Angel IV	1315	2	3	6	61	2	36.54.67	121. 51.24	9.07	100	n/a
35	9/8/2009	Ocean Angel IV	1545	3	3	6	61	2	36. 57.33	121. 53.66	9.07	100	n/a
36	9/8/2009	King Philip	1500	2.5	3	4	57.7	2	36.56.52	121.52.99	16.33	90	n/a
37	9/9/2009	King Philip	1230	2	2.5	2.5	58.8	1	36.58.38	121.55.99	11.79	100	50
38	9/9/2009	Ocean Angel IV	n/a	2	5	6	61	2	36.58.33	121.55.37	13.61	100	50
39	9/9/2009	King Philip	1400	1	2	2.5	59.5	1	36.57.93	121.54.61	35.38	90	100
40	9/9/2009	Ocean Angel IV	n/a	2	5	5	61	2	36.58.18	121.55.25	14.52	100	50
41	9/9/2009	Ocean Angel IV	n/a	2	5	6	61	2	36.57.95	121.54.95	14.52	100	50
42	9/9/2009	King Philip	1800	1	2	2.5	59.7	1	36.50.03	121.54.64	16.33	80	80
43	9/9/2009	Ocean Angel IV	n/a	1	3	5	61	2	36.57.38	121.54.20	9.07	100	n/a
44	9/10/2009	Ocean Angel IV	1620	3	7	10	61	2	36.56.93	121.55.49	15.43	100	n/a
45	9/10/2009	King Philip	1130	7	8	8	55.8	1	36.43.49	121.49.03	8.16	n/a	90
46	9/10/2009	King Philip	1400	1	3.5	3	58.5	1	36.56.57	121.52.81	41.73	n/a	n/a
47	9/10/2009	King Philip	1630	2	4	6	58.6	1	36.56.79	121.53.46	24.49	n/a	n/a

Table 9. Summary of point set species composition in 2009 Aerial Sardine Survey (CWPA).

Point-set #	Date	Vessel	Total Weight (mt)	Total Weight (lbs)	Sardine (lbs)	% Sardine	Mackerel (lbs)	% Mackerel	Jack Smelt (lbs)	% Jack Smelt	Kingfish (lbs)	% Kingfish
1	8/23/2009	King Philip	24	52910.05	52910.05	1.0000	0	0.0000	0	0.0000	0	0.0000
2	8/23/2009	King Philip	71	156525.57	156525.57	1.0000	0	0.0000	0	0.0000	0	0.0000
3	8/24/2009	King Philip	29.85	65806.88	65806.88	1.0000	0	0.0000	0	0.0000	0	0.0000
4	8/24/2009	Ocean Angel	47.41	104519.40	104519.40	1.0000	0	0.0000	0	0.0000	0	0.0000
5	8/25/2009	King Philip	20.01	44113.76	44113.76	1.0000	0	0.0000	0	0.0000	0	0.0000
6	8/25/2009	King Philip	7.08	15608.47	15608.47	1.0000	0	0.0000	0	0.0000	0	0.0000
7	8/25/2009	Ocean Angel	8.12	17901.23	17901.23	1.0000	0	0.0000	0	0.0000	0	0.0000
8	8/26/2009	Ocean Angel	40.78	89903.00	89903.00	1.0000	0	0.0000	0	0.0000	0	0.0000
9	8/26/2009	King Philip	13.6	29982.36	29982.36	1.0000	0	0.0000	0	0.0000	0	0.0000
10	8/26/2009	King Philip	42.63	93981.48	93981.48	1.0000	0	0.0000	0	0.0000	0	0.0000
11	8/27/2009	King Philip	16.33	36000.88	36000.88	1.0000	0	0.0000	0	0.0000	0	0.0000
12	8/27/2009	King Philip	38.1	83994.71	83994.71	1.0000	0	0.0000	0	0.0000	0	0.0000
13	8/27/2009	King Philip	18.14	39991.18	39991.18	1.0000	0	0.0000	0	0.0000	0	0.0000
14	8/27/2009	Ocean Angel	17.23	37985.01	37985.01	1.0000	0	0.0000	0	0.0000	0	0.0000
15	8/27/2009	Ocean Angel	20.2	44532.63	44532.63	1.0000	0	0.0000	0	0.0000	0	0.0000
16	8/28/2009	King Philip	9.1	20061.73	20061.73	1.0000	0	0.0000	0	0.0000	0	0.0000
17	8/28/2009	King Philip	36.28	79982.36	79982.36	1.0000	0	0.0000	0	0.0000	0	0.0000
18	8/28/2009	King Philip	31.74	69973.54	69973.54	1.0000	0	0.0000	0	0.0000	0	0.0000
19	8/28/2009	Ocean Angel	5.53	12191.36	12191.36	1.0000	0	0.0000	0	0.0000	0	0.0000
20	8/30/2009	Ocean Angel	9.07	19995.59	19995.59	1.0000	0	0.0000	0	0.0000	0	0.0000
21	8/30/2009	Ocean Angel	13.6	29982.36	29982.36	1.0000	0	0.0000	0	0.0000	0	0.0000
22	8/30/2009	Ocean Angel	16.33	36000.88	36000.88	1.0000	0	0.0000	0	0.0000	0	0.0000
23	8/30/2009	King Philip	40.8	89947.09	89947.09	1.0000	0	0.0000	0	0.0000	0	0.0000
24	8/30/2009	King Philip	27.2	59964.73	59964.73	1.0000	0	0.0000	0	0.0000	0	0.0000
25	8/30/2009	King Philip	2.47	5445.33	5445.33	1.0000	0	0.0000	0	0.0000	0	0.0000
26	8/31/2009	King Philip	15.65	34501.76	34501.76	1.0000	0	0.0000	0	0.0000	0	0.0000
27	8/31/2009	Ocean Angel	3.52	7760.14	7760.14	1.0000	0	0.0000	0	0.0000	0	0.0000
28	9/7/2009	King Philip	36.29	80004.41	80004.41	1.0000	0	0.0000	0	0.0000	0	0.0000
29	9/7/2009	King Philip	18.14	39991.18	39991.18	1.0000	0	0.0000	0	0.0000	0	0.0000
30	9/7/2009	Ocean Angel	27.22	60008.82	60008.82	1.0000	0	0.0000	0	0.0000	0	0.0000
31	9/7/2009	Ocean Angel	22.68	50000.00	50000.00	1.0000	0	0.0000	0	0.0000	0	0.0000
32	9/8/2009	King Philip	42.64	94003.53	94003.53	1.0000	0	0.0000	0	0.0000	0	0.0000
33	9/8/2009	King Philip	16.33	36000.88	36000.88	1.0000	0	0.0000	0	0.0000	0	0.0000
34	9/8/2009	Ocean Angel	12.7	27998.24	27998.24	1.0000	0	0.0000	0	0.0000	0	0.0000
35	9/8/2009	Ocean Angel	9.07	19995.59	19995.59	1.0000	0	0.0000	0	0.0000	0	0.0000
36	9/8/2009	Ocean Angel	9.07	19995.59	19995.59	1.0000	0	0.0000	0	0.0000	0	0.0000
37	9/9/2009	King Philip	11.79	25992.06	25972.06	0.9992	20	0.0008	0	0.0000	0	0.0000
38	9/9/2009	King Philip	35.38	77998.24	77968.24	0.9996	0	0.0000	30	0.0004	0	0.0000
39	9/9/2009	King Philip	16.33	36000.88	35980.88	0.9994	0	0.0000	0	0.0000	20	0.0006
40	9/9/2009	Ocean Angel	13.61	30004.41	30004.41	1.0000	0	0.0000	0	0.0000	0	0.0000
41	9/9/2009	Ocean Angel	14.52	32010.58	31284.58	0.9773	726	0.0227	0	0.0000	0	0.0000
42	9/9/2009	Ocean Angel	14.52	32010.58	31618.58	0.9878	0	0.0000	0	0.0000	392	0.0122
43	9/9/2009	Ocean Angel	9.07	19995.59	19995.59	1.0000	0	0.0000	0	0.0000	0	0.0000
44	9/10/2009	King Philip	8.16	17989.42	17979.42	0.9994	0	0.0000	10	0.0006	0	0.0000
45	9/10/2009	King Philip	41.73	91997.35	91987.35	0.9999	10	0.0001	0	0.0000	0	0.0000
46	9/10/2009	King Philip	24.49	53990.30	53990.30	1.0000	0	0.0000	0	0.0000	0	0.0000
47	9/10/2009	Ocean Angel	15.43	34016.75	34016.75	1.0000	0	0.0000	0	0.0000	0	0.0000

Table 10. Size distribution of point sets landed in the north (NWSS).

Size (mt)	PNW landed Size Class	Surface Area (m^2)
0 - 5	1	200
5 - 10	2	300
10 - 20	5	600
20 - 40	15	1200
40 - 60	7	2600
60 - 80	1	6000
80 +	2	
	33	

Table 11. Size distribution of point sets landed in the south (CWPA).

CWPA Point-sets School Size Class

Size (mt)	CA landed Size Class	Surface Area (m^2)
0 - 5	2	200
5 - 10	9	300
10 - 20	16	600
20 - 40	13	1200
40 - 60	6	2600
60 - 80	1	6000
80 +	0	
	47	

Table 12. Summary of point-set data collected from the Pacific Northwest during EFP period

Point-set #	Pt-set Date	Vessel	Survey Pilot	Altitude	Photo #	Delivered wt. (mt)	Area (m^2)
1	7/28/2009	Pac. Purusit	SP2	3783	249	29.42	1546.51
2	7/28/2009	Lauren L Kapp	SP2	4075	284	22.41	1297.34
3	7/28/2009	Pac. Purusit	SP2	4203	604	19.36	544.53
4	7/28/2009	Lauren L Kapp	SP2	3711	703	34.98	1914.62
5	8/13/2009	P.P/L.L.K	SP1	4029	79	128.15	3038.96
6	8/13/2009	Lauren L Kapp	SP2	1296	991	2.68	204.53
7	8/14/2009	Pac. Purusit	SP1	4193	33	42	2020.14
8	8/14/2009	Lauren L Kapp	SP1	3632	107	50.1	1396.40
9	8/14/2009	Pac. Purusit	SP1	3898	30	32.57	675.41
10	8/16/2009	Lauren L Kapp	SP1	4281	106	56.43	891.43
11	8/16/2009	Pac. Purusit	SP1	3766	475	27.25	1145.93
12	8/22/2009	Pac. Purusit	SP2	4006	77	7.15	923.00
13	8/22/2009	Pac. Purusit	SP2	4049	197	26.56	1666.02
14	8/22/2009	Lauren L Kapp	SP2	3734	411	10.17	970.65
15	8/22/2009	Pac. Purusit	SP2	4081	456	15.87	212.81
16	8/22/2009	Lauren L Kapp	SP2	4193	506	39.14	647.05
17	8/23/2009	Pac. Purusit	SP2	4121	335	18.6	931.16
18	8/23/2009	Lauren L Kapp	SP2	4062	422	13.55	702.06
19	8/23/2009	Lauren L Kapp	SP2	3783	508	48.89	704.35
20	8/23/2009	Pac. Purusit	SP2	4127	615	15.08	743.67
21	8/24/2009	Pac. Purusit	SP2	3970	143	26.4	972.39
22	8/24/2009	Lauren L Kapp	SP2	3333	961	28.55	832.26
23	8/25/2009	Pac. Purusit	SP2	N/A	N/A	N/A	N/A
24	8/25/2009	Lauren L Kapp	SP2	N/A	N/A	N/A	N/A
25	9/1/2009	Pac. Purusit	SP2	1925	297	29.85	2148.96
26	9/1/2009	Lauren L Kapp	SP2	2208	389	39.4	2451.53
27	9/1/2009	Lauren L Kapp	SP2	2053	574	39.85	1671.78
28	9/1/2009	Pac. Purusit	SP2	1586	998	45.03	4543.25
29	9/2/2009	Lauren L Kapp	SP2	N/A	N/A	N/A	N/A
30	9/2/2009	Pac. Purusit	SP2	4150	137	80.43	4243.20
31	9/2/2009	Lauren L Kapp	SP2	3868	252	29.31	1205.97
32	9/3/2009	Lauren L Kapp	SP2	N/A	N/A	N/A	N/A
33	9/3/2009	Pac. Purusit	SP2	N/A	N/A	N/A	N/A

Table 13. Summary of NWSS point set evaluation for density analysis in 2009.

Point-set #	Date	Vessel	Reason for point set being unacceptable
1	7/28/2009	Pacific Pursuit	Acceptable
2	7/28/2009	Lauren L Kapp	Acceptable
3	7/28/2009	Pacific Pursuit	Acceptable
4	7/28/2009	Lauren L Kapp	Acceptable
5	8/13/2009	Pacific Pursuit	Acceptable
6	8/13/2009	Lauren L Kapp	Acceptable
7	8/14/2009	Pacific Pursuit	Acceptable
8	8/14/2009	Lauren L Kapp	Acceptable
9	8/14/2009	Pacific Pursuit	Acceptable
10	8/16/2009	Lauren L Kapp	Acceptable
11	8/16/2009	Pacific Pursuit	Acceptable
12	8/22/2009	Pacific Pursuit	Acceptable
13	8/22/2009	Pacific Pursuit	Acceptable
14	8/22/2009	Lauren L Kapp	Acceptable
15	8/22/2009	Pacific Pursuit	Acceptable
16	8/22/2009	Lauren L Kapp	Acceptable
17	8/23/2009	Pacific Pursuit	Acceptable
18	8/23/2009	Lauren L Kapp	Acceptable
19	8/23/2009	Lauren L Kapp	Acceptable
20	8/23/2009	Pacific Pursuit	Acceptable
21	8/24/2009	Pacific Pursuit	Acceptable
22	8/24/2009	Lauren L Kapp	No fish visible
23	8/25/2009	Pacific Pursuit	No fish visible
24	8/25/2009	Lauren L Kapp	Acceptable
25	9/1/2009	Pacific Pursuit	Acceptable
26	9/1/2009	Lauren L Kapp	Acceptable
27	9/1/2009	Lauren L Kapp	Acceptable
28	9/1/2009	Pacific Pursuit	Acceptable
29	9/2/2009	Lauren L Kapp	"cookie cutter"
30	9/2/2009	Pacific Pursuit	Acceptable
31	9/2/2009	Lauren L Kapp	Acceptable
32	9/3/2009	Lauren L Kapp	% Capture
33	9/3/2009	Pacific Pursuit	"cookie cutter"

Table 14. Summary of CWPA Point Set evaluation for density analysis in 2009.

Point-set #	Date	Vessel	Reason for point set being unacceptable
1	8/23/2009	King Philip	Already pursed, approach photo is 16 min 49 sec before pursed photo
2	8/23/2009	King Philip	Already pursed, approach photo is 2 min 53 sec before setting photo, no fish visible
3	8/24/2009	Ocean Angel IV	Already pursed, approach photos is 16 min 24 sec before pursed photo (no vessel present)
4	8/24/2009	King Philip	Already pursed, approach photo is 10 min 31 sec before pursed photo
5	8/25/2009	King Philip	Already pursed, approach photo is 20 min 44 sec before pursed photo
6	8/25/2009	Ocean Angel IV	% capture, Camera off, no photos of approach, no photos of set, no photos of vessel
7	8/25/2009	King Philip	% capture, already pursed, approach photo is 17 min 49 sec before pursed photo
8	8/26/2009	King Philip	% capture, already pursed, approach photo is 9 min 24 sec before set, "cookie cutter"
9	8/26/2009	King Philip	Already pursed, no approach photos, pumping almost completed
10	8/26/2009	Ocean Angel IV	"cookie cutter", earliest photo of vessel in same area was 53 min 7 sec earlier to set
11	8/27/2009	King Philip	"cookie cutter", set nearing completion, approach photo 7 min 51 sec before set,
12	8/27/2009	King Philip	No approach photos, no setting/pursing photos
13	8/27/2009	King Philip	Already pursed, no approach, % captured, camera off between 2:34:20pm and 2:55:05pm
14	8/27/2009	Ocean Angel IV	Already pursed, no approach photos
15	8/27/2009	Ocean Angel IV	No approach photos, already setting, "cookie cutter"
16	8/28/2009	King Philip	Camera off, no photos before 12:54:13pm, Lens out of focus until 4:02:26pm, no vessel photos
17	8/28/2009	King Philip	Lens out of focus, no vessel photos
18	8/28/2009	Ocean Angel IV	No photos of vessel approach, no photos of vessel setting, no photos of vessel pumping
19	8/28/2009	King Philip	No photos of vessel approach, no photos of vessel setting, no photos of vessel pumping
20	8/30/2009	King Philip	Already pursed, approach photo 12 min 6 sec before pursed photo
21	8/30/3009	Ocean Angel IV	Already pursed, no approach
22	8/30/2009	King Philip	Already pursed, no approach, % captured
23	8/30/3009	Ocean Angel IV	No photos of approach, no photos of set, no photos of pursing
24	8/30/3009	Ocean Angel IV	Camera off
25	8/30/2009	King Philip	No photos between 3:29:58pm and 4:30:54pm, camera off, % capture
26	8/31/2009	King Philip	No approach photos, no setting photos, no pursing photos
27	8/31/2009	Ocean Angel IV	Already pursed, no approach, % captured
28	9/7/2009	King Philip	Already set, no approach, "cookie cutter"
29	9/7/2009	Ocean Angel IV	Camera off from 12:38:24pm to 1:41:23pm, no approach, already pursing, "cookie cutter"
30	9/7/2009	King Philip	Camera off from 12:38:24pm to 1:41:23pm, no approach, already pursing, "cookie cutter"
31	9/7/2009	Ocean Angel IV	No photos of approach, no photos of set, no photos of pursing
32	9/8/2009	Ocean Angel IV	Already setting, no approach
33	9/8/2009	King Philip	Approach photo 12 min 2 sec before pursing photo, already pursing
34	9/8/2009	Ocean Angel IV	Camera off between 12:31pm and 1:35pm, no approach photo, no set photo, no pursing photo
35	9/8/2009	Ocean Angel IV	No photos after 2:01:15 PM, no pilot notes
36	9/8/2009	King Philip	No photos after 2:01:15 PM, no pilot notes
37	9/9/2009	King Philip	Already pursed, approach photo is 12 min 45 sec before pursed photo
38	9/9/2009	Ocean Angel IV	Already pursed, no approach
39	9/9/2009	King Philip	Already pursed, approach photo is 35 min 32 sec before with no vessel present in photo
40	9/9/2009	Ocean Angel IV	No photos of vessel during approach, set, or pursing, camera on
41	9/9/2009	Ocean Angel IV	Already pursed, no approach, camera off from 3:27:55pm to 4:43:21pm
42	9/9/2009	King Philip	Already pursed, approach photo is 8 min 7 sec before pursed photo
43	9/9/2009	Ocean Angel IV	No photos after 4:55:09, no vessel photos
44	9/10/2009	Ocean Angel IV	No photos of vessel, camera on, no pilot notes
45	9/10/2009	King Philip	No photos of vessel, camera on
46	9/10/2009	King Philip	No photos of vessel, camera on, no pilot notes
47	9/10/2009	King Philip	No photos of vessel, camera on, no pilot notes

Table 15. Nonlinear regression model used to determine parameters for individual school density estimation for the 2009 Aerial Sardine Survey.

Model: log(Density) = a + b Log(Area) + c Log(Area)^2		
a	**-2.2012835312416**	
b	**0.7527882003985**	
c	**-0.1800584074903**	
School Area (m2)	**Obs Density (mt/m2)**	**Pred Density (mt/m2)**
204.5	0.0131	0.0377
212.8	0.0746	0.0376
544.5	0.0356	0.0324
647.0	0.0605	0.0310
657.4	0.0768	0.0309
675.4	0.0482	0.0307
702.1	0.0193	0.0304
704.3	0.0694	0.0304
743.7	0.0203	0.0299
832.3	0.0343	0.0289
891.4	0.0633	0.0283
923.0	0.0077	0.0280
931.2	0.0200	0.0280
970.6	0.0105	0.0276
972.4	0.0271	0.0276
1121.7	0.0350	0.0263
1145.9	0.0238	0.0261
1206.0	0.0243	0.0256
1297.3	0.0173	0.0250
1396.4	0.0359	0.0243
1546.5	0.0190	0.0233
1666.0	0.0159	0.0227
1671.8	0.0238	0.0226
1914.6	0.0183	0.0214
2020.1	0.0208	0.0209
2149.0	0.0139	0.0203
2399.8	0.0297	0.0193
2451.5	0.0161	0.0191
2543.9	0.0243	0.0188
2752.2	0.0146	0.0181
3001.9	0.0085	0.0173
3039.0	0.0422	0.0172
3763.9	0.0214	0.0154
4243.2	0.0190	0.0145
4543.2	0.0099	0.0139
9308.4	0.0093	0.0089

Table 16. Confidence intervals (CI) on the predicted values for individual school density estimation for the 2009 Aerial Sardine Survey.

Observation	Lower CI	Predicted Value	Upper CI
1	0.02306	0.03092	0.04146
2	0.02170	0.02629	0.03184
3	0.01492	0.01932	0.02501
4	0.01431	0.01880	0.02469
5	0.01264	0.01734	0.02381
6	0.01351	0.01810	0.02426
7	0.01052	0.01543	0.02263
8	0.00449	0.00891	0.01769
9	0.01940	0.02334	0.02808
10	0.02082	0.02496	0.02993
11	0.02305	0.03239	0.04553
12	0.01730	0.02137	0.02640
13	0.01251	0.01724	0.02374
14	0.02066	0.03773	0.06893
15	0.01674	0.02088	0.02604
16	0.02027	0.02428	0.02909
17	0.02304	0.03070	0.04090
18	0.02260	0.02834	0.03555
19	0.02159	0.02610	0.03154
20	0.02250	0.02804	0.03494
21	0.01870	0.02265	0.02743
22	0.02233	0.02759	0.03409
23	0.02081	0.03761	0.06797
24	0.02307	0.03105	0.04180
25	0.02247	0.02796	0.03479
26	0.02302	0.03038	0.04011
27	0.02301	0.03036	0.04004
28	0.02295	0.02990	0.03896
29	0.02232	0.02758	0.03406
30	0.02276	0.02894	0.03680
31	0.01609	0.02032	0.02565
32	0.01470	0.01913	0.02489
33	0.01867	0.02262	0.02740
34	0.00894	0.01391	0.02165
35	0.00949	0.01445	0.02201
36	0.02129	0.02563	0.03085

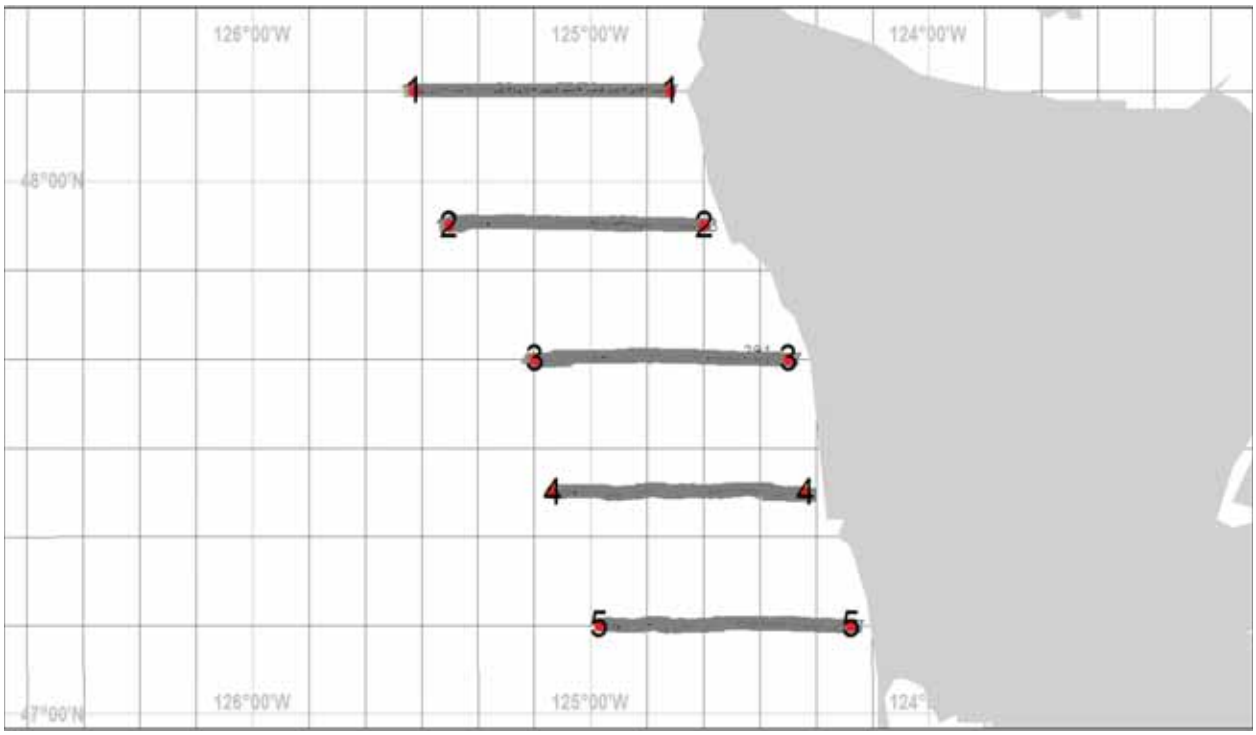
Table 17. Components used to estimate total biomass for the 2009 Aerial Sardine Survey. Left: Analysis of data for transects 1-41 (coastwide); Right: analysis of data for transects 1-26 (northern area only).

Biomass Estimate: Transects 1-41 (Coastwide)		
Total Transects Possible (N)		
	Latitude	Longitude
Transect 1	48.1667	-125.5222
Transect 41	38.1667	-125.5222
W (m)		1113858.7
w (m)		1858.7
N		599
n		41
Average Transect Biomass (mt)		
B_{ave}	2343.1	
Estimate of Total Biomass (mt)		
B_{tot}	1403504	
Estimate of Total Biomass Variance		
s^2u	59811852	
$V(B_{tot})$	487600807198	
$SE(B_{tot})$	698284	
CI_{low}	34867	
CI_{high}	2772141	
+/-	1368637	
CV	0.4975	

Biomass Estimate: Transects 1-26 (North)		
Total Transects Possible (N)		
	Latitude	Longitude
Transect 1	48.1667	-125.5222
Transect 26	41.9167	-125.5222
W (m)		696866.2
w (m)		1866.2
N		373
n		26
Average Transect Biomass (mt)		
B_{ave}	3648.8	
Estimate of Total Biomass (mt)		
B_{tot}	1361012	
Estimate of Total Biomass Variance		
s^2u	90827297	
$V(B_{tot})$	452148763792	
$SE(B_{tot})$	672420	
CI_{low}	43069	
CI_{high}	2678955	
+/-	1317943	
CV	0.4941	

Figure 1. Transects conducted during the Aerial Sardine Survey in 2009. Transects are numbered at the planned end points. Thick gray line shows location of photographs used in the analysis.

Set A: Transects 1-5

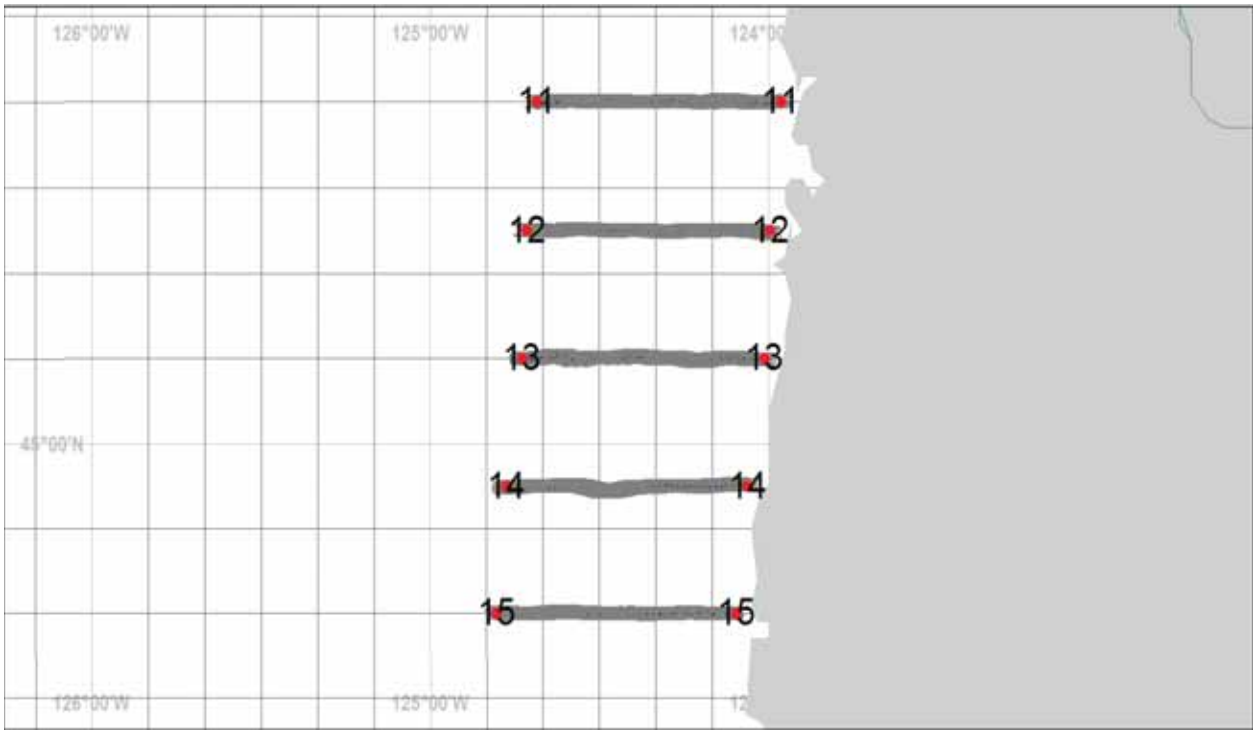


Set A: Transects 6-10



Figure 1, continued.

Set A: Transects 11-15

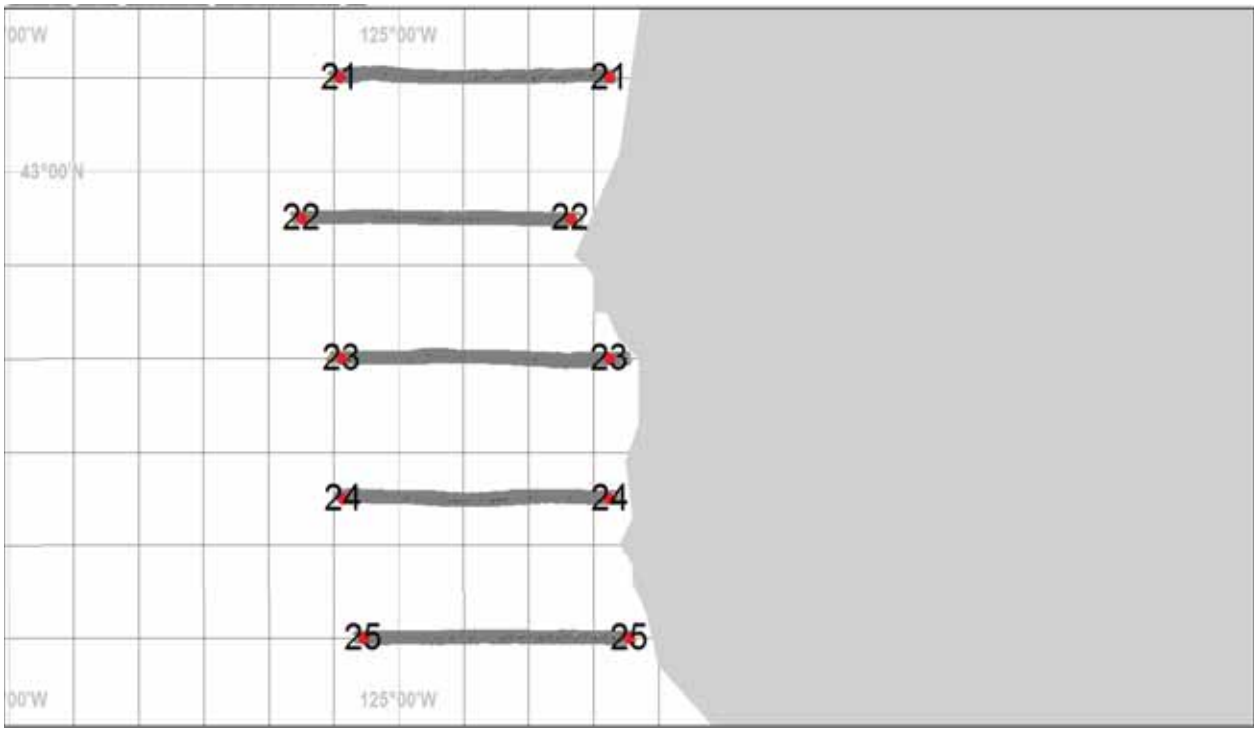


Set A: Transects 16-20



Figure 1, continued.

Set A: Transects 21-25



Set A: Transects 26-30

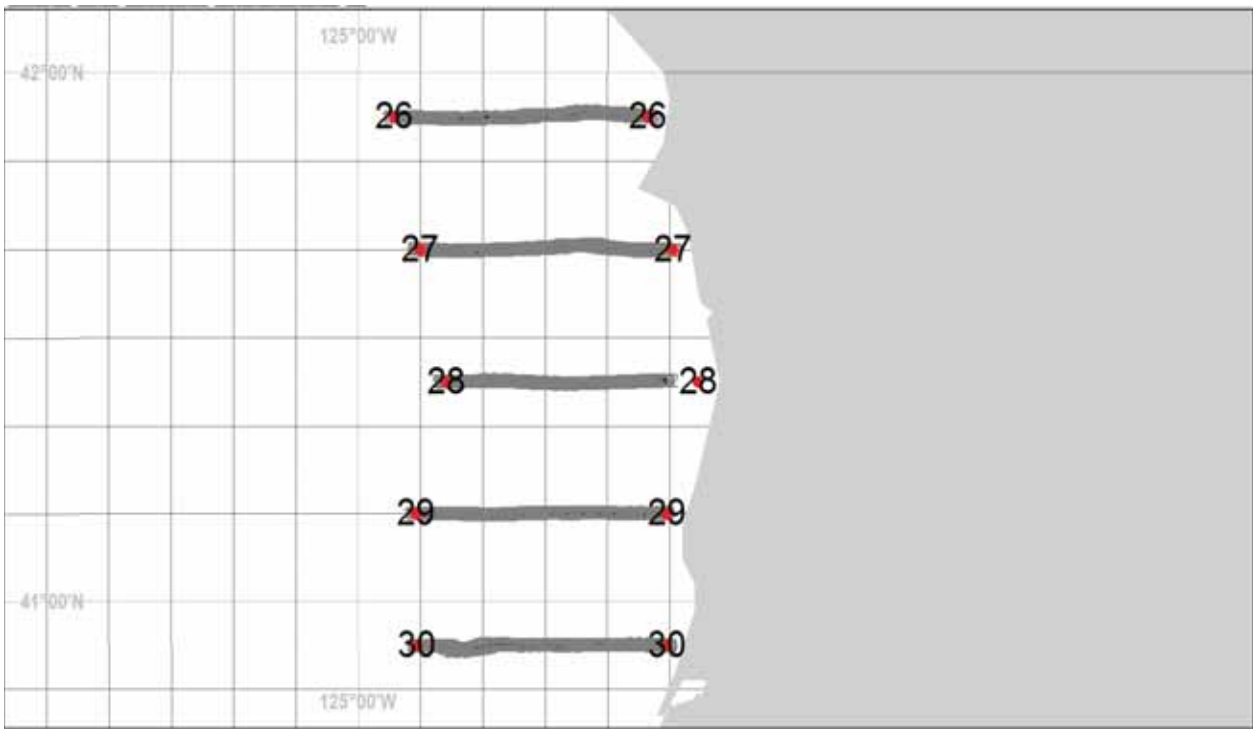
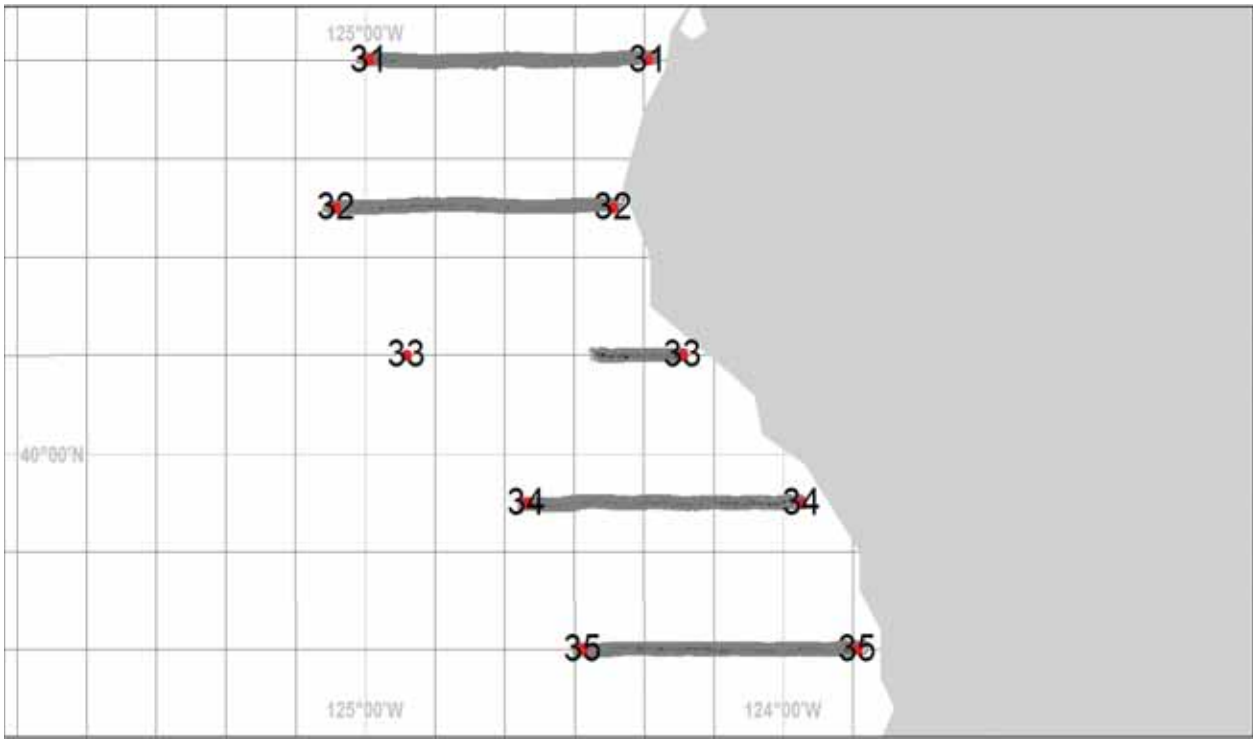


Figure 1, continued.

Set A: Transects 31-35



Set A: Transects 36-41

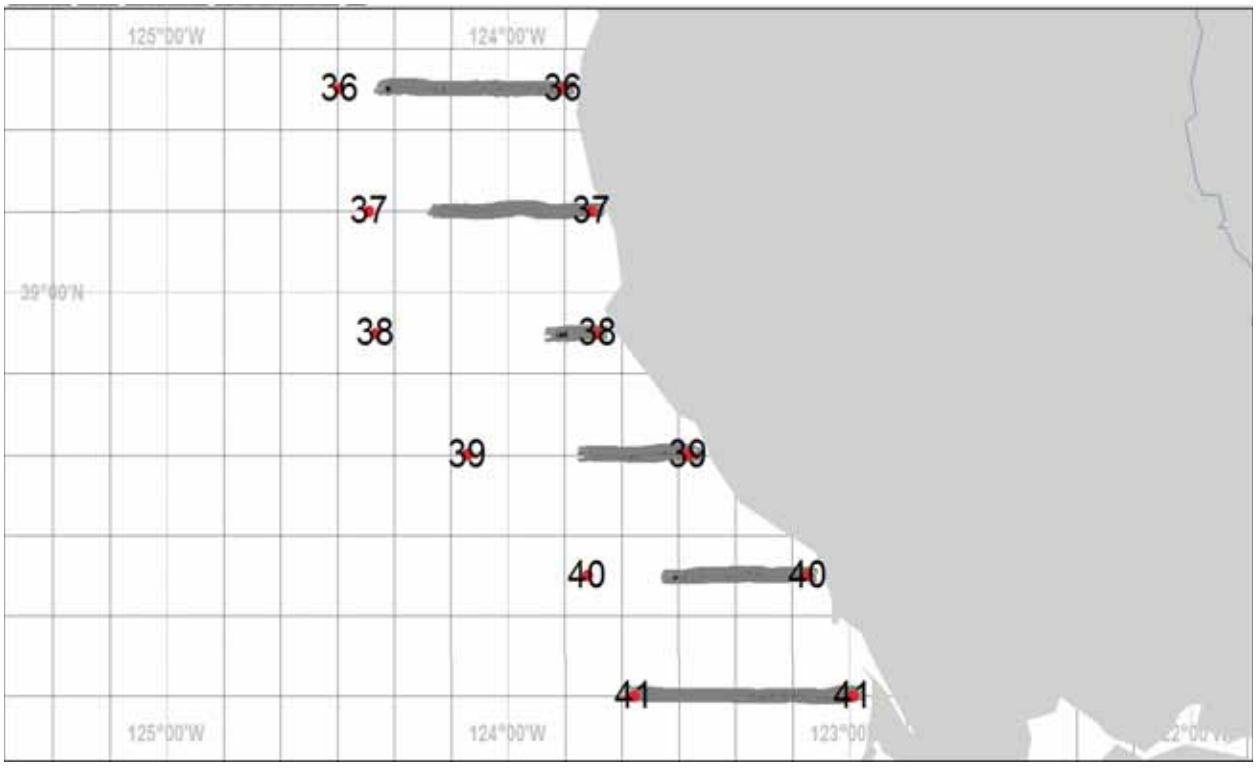


Figure 2. Map showing the distribution of sardine schools observed during the 2009 Aerial Sardine Survey. Note: transects No. 42-52 were not sampled in 2009 due to prohibitive weather conditions and time constraints.

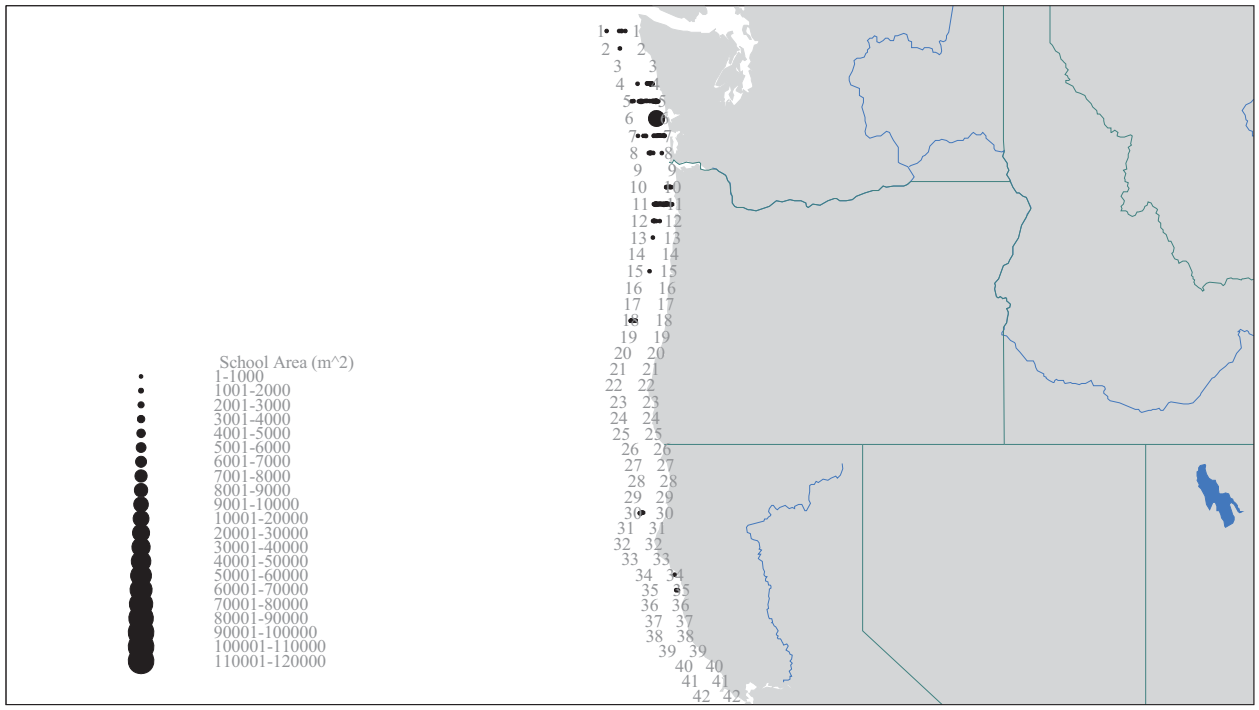
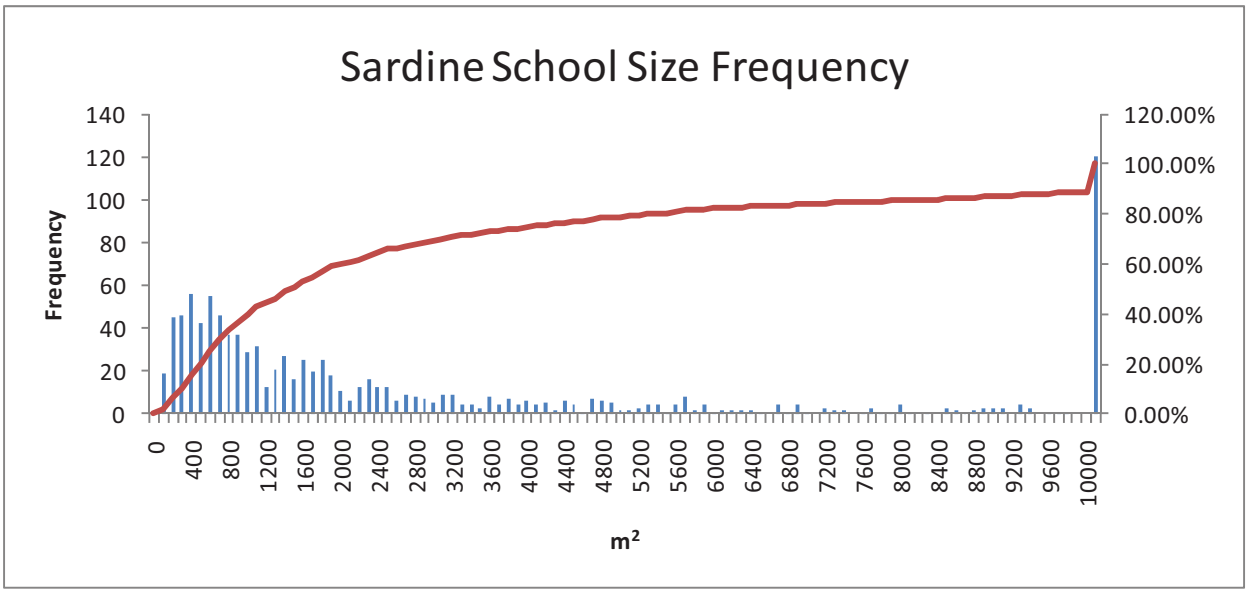


Figure 3. Frequency distribution of size (m^2) (Top) and biomass (mt) (Bottom) of sardine schools measured on transects sampled in the 2009 Aerial Sardine Survey.



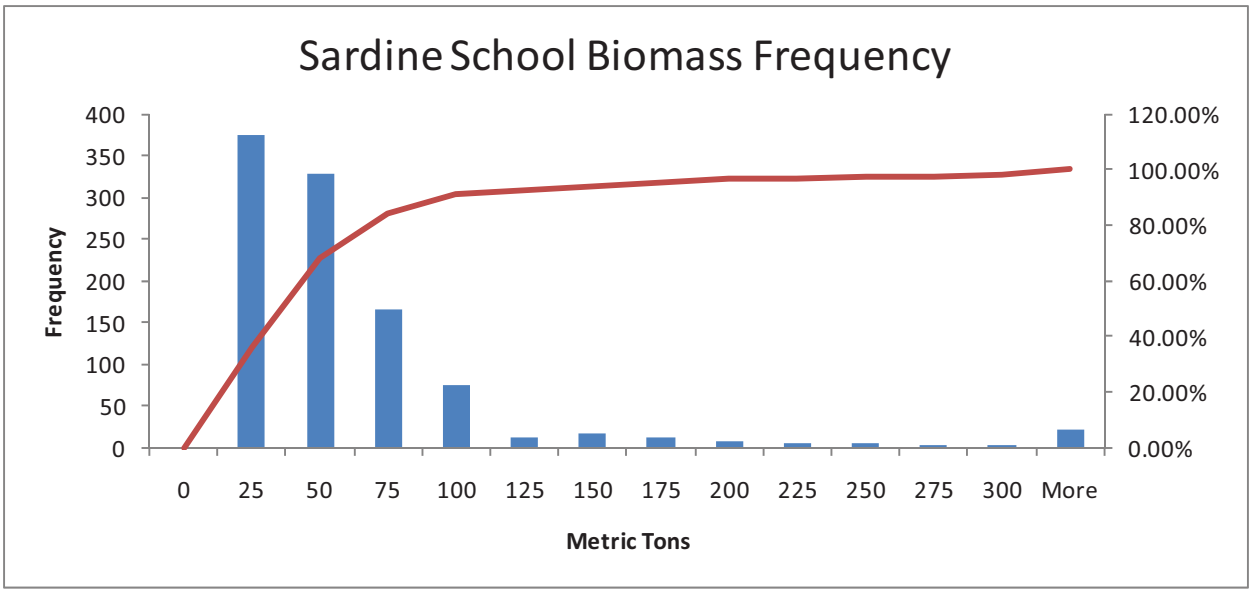
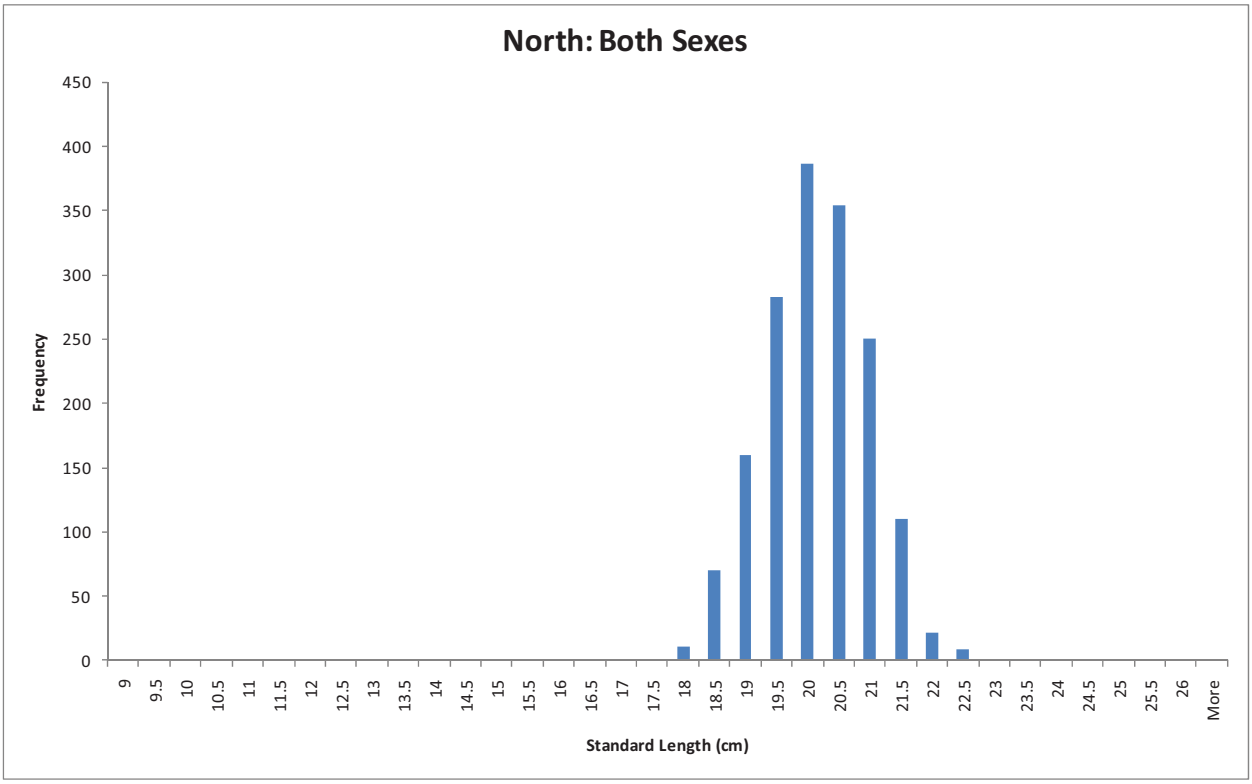


Figure 4. Size distribution (sexes pooled) for fish sampled in the north (top) and the south (bottom) during the Aerial Sardine Survey in 2009.



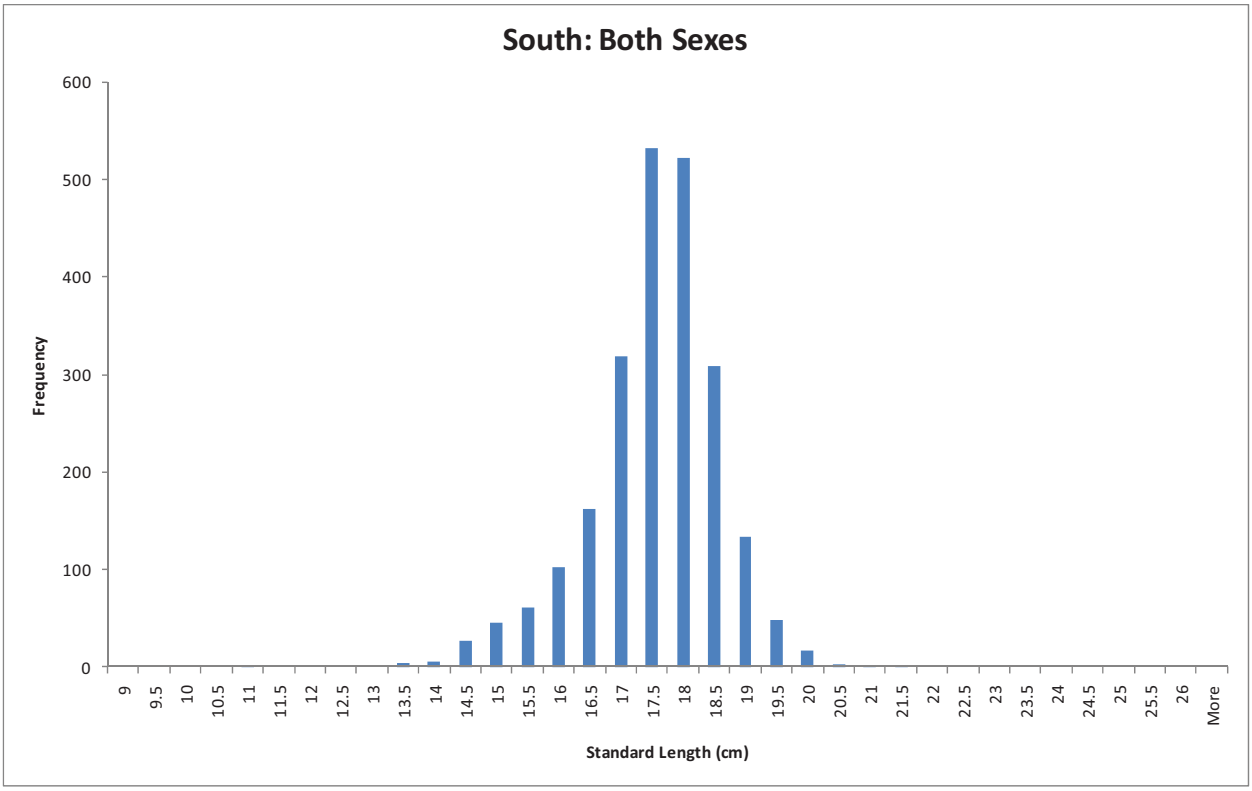
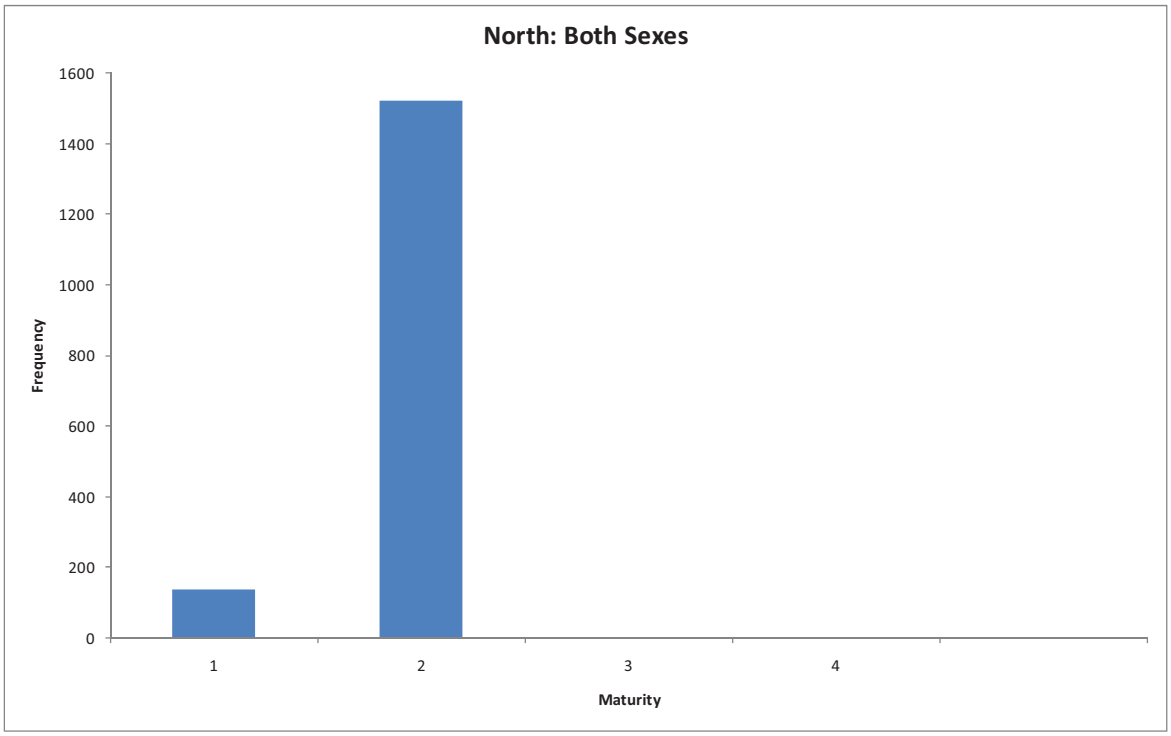


Figure 5. Visual maturity classification (sexes pooled) for fish sampled in the north (top) and the south (bottom) during the Aerial Sardine Survey in 2009. Maturity Classes (Table 11):
1 – Clearly Immature, 2 – Intermediate, 3 – Active, 4 – Hydrated Oocytes present.



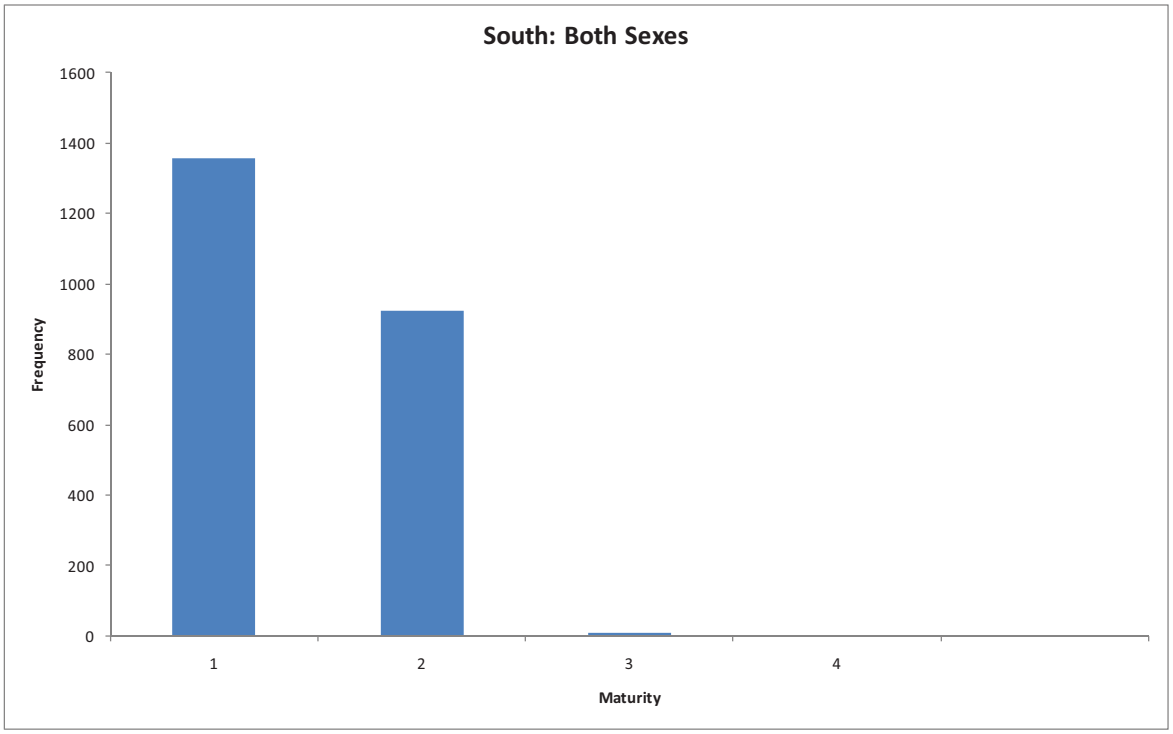


Figure 6. Relationship between observed and predicted density (mt/m^2) and surface area (m^2) for 33 sardine schools sampled in 2008 and 2009.

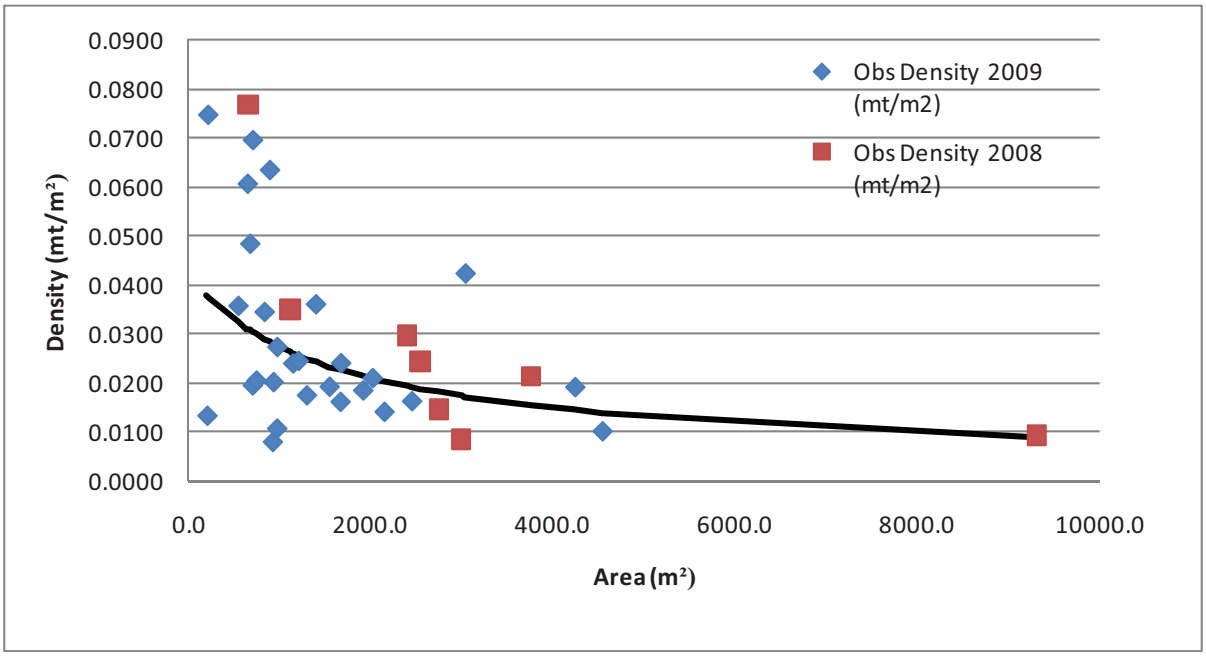


Figure 7. Upper and lower confidence limits including 1) variance of the regression (yhat) and 2) variance of the residuals; (pred + - 1.96 sqrt(var(yhat) + var(residuals)).

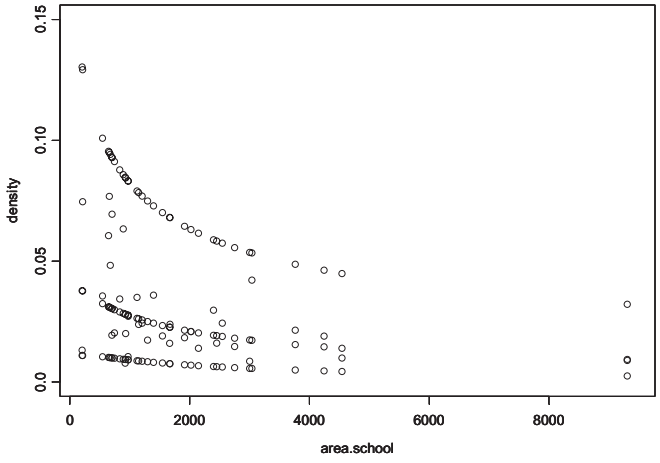
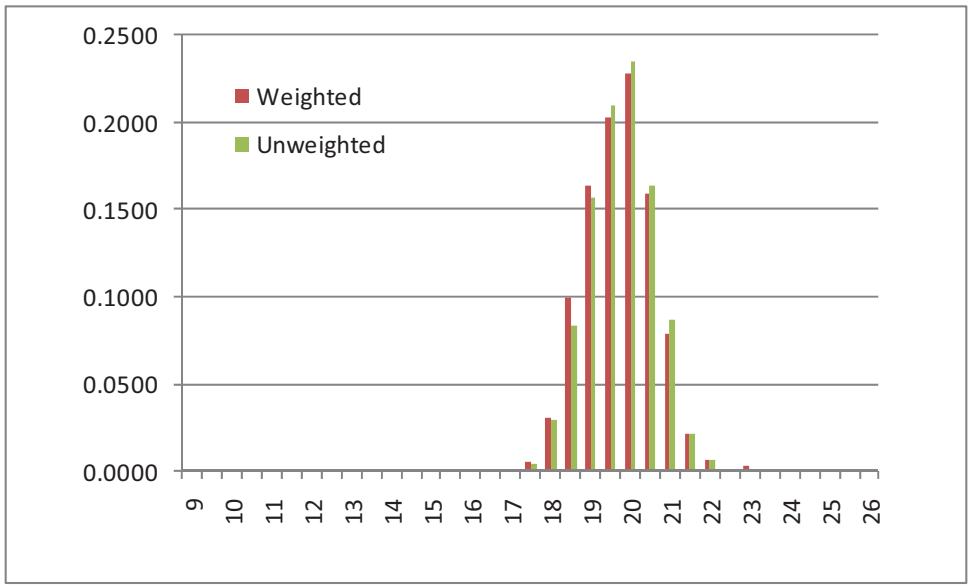


Figure 8. Comparison of weighted and un-weighted size distributions of sardine derived from point set samples taken in the North in 2009.



Size (cm)	Weighted	Unweighted
9	0.0000	0.0000
9.5	0.0000	0.0000
10	0.0000	0.0000
10.5	0.0000	0.0000
11	0.0000	0.0000
11.5	0.0005	0.0006
12	0.0000	0.0000
12.5	0.0000	0.0000
13	0.0000	0.0000
13.5	0.0000	0.0000
14	0.0000	0.0000
14.5	0.0000	0.0000
15	0.0000	0.0000
15.5	0.0000	0.0000
16	0.0000	0.0000
16.5	0.0000	0.0000
17	0.0006	0.0006
17.5	0.0050	0.0042
18	0.0310	0.0295
18.5	0.0996	0.0838
19	0.1637	0.1573
19.5	0.2022	0.2092
20	0.2284	0.2345
20.5	0.1589	0.1634
21	0.0792	0.0868
21.5	0.0210	0.0211
22	0.0062	0.0066
22.5	0.0009	0.0006
23	0.0026	0.0012
23.5	0.0000	0.0000
24	0.0004	0.0006
24.5	0.0000	0.0000
25	0.0000	0.0000
25.5	0.0000	0.0000
26	0.0000	0.0000

West Coast Sardine Survey

2009 Operational Plan

Prepared for

Northwest Sardine Survey, LLC
(Jerry Thon, Principal)

and

California Wetfish Producers Association
(Diane Pleschner-Steele, Principal)

By

Tom Jagielo, Consulting
(Science Advisor)

August 11, 2009

I. Aerial Transect Survey

Overall Aerial Survey Design
The 2009 West Coast Sardine Aerial Survey design consists of 52 transects spanning the area from Cape Flattery in the north to the Monterey Bay area in the south. Each 52-transect series will be conducted as a SET, and will make up one replicate. There are three replicate SETS, or 156 transects in total.

Location of Transects
The east and west endpoints of each transect and corresponding shoreline position are given in Tables 1a-c and are mapped in Figures 1a-c for each of the three replicates (SET A, SET B, and SET C, respectively). The transects start at 3 miles from shore and extend westward for 35 statute miles in length; they are spaced 15 nautical miles (15 minutes) apart in latitude. In addition to the 35 mile transect, the 3 mile segment directly eastward from the east end of the transect to the shore will also be flown and photographed.

Time permitting, additional opportunistic transects may be conducted longitudinally (in a north/ south orientation in the area offshore of the established 35 mile long east/west transects), for the purpose of scouting for sardine schools westward of the established survey area. If the westward distribution of sardine is found to extend substantially beyond the established east/west transects, it may subsequently be decided to modify the transect layout to extend further westward, accordingly.

Aerial Resources Available
Frank Foode will be flying a Piper Super Cub with a Canon EOS 1Ds in an Aerial Imaging Solutions FMC mount system installed inside the fuselage of the plane. John Huelman and his assistant Gino will be flying a Cessna 182 with a Canon EOS 1Ds in an Aerial Imaging Solutions FMC mount system mounted in an externally mounted pod. A potential third survey plane with the same camera system is currently in preparation in Astoria under the supervision of Principal Jerry Thon (NWSS).

Use of Aerial Resources
To conduct a SET, the survey pilots will begin with transect number 1 at Cape Flattery in the north and will proceed to transect number 52 near Monterey Bay in the south, operating as a coordinated team, communicating via radio or cell phone. The pilots will take a "Leap-Frog" approach: for example -- plane 1 will fly transects 1-5 while plane 2 is flying transects 6-10; then plane 1 will fly transects 11-15 while plane 2 flies Transects 16-20, and so on. When the third survey plane becomes available, it will be incorporated into the rotation accordingly. The actual number of transects flown in a day by each plane will be determined jointly by the survey pilots and scientific staff (Doyle Hanan or Ryan Howe), and may be more or less than the example of five per plane given above.

Conditions Acceptable for Surveying
At the beginning of each potential survey day, the survey pilots will confer and will jointly judge if conditions will permit safe and successful surveying that day. Considering local conditions, the survey pilots will also jointly determine the optimal time of day for surveying the area slated

for coverage that day. Factors will include sea condition, time of day for best sardine visibility, presence of cloud or fog cover, and other relevant criteria as determined by the survey pilots.

Transect Sampling
Prior to beginning a survey flight, the Pre-Flight Survey Checklist will be completed. This will ensure that the camera system settings are fully operational for data collection. For example, it is crucial to have accurate GPS information in the log file. It is also crucial that the photograph number series is re-set to zero. Transects flown without the necessary survey data are not valid and cannot be analyzed.

The decision of when to start a new SET of transects will be determined jointly by the pilots and the Principals Jerry Thon (NWSS) and Diane Pleschner-Steele (CWPA). Transects will be flown at the nominal survey altitude of 4,000 ft whenever possible. If conditions require a lower altitude for acceptable ocean surface visibility, transects (or portions of transects) may be flown at a lower altitude, when necessary. Transects may be flown starting at either the east end or the west end.

A Transect Flight Log Form will be kept during the sampling of each transect for the purpose of documenting the observations of the pilot and/or onboard observers. Key notations will include observations of school species ID and documentation of any special conditions that could have an influence on interpreting photographs taken on the transect.

Once a transect (or a portion of a transect) has been flown, neither that transect, nor any transects to the north of that transect, may be flown again during the current transect SET (52-transect series) in progress. It will be acceptable to skip transects or portions of transects if conditions require it (e.g. if better weather is available to the south of an area), but transects may not be "made up" once skipped during the sampling of a transect SET. Once begun, the goal is to cover the full 52-transect SET in as few days as possible.

Data Transfer
Photographs and FMC log files will be downloaded and forwarded for analysis and archival at the end of each survey day (when possible) depending on where the airplanes stop for the night and shipping availabilities. Doyle Hanan will fly on board the Cessna 182 to operate the FMC system. Ryan Howe will collect data from Frank Foode on the Piper Super Cub and will coordinate the transfer and archival of all coastwide aerial survey data.

II. Point Set Sampling

Location of Point Sets
Attempts will be made to conduct point sets over as wide an area as feasible; however, point sets may occur in any area covered by aerial transects where sardine schools of the desired size are found.

Aerial Photography of Point Sets
Sardine schools to be captured for point sets will be first selected by the spotter pilot and photographed at the nominal survey altitude of 4,000 ft. Following selection, the spotter pilot

will descend to a lower altitude to better photograph and set the boat for capture of the school. Photographs will be taken before and during the vessels approach to the school for the point set capture. Each school selected by the spotter pilot and photographed for a potential point set will be logged on the spotter pilots' Point Set Flight Log Form. The species identification of the selected school will be verified by the Captain of the purse seine vessel conducting the point set, and will be logged on the Fishermans' Log Form. These records will be used to determine the rate of school mis-identification by spotter pilots in the field and by analysts viewing photographs taken at the nominal survey altitude of 4,000 ft.

Vessel Point Set Capture

The purse seine vessel will wrap and fully capture the school selected by the spotter pilot for the point set. Any schools not "fully" captured will not be considered a valid point set for analysis. If a school is judged to be "nearly completely" captured (i.e. over 90% captured), it will be noted as such and will be included for analysis. Both the spotter pilot and the purse seine vessel captain will independently make note of the "percent captured" on their survey log forms for this purpose. Upon capture, sardine point sets will be held in separate holds for separate weighing and biological sampling at the dock.

Biological Sampling

Biological samples of individual point sets will be collected at fish processing plants upon landing. Samples will be collected from the unsorted catch while being pumped from the vessels. Fish will be systematically taken at the start, middle, and end of a delivery as it is pumped. The three samples will then be combined and a random subsample of fish will be taken. The sample size will be n = 50 fish for each point set haul.

Length, weight, maturity, and age structures will be sampled for each point set haul and will be documented on the Biological Sampling Form. Sardine weights will be taken using an electronic scale accurate to 0.5 gm. Sardine lengths will be taken using a millimeter length strip provided attached to a measuring board. Standard length will be determined by measuring from sardine snout to the last vertebrae. Sardine maturity will be established by referencing maturity codes (female- 4 point scale, male- 3 point scale) supplied by Beverly Macewicz NMFS, SWFSC. Otolith samples will be collected from n = 25 fish selected at random from each n = 50 fish point set sample for future age reading analysis.

Hydroacoustic Sounding of School Height

School height will be measured for each point set. This may be obtained by using either the purse seine or other participating research vessels' hydroacoustic gear. The school height measurements to be recorded on the Fishermans' Log Form are: 1) depth in the water column of the top of the school, and 2) depth in the water column of the bottom of the school. Simrad ES-60 sounders will be installed on three purse seine vessels. Data collected by the ES-60 sounders will be backed-up daily and archived onshore.

Number and Size of Point Sets to be Captured

Point sets will be conducted for a range of school sizes (Table 2). Each day, the spotter pilot will operate with an updated list of remaining school sizes needed for analysis. The spotter pilot will use his experience to judge the biomass of sardine schools from the air, and will direct the purse

seine vessel to capture schools of the appropriate size. Following landing of the point sets at the dock, the actual school weights will be determined and the list of remaining school sizes needed will be updated accordingly for the next day of fishing. If schools are not available in the designated size range, point sets will be conducted on schools as close to the designated range as possible. Ryan Howe will oversee the gathering of point set landing data and will update the list daily for the northern area; Doyle Hanan will oversee the gathering of point set landing data and will update the list daily for the southern area. The total landed weight of point sets sampled in each area (north and south) will not exceed 1200 mt per area.

Landing Reporting Requirements
Cumulative point set landings will be updated by Principals Diane Pleschner-Steele (southern area) and Jerry Thon (northern area) and will be reported daily to Josh Lindsay, NMFS, as per the terms of the Exempted Fishing Permit. Also included in this daily report will be an estimate of the weight of all by-catch by species.

Other EFP Reporting Requirements
Principals Jerry Thon (northern area) and Diane Pleschner-Steele (southern area) will also be responsible for providing the other required reporting elements (as specified in the EFP permit) to Josh Lindsay, NMFS. For example, a daily report will be provided for enforcement giving 24 hour notice of vessels to be conducting point sets on any given day and will include vessel name, area to be fished, estimated departure time, estimated return time.

III. Calibration and Validation

Aerial Measurement Calibration
For each area (north and south) a series of photographs will be collected from a feature of known size (e.g. a football field or tennis court) on the ground, from the altitudes of 1,000 ft, 2,000 ft, 3000 ft, and 4000 ft. For each altitude series, an aerial pass will be made to place the target onto the right, middle, and left portions of the photographic image.

Aerial Photographs and Sampling for Species Validation
For each area (north and south) a set of reference photographs will be compiled which will be taken at the nominal survey altitude of 4,000 ft for the purpose of species identification. The spotter pilots will find and photograph schooling fish other than sardine (e.g. mackerel, herring, smelt, anchovy, etc). For the actual schools photographed, a vessel at sea will collect a jig sample to document the species identification. This set of reference photographs will be used by the photograph analysts to learn how to discern between sardine and other species as they appear on the aerial transect photographs.

Two-Plane Dual Altitude Transect
To examine the effect of altitude on photograph analysis, we will conduct an experiment where one plane will fly a transect at an altitude of 4,000 ft, concurrently with a second plane flying the same transect at an altitude of 2,000 ft. This experiment should be conducted in an area of high sardine density and should be conducted for two or three transects.

IV. Disclaimer

This Operational Plan document was prepared by Tom Jagielo, Consulting only for the purpose of giving scientific advice to the Northwest Sardine Survey, LLC (NWSS), and the California Wetfish Producers Association (CWPA), in order to suggest how those two groups might comply with the recommendations of the May, 2009 STAR Panel and the PFMC. Tom Jagielo, Consulting assumes no responsibility for any actual execution of the Operational Plan content discussed herein. The role of Tom Jagielo is that of science advisor only.

Table 1a. Aerial Transect Locations for 2009 Sardine Survey -- SET A

	Survey	Transect	Transect Latitude		West End			East End			Shoreline	
Location	Area	Number	Lat Deg	Lat Min	Long Deg	Long Min	Way Point #	Long Deg	Long Min	Way Point #	Long Deg	Long Min
Washington	N	1	48	10.000	125	31.33	1w	124	45.89	1e	124	42.0
Washington	N	2	47	55.000	125	25.09	2w	124	39.88	2e	124	36.0
Washington	N	3	47	40.000	125	9.85	3w	124	24.86	3e	124	21.0
Washington	N	4	47	25.000	125	6.62	4w	124	21.84	4e	124	18.0
Washington	N	5	47	10.000	124	58.40	5w	124	13.82	5e	124	10.0
Washington	N	6	46	55.000	124	55.17	6w	124	10.80	6e	124	7.0
Washington	N	7	46	40.000	124	50.95	7w	124	6.79	7e	124	3.0
Washington	N	8	46	25.000	124	49.73	8w	124	5.77	8e	124	2.0
Washington	N	9	46	10.000	124	44.51	9w	124	0.75	9e	123	57.0
Oregon	N	10	45	55.000	124	44.29	10w	124	0.73	10e	123	57.0
Oregon	N	11	45	40.000	124	41.09	11w	123	57.72	11e	123	54.0
Oregon	N	12	45	25.000	124	42.88	12w	123	59.70	12e	123	56.0
Oregon	N	13	45	10.000	124	43.67	13w	123	60.68	13e	123	57.0
Oregon	N	14	44	55.000	124	46.47	14w	124	3.67	14e	124	0.0
Oregon	N	15	44	40.000	124	48.27	15w	124	5.65	15e	124	2.0
Oregon	N	16	44	25.000	124	50.07	16w	124	7.64	16e	124	4.0
Oregon	N	17	44	10.000	124	51.88	17w	124	9.62	17e	124	6.0
Oregon	N	18	43	55.000	124	53.68	18w	124	11.61	18e	124	8.0
Oregon	N	19	43	40.000	124	56.49	19w	124	14.59	19e	124	11.0
Oregon	N	20	43	25.000	124	63.31	20w	124	21.58	20e	124	18.0
Oregon	N	21	43	10.000	125	9.12	21w	124	27.56	21e	124	24.0
Oregon	N	22	42	55.000	125	14.93	22w	124	33.55	22e	124	30.0
Oregon	N	23	42	40.000	125	8.76	23w	124	27.53	23e	124	24.0
Oregon	N	24	42	25.000	125	8.58	24w	124	27.52	24e	124	24.0
Oregon	N	25	42	10.000	125	5.40	25w	124	24.51	25e	124	21.0
Oregon	N	26	41	55.000	124	54.23	26w	124	13.49	26e	124	10.0
California	S	27	41	40.000	124	50.06	27w	124	9.48	27e	124	6.0
California	S	28	41	25.000	124	45.89	28w	124	5.46	28e	124	2.0
California	S	29	41	10.000	124	50.72	29w	124	10.45	29e	124	7.0
California	S	30	40	55.000	124	50.55	30w	124	10.44	30e	124	7.0
California	S	31	40	40.000	124	59.40	31w	124	19.43	31e	124	16.0
California	S	32	40	25.000	124	64.23	32w	124	24.41	32e	124	21.0
California	S	33	40	10.000	124	54.08	33w	124	14.40	33e	124	11.0
California	S	34	39	55.000	124	36.91	34w	123	57.39	34e	123	54.0
California	S	35	39	40.000	124	28.76	35w	123	49.38	35e	123	46.0
California	S	36	39	25.000	124	29.61	36w	123	50.36	36e	123	47.0
California	S	37	39	10.000	124	24.46	37w	123	45.35	37e	123	42.0
California	S	38	38	55.000	124	23.31	38w	123	44.34	38e	123	41.0
California	S	39	38	40.000	124	7.16	39w	123	28.33	39e	123	25.0
California	S	40	38	25.000	123	46.01	40w	123	7.32	40e	123	4.0
California	S	41	38	10.000	123	37.87	41w	122	59.31	41e	122	56.0
California	S	42	37	55.000	123	23.73	42w	122	45.29	42e	122	42.0
California	S	43	37	40.000	123	9.59	43w	122	31.28	43e	122	28.0
California	S	44	37	25.000	123	5.45	44w	122	27.27	44e	122	24.0
California	S	45	37	10.000	123	2.31	45w	122	24.26	45e	122	21.0
California	S	46	36	55.000	122	31.18	46w	121	53.25	46e	121	50.0
California	S	47	36	40.000	122	29.04	47w	121	51.24	47e	121	48.0
California	S	48	36	25.000	122	32.91	48w	121	55.23	48e	121	52.0
California	S	49	36	10.000	122	18.78	49w	121	41.22	49e	121	38.0
California	S	50	35	55.000	122	6.66	50w	121	29.21	50e	121	26.0
California	S	51	35	40.000	121	56.53	51w	121	19.20	51e	121	16.0
California	S	52	35	25.000	121	31.40	52w	120	54.19	52e	120	51.0

Table 1b. Aerial Transect Locations for 2009 Sardine Survey -- SET B

	Survey	Transect	Transect Latitude		West End			East End			Shoreline	
Location	Area	Number	Lat Deg	Lat Min	Long Deg	Long Min	Way Point #	Long Deg	Long Min	Way Point #	Long Deg	Long Min
Washington	N	1	48	20.000	125	28.49	1w	124	42.91	1e	124	39.0
Washington	N	2	48	5.000	125	29.24	2w	124	43.89	2e	124	40.0
Washington	N	3	47	50.000	125	17.01	3w	124	31.87	3e	124	28.0
Washington	N	4	47	35.000	125	8.78	4w	124	23.85	4e	124	20.0
Washington	N	5	47	20.000	125	4.55	5w	124	19.83	5e	124	16.0
Washington	N	6	47	5.000	124	57.32	6w	124	12.81	6e	124	9.0
Washington	N	7	46	50.000	124	53.09	7w	124	8.80	7e	124	5.0
Washington	N	8	46	35.000	124	50.87	8w	124	6.78	8e	124	3.0
Washington	N	9	46	20.000	124	49.66	9w	124	5.76	9e	124	2.0
Oregon	N	10	46	5.000	124	42.44	10w	123	58.75	10e	123	55.0
Oregon	N	11	45	50.000	124	43.22	11w	123	59.73	11e	123	56.0
Oregon	N	12	45	35.000	124	42.02	12w	123	58.71	12e	123	55.0
Oregon	N	13	45	20.000	124	43.81	13w	124	0.70	13e	123	57.0
Oregon	N	14	45	5.000	124	45.61	14w	124	2.68	14e	123	59.0
Oregon	N	15	44	50.000	124	49.41	15w	124	6.66	15e	124	3.0
Oregon	N	16	44	35.000	124	49.20	16w	124	6.65	16e	124	3.0
Oregon	N	17	44	20.000	124	52.00	17w	124	9.63	17e	124	6.0
Oregon	N	18	44	5.000	124	52.81	18w	124	10.62	18e	124	7.0
Oregon	N	19	43	50.000	124	54.62	19w	124	12.60	19e	124	9.0
Oregon	N	20	43	35.000	124	57.43	20w	124	15.59	20e	124	12.0
Oregon	N	21	43	20.000	125	7.25	21w	124	25.57	21e	124	22.0
Oregon	N	22	43	5.000	125	10.06	22w	124	28.56	22e	124	25.0
Oregon	N	23	42	50.000	125	16.88	23w	124	35.54	23e	124	32.0
Oregon	N	24	42	35.000	125	7.70	24w	124	26.53	24e	124	23.0
Oregon	N	25	42	20.000	125	9.52	25w	124	28.51	25e	124	25.0
Oregon	N	26	42	5.000	125	1.35	26w	124	20.50	26e	124	17.0
California	S	27	41	50.000	124	56.17	27w	124	15.49	27e	124	12.0
California	S	28	41	35.000	124	49.00	28w	124	8.47	28e	124	5.0
California	S	29	41	20.000	124	46.84	29w	124	6.46	29e	124	3.0
California	S	30	41	5.000	124	51.67	30w	124	11.45	30e	124	8.0
California	S	31	40	50.000	124	53.50	31w	124	13.43	31e	124	10.0
California	S	32	40	35.000	125	2.34	32w	124	22.42	32e	124	19.0
California	S	33	40	20.000	125	2.18	33w	124	22.41	33e	124	19.0
California	S	34	40	5.000	124	46.02	34w	124	6.40	34e	124	3.0
California	S	35	39	50.000	124	31.87	35w	123	52.38	35e	123	49.0
California	S	36	39	35.000	124	26.71	36w	123	47.37	36e	123	44.0
California	S	37	39	20.000	124	29.56	37w	123	50.36	37e	123	47.0
California	S	38	39	5.000	124	22.41	38w	123	43.35	38e	123	40.0
California	S	39	38	50.000	124	17.26	39w	123	38.34	39e	123	35.0
California	S	40	38	35.000	124	2.11	40w	123	23.32	40e	123	20.0
California	S	41	38	20.000	123	44.97	41w	123	6.31	41e	123	3.0
California	S	42	38	5.000	123	37.83	42w	122	59.30	42e	122	56.0
California	S	43	37	50.000	123	10.68	43w	122	32.29	43e	122	29.0
California	S	44	37	35.000	123	10.55	44w	122	32.28	44e	122	29.0
California	S	45	37	20.000	123	3.40	45w	122	25.27	45e	122	22.0
California	S	46	37	5.000	122	56.27	46w	122	18.26	46e	122	15.0
California	S	47	36	50.000	122	27.13	47w	121	49.25	47e	121	46.0
California	S	48	36	35.000	122	38.00	48w	122	0.24	48e	121	57.0
California	S	49	36	20.000	122	31.87	49w	121	54.23	49e	121	51.0
California	S	50	36	5.000	122	16.74	50w	121	39.22	50e	121	36.0
California	S	51	35	50.000	122	3.61	51w	121	26.21	51e	121	23.0
California	S	52	35	35.000	121	46.48	52w	121	9.20	52e	121	6.0

Table 1c. Aerial Transect Locations for 2009 Sardine Survey -- SET C

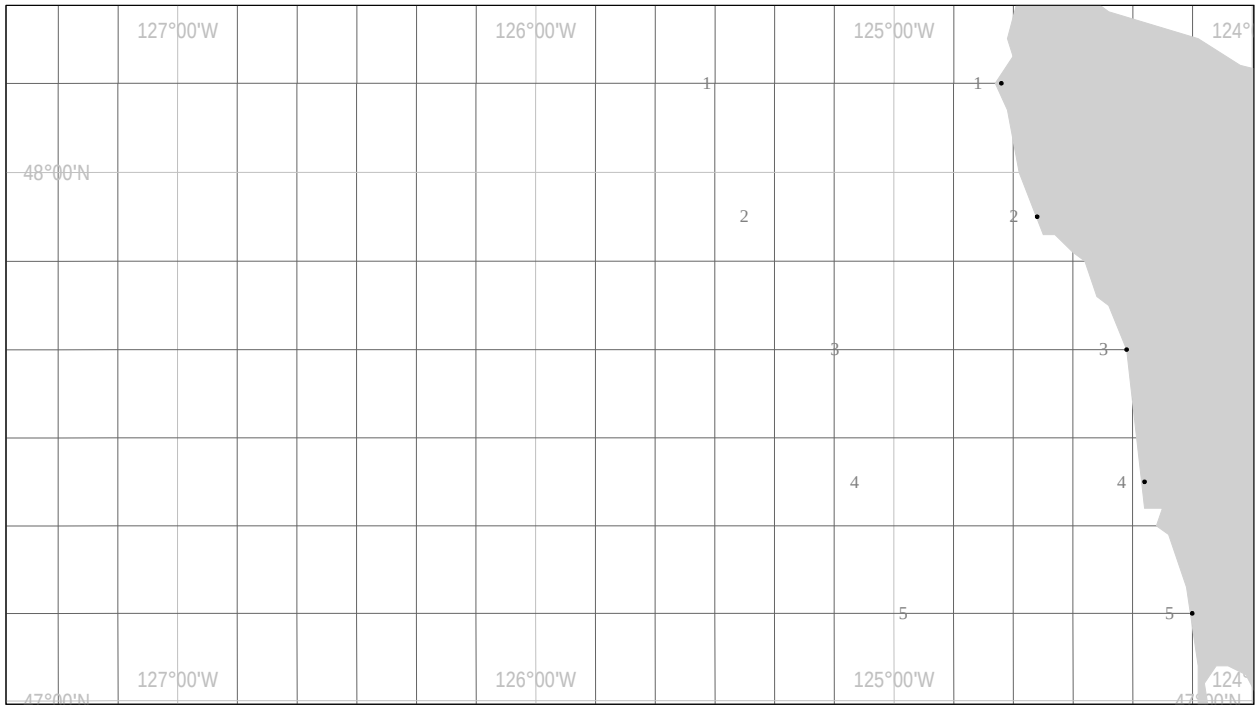
	Survey	Transect	Transect Latitude		West End			East End			Shoreline	
Location	Area	Number	Lat Deg	Lat Min	Long Deg	Long Min	Way Point #	Long Deg	Long Min	Way Point #	Long Deg	Long Min
Washington	N	1	48	15.000	125	30.40	1w	124	44.90	1e	124	41.0
Washington	N	2	48	0.000	125	28.17	2w	124	42.88	2e	124	39.0
Washington	N	3	47	45.000	125	12.94	3w	124	27.86	3e	124	24.0
Washington	N	4	47	30.000	125	7.70	4w	124	22.84	4e	124	19.0
Washington	N	5	47	15.000	125	0.47	5w	124	15.83	5e	124	12.0
Washington	N	6	47	0.000	124	57.24	6w	124	12.81	6e	124	9.0
Washington	N	7	46	45.000	124	52.02	7w	124	7.79	7e	124	4.0
Washington	N	8	46	30.000	124	49.80	8w	124	5.77	8e	124	2.0
Washington	N	9	46	15.000	124	48.58	9w	124	4.76	9e	124	1.0
Oregon	N	10	46	0.000	124	42.37	10w	123	58.74	10e	123	55.0
Oregon	N	11	45	45.000	124	43.16	11w	123	59.72	11e	123	56.0
Oregon	N	12	45	30.000	124	42.94	12w	123	59.71	12e	123	56.0
Oregon	N	13	45	15.000	124	42.74	13w	123	59.69	13e	123	56.0
Oregon	N	14	45	0.000	124	46.54	14w	124	3.67	14e	124	0.0
Oregon	N	15	44	45.000	124	48.33	15w	124	5.66	15e	124	2.0
Oregon	N	16	44	30.000	124	49.14	16w	124	6.64	16e	124	3.0
Oregon	N	17	44	15.000	124	50.94	17w	124	8.63	17e	124	5.0
Oregon	N	18	44	0.000	124	52.75	18w	124	10.61	18e	124	7.0
Oregon	N	19	43	45.000	124	55.55	19w	124	13.60	19e	124	10.0
Oregon	N	20	43	30.000	125	0.37	20w	124	18.58	20e	124	15.0
Oregon	N	21	43	15.000	125	8.24	21w	124	26.57	21e	124	23.0
Oregon	N	22	43	0.000	125	12.00	22w	124	30.55	22e	124	27.0
Oregon	N	23	42	45.000	125	14.82	23w	124	33.54	23e	124	30.0
Oregon	N	24	42	30.000	125	8.64	24w	124	27.52	24e	124	24.0
Oregon	N	25	42	15.000	125	7.46	25w	124	26.51	25e	124	23.0
Oregon	N	26	42	0.000	124	55.29	26w	124	14.50	26e	124	11.0
California	S	27	41	45.000	124	53.12	27w	124	12.48	27e	124	9.0
California	S	28	41	30.000	124	46.95	28w	124	6.47	28e	124	3.0
California	S	29	41	15.000	124	48.78	29w	124	8.46	29e	124	5.0
California	S	30	41	0.000	124	49.61	30w	124	9.44	30e	124	6.0
California	S	31	40	45.000	124	56.45	31w	124	16.43	31e	124	13.0
California	S	32	40	30.000	125	5.29	32w	124	25.42	32e	124	22.0
California	S	33	40	15.000	125	2.12	33w	124	22.40	33e	124	19.0
California	S	34	40	0.000	124	41.97	34w	124	2.39	34e	123	59.0
California	S	35	39	45.000	124	30.82	35w	123	51.38	35e	123	48.0
California	S	36	39	30.000	124	28.66	36w	123	49.37	36e	123	46.0
California	S	37	39	15.000	124	28.51	37w	123	49.36	37e	123	46.0
California	S	38	39	0.000	124	22.36	38w	123	43.34	38e	123	40.0
California	S	39	38	45.000	124	12.21	39w	123	33.33	39e	123	30.0
California	S	40	38	30.000	123	53.07	40w	123	14.32	40e	123	11.0
California	S	41	38	15.000	123	37.92	41w	122	59.31	41e	122	56.0
California	S	42	38	0.000	123	40.77	42w	123	2.30	42e	122	59.0
California	S	43	37	45.000	123	9.64	43w	122	31.29	43e	122	28.0
California	S	44	37	30.000	123	7.50	44w	122	29.28	44e	122	26.0
California	S	45	37	15.000	123	3.36	45w	122	25.27	45e	122	22.0
California	S	46	37	0.000	122	50.22	46w	122	12.25	46e	122	9.0
California	S	47	36	45.000	122	28.09	47w	121	50.24	47e	121	47.0
California	S	48	36	30.000	122	34.96	48w	121	57.23	48e	121	54.0
California	S	49	36	15.000	122	28.82	49w	121	51.22	49e	121	48.0
California	S	50	36	0.000	122	8.70	50w	121	31.21	50e	121	28.0
California	S	51	35	45.000	121	58.57	51w	121	21.20	51e	121	18.0
California	S	52	35	30.000	121	41.44	52w	121	4.19	52e	121	1.0

Table 2. Size and Number of Point Sets needed during 2009 EFP survey for each area (north and south). The total landed weight of point sets will not exceed 1200 mt per area.

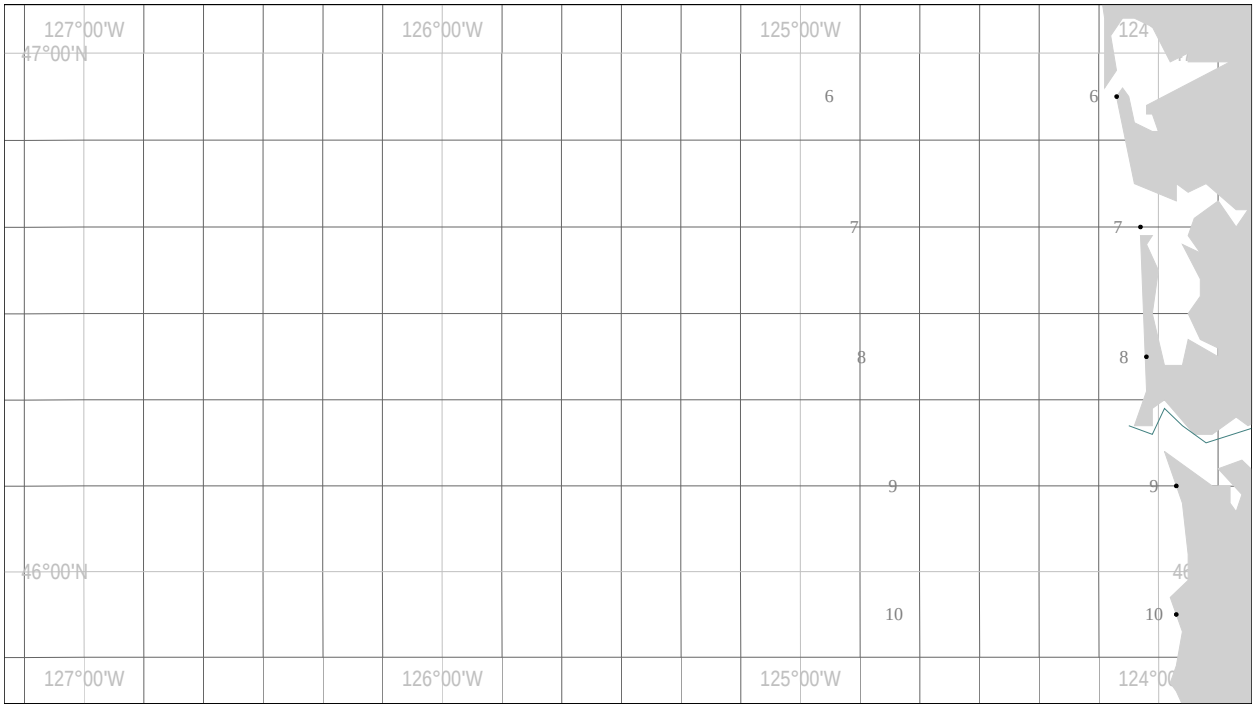
Size (mt)	*No. of Point Sets*	*Total (mt)*
5-10 mt	20	195
10-20 mt	20	380
20-40 mt	10	360
40-60 mt	3	180
60-80 mt	1	80
Total:	54	1195

Figure 1a. Maps showing locations of transects comprising Replicate SET A

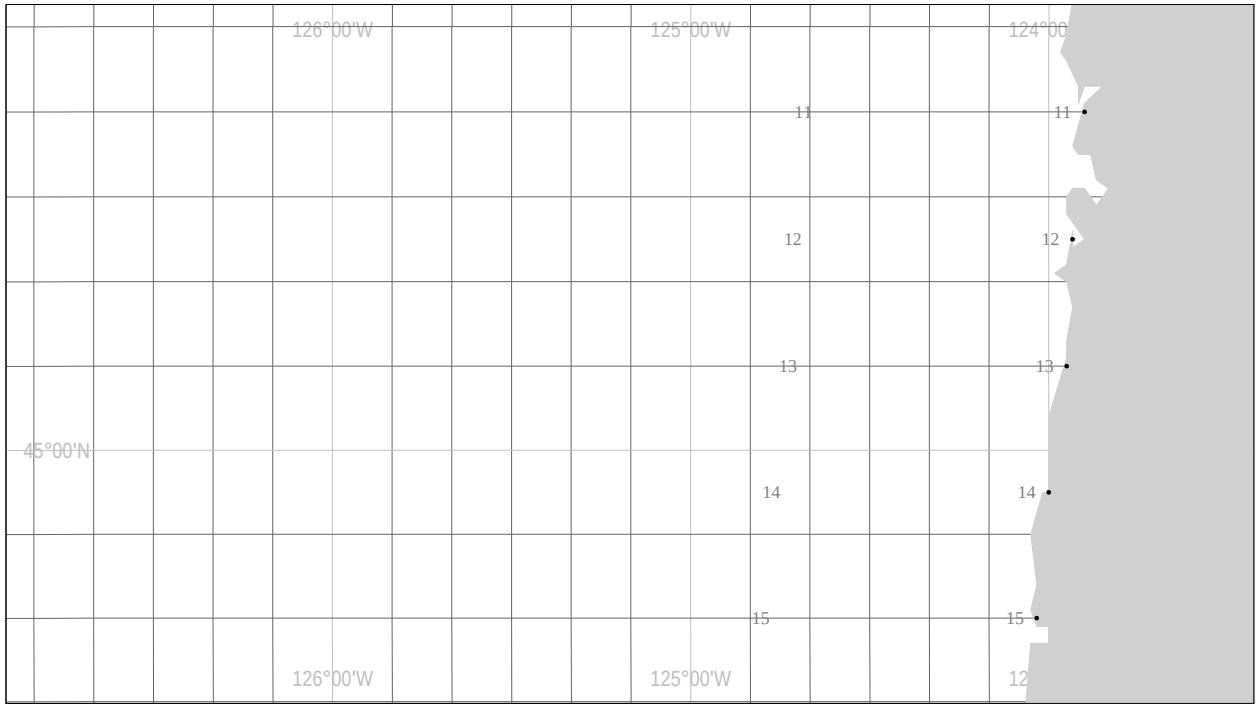
Replicate SET A: Transects 1-5



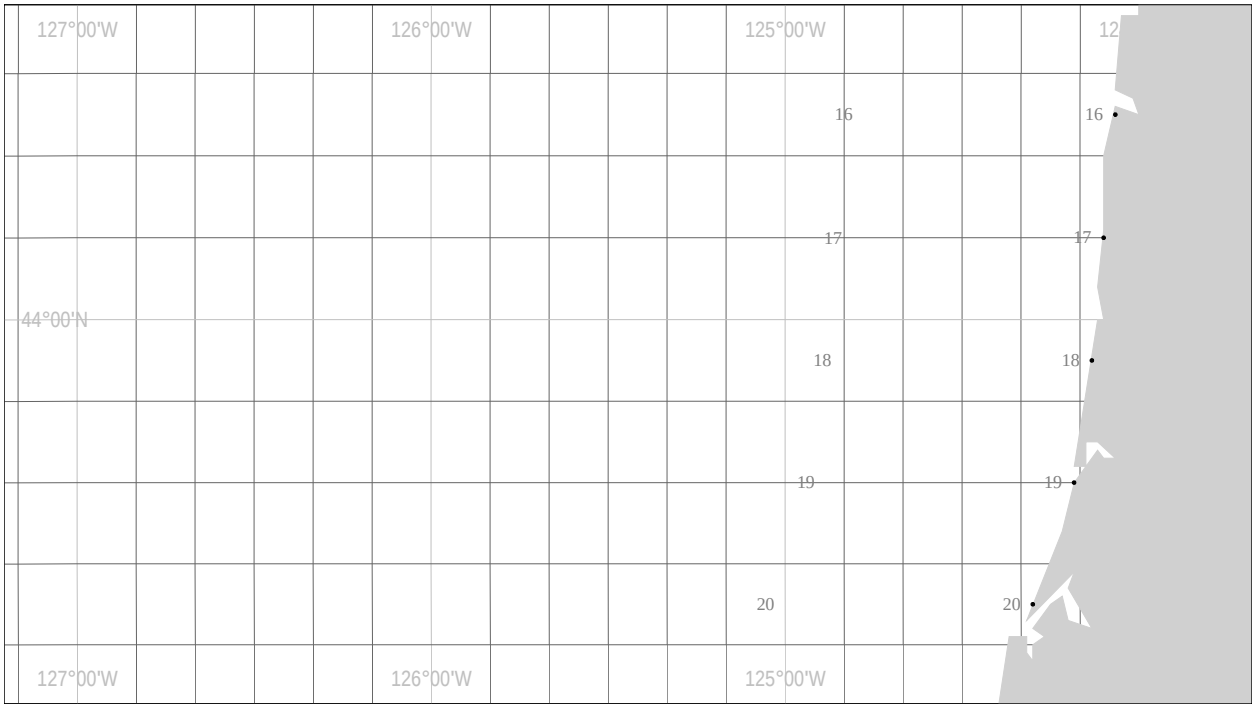
Replicate SET A: Transects 6-10



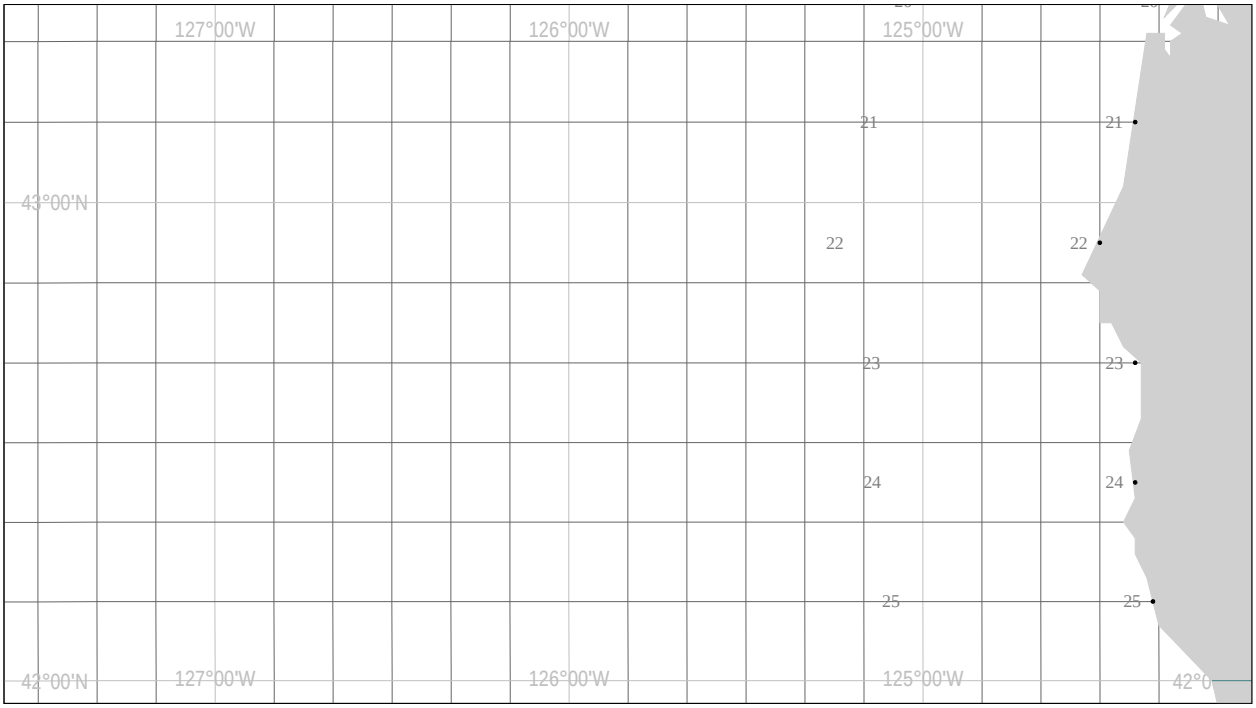
Replicate SET A: Transects 11-15



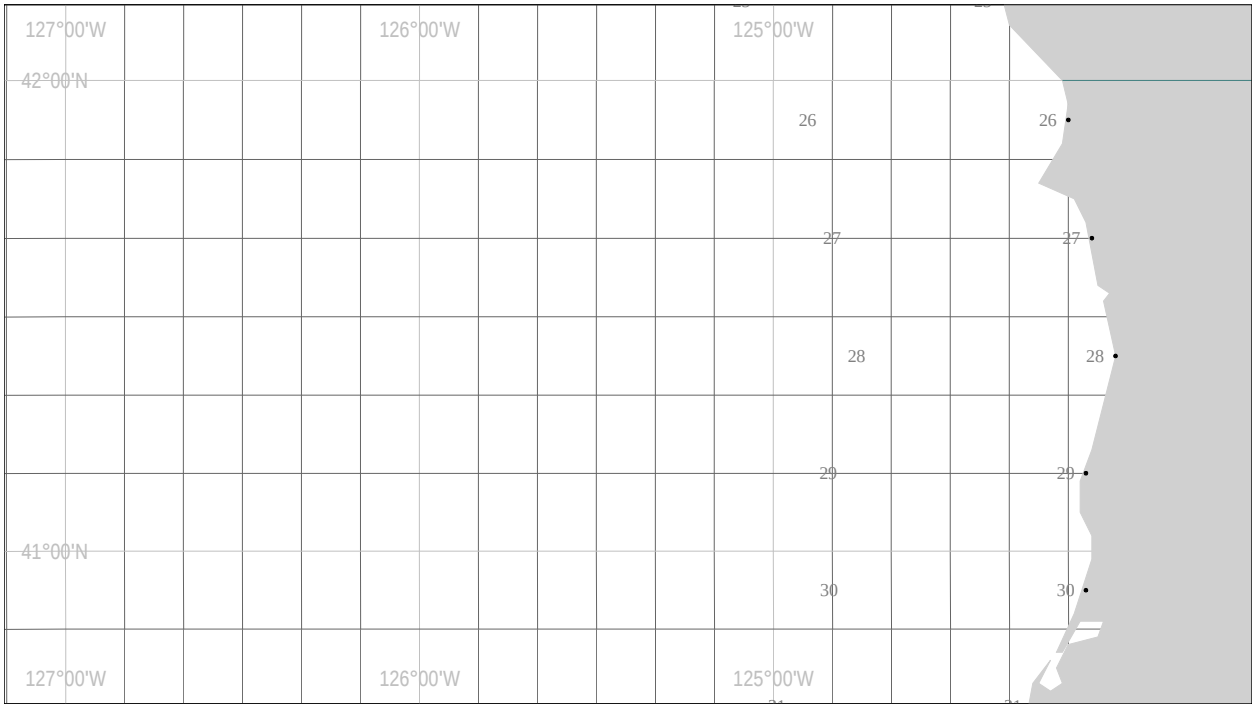
Replicate SET A: Transects 16-20



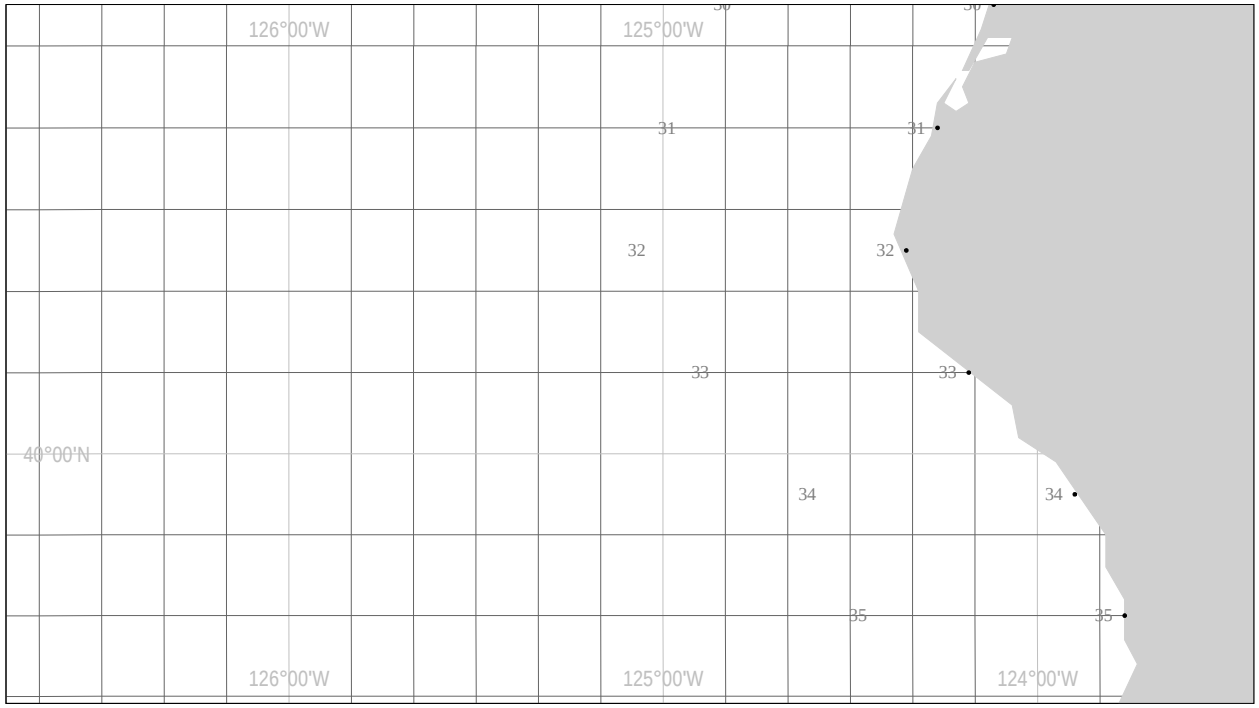
Replicate SET A: Transects 21-25



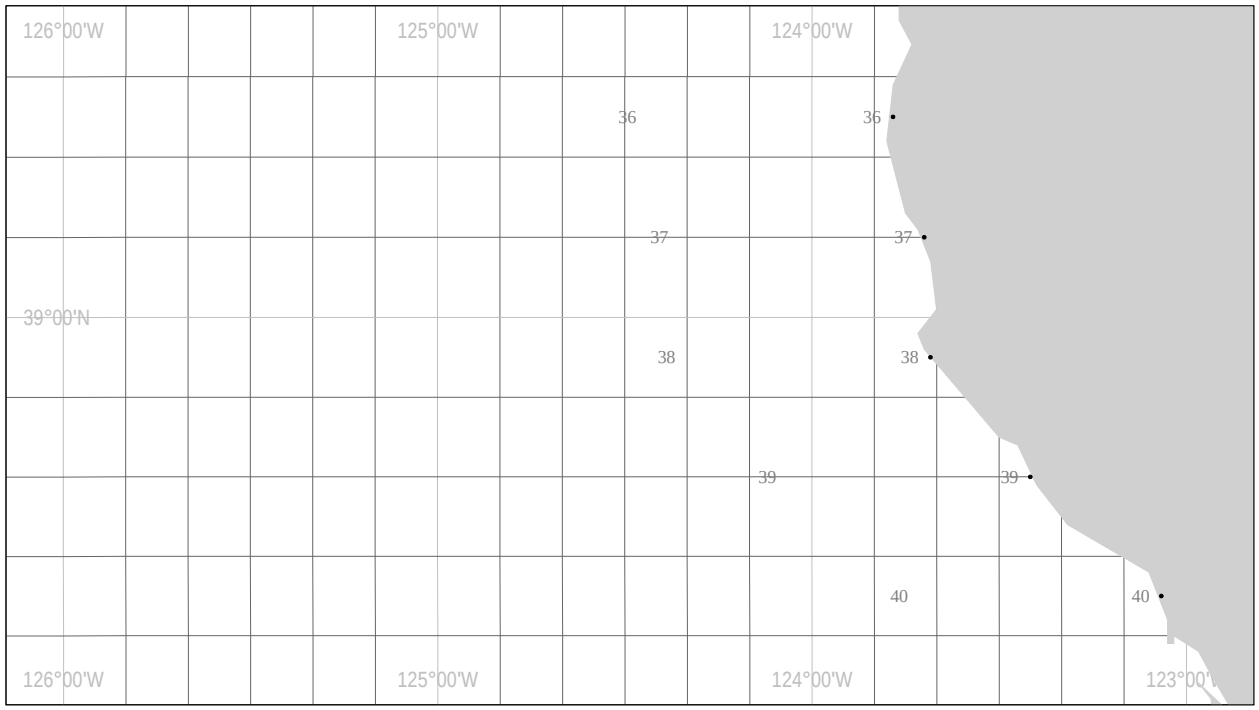
Replicate SET A: Transects 26-30



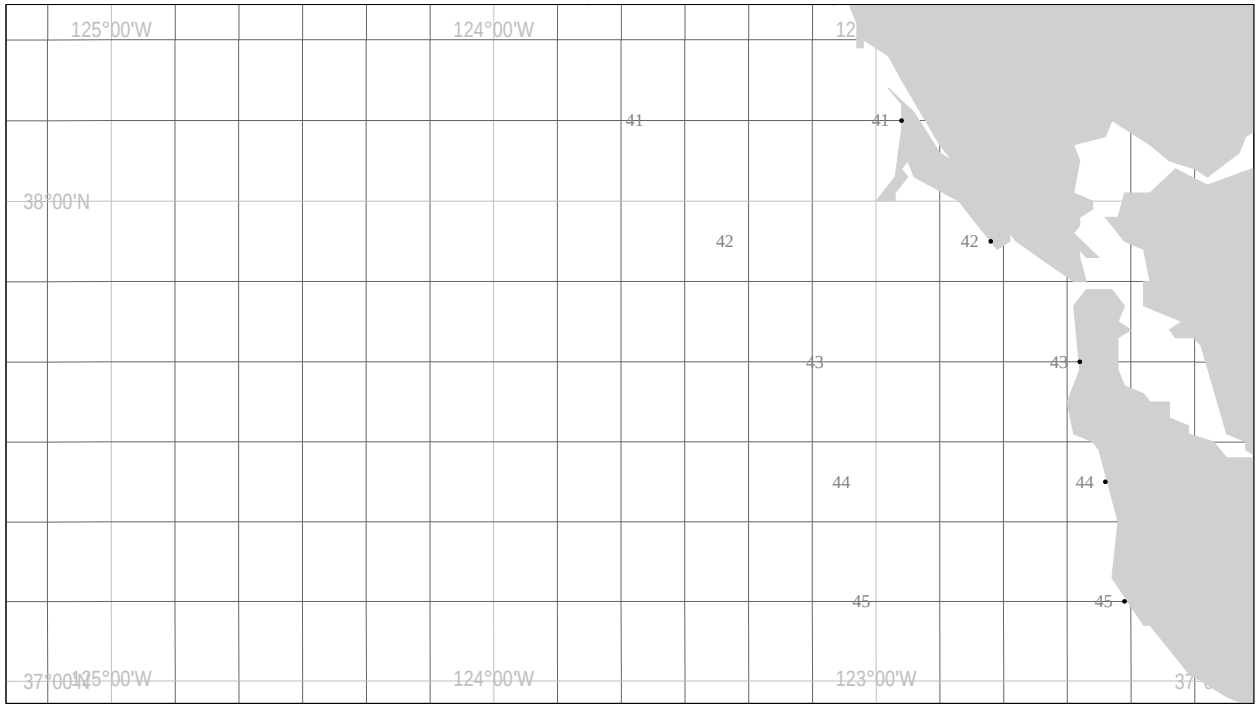
Replicate SET A: Transects 31-35



Replicate SET A: Transects 36-40



Replicate SET A: Transects 41-45



Replicate SET A: Transects 46-52

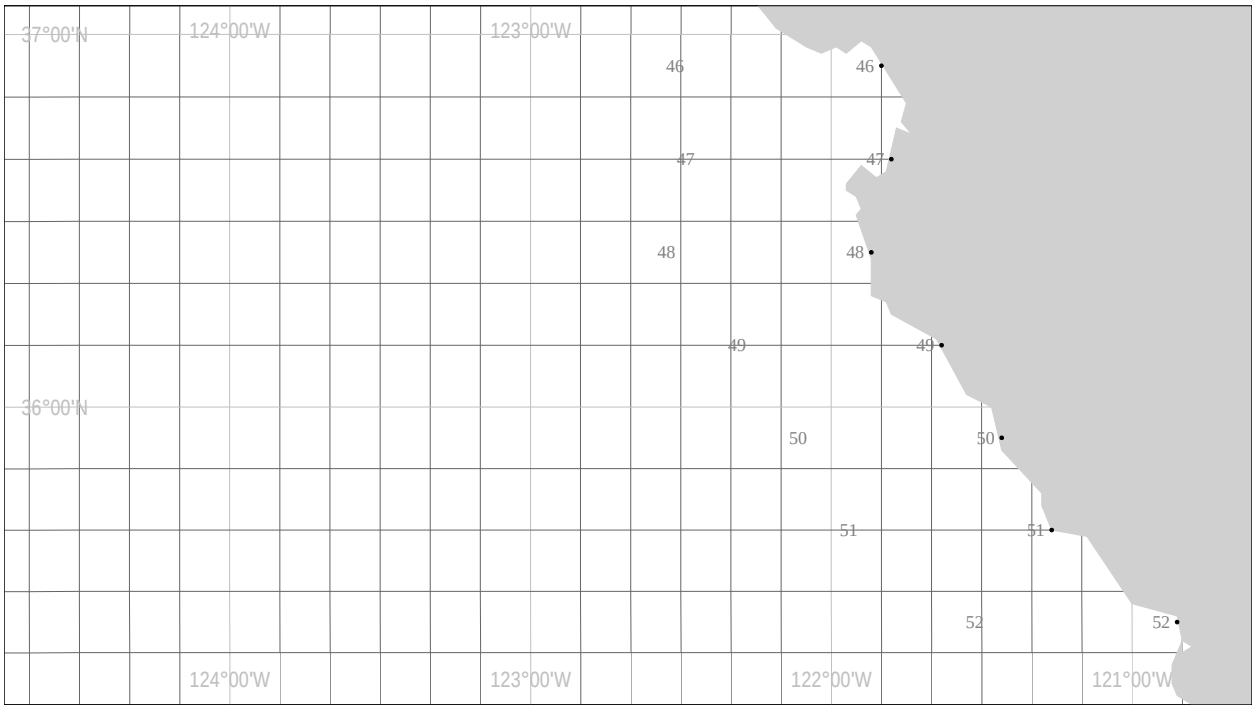
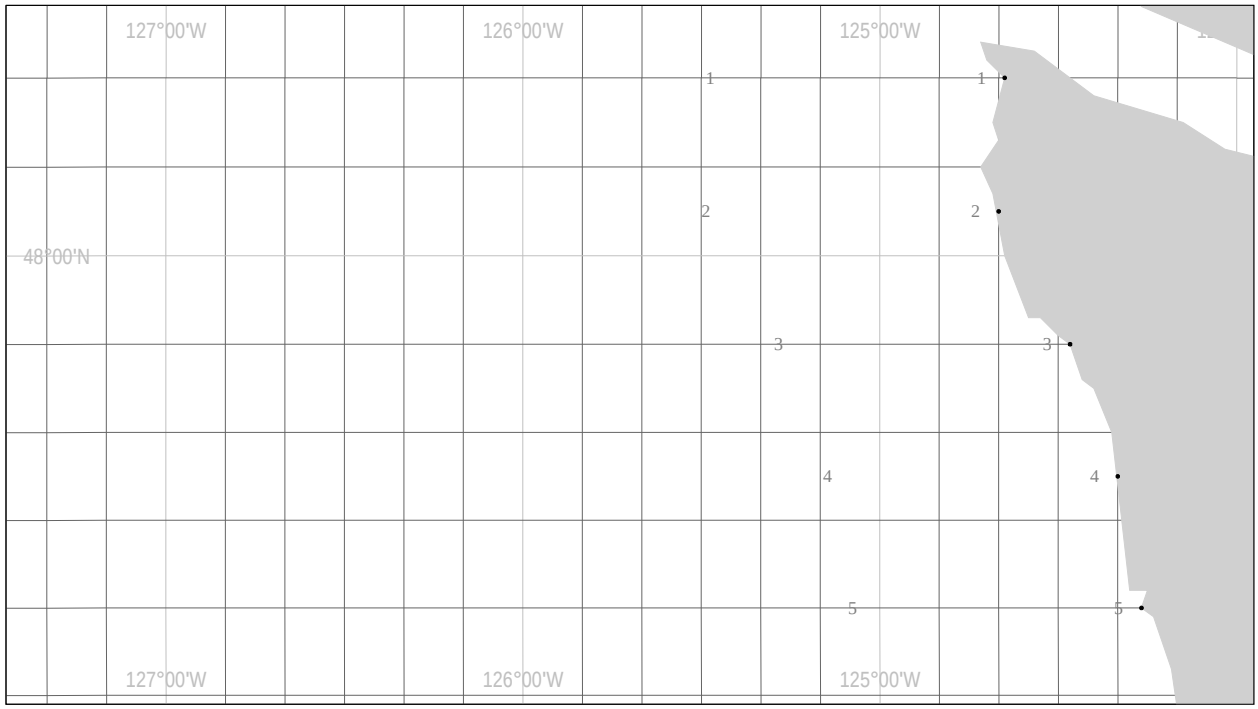
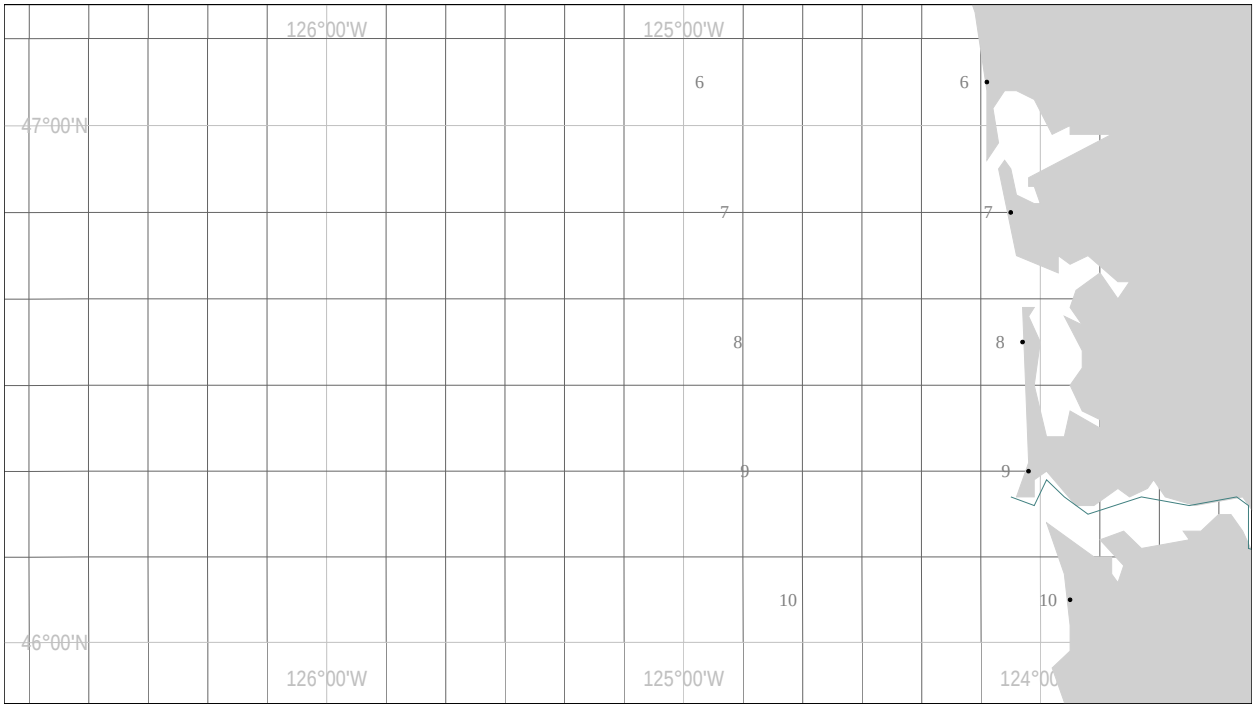


Figure 1b. Maps showing locations of transects comprising Replicate SET B

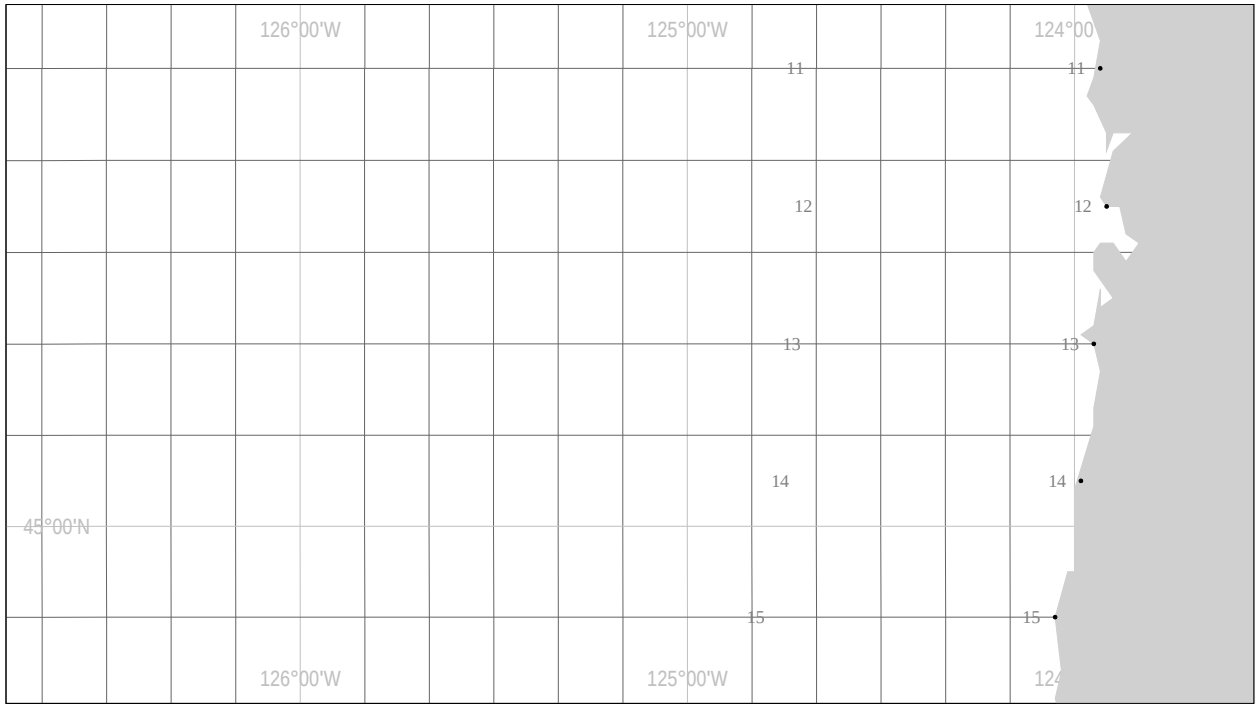
Replicate SET B: Transects 1-5



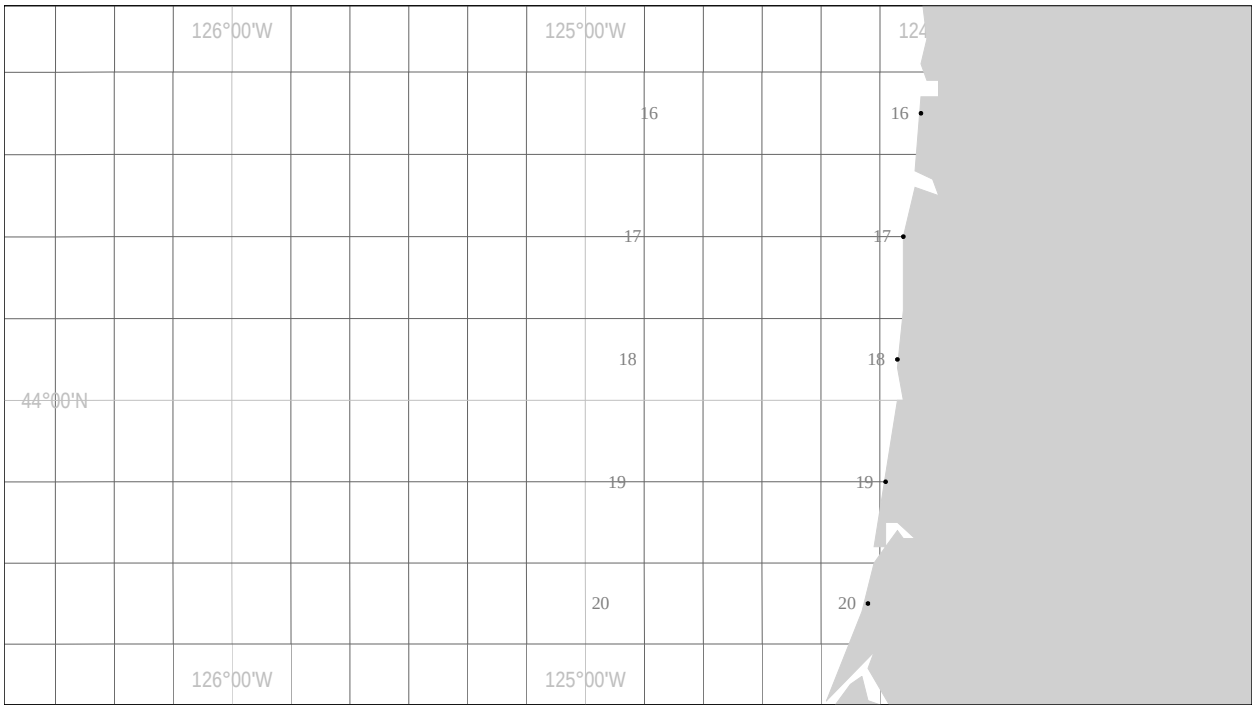
Replicate SET B: Transects 6-10



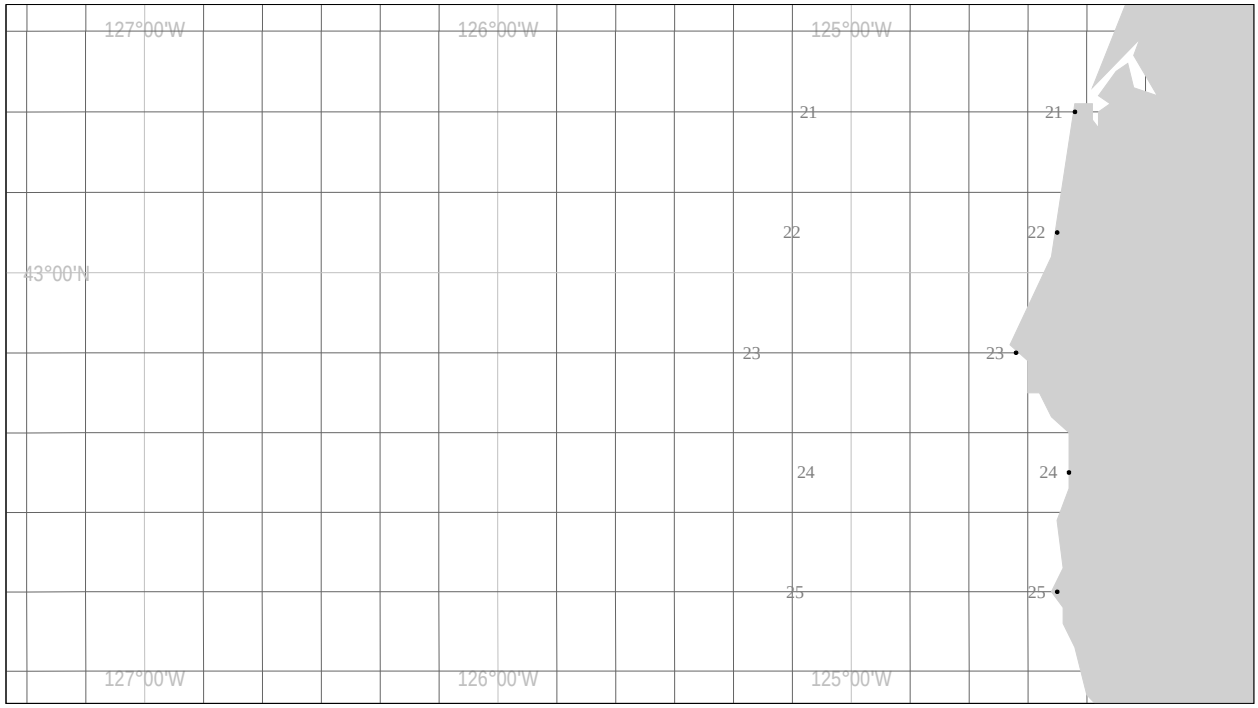
Replicate SET B: Transects 11-15



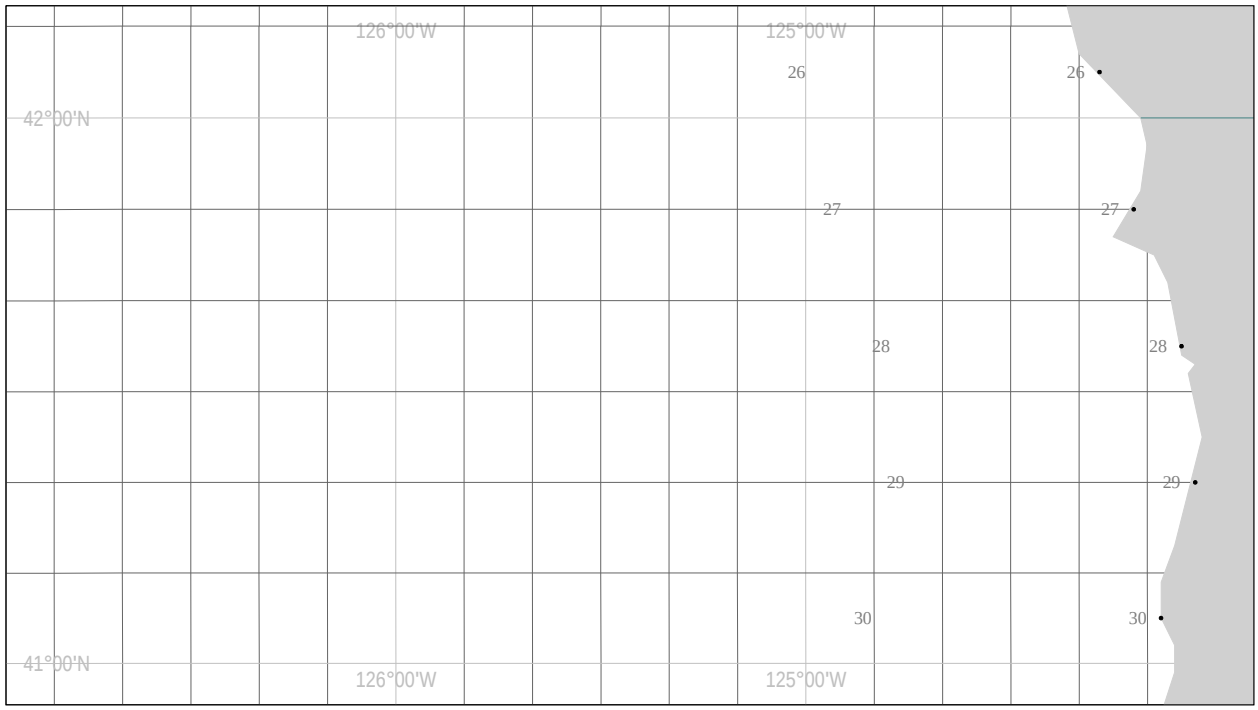
Replicate SET B: Transects 16-20



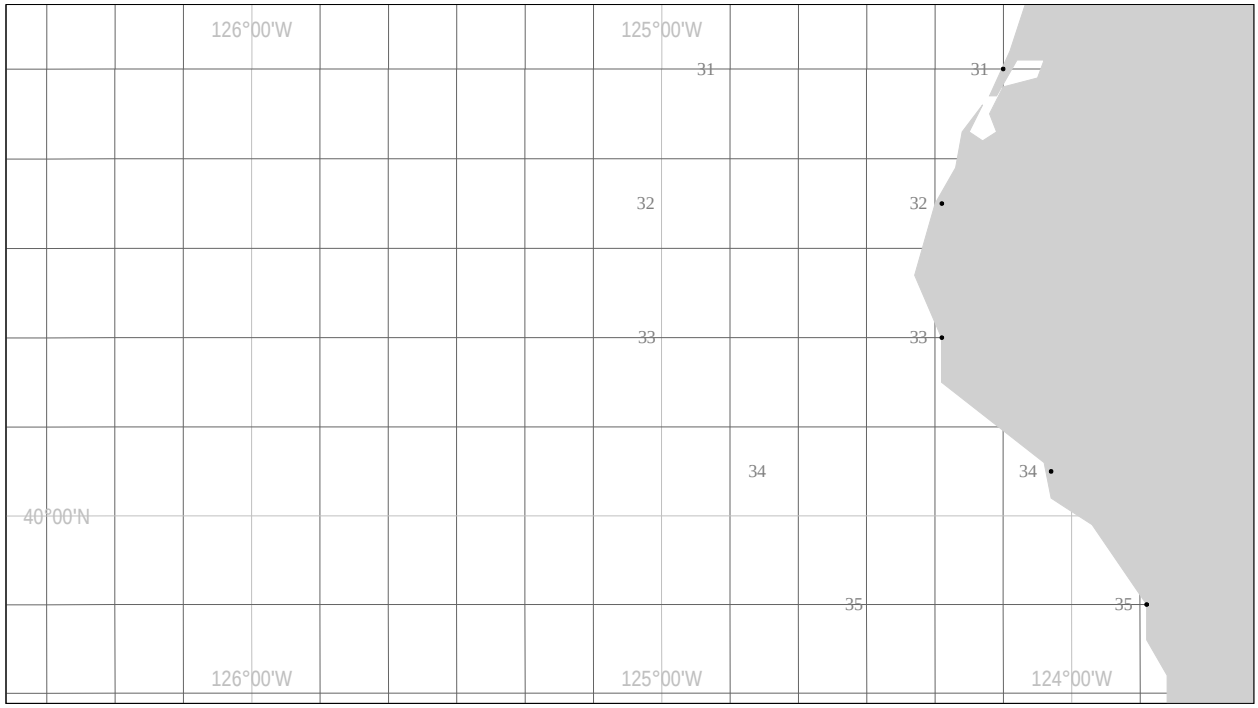
Replicate SET B: Transects 21-25



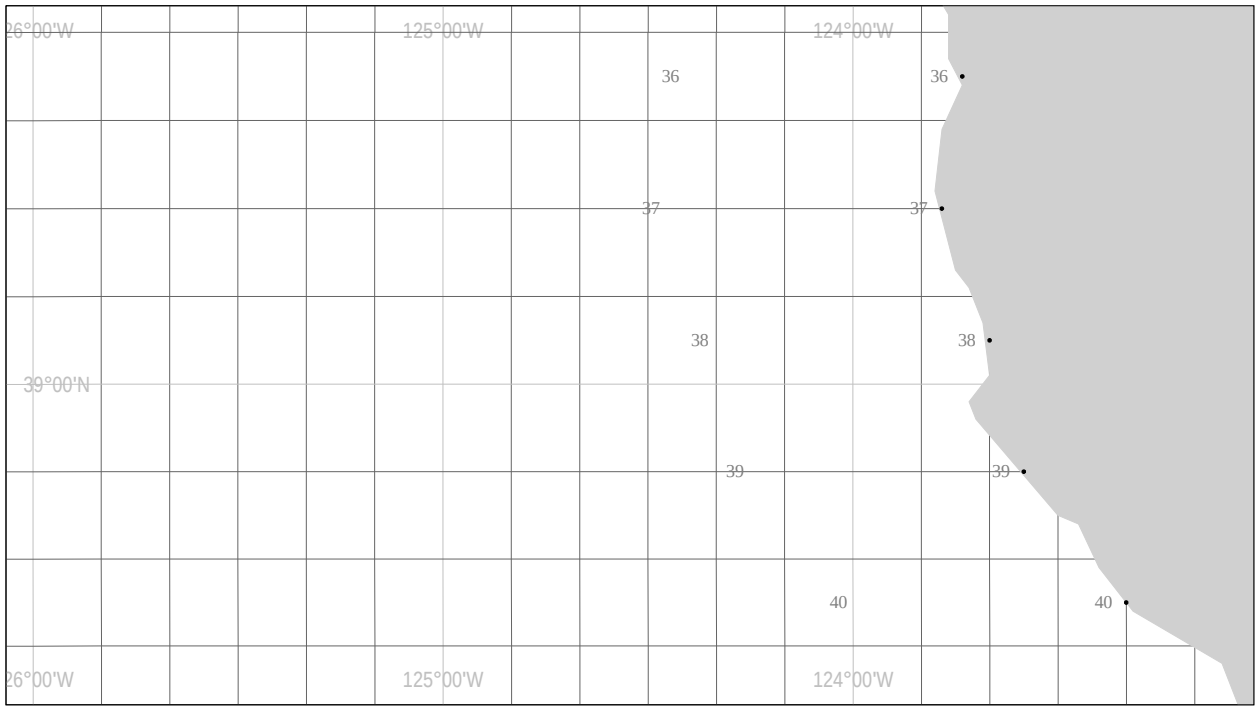
Replicate SET B: Transects 26-30



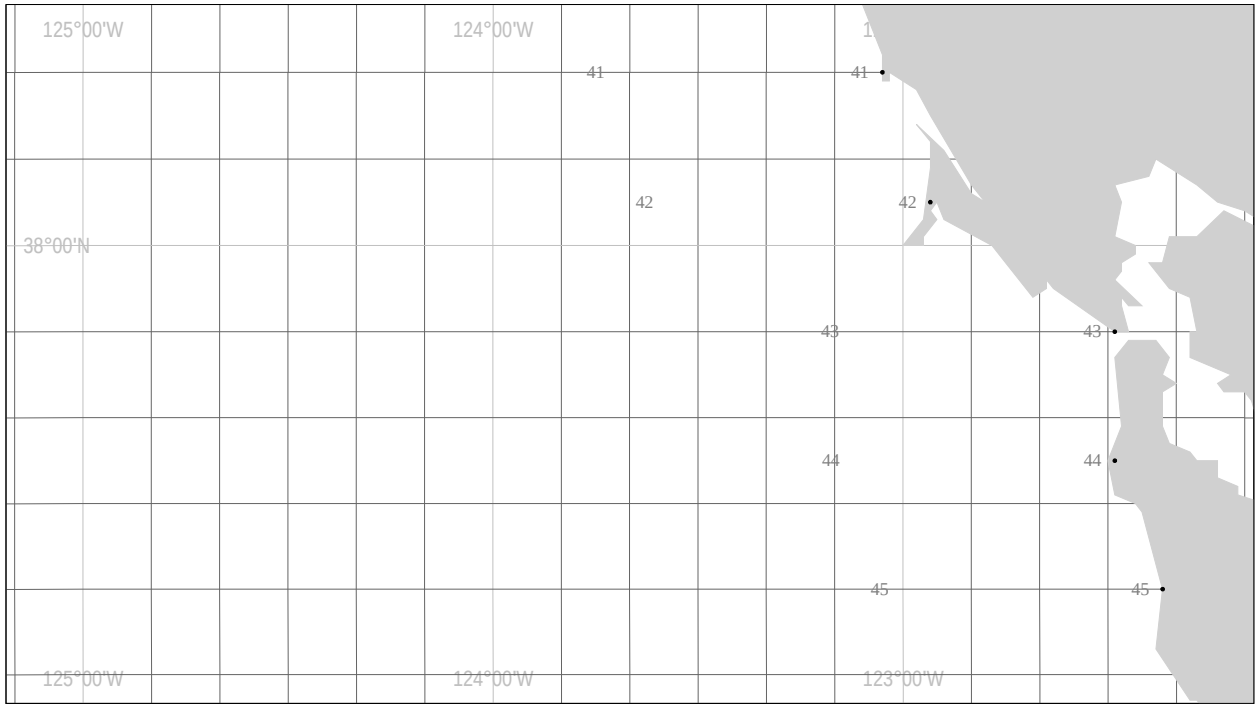
Replicate SET B: Transects 31-35



Replicate SET B: Transects 36-40



Replicate SET B: Transects 41-45



Replicate SET B: Transects 46-52

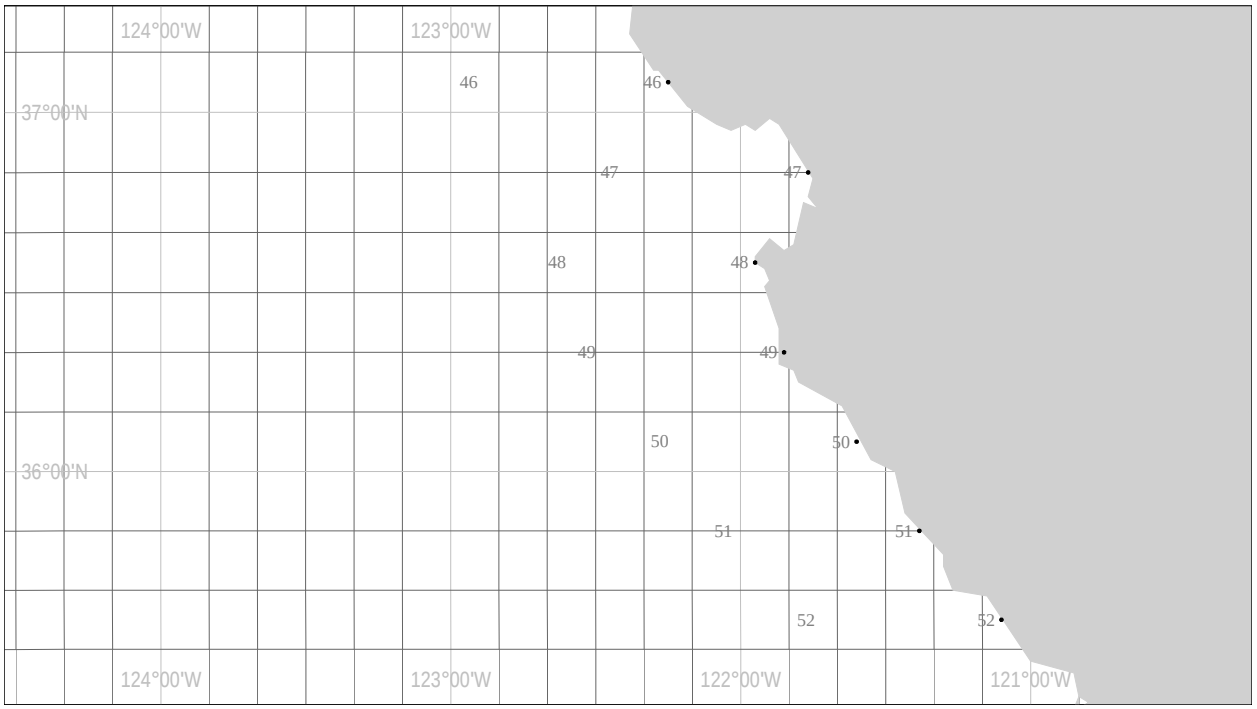
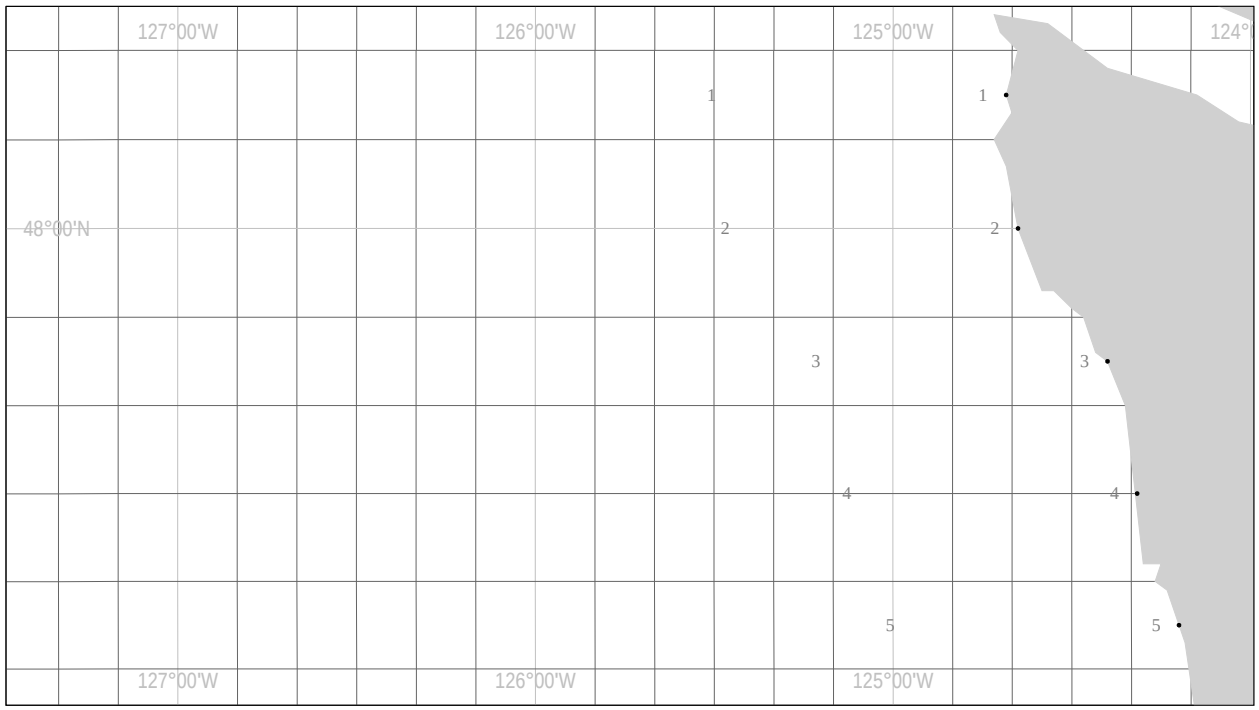
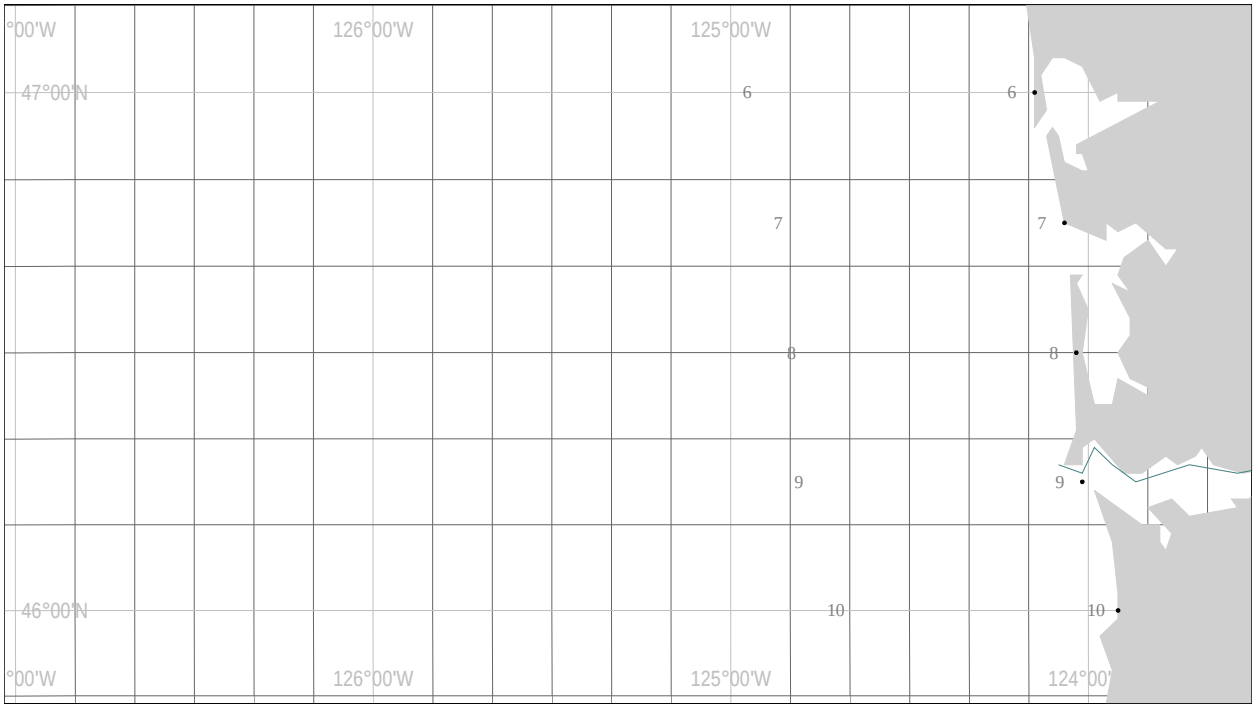


Figure 1c. Maps showing locations of transects comprising Replicate SET C

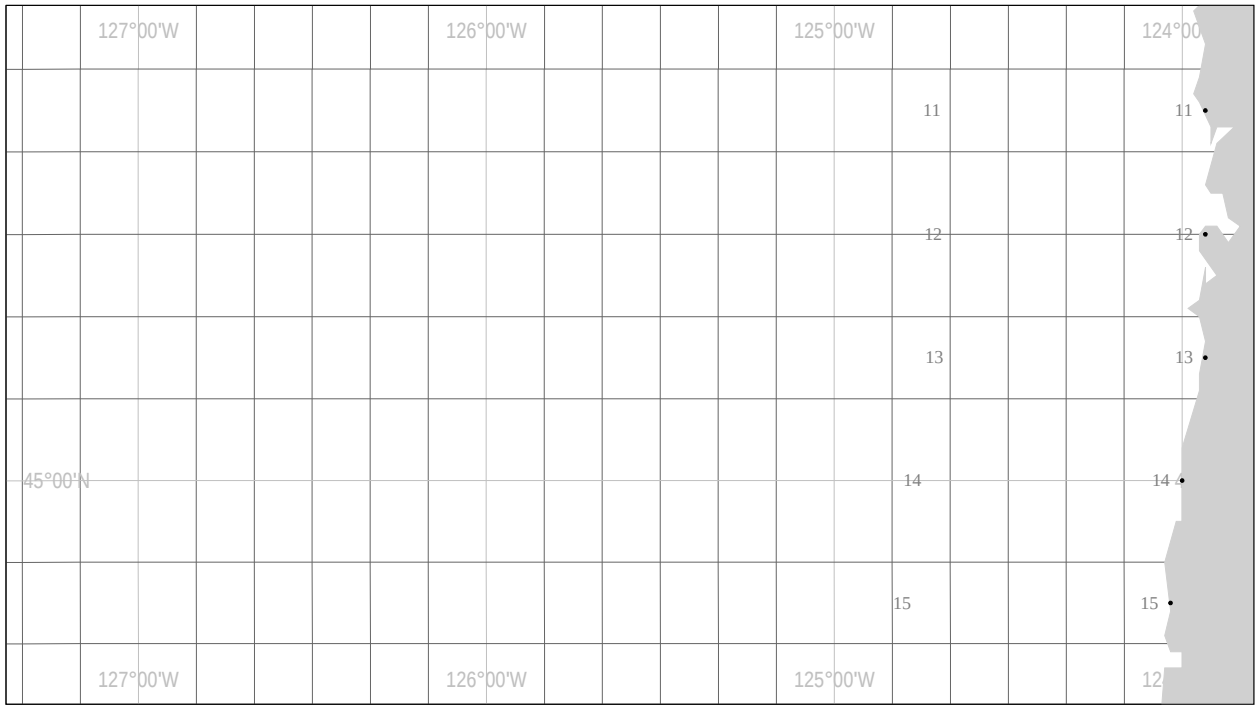
Replicate SET C: Transects 1-5



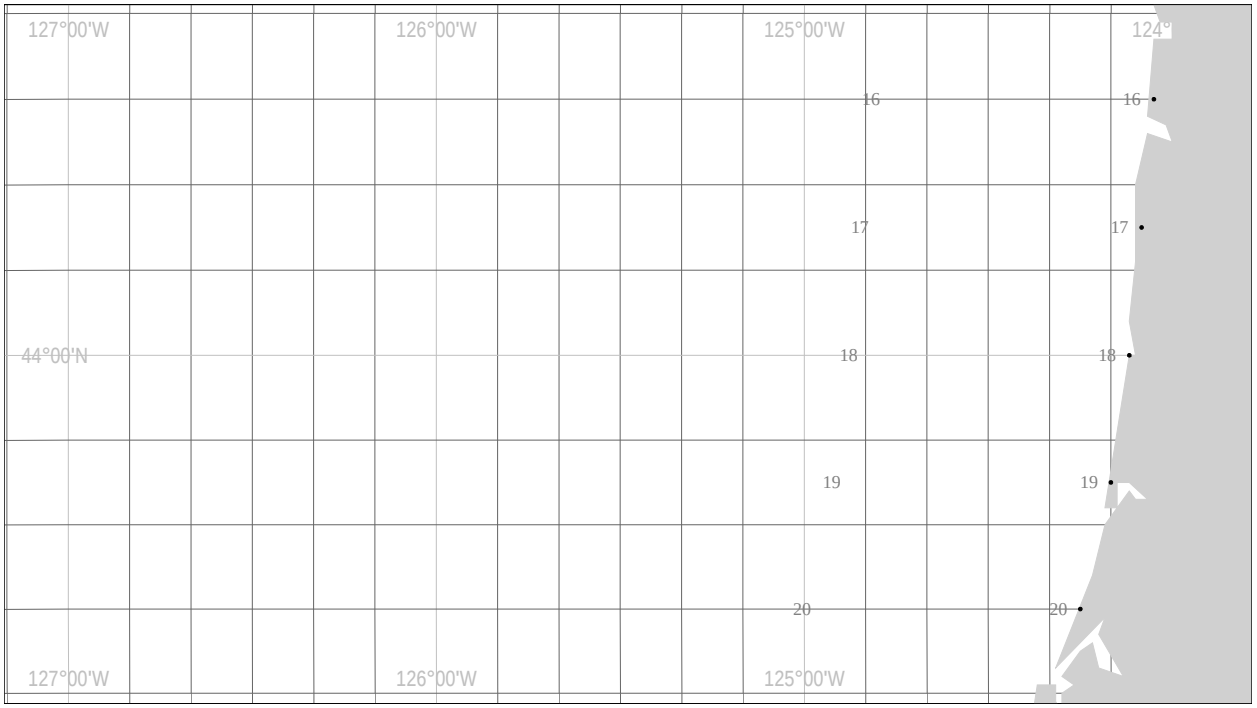
Replicate SET C: Transects 6-10



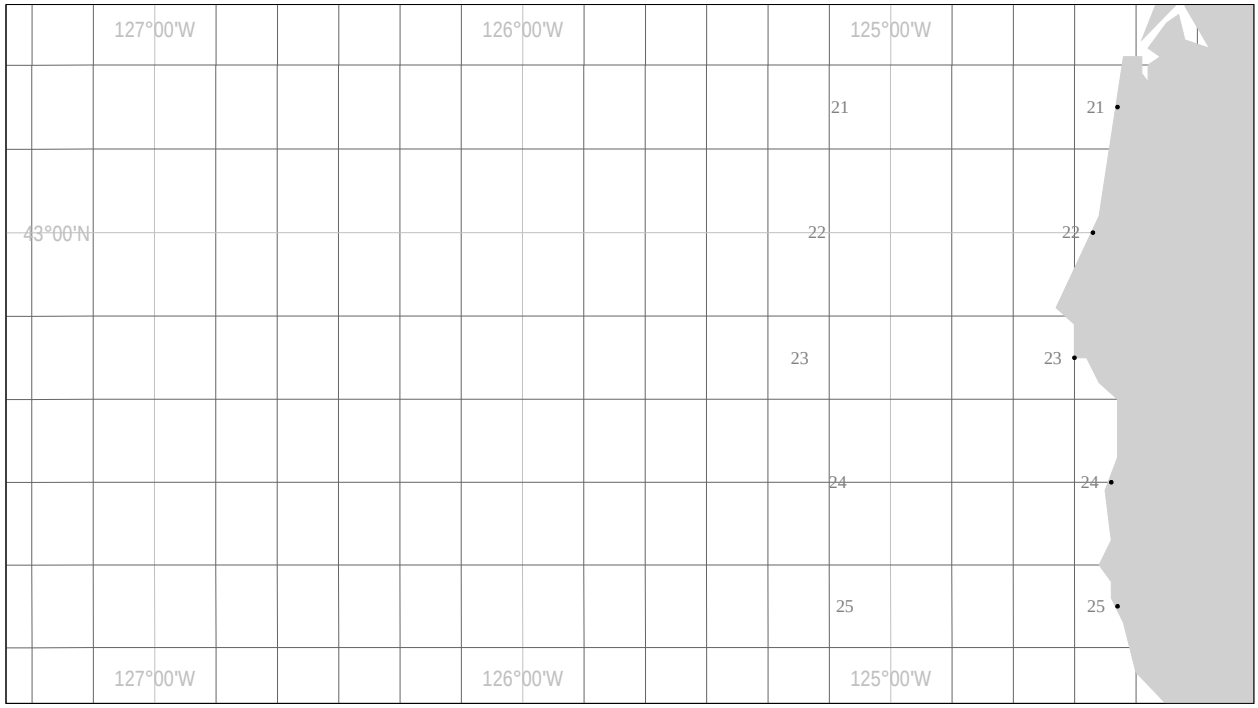
Replicate SET C: Transects 11-15



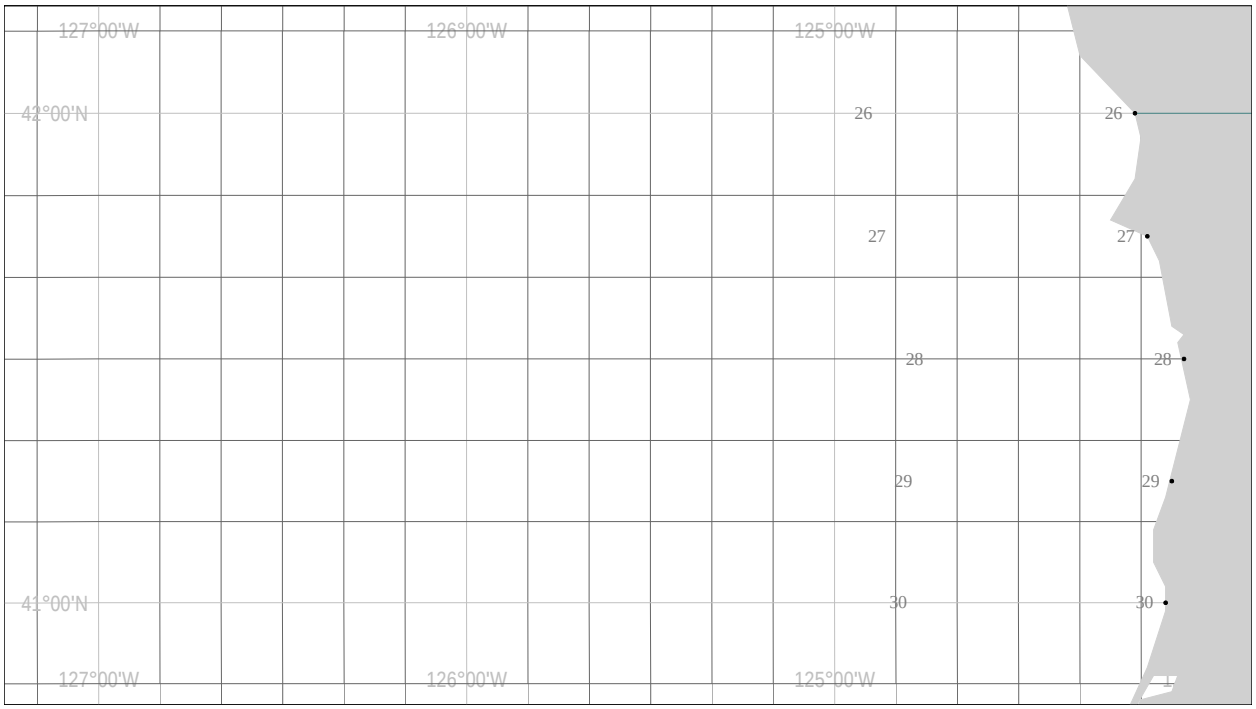
Replicate SET C: Transects 16-20



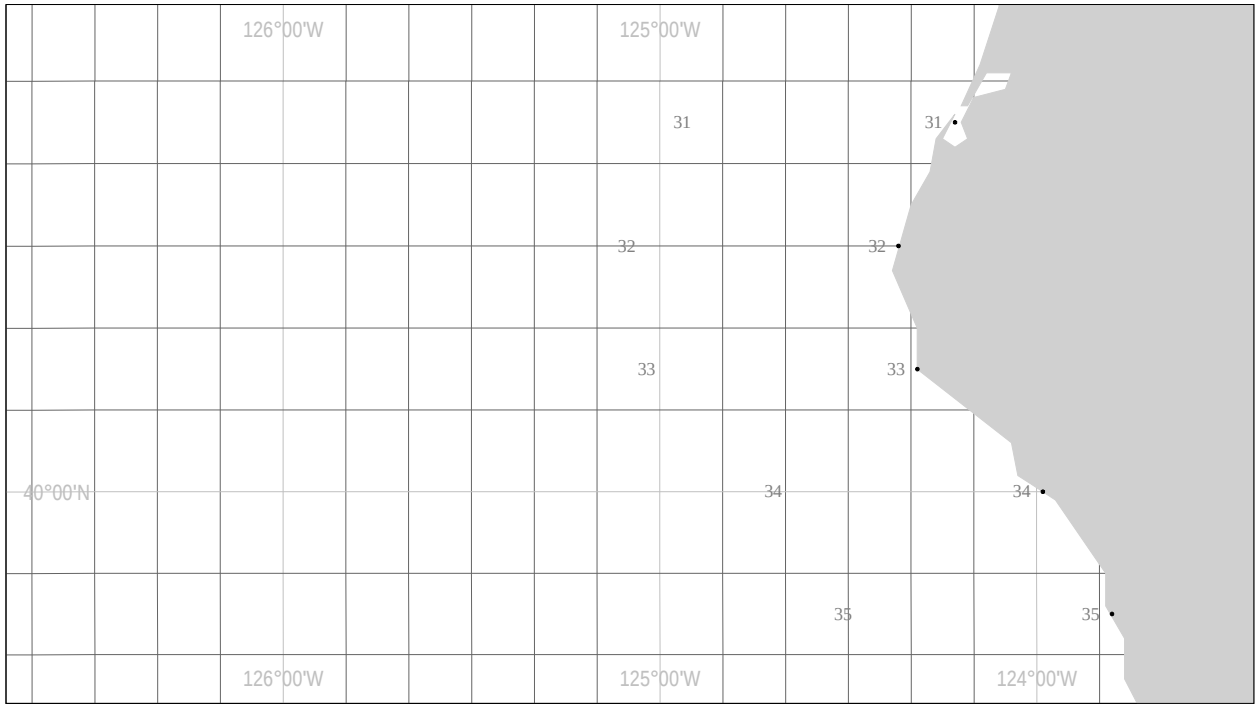
Replicate SET C: Transects 21-25



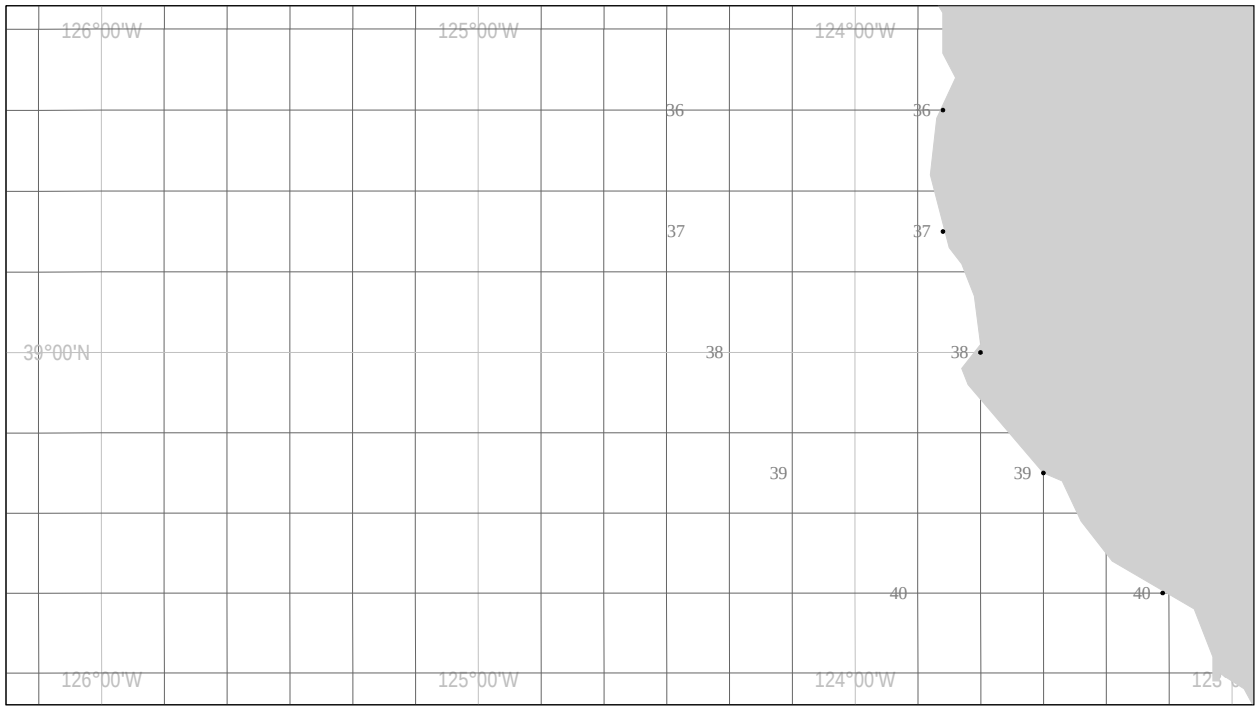
Replicate SET C: Transects 26-30



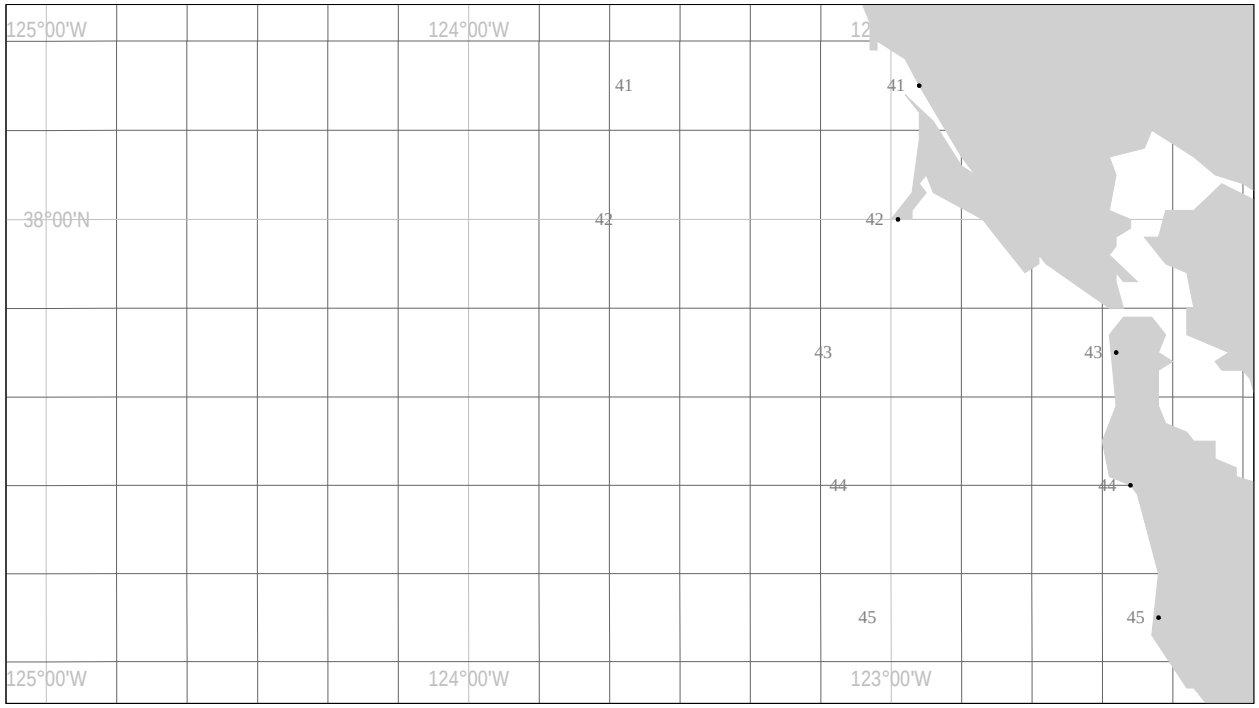
Replicate SET C: Transects 31-35



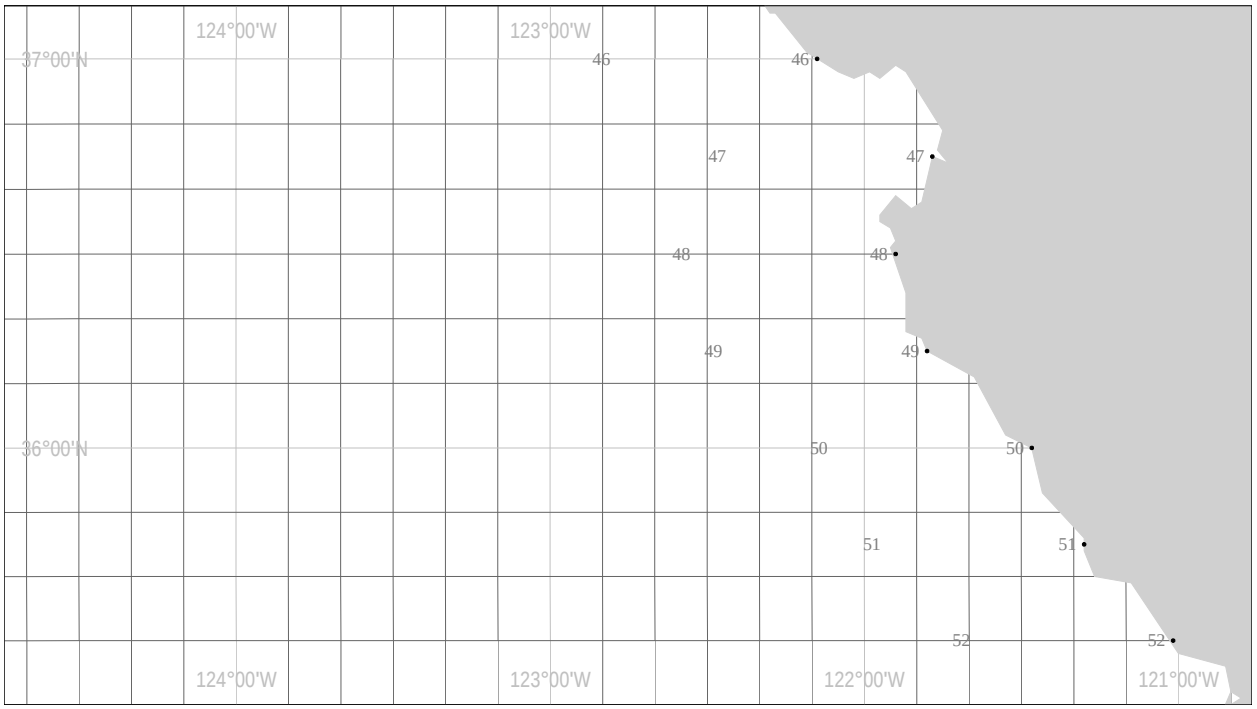
Replicate SET C: Transects 36-40



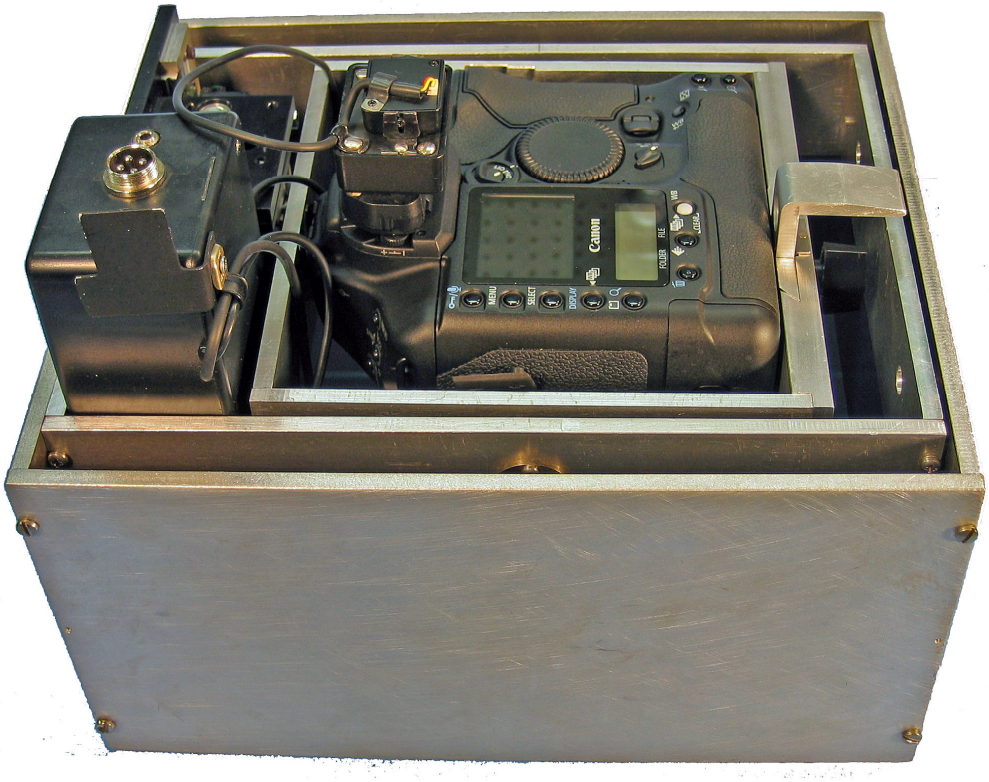
Replicate SET C: Transects 41-45



Replicate SET C: Transects 46-52



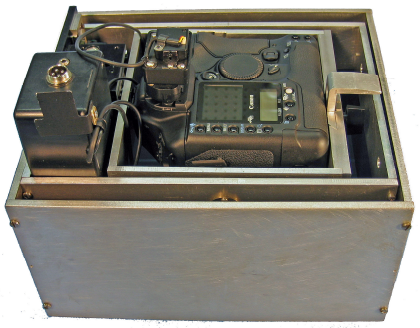
AERIAL IMAGING SOLUTIONS
FMC MOUNT SYSTEM

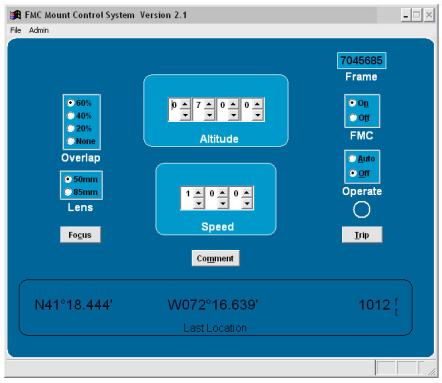


DESCRIPTION

An aerial mount system for digital cameras that reduces image blur caused by the forward motion of the aircraft while the shutter is open. The mount and camera are connected to, and remotely controlled by, a program running on a customer-supplied (Windows-based) computer. Flight and camera parameters entered by the computer's operator determine the required forward motion compensation (FMC) and camera firing interval. The system also takes inputs from the customer-supplied GPS and radar altimeter and will, optionally, use these data to automatically determine the required FMC and firing interval. The system includes a remote viewfinder that displays the image seen through the camera's eyepiece on a small monitor to permit the computer operator to observe camera operation to ensure successful coverage of sites. It also includes a data acquisition system that interfaces with the camera, GPS, radar altimeter, and computer to record position and altitude readings as each frame is collected.

AERIAL IMAGING SOLUTIONS
FMC MOUNT SYSTEM





TECHNICAL SPECIFICATIONS

Cameras Accepted

- Canon EOS-1Ds (Standard)
- Any small or medium format digital camera (Custom)

- **FMC Drive**
  - Servo motor with closed-loop control circuit
- **Weight and Dimensions (Approximate)**
  - Weight w/Camera and cables: 15 lbs (6.8 kg)
  - Length: 11.3” (287 mm)
  - Width: 9.8” (250 mm)
  - Height: 9.3” (237 mm)
- **Environmental**
  - 32° F to 113° F (0° C to 45° C)
- **Power**
  - 28 V DC @ 3A
- **Setup and Pre-flight Testing Time**
  - Approximately 2 hours

Contents of System

- Mount
- Mount Controller
- Control Program
- Data Logger
- Cables
- Transportation Box

Survey Date	Survey Time	Transect No.	Photo ID	Dec Latitude	Dec Longitude	Transect Length (km)	Photo Width (m)	Biomass (mt)
8/19/2009	12:42:43	1	8-19-2009 merrill transects 1-2-3 017	48.1664	-124.7669	55.95	1834.3	0.0
8/19/2009	12:42:53	1	8-19-2009 merrill transects 1-2-3 018	48.1660	-124.7731	55.95	1838.9	0.0
8/19/2009	12:43:03	1	8-19-2009 merrill transects 1-2-3 019	48.1662	-124.7793	55.95	1834.3	0.0
8/19/2009	12:43:13	1	8-19-2009 merrill transects 1-2-3 020	48.1667	-124.7856	55.95	1836.1	0.0
8/19/2009	12:43:23	1	8-19-2009 merrill transects 1-2-3 021	48.1670	-124.7915	55.95	1834.3	0.0
8/19/2009	12:43:33	1	8-19-2009 merrill transects 1-2-3 022	48.1671	-124.7977	55.95	1837.5	0.0
8/19/2009	12:43:43	1	8-19-2009 merrill transects 1-2-3 023	48.1673	-124.8039	55.95	1830.2	0.0
8/19/2009	12:43:53	1	8-19-2009 merrill transects 1-2-3 024	48.1675	-124.8100	55.95	1830.2	0.0
8/19/2009	12:44:03	1	8-19-2009 merrill transects 1-2-3 025	48.1677	-124.8163	55.95	1827.0	0.0
8/19/2009	12:44:13	1	8-19-2009 merrill transects 1-2-3 026	48.1676	-124.8225	55.95	1831.5	0.0
8/19/2009	12:44:23	1	8-19-2009 merrill transects 1-2-3 027	48.1676	-124.8286	55.95	1827.0	0.0
8/19/2009	12:44:33	1	8-19-2009 merrill transects 1-2-3 028	48.1678	-124.8348	55.95	1828.3	0.0
8/19/2009	12:44:43	1	8-19-2009 merrill transects 1-2-3 029	48.1679	-124.8408	55.95	1843.4	0.0
8/19/2009	12:44:53	1	8-19-2009 merrill transects 1-2-3 030	48.1679	-124.8467	55.95	1849.4	0.0
8/19/2009	12:45:03	1	8-19-2009 merrill transects 1-2-3 031	48.1678	-124.8527	55.95	1848.0	0.0
8/19/2009	12:45:21	1	8-19-2009 merrill transects 1-2-3 032	48.1675	-124.8638	55.95	1849.4	0.0
8/19/2009	12:45:32	1	8-19-2009 merrill transects 1-2-3 033	48.1673	-124.8704	55.95	1846.6	0.0
8/19/2009	12:45:43	1	8-19-2009 merrill transects 1-2-3 034	48.1673	-124.8770	55.95	1849.4	0.0
8/19/2009	12:45:54	1	8-19-2009 merrill transects 1-2-3 035	48.1674	-124.8836	55.95	1855.3	0.0
8/19/2009	12:46:04	1	8-19-2009 merrill transects 1-2-3 036	48.1677	-124.8901	55.95	1849.4	0.0
8/19/2009	12:46:15	1	8-19-2009 merrill transects 1-2-3 037	48.1679	-124.8967	55.95	1853.9	0.0
8/19/2009	12:46:26	1	8-19-2009 merrill transects 1-2-3 038	48.1679	-124.9032	55.95	1859.9	0.0
8/19/2009	12:46:37	1	8-19-2009 merrill transects 1-2-3 039	48.1680	-124.9099	55.95	1858.5	0.0
8/19/2009	12:46:47	1	8-19-2009 merrill transects 1-2-3 040	48.1680	-124.9162	55.95	1855.3	0.0
8/19/2009	12:46:58	1	8-19-2009 merrill transects 1-2-3 041	48.1678	-124.9232	55.95	1857.1	0.0
8/19/2009	12:47:09	1	8-19-2009 merrill transects 1-2-3 042	48.1675	-124.9296	55.95	1857.1	0.0
8/19/2009	12:47:20	1	8-19-2009 merrill transects 1-2-3 043	48.1674	-124.9365	55.95	1857.1	0.0
8/19/2009	12:47:31	1	8-19-2009 merrill transects 1-2-3 044	48.1672	-124.9429	55.95	1859.9	0.0
8/19/2009	12:47:42	1	8-19-2009 merrill transects 1-2-3 045	48.1672	-124.9498	55.95	1869.0	0.0
8/19/2009	12:47:52	1	8-19-2009 merrill transects 1-2-3 046	48.1674	-124.9562	55.95	1858.5	0.0
8/19/2009	12:48:03	1	8-19-2009 merrill transects 1-2-3 047	48.1675	-124.9631	55.95	1864.5	0.0

8/19/2009	12:48:14	1	8-19-2009 merrill transects 1-2-3 048	48.1672	-124.9695	55.95	1857.1	0.0
8/19/2009	12:48:25	1	8-19-2009 merrill transects 1-2-3 049	48.1668	-124.9764	55.95	1853.9	0.0
8/19/2009	12:48:35	1	8-19-2009 merrill transects 1-2-3 050	48.1670	-124.9829	55.95	1863.1	0.0
8/19/2009	12:48:46	1	8-19-2009 merrill transects 1-2-3 051	48.1674	-124.9897	55.95	1859.9	0.0
8/19/2009	12:48:57	1	8-19-2009 merrill transects 1-2-3 052	48.1679	-124.9961	55.95	1861.7	0.0
8/19/2009	12:49:08	1	8-19-2009 merrill transects 1-2-3 053	48.1684	-125.0029	55.95	1865.8	5.1
8/19/2009	12:49:19	1	8-19-2009 merrill transects 1-2-3 054	48.1683	-125.0094	55.95	1865.8	0.0
8/19/2009	12:49:30	1	8-19-2009 merrill transects 1-2-3 055	48.1680	-125.0163	55.95	1871.8	0.0
8/19/2009	12:49:40	1	8-19-2009 merrill transects 1-2-3 056	48.1680	-125.0228	55.95	1869.0	0.0
8/19/2009	12:49:51	1	8-19-2009 merrill transects 1-2-3 057	48.1680	-125.0295	55.95	1871.8	0.0
8/19/2009	12:50:02	1	8-19-2009 merrill transects 1-2-3 058	48.1680	-125.0361	55.95	1873.6	0.0
8/19/2009	12:50:13	1	8-19-2009 merrill transects 1-2-3 059	48.1681	-125.0428	55.95	1867.7	0.0
8/19/2009	12:50:23	1	8-19-2009 merrill transects 1-2-3 060	48.1682	-125.0495	55.95	1869.0	0.0
8/19/2009	12:50:34	1	8-19-2009 merrill transects 1-2-3 061	48.1681	-125.0561	55.95	1876.3	0.0
8/19/2009	12:50:45	1	8-19-2009 merrill transects 1-2-3 062	48.1681	-125.0628	55.95	1878.2	0.0
8/19/2009	12:50:56	1	8-19-2009 merrill transects 1-2-3 063	48.1682	-125.0694	55.95	1882.3	0.0
8/19/2009	12:51:06	1	8-19-2009 merrill transects 1-2-3 064	48.1684	-125.0759	55.95	1890.1	9.3
8/19/2009	12:51:17	1	8-19-2009 merrill transects 1-2-3 065	48.1682	-125.0824	55.95	1886.9	0.0
8/19/2009	12:51:28	1	8-19-2009 merrill transects 1-2-3 066	48.1679	-125.0890	55.95	1888.7	0.0
8/19/2009	12:51:39	1	8-19-2009 merrill transects 1-2-3 067	48.1678	-125.0955	55.95	1890.1	7.2
8/19/2009	12:51:50	1	8-19-2009 merrill transects 1-2-3 068	48.1676	-125.1022	55.95	1891.4	0.0
8/19/2009	12:52:00	1	8-19-2009 merrill transects 1-2-3 069	48.1677	-125.1088	55.95	1886.9	0.0
8/19/2009	12:52:11	1	8-19-2009 merrill transects 1-2-3 070	48.1674	-125.1159	55.95	1876.3	0.0
8/19/2009	12:52:22	1	8-19-2009 merrill transects 1-2-3 071	48.1678	-125.1227	55.95	1865.8	0.0
8/19/2009	12:52:33	1	8-19-2009 merrill transects 1-2-3 072	48.1674	-125.1294	55.95	1864.5	0.0
8/19/2009	12:52:44	1	8-19-2009 merrill transects 1-2-3 073	48.1675	-125.1364	55.95	1871.8	8.0
8/19/2009	12:52:54	1	8-19-2009 merrill transects 1-2-3 074	48.1675	-125.1429	55.95	1876.3	0.0
8/19/2009	12:53:05	1	8-19-2009 merrill transects 1-2-3 075	48.1677	-125.1499	55.95	1876.3	0.0
8/19/2009	12:53:16	1	8-19-2009 merrill transects 1-2-3 076	48.1677	-125.1563	55.95	1880.9	0.0
8/19/2009	12:53:27	1	8-19-2009 merrill transects 1-2-3 077	48.1678	-125.1634	55.95	1875.0	0.0
8/19/2009	12:53:37	1	8-19-2009 merrill transects 1-2-3 078	48.1678	-125.1699	55.95	1879.5	0.0
8/19/2009	12:53:48	1	8-19-2009 merrill transects 1-2-3 079	48.1678	-125.1768	55.95	1885.5	0.0

8/19/2009	12:53:59	1	8-19-2009 merrill transects 1-2-3 080	48.1677	-125.1834	55.95	1888.7	0.0
8/19/2009	12:54:10	1	8-19-2009 merrill transects 1-2-3 081	48.1677	-125.1904	55.95	1885.5	0.0
8/19/2009	12:54:21	1	8-19-2009 merrill transects 1-2-3 082	48.1678	-125.1969	55.95	1890.1	0.0
8/19/2009	12:54:32	1	8-19-2009 merrill transects 1-2-3 083	48.1679	-125.2040	55.95	1886.9	0.0
8/19/2009	12:54:42	1	8-19-2009 merrill transects 1-2-3 084	48.1676	-125.2109	55.95	1875.0	0.0
8/19/2009	12:54:53	1	8-19-2009 merrill transects 1-2-3 085	48.1674	-125.2182	55.95	1864.5	0.0
8/19/2009	12:55:04	1	8-19-2009 merrill transects 1-2-3 086	48.1676	-125.2249	55.95	1873.6	0.0
8/19/2009	12:55:15	1	8-19-2009 merrill transects 1-2-3 087	48.1676	-125.2321	55.95	1869.0	0.0
8/19/2009	12:55:25	1	8-19-2009 merrill transects 1-2-3 088	48.1678	-125.2386	55.95	1871.8	0.0
8/19/2009	12:55:47	1	8-19-2009 merrill transects 1-2-3 089	48.1685	-125.2517	55.95	1878.2	0.0
8/19/2009	12:55:57	1	8-19-2009 merrill transects 1-2-3 090	48.1683	-125.2582	55.95	1875.0	0.0
8/19/2009	12:56:07	1	8-19-2009 merrill transects 1-2-3 091	48.1676	-125.2646	55.95	1875.0	0.0
8/19/2009	12:56:18	1	8-19-2009 merrill transects 1-2-3 092	48.1674	-125.2711	55.95	1870.4	0.0
8/19/2009	12:56:28	1	8-19-2009 merrill transects 1-2-3 093	48.1677	-125.2776	55.95	1859.9	0.0
8/19/2009	12:56:38	1	8-19-2009 merrill transects 1-2-3 094	48.1677	-125.2844	55.95	1852.6	0.0
8/19/2009	12:56:48	1	8-19-2009 merrill transects 1-2-3 095	48.1677	-125.2912	55.95	1844.8	0.0
8/19/2009	12:56:59	1	8-19-2009 merrill transects 1-2-3 096	48.1678	-125.2979	55.95	1848.0	0.0
8/19/2009	12:57:09	1	8-19-2009 merrill transects 1-2-3 097	48.1677	-125.3043	55.95	1844.8	0.0
8/19/2009	12:57:19	1	8-19-2009 merrill transects 1-2-3 098	48.1676	-125.3109	55.95	1843.4	0.0
8/19/2009	12:57:30	1	8-19-2009 merrill transects 1-2-3 099	48.1676	-125.3177	55.95	1827.0	0.0
8/19/2009	12:57:40	1	8-19-2009 merrill transects 1-2-3 100	48.1677	-125.3240	55.95	1831.5	0.0
8/19/2009	12:57:50	1	8-19-2009 merrill transects 1-2-3 101	48.1677	-125.3307	55.95	1821.0	0.0
8/19/2009	12:58:01	1	8-19-2009 merrill transects 1-2-3 102	48.1677	-125.3375	55.95	1822.4	0.0
8/19/2009	12:58:11	1	8-19-2009 merrill transects 1-2-3 103	48.1677	-125.3441	55.95	1819.7	0.0
8/19/2009	12:58:21	1	8-19-2009 merrill transects 1-2-3 104	48.1678	-125.3509	55.95	1811.9	0.0
8/19/2009	12:58:31	1	8-19-2009 merrill transects 1-2-3 105	48.1678	-125.3574	55.95	1813.7	0.0
8/19/2009	12:58:47	1	8-19-2009 merrill transects 1-2-3 106	48.1675	-125.3677	55.95	1809.1	0.0
8/19/2009	12:58:57	1	8-19-2009 merrill transects 1-2-3 107	48.1676	-125.3741	55.95	1815.1	0.0
8/19/2009	12:59:07	1	8-19-2009 merrill transects 1-2-3 108	48.1677	-125.3803	55.95	1813.7	0.0
8/19/2009	12:59:18	1	8-19-2009 merrill transects 1-2-3 109	48.1676	-125.3869	55.95	1811.9	0.0
8/19/2009	12:59:28	1	8-19-2009 merrill transects 1-2-3 110	48.1676	-125.3932	55.95	1815.1	0.0
8/19/2009	12:59:38	1	8-19-2009 merrill transects 1-2-3 111	48.1675	-125.3996	55.95	1813.7	13.5

8/19/2009	12:59:48	1	8-19-2009 merrill transects 1-2-3 112	48.1675	-125.4058	55.95	1821.0	0.0
8/19/2009	12:59:58	1	8-19-2009 merrill transects 1-2-3 113	48.1676	-125.4123	55.95	1819.7	0.0
8/19/2009	13:00:09	1	8-19-2009 merrill transects 1-2-3 114	48.1676	-125.4186	55.95	1817.8	0.0
8/19/2009	13:00:19	1	8-19-2009 merrill transects 1-2-3 115	48.1676	-125.4252	55.95	1813.7	0.0
8/19/2009	13:00:29	1	8-19-2009 merrill transects 1-2-3 116	48.1676	-125.4315	55.95	1811.9	0.0
8/19/2009	13:00:39	1	8-19-2009 merrill transects 1-2-3 117	48.1675	-125.4381	55.95	1815.1	0.0
8/19/2009	13:00:49	1	8-19-2009 merrill transects 1-2-3 118	48.1675	-125.4445	55.95	1815.1	0.0
8/19/2009	13:01:00	1	8-19-2009 merrill transects 1-2-3 119	48.1674	-125.4510	55.95	1827.0	0.0
8/19/2009	13:01:10	1	8-19-2009 merrill transects 1-2-3 120	48.1672	-125.4572	55.95	1831.5	0.0
8/19/2009	13:01:20	1	8-19-2009 merrill transects 1-2-3 121	48.1672	-125.4637	55.95	1832.9	0.0
8/19/2009	13:01:30	1	8-19-2009 merrill transects 1-2-3 122	48.1673	-125.4699	55.95	1825.6	0.0
8/19/2009	13:01:40	1	8-19-2009 merrill transects 1-2-3 123	48.1671	-125.4766	55.95	1819.7	0.0
8/19/2009	13:01:51	1	8-19-2009 merrill transects 1-2-3 124	48.1669	-125.4829	55.95	1817.8	0.0
8/19/2009	13:02:01	1	8-19-2009 merrill transects 1-2-3 125	48.1669	-125.4895	55.95	1822.4	0.0
8/19/2009	13:02:11	1	8-19-2009 merrill transects 1-2-3 126	48.1670	-125.4957	55.95	1824.2	0.0
8/19/2009	13:02:21	1	8-19-2009 merrill transects 1-2-3 127	48.1670	-125.5023	55.95	1815.1	0.0
8/19/2009	13:02:31	1	8-19-2009 merrill transects 1-2-3 128	48.1671	-125.5086	55.95	1822.4	0.0
8/19/2009	13:02:42	1	8-19-2009 merrill transects 1-2-3 129	48.1668	-125.5150	55.95	1828.3	0.0
8/19/2009	13:02:52	1	8-19-2009 merrill transects 1-2-3 130	48.1666	-125.5213	55.95	1825.6	0.0
8/19/2009	13:17:01	2	8-19-2009 merrill transects 1-2-3 132	47.9169	-125.4171	56.07	1861.7	0.0
8/19/2009	13:17:11	2	8-19-2009 merrill transects 1-2-3 133	47.9160	-125.4129	56.07	1869.0	0.0
8/19/2009	13:17:22	2	8-19-2009 merrill transects 1-2-3 134	47.9163	-125.4084	56.07	1870.4	0.0
8/19/2009	13:17:32	2	8-19-2009 merrill transects 1-2-3 135	47.9173	-125.4040	56.07	1867.7	0.0
8/19/2009	13:17:42	2	8-19-2009 merrill transects 1-2-3 136	47.9185	-125.3996	56.07	1867.7	0.0
8/19/2009	13:17:52	2	8-19-2009 merrill transects 1-2-3 137	47.9201	-125.3953	56.07	1867.7	0.0
8/19/2009	13:18:02	2	8-19-2009 merrill transects 1-2-3 138	47.9217	-125.3913	56.07	1875.0	0.0
8/19/2009	13:18:13	2	8-19-2009 merrill transects 1-2-3 139	47.9232	-125.3872	56.07	1870.4	0.0
8/19/2009	13:18:23	2	8-19-2009 merrill transects 1-2-3 140	47.9240	-125.3825	56.07	1879.5	0.0
8/19/2009	13:18:33	2	8-19-2009 merrill transects 1-2-3 141	47.9242	-125.3780	56.07	1882.3	0.0
8/19/2009	13:18:43	2	8-19-2009 merrill transects 1-2-3 142	47.9237	-125.3732	56.07	1890.1	0.0
8/19/2009	13:18:53	2	8-19-2009 merrill transects 1-2-3 143	47.9235	-125.3686	56.07	1891.4	0.0
8/19/2009	13:19:04	2	8-19-2009 merrill transects 1-2-3 144	47.9237	-125.3637	56.07	1891.4	0.0

8/19/2009	13:19:14	2	8-19-2009 merrill transects 1-2-3 145	47.9233	-125.3590	56.07	1892.8	0.0
8/19/2009	13:19:24	2	8-19-2009 merrill transects 1-2-3 146	47.9227	-125.3542	56.07	1897.4	0.0
8/19/2009	13:19:34	2	8-19-2009 merrill transects 1-2-3 147	47.9227	-125.3495	56.07	1900.6	0.0
8/19/2009	13:19:44	2	8-19-2009 merrill transects 1-2-3 148	47.9229	-125.3444	56.07	1884.1	0.0
8/19/2009	13:19:55	2	8-19-2009 merrill transects 1-2-3 149	47.9230	-125.3394	56.07	1879.5	0.0
8/19/2009	13:20:05	2	8-19-2009 merrill transects 1-2-3 150	47.9231	-125.3341	56.07	1859.9	0.0
8/19/2009	13:20:15	2	8-19-2009 merrill transects 1-2-3 151	47.9229	-125.3291	56.07	1867.7	0.0
8/19/2009	13:20:25	2	8-19-2009 merrill transects 1-2-3 152	47.9229	-125.3238	56.07	1864.5	0.0
8/19/2009	13:20:35	2	8-19-2009 merrill transects 1-2-3 153	47.9227	-125.3188	56.07	1859.9	0.0
8/19/2009	13:20:46	2	8-19-2009 merrill transects 1-2-3 154	47.9226	-125.3135	56.07	1853.9	0.0
8/19/2009	13:20:56	2	8-19-2009 merrill transects 1-2-3 155	47.9224	-125.3087	56.07	1851.2	0.0
8/19/2009	13:21:06	2	8-19-2009 merrill transects 1-2-3 156	47.9222	-125.3035	56.07	1838.9	0.0
8/19/2009	13:21:16	2	8-19-2009 merrill transects 1-2-3 157	47.9218	-125.2987	56.07	1843.4	0.0
8/19/2009	13:21:26	2	8-19-2009 merrill transects 1-2-3 158	47.9218	-125.2936	56.07	1837.5	0.0
8/19/2009	13:21:37	2	8-19-2009 merrill transects 1-2-3 159	47.9221	-125.2888	56.07	1836.1	0.0
8/19/2009	13:21:47	2	8-19-2009 merrill transects 1-2-3 160	47.9225	-125.2838	56.07	1837.5	0.0
8/19/2009	13:21:57	2	8-19-2009 merrill transects 1-2-3 161	47.9228	-125.2790	56.07	1830.2	0.0
8/19/2009	13:22:16	2	8-19-2009 merrill transects 1-2-3 162	47.9233	-125.2695	56.07	1830.2	0.0
8/19/2009	13:22:35	2	8-19-2009 merrill transects 1-2-3 163	47.9234	-125.2605	56.07	1828.3	0.0
8/19/2009	13:22:48	2	8-19-2009 merrill transects 1-2-3 164	47.9235	-125.2545	56.07	1827.0	0.0
8/19/2009	13:23:00	2	8-19-2009 merrill transects 1-2-3 165	47.9236	-125.2484	56.07	1828.3	0.0
8/19/2009	13:23:13	2	8-19-2009 merrill transects 1-2-3 166	47.9237	-125.2425	56.07	1827.0	0.0
8/19/2009	13:23:25	2	8-19-2009 merrill transects 1-2-3 167	47.9236	-125.2365	56.07	1827.0	0.0
8/19/2009	13:23:38	2	8-19-2009 merrill transects 1-2-3 168	47.9233	-125.2306	56.07	1827.0	0.0
8/19/2009	13:23:50	2	8-19-2009 merrill transects 1-2-3 169	47.9228	-125.2248	56.07	1831.5	0.0
8/19/2009	13:24:03	2	8-19-2009 merrill transects 1-2-3 170	47.9225	-125.2188	56.07	1825.6	0.0
8/19/2009	13:24:15	2	8-19-2009 merrill transects 1-2-3 171	47.9225	-125.2129	56.07	1824.2	0.0
8/19/2009	13:24:28	2	8-19-2009 merrill transects 1-2-3 172	47.9224	-125.2070	56.07	1822.4	0.0
8/19/2009	13:24:40	2	8-19-2009 merrill transects 1-2-3 173	47.9222	-125.2011	56.07	1819.7	0.0
8/19/2009	13:24:53	2	8-19-2009 merrill transects 1-2-3 174	47.9219	-125.1952	56.07	1813.7	0.0
8/19/2009	13:25:05	2	8-19-2009 merrill transects 1-2-3 175	47.9222	-125.1893	56.07	1810.5	0.0
8/19/2009	13:25:18	2	8-19-2009 merrill transects 1-2-3 176	47.9223	-125.1833	56.07	1816.5	0.0

8/19/2009	13:25:30	2	8-19-2009 merrill transects 1-2-3 177	47.9222	-125.1776	56.07	1809.1	0.0
8/19/2009	13:25:43	2	8-19-2009 merrill transects 1-2-3 178	47.9222	-125.1717	56.07	1809.1	0.0
8/19/2009	13:25:55	2	8-19-2009 merrill transects 1-2-3 179	47.9222	-125.1659	56.07	1813.7	0.0
8/19/2009	13:26:08	2	8-19-2009 merrill transects 1-2-3 180	47.9219	-125.1600	56.07	1824.2	0.0
8/19/2009	13:26:20	2	8-19-2009 merrill transects 1-2-3 181	47.9217	-125.1543	56.07	1827.0	0.0
8/19/2009	13:26:32	2	8-19-2009 merrill transects 1-2-3 182	47.9218	-125.1489	56.07	1840.7	0.0
8/19/2009	13:26:45	2	8-19-2009 merrill transects 1-2-3 183	47.9218	-125.1434	56.07	1840.7	0.0
8/19/2009	13:26:57	2	8-19-2009 merrill transects 1-2-3 184	47.9217	-125.1378	56.07	1844.8	0.0
8/19/2009	13:27:10	2	8-19-2009 merrill transects 1-2-3 185	47.9217	-125.1321	56.07	1855.3	0.0
8/19/2009	13:27:22	2	8-19-2009 merrill transects 1-2-3 186	47.9218	-125.1265	56.07	1851.2	0.0
8/19/2009	13:27:35	2	8-19-2009 merrill transects 1-2-3 187	47.9215	-125.1209	56.07	1852.6	5.3
8/19/2009	13:27:47	2	8-19-2009 merrill transects 1-2-3 188	47.9210	-125.1153	56.07	1857.1	0.0
8/19/2009	13:28:00	2	8-19-2009 merrill transects 1-2-3 189	47.9212	-125.1098	56.07	1858.5	0.0
8/19/2009	13:28:12	2	8-19-2009 merrill transects 1-2-3 190	47.9211	-125.1040	56.07	1865.8	0.0
8/19/2009	13:28:25	2	8-19-2009 merrill transects 1-2-3 191	47.9213	-125.0986	56.07	1871.8	0.0
8/19/2009	13:28:37	2	8-19-2009 merrill transects 1-2-3 192	47.9212	-125.0931	56.07	1873.6	0.0
8/19/2009	13:28:50	2	8-19-2009 merrill transects 1-2-3 193	47.9213	-125.0873	56.07	1861.7	0.0
8/19/2009	13:29:02	2	8-19-2009 merrill transects 1-2-3 194	47.9213	-125.0814	56.07	1865.8	0.0
8/19/2009	13:29:15	2	8-19-2009 merrill transects 1-2-3 195	47.9211	-125.0757	56.07	1865.8	0.0
8/19/2009	13:29:27	2	8-19-2009 merrill transects 1-2-3 196	47.9213	-125.0697	56.07	1869.0	0.0
8/19/2009	13:29:40	2	8-19-2009 merrill transects 1-2-3 197	47.9214	-125.0639	56.07	1865.8	0.0
8/19/2009	13:29:52	2	8-19-2009 merrill transects 1-2-3 198	47.9210	-125.0578	56.07	1853.9	0.0
8/19/2009	13:30:05	2	8-19-2009 merrill transects 1-2-3 199	47.9208	-125.0517	56.07	1851.2	0.0
8/19/2009	13:30:17	2	8-19-2009 merrill transects 1-2-3 200	47.9208	-125.0455	56.07	1844.8	0.0
8/19/2009	13:30:30	2	8-19-2009 merrill transects 1-2-3 201	47.9209	-125.0395	56.07	1844.8	0.0
8/19/2009	13:30:42	2	8-19-2009 merrill transects 1-2-3 202	47.9210	-125.0335	56.07	1840.7	0.0
8/19/2009	13:30:55	2	8-19-2009 merrill transects 1-2-3 203	47.9208	-125.0276	56.07	1846.6	0.0
8/19/2009	13:31:07	2	8-19-2009 merrill transects 1-2-3 204	47.9205	-125.0217	56.07	1852.6	0.0
8/19/2009	13:31:19	2	8-19-2009 merrill transects 1-2-3 205	47.9203	-125.0158	56.07	1852.6	0.0
8/19/2009	13:31:32	2	8-19-2009 merrill transects 1-2-3 206	47.9202	-125.0098	56.07	1855.3	0.0
8/19/2009	13:31:44	2	8-19-2009 merrill transects 1-2-3 207	47.9206	-125.0040	56.07	1859.9	0.0
8/19/2009	13:31:57	2	8-19-2009 merrill transects 1-2-3 208	47.9212	-124.9982	56.07	1858.5	0.0

8/19/2009	13:32:09	2	8-19-2009 merrill transects 1-2-3 209	47.9216	-124.9924	56.07	1864.5	0.0
8/19/2009	13:32:22	2	8-19-2009 merrill transects 1-2-3 210	47.9213	-124.9861	56.07	1849.4	0.0
8/19/2009	13:32:34	2	8-19-2009 merrill transects 1-2-3 211	47.9209	-124.9799	56.07	1849.4	0.0
8/19/2009	13:32:47	2	8-19-2009 merrill transects 1-2-3 212	47.9206	-124.9738	56.07	1843.4	0.0
8/19/2009	13:32:59	2	8-19-2009 merrill transects 1-2-3 213	47.9202	-124.9677	56.07	1842.1	0.0
8/19/2009	13:33:12	2	8-19-2009 merrill transects 1-2-3 214	47.9200	-124.9617	56.07	1842.1	0.0
8/19/2009	13:33:24	2	8-19-2009 merrill transects 1-2-3 215	47.9200	-124.9554	56.07	1837.5	0.0
8/19/2009	13:33:37	2	8-19-2009 merrill transects 1-2-3 216	47.9197	-124.9494	56.07	1840.7	0.0
8/19/2009	13:33:49	2	8-19-2009 merrill transects 1-2-3 217	47.9192	-124.9434	56.07	1840.7	0.0
8/19/2009	13:34:02	2	8-19-2009 merrill transects 1-2-3 218	47.9191	-124.9374	56.07	1830.2	0.0
8/19/2009	13:34:14	2	8-19-2009 merrill transects 1-2-3 219	47.9194	-124.9313	56.07	1822.4	0.0
8/19/2009	13:34:27	2	8-19-2009 merrill transects 1-2-3 220	47.9197	-124.9252	56.07	1816.5	0.0
8/19/2009	13:34:39	2	8-19-2009 merrill transects 1-2-3 221	47.9197	-124.9188	56.07	1811.9	0.0
8/19/2009	13:34:52	2	8-19-2009 merrill transects 1-2-3 222	47.9203	-124.9130	56.07	1824.2	0.0
8/19/2009	13:35:04	2	8-19-2009 merrill transects 1-2-3 223	47.9215	-124.9076	56.07	1840.7	0.0
8/19/2009	13:35:17	2	8-19-2009 merrill transects 1-2-3 224	47.9220	-124.9021	56.07	1852.6	0.0
8/19/2009	13:35:29	2	8-19-2009 merrill transects 1-2-3 225	47.9211	-124.8968	56.07	1864.5	0.0
8/19/2009	13:35:42	2	8-19-2009 merrill transects 1-2-3 226	47.9196	-124.8912	56.07	1863.1	0.0
8/19/2009	13:35:54	2	8-19-2009 merrill transects 1-2-3 227	47.9177	-124.8861	56.07	1865.8	0.0
8/19/2009	13:36:06	2	8-19-2009 merrill transects 1-2-3 228	47.9168	-124.8804	56.07	1869.0	0.0
8/19/2009	13:36:19	2	8-19-2009 merrill transects 1-2-3 229	47.9175	-124.8747	56.07	1876.3	0.0
8/19/2009	13:36:31	2	8-19-2009 merrill transects 1-2-3 230	47.9184	-124.8691	56.07	1882.3	0.0
8/19/2009	13:36:44	2	8-19-2009 merrill transects 1-2-3 231	47.9186	-124.8632	56.07	1882.3	0.0
8/19/2009	13:36:56	2	8-19-2009 merrill transects 1-2-3 232	47.9183	-124.8571	56.07	1891.4	0.0
8/19/2009	13:37:09	2	8-19-2009 merrill transects 1-2-3 233	47.9183	-124.8511	56.07	1875.0	0.0
8/19/2009	13:37:21	2	8-19-2009 merrill transects 1-2-3 234	47.9191	-124.8450	56.07	1884.1	0.0
8/19/2009	13:37:34	2	8-19-2009 merrill transects 1-2-3 235	47.9191	-124.8390	56.07	1888.7	0.0
8/19/2009	13:37:46	2	8-19-2009 merrill transects 1-2-3 236	47.9190	-124.8329	56.07	1896.0	0.0
8/19/2009	13:37:59	2	8-19-2009 merrill transects 1-2-3 237	47.9189	-124.8266	56.07	1876.3	0.0
8/19/2009	13:38:11	2	8-19-2009 merrill transects 1-2-3 238	47.9188	-124.8201	56.07	1852.6	0.0
8/19/2009	13:38:24	2	8-19-2009 merrill transects 1-2-3 239	47.9187	-124.8135	56.07	1840.7	0.0
8/19/2009	13:38:36	2	8-19-2009 merrill transects 1-2-3 240	47.9186	-124.8070	56.07	1831.5	0.0

8/19/2009	13:38:49	2	8-19-2009 merrill transects 1-2-3 241	47.9186	-124.8003	56.07	1824.2	0.0
8/19/2009	13:39:01	2	8-19-2009 merrill transects 1-2-3 242	47.9186	-124.7939	56.07	1819.7	0.0
8/19/2009	13:39:14	2	8-19-2009 merrill transects 1-2-3 243	47.9184	-124.7876	56.07	1810.5	0.0
8/19/2009	13:39:26	2	8-19-2009 merrill transects 1-2-3 244	47.9184	-124.7812	56.07	1804.6	0.0
8/19/2009	13:39:39	2	8-19-2009 merrill transects 1-2-3 245	47.9185	-124.7749	56.07	1792.7	0.0
8/19/2009	13:39:51	2	8-19-2009 merrill transects 1-2-3 246	47.9186	-124.7683	56.07	1789.5	0.0
8/19/2009	13:40:04	2	8-19-2009 merrill transects 1-2-3 247	47.9186	-124.7620	56.07	1784.9	0.0
8/19/2009	13:40:16	2	8-19-2009 merrill transects 1-2-3 248	47.9185	-124.7556	56.07	1779.0	0.0
8/19/2009	13:40:29	2	8-19-2009 merrill transects 1-2-3 249	47.9183	-124.7494	56.07	1780.3	0.0
8/19/2009	13:40:41	2	8-19-2009 merrill transects 1-2-3 250	47.9180	-124.7431	56.07	1774.4	0.0
8/19/2009	13:40:53	2	8-19-2009 merrill transects 1-2-3 251	47.9177	-124.7371	56.07	1800.0	0.0
8/19/2009	13:41:06	2	8-19-2009 merrill transects 1-2-3 252	47.9177	-124.7313	56.07	1810.5	0.0
8/19/2009	13:41:19	2	8-19-2009 merrill transects 1-2-3 253	47.9176	-124.7256	56.07	1825.6	0.0
8/19/2009	13:41:31	2	8-19-2009 merrill transects 1-2-3 254	47.9174	-124.7200	56.07	1832.9	0.0
8/19/2009	13:41:44	2	8-19-2009 merrill transects 1-2-3 255	47.9173	-124.7140	56.07	1838.9	0.0
8/19/2009	13:41:56	2	8-19-2009 merrill transects 1-2-3 256	47.9173	-124.7082	56.07	1849.4	0.0
8/19/2009	13:42:08	2	8-19-2009 merrill transects 1-2-3 257	47.9173	-124.7022	56.07	1846.6	0.0
8/19/2009	13:42:21	2	8-19-2009 merrill transects 1-2-3 258	47.9172	-124.6960	56.07	1840.7	0.0
8/19/2009	13:42:33	2	8-19-2009 merrill transects 1-2-3 259	47.9172	-124.6897	56.07	1836.1	0.0
8/19/2009	13:42:46	2	8-19-2009 merrill transects 1-2-3 260	47.9173	-124.6834	56.07	1834.3	0.0
8/19/2009	13:42:58	2	8-19-2009 merrill transects 1-2-3 261	47.9172	-124.6770	56.07	1831.5	0.0
8/19/2009	13:43:11	2	8-19-2009 merrill transects 1-2-3 262	47.9172	-124.6708	56.07	1831.5	0.0
8/19/2009	13:43:23	2	8-19-2009 merrill transects 1-2-3 263	47.9173	-124.6646	56.07	1830.2	0.0
8/19/2009	14:06:06	3	8-19-2009 merrill transects 1-2-3 287	47.6665	-124.4149	55.99	1849.4	0.0
8/19/2009	14:06:18	3	8-19-2009 merrill transects 1-2-3 288	47.6659	-124.4213	55.99	1851.2	0.0
8/19/2009	14:06:31	3	8-19-2009 merrill transects 1-2-3 289	47.6659	-124.4279	55.99	1857.1	0.0
8/19/2009	14:06:43	3	8-19-2009 merrill transects 1-2-3 290	47.6661	-124.4345	55.99	1863.1	0.0
8/19/2009	14:06:56	3	8-19-2009 merrill transects 1-2-3 291	47.6662	-124.4410	55.99	1865.8	0.0
8/19/2009	14:07:08	3	8-19-2009 merrill transects 1-2-3 292	47.6660	-124.4478	55.99	1867.7	0.0
8/19/2009	14:07:21	3	8-19-2009 merrill transects 1-2-3 293	47.6663	-124.4544	55.99	1871.8	0.0
8/19/2009	14:07:33	3	8-19-2009 merrill transects 1-2-3 294	47.6667	-124.4611	55.99	1876.3	0.0
8/19/2009	14:07:46	3	8-19-2009 merrill transects 1-2-3 295	47.6672	-124.4678	55.99	1879.5	0.0

8/19/2009	14:07:58	3	8-19-2009 merrill transects 1-2-3 296	47.6672	-124.4747	55.99	1880.9	0.0
8/19/2009	14:08:11	3	8-19-2009 merrill transects 1-2-3 297	47.6674	-124.4815	55.99	1884.1	0.0
8/19/2009	14:08:23	3	8-19-2009 merrill transects 1-2-3 298	47.6676	-124.4881	55.99	1892.8	0.0
8/19/2009	14:08:36	3	8-19-2009 merrill transects 1-2-3 299	47.6676	-124.4950	55.99	1875.0	0.0
8/19/2009	14:08:48	3	8-19-2009 merrill transects 1-2-3 300	47.6677	-124.5023	55.99	1852.6	0.0
8/19/2009	14:09:01	3	8-19-2009 merrill transects 1-2-3 301	47.6807	-124.5051	55.99	1892.8	0.0
8/19/2009	14:09:13	3	8-19-2009 merrill transects 1-2-3 302	47.6679	-124.5174	55.99	1863.1	0.0
8/19/2009	14:09:26	3	8-19-2009 merrill transects 1-2-3 303	47.6679	-124.5246	55.99	1836.1	0.0
8/19/2009	14:09:38	3	8-19-2009 merrill transects 1-2-3 304	47.6679	-124.5314	55.99	1830.2	0.0
8/19/2009	14:09:51	3	8-19-2009 merrill transects 1-2-3 305	47.6681	-124.5383	55.99	1830.2	0.0
8/19/2009	14:10:03	3	8-19-2009 merrill transects 1-2-3 306	47.6684	-124.5453	55.99	1843.4	0.0
8/19/2009	14:10:16	3	8-19-2009 merrill transects 1-2-3 307	47.6684	-124.5520	55.99	1836.1	0.0
8/19/2009	14:10:28	3	8-19-2009 merrill transects 1-2-3 308	47.6685	-124.5588	55.99	1840.7	0.0
8/19/2009	14:10:41	3	8-19-2009 merrill transects 1-2-3 309	47.6686	-124.5655	55.99	1846.6	0.0
8/19/2009	14:10:53	3	8-19-2009 merrill transects 1-2-3 310	47.6687	-124.5722	55.99	1837.5	0.0
8/19/2009	14:11:05	3	8-19-2009 merrill transects 1-2-3 311	47.6685	-124.5790	55.99	1831.5	0.0
8/19/2009	14:11:18	3	8-19-2009 merrill transects 1-2-3 312	47.6685	-124.5858	55.99	1828.3	0.0
8/19/2009	14:11:30	3	8-19-2009 merrill transects 1-2-3 313	47.6686	-124.5925	55.99	1819.7	0.0
8/19/2009	14:11:43	3	8-19-2009 merrill transects 1-2-3 314	47.6689	-124.5994	55.99	1815.1	0.0
8/19/2009	14:11:55	3	8-19-2009 merrill transects 1-2-3 315	47.6691	-124.6062	55.99	1822.4	0.0
8/19/2009	14:12:08	3	8-19-2009 merrill transects 1-2-3 316	47.6691	-124.6131	55.99	1819.7	0.0
8/19/2009	14:12:20	3	8-19-2009 merrill transects 1-2-3 317	47.6693	-124.6197	55.99	1824.2	0.0
8/19/2009	14:12:33	3	8-19-2009 merrill transects 1-2-3 318	47.6696	-124.6262	55.99	1825.6	0.0
8/19/2009	14:12:45	3	8-19-2009 merrill transects 1-2-3 319	47.6700	-124.6328	55.99	1822.4	0.0
8/19/2009	14:12:58	3	8-19-2009 merrill transects 1-2-3 320	47.6703	-124.6393	55.99	1822.4	0.0
8/19/2009	14:13:10	3	8-19-2009 merrill transects 1-2-3 321	47.6704	-124.6459	55.99	1822.4	0.0
8/19/2009	14:13:23	3	8-19-2009 merrill transects 1-2-3 322	47.6706	-124.6524	55.99	1821.0	0.0
8/19/2009	14:13:35	3	8-19-2009 merrill transects 1-2-3 323	47.6708	-124.6588	55.99	1819.7	0.0
8/19/2009	14:13:48	3	8-19-2009 merrill transects 1-2-3 324	47.6711	-124.6651	55.99	1813.7	0.0
8/19/2009	14:14:00	3	8-19-2009 merrill transects 1-2-3 325	47.6714	-124.6717	55.99	1795.4	0.0
8/19/2009	14:14:13	3	8-19-2009 merrill transects 1-2-3 326	47.6717	-124.6784	55.99	1804.6	0.0
8/19/2009	14:14:25	3	8-19-2009 merrill transects 1-2-3 327	47.6717	-124.6848	55.99	1803.2	0.0

8/19/2009	14:14:38	3	8-19-2009 merrill transects 1-2-3 328	47.6718	-124.6911	55.99	1819.7	0.0
8/19/2009	14:14:50	3	8-19-2009 merrill transects 1-2-3 329	47.6720	-124.6970	55.99	1831.5	0.0
8/19/2009	14:15:03	3	8-19-2009 merrill transects 1-2-3 330	47.6722	-124.7031	55.99	1843.4	0.0
8/19/2009	14:15:15	3	8-19-2009 merrill transects 1-2-3 331	47.6723	-124.7093	55.99	1852.6	0.0
8/19/2009	14:15:28	3	8-19-2009 merrill transects 1-2-3 332	47.6725	-124.7157	55.99	1863.1	0.0
8/19/2009	14:15:40	3	8-19-2009 merrill transects 1-2-3 333	47.6727	-124.7217	55.99	1886.9	0.0
8/19/2009	14:15:53	3	8-19-2009 merrill transects 1-2-3 334	47.6726	-124.7279	55.99	1865.8	0.0
8/19/2009	14:16:05	3	8-19-2009 merrill transects 1-2-3 335	47.6725	-124.7344	55.99	1852.6	0.0
8/19/2009	14:16:18	3	8-19-2009 merrill transects 1-2-3 336	47.6723	-124.7413	55.99	1840.7	0.0
8/19/2009	14:16:30	3	8-19-2009 merrill transects 1-2-3 337	47.6723	-124.7483	55.99	1828.3	0.0
8/19/2009	14:16:42	3	8-19-2009 merrill transects 1-2-3 338	47.6725	-124.7541	55.99	1858.5	0.0
8/19/2009	14:16:55	3	8-19-2009 merrill transects 1-2-3 339	47.6724	-124.7602	55.99	1831.5	0.0
8/19/2009	14:17:07	3	8-19-2009 merrill transects 1-2-3 340	47.6726	-124.7666	55.99	1828.3	0.0
8/19/2009	14:17:20	3	8-19-2009 merrill transects 1-2-3 341	47.6728	-124.7731	55.99	1824.2	0.0
8/19/2009	14:17:32	3	8-19-2009 merrill transects 1-2-3 342	47.6729	-124.7793	55.99	1817.8	0.0
8/19/2009	14:17:45	3	8-19-2009 merrill transects 1-2-3 343	47.6730	-124.7856	55.99	1817.8	0.0
8/19/2009	14:17:57	3	8-19-2009 merrill transects 1-2-3 344	47.6719	-124.7913	55.99	1816.5	0.0
8/19/2009	14:18:10	3	8-19-2009 merrill transects 1-2-3 345	47.6721	-124.7975	55.99	1817.8	0.0
8/19/2009	14:18:22	3	8-19-2009 merrill transects 1-2-3 346	47.6731	-124.8039	55.99	1827.0	0.0
8/19/2009	14:18:35	3	8-19-2009 merrill transects 1-2-3 347	47.6739	-124.8100	55.99	1830.2	0.0
8/19/2009	14:18:47	3	8-19-2009 merrill transects 1-2-3 348	47.6739	-124.8161	55.99	1828.3	0.0
8/19/2009	14:19:00	3	8-19-2009 merrill transects 1-2-3 349	47.6739	-124.8223	55.99	1831.5	0.0
8/19/2009	14:19:12	3	8-19-2009 merrill transects 1-2-3 350	47.6741	-124.8284	55.99	1830.2	0.0
8/19/2009	14:19:25	3	8-19-2009 merrill transects 1-2-3 351	47.6744	-124.8348	55.99	1830.2	0.0
8/19/2009	14:19:37	3	8-19-2009 merrill transects 1-2-3 352	47.6747	-124.8412	55.99	1831.5	0.0
8/19/2009	14:19:50	3	8-19-2009 merrill transects 1-2-3 353	47.6748	-124.8474	55.99	1830.2	0.0
8/19/2009	14:20:02	3	8-19-2009 merrill transects 1-2-3 354	47.6742	-124.8537	55.99	1800.0	0.0
8/19/2009	14:20:15	3	8-19-2009 merrill transects 1-2-3 355	47.6737	-124.8596	55.99	1849.4	0.0
8/19/2009	14:20:27	3	8-19-2009 merrill transects 1-2-3 356	47.6730	-124.8653	55.99	1828.3	0.0
8/19/2009	14:20:40	3	8-19-2009 merrill transects 1-2-3 357	47.6731	-124.8717	55.99	1830.2	0.0
8/19/2009	14:20:52	3	8-19-2009 merrill transects 1-2-3 358	47.6730	-124.8779	55.99	1832.9	0.0
8/19/2009	14:21:04	3	8-19-2009 merrill transects 1-2-3 359	47.6725	-124.8839	55.99	1831.5	0.0

8/19/2009	14:21:17	3	8-19-2009 merrill transects 1-2-3 360	47.6724	-124.8902	55.99	1832.9	0.0
8/19/2009	14:21:29	3	8-19-2009 merrill transects 1-2-3 361	47.6722	-124.8966	55.99	1828.3	0.0
8/19/2009	14:21:42	3	8-19-2009 merrill transects 1-2-3 362	47.6721	-124.9031	55.99	1827.0	0.0
8/19/2009	14:21:54	3	8-19-2009 merrill transects 1-2-3 363	47.6721	-124.9094	55.99	1834.3	0.0
8/19/2009	14:22:07	3	8-19-2009 merrill transects 1-2-3 364	47.6719	-124.9158	55.99	1834.3	0.0
8/19/2009	14:22:19	3	8-19-2009 merrill transects 1-2-3 365	47.6718	-124.9220	55.99	1838.9	0.0
8/19/2009	14:22:32	3	8-19-2009 merrill transects 1-2-3 366	47.6713	-124.9280	55.99	1842.1	0.0
8/19/2009	14:22:44	3	8-19-2009 merrill transects 1-2-3 367	47.6712	-124.9342	55.99	1844.8	0.0
8/19/2009	14:22:57	3	8-19-2009 merrill transects 1-2-3 368	47.6712	-124.9407	55.99	1838.9	0.0
8/19/2009	14:23:09	3	8-19-2009 merrill transects 1-2-3 369	47.6713	-124.9469	55.99	1844.8	0.0
8/19/2009	14:23:22	3	8-19-2009 merrill transects 1-2-3 370	47.6714	-124.9531	55.99	1846.6	0.0
8/19/2009	14:23:34	3	8-19-2009 merrill transects 1-2-3 371	47.6715	-124.9590	55.99	1857.1	0.0
8/19/2009	14:23:47	3	8-19-2009 merrill transects 1-2-3 372	47.6714	-124.9655	55.99	1844.8	0.0
8/19/2009	14:23:59	3	8-19-2009 merrill transects 1-2-3 373	47.6714	-124.9719	55.99	1852.6	0.0
8/19/2009	14:24:12	3	8-19-2009 merrill transects 1-2-3 374	47.6715	-124.9782	55.99	1867.7	0.0
8/19/2009	14:24:24	3	8-19-2009 merrill transects 1-2-3 375	47.6714	-124.9842	55.99	1870.4	0.0
8/19/2009	14:24:37	3	8-19-2009 merrill transects 1-2-3 376	47.6709	-124.9904	55.99	1869.0	0.0
8/19/2009	14:24:49	3	8-19-2009 merrill transects 1-2-3 377	47.6709	-124.9971	55.99	1865.8	0.0
8/19/2009	14:25:02	3	8-19-2009 merrill transects 1-2-3 378	47.6711	-125.0034	55.99	1875.0	0.0
8/19/2009	14:25:14	3	8-19-2009 merrill transects 1-2-3 379	47.6711	-125.0097	55.99	1878.2	0.0
8/19/2009	14:25:27	3	8-19-2009 merrill transects 1-2-3 380	47.6710	-125.0161	55.99	1871.8	0.0
8/19/2009	14:25:39	3	8-19-2009 merrill transects 1-2-3 381	47.6712	-125.0228	55.99	1867.7	0.0
8/19/2009	14:25:52	3	8-19-2009 merrill transects 1-2-3 382	47.6715	-125.0296	55.99	1855.3	0.0
8/19/2009	14:26:04	3	8-19-2009 merrill transects 1-2-3 383	47.6718	-125.0363	55.99	1836.1	0.0
8/19/2009	14:26:16	3	8-19-2009 merrill transects 1-2-3 384	47.6713	-125.0429	55.99	1819.7	0.0
8/19/2009	14:26:29	3	8-19-2009 merrill transects 1-2-3 385	47.6715	-125.0496	55.99	1810.5	0.0
8/19/2009	14:26:41	3	8-19-2009 merrill transects 1-2-3 386	47.6715	-125.0561	55.99	1804.6	0.0
8/19/2009	14:26:54	3	8-19-2009 merrill transects 1-2-3 387	47.6712	-125.0625	55.99	1801.4	0.0
8/19/2009	14:27:06	3	8-19-2009 merrill transects 1-2-3 388	47.6710	-125.0691	55.99	1807.3	0.0
8/19/2009	14:27:19	3	8-19-2009 merrill transects 1-2-3 389	47.6706	-125.0753	55.99	1803.2	0.0
8/19/2009	14:27:31	3	8-19-2009 merrill transects 1-2-3 390	47.6690	-125.0813	55.99	1711.3	0.0
8/19/2009	14:27:44	3	8-19-2009 merrill transects 1-2-3 391	47.6670	-125.0866	55.99	1717.7	0.0

8/19/2009	14:27:56	3	8-19-2009 merrill transects 1-2-3 392	47.6654	-125.0926	55.99	1715.9	0.0
8/19/2009	14:28:09	3	8-19-2009 merrill transects 1-2-3 393	47.6654	-125.0992	55.99	1714.5	0.0
8/19/2009	14:28:21	3	8-19-2009 merrill transects 1-2-3 394	47.6652	-125.1056	55.99	1711.3	0.0
8/19/2009	14:28:34	3	8-19-2009 merrill transects 1-2-3 395	47.6652	-125.1121	55.99	1705.4	0.0
8/19/2009	14:28:46	3	8-19-2009 merrill transects 1-2-3 396	47.6655	-125.1186	55.99	1715.9	0.0
8/19/2009	14:28:59	3	8-19-2009 merrill transects 1-2-3 397	47.6649	-125.1243	55.99	1731.0	0.0
8/19/2009	14:29:11	3	8-19-2009 merrill transects 1-2-3 398	47.6646	-125.1304	55.99	1735.5	0.0
8/19/2009	14:29:24	3	8-19-2009 merrill transects 1-2-3 399	47.6648	-125.1367	55.99	1742.8	0.0
8/19/2009	14:29:36	3	8-19-2009 merrill transects 1-2-3 400	47.6654	-125.1432	55.99	1746.0	0.0
8/19/2009	14:29:49	3	8-19-2009 merrill transects 1-2-3 401	47.6660	-125.1496	55.99	1756.6	0.0
8/19/2009	14:30:01	3	8-19-2009 merrill transects 1-2-3 402	47.6660	-125.1563	55.99	1762.5	0.0
8/19/2009	14:30:14	3	8-19-2009 merrill transects 1-2-3 403	47.6664	-125.1626	55.99	1786.3	0.0
8/19/2009	12:24:02	4	SP1_0015	47.4182	-125.1072	55.87	1831.5	0.0
8/19/2009	12:24:13	4	SP1_0016	47.4180	-125.1021	55.87	1836.1	0.0
8/19/2009	12:24:23	4	SP1_0017	47.4181	-125.0973	55.87	1837.5	0.0
8/19/2009	12:24:34	4	SP1_0018	47.4181	-125.0925	55.87	1838.9	0.0
8/19/2009	12:24:44	4	SP1_0019	47.4183	-125.0875	55.87	1836.1	0.0
8/19/2009	12:24:55	4	SP1_0020	47.4187	-125.0826	55.87	1842.1	0.0
8/19/2009	12:25:05	4	SP1_0021	47.4187	-125.0779	55.87	1840.7	0.0
8/19/2009	12:25:16	4	SP1_0022	47.4186	-125.0728	55.87	1836.1	0.0
8/19/2009	12:25:27	4	SP1_0023	47.4187	-125.0678	55.87	1842.1	0.0
8/19/2009	12:25:37	4	SP1_0024	47.4188	-125.0630	55.87	1843.4	0.0
8/19/2009	12:25:48	4	SP1_0025	47.4189	-125.0580	55.87	1849.4	0.0
8/19/2009	12:25:58	4	SP1_0026	47.4191	-125.0531	55.87	1851.2	0.0
8/19/2009	12:26:09	4	SP1_0027	47.4192	-125.0482	55.87	1851.2	0.0
8/19/2009	12:26:19	4	SP1_0028	47.4191	-125.0432	55.87	1851.2	0.0
8/19/2009	12:26:30	4	SP1_0029	47.4193	-125.0384	55.87	1852.6	0.0
8/19/2009	12:26:40	4	SP1_0030	47.4195	-125.0335	55.87	1855.3	0.0
8/19/2009	12:26:51	4	SP1_0031	47.4193	-125.0286	55.87	1857.1	0.0
8/19/2009	12:27:01	4	SP1_0032	47.4192	-125.0238	55.87	1855.3	0.0
8/19/2009	12:27:12	4	SP1_0033	47.4192	-125.0191	55.87	1855.3	0.0
8/19/2009	12:27:22	4	SP1_0034	47.4189	-125.0142	55.87	1853.9	0.0

8/19/2009	12:27:33	4	SP1_0035	47.4188	-125.0094	55.87	1857.1	0.0
8/19/2009	12:27:43	4	SP1_0036	47.4187	-125.0047	55.87	1859.9	0.0
8/19/2009	12:27:54	4	SP1_0037	47.4186	-124.9998	55.87	1859.9	0.0
8/19/2009	12:28:04	4	SP1_0038	47.4186	-124.9950	55.87	1861.7	0.0
8/19/2009	12:28:15	4	SP1_0039	47.4186	-124.9902	55.87	1867.7	0.0
8/19/2009	12:28:26	4	SP1_0040	47.4186	-124.9852	55.87	1864.5	0.0
8/19/2009	12:28:36	4	SP1_0041	47.4187	-124.9804	55.87	1861.7	0.0
8/19/2009	12:28:47	4	SP1_0042	47.4188	-124.9755	55.87	1857.1	0.0
8/19/2009	12:28:57	4	SP1_0043	47.4190	-124.9703	55.87	1857.1	0.0
8/19/2009	12:29:08	4	SP1_0044	47.4184	-124.9656	55.87	1853.9	0.0
8/19/2009	12:29:18	4	SP1_0045	47.4178	-124.9610	55.87	1852.6	0.0
8/19/2009	12:29:29	4	SP1_0046	47.4169	-124.9562	55.87	1853.9	0.0
8/19/2009	12:29:39	4	SP1_0047	47.4163	-124.9515	55.87	1852.6	0.0
8/19/2009	12:29:50	4	SP1_0048	47.4160	-124.9467	55.87	1853.9	0.0
8/19/2009	12:30:00	4	SP1_0049	47.4160	-124.9416	55.87	1849.4	0.0
8/19/2009	12:30:11	4	SP1_0050	47.4152	-124.9368	55.87	1844.8	0.0
8/19/2009	12:30:21	4	SP1_0051	47.4143	-124.9324	55.87	1848.0	0.0
8/19/2009	12:30:32	4	SP1_0052	47.4137	-124.9275	55.87	1851.2	0.0
8/19/2009	12:30:42	4	SP1_0053	47.4145	-124.9228	55.87	1853.9	0.0
8/19/2009	12:30:53	4	SP1_0054	47.4150	-124.9180	55.87	1855.3	0.0
8/19/2009	12:31:04	4	SP1_0055	47.4152	-124.9130	55.87	1853.9	0.0
8/19/2009	12:31:14	4	SP1_0056	47.4155	-124.9081	55.87	1852.6	0.0
8/19/2009	12:31:25	4	SP1_0057	47.4159	-124.9032	55.87	1851.2	0.0
8/19/2009	12:31:35	4	SP1_0058	47.4163	-124.8981	55.87	1855.3	0.0
8/19/2009	12:31:46	4	SP1_0059	47.4163	-124.8932	55.87	1853.9	0.0
8/19/2009	12:31:56	4	SP1_0060	47.4165	-124.8883	55.87	1859.9	0.0
8/19/2009	12:32:07	4	SP1_0061	47.4166	-124.8833	55.87	1859.9	0.0
8/19/2009	12:32:17	4	SP1_0062	47.4165	-124.8784	55.87	1855.3	0.0
8/19/2009	12:32:28	4	SP1_0063	47.4164	-124.8736	55.87	1864.5	0.0
8/19/2009	12:32:38	4	SP1_0064	47.4166	-124.8685	55.87	1861.7	0.0
8/19/2009	12:32:49	4	SP1_0065	47.4169	-124.8636	55.87	1867.7	0.0
8/19/2009	12:32:59	4	SP1_0066	47.4173	-124.8587	55.87	1863.1	0.0

8/19/2009	12:33:10	4	SP1_0067	47.4180	-124.8535	55.87	1867.7	0.0
8/19/2009	12:33:20	4	SP1_0068	47.4188	-124.8486	55.87	1865.8	0.0
8/19/2009	12:33:31	4	SP1_0069	47.4196	-124.8436	55.87	1867.7	0.0
8/19/2009	12:33:42	4	SP1_0070	47.4199	-124.8385	55.87	1869.0	0.0
8/19/2009	12:33:52	4	SP1_0071	47.4198	-124.8336	55.87	1867.7	0.0
8/19/2009	12:34:03	4	SP1_0072	47.4201	-124.8286	55.87	1869.0	0.0
8/19/2009	12:34:13	4	SP1_0073	47.4204	-124.8235	55.87	1873.6	0.0
8/19/2009	12:34:24	4	SP1_0074	47.4208	-124.8185	55.87	1875.0	0.0
8/19/2009	12:34:34	4	SP1_0075	47.4215	-124.8135	55.87	1875.0	0.0
8/19/2009	12:34:45	4	SP1_0076	47.4225	-124.8084	55.87	1879.5	0.0
8/19/2009	12:34:55	4	SP1_0077	47.4228	-124.8035	55.87	1876.3	0.0
8/19/2009	12:35:06	4	SP1_0078	47.4222	-124.7988	55.87	1870.4	0.0
8/19/2009	12:35:16	4	SP1_0079	47.4210	-124.7941	55.87	1870.4	0.0
8/19/2009	12:35:27	4	SP1_0080	47.4203	-124.7894	55.87	1871.8	0.0
8/19/2009	12:35:37	4	SP1_0081	47.4197	-124.7846	55.87	1871.8	0.0
8/19/2009	12:35:48	4	SP1_0082	47.4192	-124.7796	55.87	1870.4	0.0
8/19/2009	12:35:58	4	SP1_0083	47.4188	-124.7747	55.87	1871.8	0.0
8/19/2009	12:36:09	4	SP1_0084	47.4184	-124.7698	55.87	1873.6	0.0
8/19/2009	12:36:19	4	SP1_0085	47.4180	-124.7650	55.87	1878.2	0.0
8/19/2009	12:36:30	4	SP1_0086	47.4178	-124.7598	55.87	1876.3	0.0
8/19/2009	12:36:41	4	SP1_0087	47.4176	-124.7549	55.87	1880.9	0.0
8/19/2009	12:36:51	4	SP1_0088	47.4175	-124.7499	55.87	1878.2	0.0
8/19/2009	12:37:02	4	SP1_0089	47.4176	-124.7448	55.87	1878.2	48.9
8/19/2009	12:37:12	4	SP1_0090	47.4179	-124.7395	55.87	1863.1	0.0
8/19/2009	12:37:23	4	SP1_0091	47.4183	-124.7345	55.87	1878.2	0.0
8/19/2009	12:37:33	4	SP1_0092	47.4188	-124.7293	55.87	1870.4	0.0
8/19/2009	12:37:44	4	SP1_0093	47.4194	-124.7242	55.87	1876.3	0.0
8/19/2009	12:37:54	4	SP1_0094	47.4199	-124.7192	55.87	1873.6	0.0
8/19/2009	12:38:05	4	SP1_0095	47.4202	-124.7140	55.87	1875.0	0.0
8/19/2009	12:38:15	4	SP1_0096	47.4200	-124.7090	55.87	1873.6	0.0
8/19/2009	12:38:26	4	SP1_0097	47.4193	-124.7043	55.87	1871.8	0.0
8/19/2009	12:38:36	4	SP1_0098	47.4188	-124.6992	55.87	1873.6	0.0

8/19/2009	12:38:47	4	SP1_0099	47.4185	-124.6943	55.87	1875.0	0.0
8/19/2009	12:38:57	4	SP1_0100	47.4184	-124.6893	55.87	1875.0	0.0
8/19/2009	12:39:08	4	SP1_0101	47.4183	-124.6839	55.87	1851.2	0.0
8/19/2009	12:39:19	4	SP1_0102	47.4183	-124.6783	55.87	1832.9	0.0
8/19/2009	12:39:29	4	SP1_0103	47.4183	-124.6730	55.87	1848.0	0.0
8/19/2009	12:39:40	4	SP1_0104	47.4184	-124.6679	55.87	1848.0	0.0
8/19/2009	12:39:50	4	SP1_0105	47.4186	-124.6628	55.87	1851.2	0.0
8/19/2009	12:40:01	4	SP1_0106	47.4187	-124.6579	55.87	1849.4	0.0
8/19/2009	12:40:11	4	SP1_0107	47.4187	-124.6527	55.87	1857.1	0.0
8/19/2009	12:40:22	4	SP1_0108	47.4184	-124.6479	55.87	1855.3	0.0
8/19/2009	12:40:32	4	SP1_0109	47.4180	-124.6431	55.87	1859.9	0.0
8/19/2009	12:40:43	4	SP1_0110	47.4179	-124.6381	55.87	1859.9	0.0
8/19/2009	12:40:53	4	SP1_0111	47.4184	-124.6331	55.87	1859.9	0.0
8/19/2009	12:41:04	4	SP1_0112	47.4189	-124.6281	55.87	1865.8	0.0
8/19/2009	12:41:14	4	SP1_0113	47.4194	-124.6229	55.87	1869.0	0.0
8/19/2009	12:41:25	4	SP1_0114	47.4197	-124.6178	55.87	1864.5	0.0
8/19/2009	12:41:35	4	SP1_0115	47.4195	-124.6129	55.87	1861.7	0.0
8/19/2009	12:41:46	4	SP1_0116	47.4199	-124.6078	55.87	1867.7	0.0
8/19/2009	12:41:56	4	SP1_0117	47.4203	-124.6028	55.87	1864.5	0.0
8/19/2009	12:42:07	4	SP1_0118	47.4209	-124.5980	55.87	1871.8	0.0
8/19/2009	12:42:18	4	SP1_0119	47.4212	-124.5929	55.87	1867.7	0.0
8/19/2009	12:42:28	4	SP1_0120	47.4210	-124.5881	55.87	1870.4	0.0
8/19/2009	12:42:39	4	SP1_0121	47.4213	-124.5833	55.87	1870.4	0.0
8/19/2009	12:42:49	4	SP1_0122	47.4216	-124.5783	55.87	1879.5	0.0
8/19/2009	12:43:00	4	SP1_0123	47.4219	-124.5737	55.87	1886.9	0.0
8/19/2009	12:43:10	4	SP1_0124	47.4222	-124.5689	55.87	1888.7	0.0
8/19/2009	12:43:21	4	SP1_0125	47.4219	-124.5641	55.87	1888.7	0.0
8/19/2009	12:43:31	4	SP1_0126	47.4217	-124.5593	55.87	1885.5	0.0
8/19/2009	12:43:42	4	SP1_0127	47.4216	-124.5545	55.87	1886.9	0.0
8/19/2009	12:43:52	4	SP1_0128	47.4219	-124.5494	55.87	1890.1	44.2
8/19/2009	12:44:03	4	SP1_0129	47.4221	-124.5445	55.87	1894.6	0.0
8/19/2009	12:44:13	4	SP1_0130	47.4222	-124.5398	55.87	1897.4	35.9

8/19/2009	12:44:24	4	SP1_0131	47.4223	-124.5348	55.87	1902.0	0.0
8/19/2009	12:44:34	4	SP1_0132	47.4226	-124.5300	55.87	1900.6	163.3
8/19/2009	12:44:45	4	SP1_0133	47.4225	-124.5253	55.87	1906.5	0.0
8/19/2009	12:44:56	4	SP1_0134	47.4224	-124.5205	55.87	1911.1	0.0
8/19/2009	12:45:06	4	SP1_0135	47.4221	-124.5159	55.87	1912.5	174.4
8/19/2009	12:45:17	4	SP1_0136	47.4219	-124.5112	55.87	1913.8	0.0
8/19/2009	12:45:27	4	SP1_0137	47.4218	-124.5062	55.87	1911.1	210.2
8/19/2009	12:45:38	4	SP1_0138	47.4215	-124.5015	55.87	1915.7	307.7
8/19/2009	12:45:48	4	SP1_0139	47.4215	-124.4969	55.87	1921.6	88.8
8/19/2009	12:45:59	4	SP1_0140	47.4211	-124.4921	55.87	1917.0	390.7
8/19/2009	12:46:09	4	SP1_0141	47.4200	-124.4878	55.87	1918.4	0.0
8/19/2009	12:46:20	4	SP1_0142	47.4190	-124.4835	55.87	1923.0	275.6
8/19/2009	12:46:30	4	SP1_0143	47.4182	-124.4789	55.87	1926.2	405.2
8/19/2009	12:46:41	4	SP1_0144	47.4176	-124.4744	55.87	1924.4	375.5
8/19/2009	12:46:51	4	SP1_0145	47.4168	-124.4701	55.87	1926.2	530.9
8/19/2009	12:47:13	4	SP1_0146	47.4143	-124.4619	55.87	1934.9	1238.5
8/19/2009	12:47:15	4	SP1_0147	47.4140	-124.4610	55.87	1933.5	0.0
8/19/2009	12:47:22	4	SP1_0148	47.4133	-124.4579	55.87	1933.5	0.0
8/19/2009	12:47:34	4	SP1_0149	47.4133	-124.4529	55.87	1928.9	1384.8
8/19/2009	12:47:36	4	SP1_0150	47.4134	-124.4518	55.87	1932.1	0.0
8/19/2009	12:47:44	4	SP1_0151	47.4136	-124.4483	55.87	1934.9	416.4
8/19/2009	12:47:47	4	SP1_0152	47.4136	-124.4472	55.87	1934.9	0.0
8/19/2009	12:47:55	4	SP1_0153	47.4139	-124.4436	55.87	1936.7	0.0
8/19/2009	12:48:05	4	SP1_0154	47.4142	-124.4388	55.87	1942.6	446.9
8/19/2009	12:48:16	4	SP1_0155	47.4143	-124.4341	55.87	1939.4	209.9
8/19/2009	12:48:22	4	SP1_0156	47.4145	-124.4311	55.87	1942.6	0.0
8/19/2009	12:48:26	4	SP1_0157	47.4146	-124.4295	55.87	1942.6	34.5
8/19/2009	12:48:37	4	SP1_0158	47.4148	-124.4246	55.87	1940.8	0.0
8/19/2009	12:48:47	4	SP1_0159	47.4153	-124.4200	55.87	1948.6	0.0
8/19/2009	12:48:58	4	SP1_0160	47.4159	-124.4153	55.87	1947.2	0.0
8/19/2009	12:49:08	4	SP1_0161	47.4163	-124.4104	55.87	1953.2	0.0
8/19/2009	12:49:19	4	SP1_0162	47.4156	-124.4060	55.87	1945.4	0.0

8/19/2009	12:49:29	4	SP1_0163	47.4145	-124.4017	55.87	1948.6	0.0
8/19/2009	12:49:40	4	SP1_0164	47.4137	-124.3971	55.87	1950.0	0.0
8/19/2009	12:49:50	4	SP1_0165	47.4128	-124.3927	55.87	1947.2	0.0
8/19/2009	12:50:01	4	SP1_0166	47.4121	-124.3883	55.87	1950.0	0.0
8/19/2009	12:50:12	4	SP1_0167	47.4122	-124.3835	55.87	1945.4	0.0
8/19/2009	12:50:22	4	SP1_0168	47.4123	-124.3788	55.87	1945.4	0.0
8/19/2009	12:50:33	4	SP1_0169	47.4122	-124.3742	55.87	1944.0	0.0
8/19/2009	12:50:43	4	SP1_0170	47.4127	-124.3693	55.87	1948.6	0.0
8/19/2009	12:50:54	4	SP1_0171	47.4128	-124.3646	55.87	1948.6	0.0
8/22/2009	10:03:22	5	SP1_0015	47.1674	-124.9724	56.16	1871.8	0.0
8/22/2009	10:03:30	5	SP1_0016	47.1676	-124.9677	56.16	1870.4	0.0
8/22/2009	10:03:39	5	SP1_0017	47.1680	-124.9631	56.16	1873.6	0.0
8/22/2009	10:03:48	5	SP1_0018	47.1676	-124.9588	56.16	1879.5	0.0
8/22/2009	10:03:56	5	SP1_0019	47.1672	-124.9542	56.16	1871.8	0.0
8/22/2009	10:04:05	5	SP1_0020	47.1673	-124.9497	56.16	1875.0	0.0
8/22/2009	10:04:13	5	SP1_0021	47.1672	-124.9451	56.16	1886.9	0.0
8/22/2009	10:04:22	5	SP1_0022	47.1671	-124.9408	56.16	1891.4	0.0
8/22/2009	10:04:31	5	SP1_0023	47.1671	-124.9361	56.16	1886.9	0.0
8/22/2009	10:04:39	5	SP1_0024	47.1670	-124.9317	56.16	1892.8	0.0
8/22/2009	10:04:48	5	SP1_0025	47.1668	-124.9270	56.16	1884.1	0.0
8/22/2009	10:04:56	5	SP1_0026	47.1666	-124.9224	56.16	1885.5	0.0
8/22/2009	10:05:05	5	SP1_0027	47.1665	-124.9178	56.16	1899.2	0.0
8/22/2009	10:05:14	5	SP1_0028	47.1664	-124.9134	56.16	1891.4	0.0
8/22/2009	10:05:22	5	SP1_0029	47.1662	-124.9087	56.16	1894.6	0.0
8/22/2009	10:05:31	5	SP1_0030	47.1661	-124.9040	56.16	1894.6	0.0
8/22/2009	10:05:40	5	SP1_0031	47.1661	-124.8994	56.16	1892.8	0.0
8/22/2009	10:05:48	5	SP1_0032	47.1661	-124.8947	56.16	1892.8	0.0
8/22/2009	10:05:57	5	SP1_0033	47.1660	-124.8901	56.16	1892.8	0.0
8/22/2009	10:06:06	5	SP1_0034	47.1660	-124.8853	56.16	1892.8	0.0
8/22/2009	10:06:14	5	SP1_0035	47.1660	-124.8808	56.16	1897.4	0.0
8/22/2009	10:06:23	5	SP1_0036	47.1660	-124.8762	56.16	1894.6	0.0
8/22/2009	10:06:31	5	SP1_0037	47.1659	-124.8717	56.16	1894.6	62.1

8/22/2009	10:06:40	5	SP1_0038	47.1658	-124.8672	56.16	1915.7	0.0
8/22/2009	10:06:48	5	SP1_0039	47.1658	-124.8630	56.16	1909.7	0.0
8/22/2009	10:06:57	5	SP1_0040	47.1661	-124.8585	56.16	1912.5	0.0
8/22/2009	10:07:06	5	SP1_0041	47.1665	-124.8540	56.16	1918.4	0.0
8/22/2009	10:07:14	5	SP1_0042	47.1669	-124.8499	56.16	1921.6	0.0
8/22/2009	10:07:23	5	SP1_0043	47.1674	-124.8456	56.16	1926.2	0.0
8/22/2009	10:07:32	5	SP1_0044	47.1679	-124.8415	56.16	1930.3	0.0
8/22/2009	10:07:40	5	SP1_0045	47.1684	-124.8372	56.16	1930.3	0.0
8/22/2009	10:07:49	5	SP1_0046	47.1688	-124.8330	56.16	1939.4	65.0
8/22/2009	10:07:58	5	SP1_0047	47.1692	-124.8286	56.16	1947.2	0.0
8/22/2009	10:08:06	5	SP1_0048	47.1696	-124.8243	56.16	1927.6	0.0
8/22/2009	10:08:15	5	SP1_0049	47.1700	-124.8198	56.16	1950.0	0.0
8/22/2009	10:08:23	5	SP1_0050	47.1703	-124.8156	56.16	1971.0	0.0
8/22/2009	10:08:32	5	SP1_0051	47.1706	-124.8115	56.16	1974.2	0.0
8/22/2009	10:08:41	5	SP1_0052	47.1709	-124.8072	56.16	1980.1	0.0
8/22/2009	10:08:49	5	SP1_0053	47.1709	-124.8027	56.16	1945.4	0.0
8/22/2009	10:08:58	5	SP1_0054	47.1697	-124.7975	56.16	1900.6	0.0
8/22/2009	10:09:06	5	SP1_0055	47.1686	-124.7926	56.16	1905.2	0.0
8/22/2009	10:09:15	5	SP1_0056	47.1677	-124.7878	56.16	1912.5	0.0
8/22/2009	10:09:24	5	SP1_0057	47.1667	-124.7833	56.16	1897.4	0.0
8/22/2009	10:09:32	5	SP1_0058	47.1661	-124.7785	56.16	1890.1	0.0
8/22/2009	10:09:41	5	SP1_0059	47.1651	-124.7736	56.16	1867.7	0.0
8/22/2009	10:09:50	5	SP1_0060	47.1644	-124.7689	56.16	1857.1	0.0
8/22/2009	10:09:58	5	SP1_0061	47.1637	-124.7639	56.16	1844.8	0.0
8/22/2009	10:10:07	5	SP1_0062	47.1634	-124.7594	56.16	1846.6	0.0
8/22/2009	10:10:15	5	SP1_0063	47.1641	-124.7550	56.16	1834.3	0.0
8/22/2009	10:10:24	5	SP1_0064	47.1649	-124.7505	56.16	1815.1	0.0
8/22/2009	10:10:33	5	SP1_0065	47.1646	-124.7457	56.16	1834.3	0.0
8/22/2009	10:10:41	5	SP1_0066	47.1649	-124.7415	56.16	1817.8	0.0
8/22/2009	10:10:50	5	SP1_0067	47.1654	-124.7369	56.16	1810.5	0.0
8/22/2009	10:10:58	5	SP1_0068	47.1657	-124.7325	56.16	1809.1	0.0
8/22/2009	10:11:07	5	SP1_0069	47.1659	-124.7279	56.16	1803.2	0.0

8/22/2009	10:11:16	5	SP1_0070	47.1661	-124.7235	56.16	1794.1	0.0
8/22/2009	10:11:24	5	SP1_0071	47.1662	-124.7187	56.16	1784.9	294.6
8/22/2009	10:11:33	5	SP1_0072	47.1661	-124.7142	56.16	1786.3	0.0
8/22/2009	10:11:42	5	SP1_0073	47.1660	-124.7096	56.16	1786.3	0.0
8/22/2009	10:11:50	5	SP1_0074	47.1659	-124.7050	56.16	1780.3	132.6
8/22/2009	10:11:59	5	SP1_0075	47.1659	-124.7007	56.16	1782.2	0.0
8/22/2009	10:12:07	5	SP1_0076	47.1659	-124.6962	56.16	1779.0	156.4
8/22/2009	10:12:16	5	SP1_0077	47.1659	-124.6920	56.16	1789.5	0.0
8/22/2009	10:12:25	5	SP1_0078	47.1658	-124.6877	56.16	1786.3	0.0
8/22/2009	10:12:33	5	SP1_0079	47.1659	-124.6836	56.16	1790.9	0.0
8/22/2009	10:12:42	5	SP1_0080	47.1659	-124.6793	56.16	1801.4	493.5
8/22/2009	10:12:50	5	SP1_0081	47.1660	-124.6753	56.16	1804.6	0.0
8/22/2009	10:12:59	5	SP1_0082	47.1661	-124.6710	56.16	1811.9	1198.2
8/22/2009	10:13:08	5	SP1_0083	47.1660	-124.6670	56.16	1830.2	0.0
8/22/2009	10:13:16	5	SP1_0084	47.1662	-124.6629	56.16	1836.1	105.3
8/22/2009	10:13:25	5	SP1_0085	47.1663	-124.6588	56.16	1843.4	469.3
8/22/2009	10:13:34	5	SP1_0086	47.1665	-124.6549	56.16	1846.6	0.0
8/22/2009	10:13:42	5	SP1_0087	47.1666	-124.6507	56.16	1840.7	844.4
8/22/2009	10:13:51	5	SP1_0088	47.1669	-124.6467	56.16	1851.2	0.0
8/22/2009	10:13:59	5	SP1_0089	47.1670	-124.6425	56.16	1861.7	160.9
8/22/2009	10:14:08	5	SP1_0090	47.1672	-124.6385	56.16	1861.7	0.0
8/22/2009	10:14:17	5	SP1_0091	47.1674	-124.6343	56.16	1864.5	0.0
8/22/2009	10:14:25	5	SP1_0092	47.1674	-124.6302	56.16	1869.0	0.0
8/22/2009	10:14:34	5	SP1_0093	47.1676	-124.6259	56.16	1867.7	0.0
8/22/2009	10:14:42	5	SP1_0094	47.1682	-124.6220	56.16	1878.2	191.6
8/22/2009	10:14:51	5	SP1_0095	47.1693	-124.6184	56.16	1885.5	0.0
8/22/2009	10:15:00	5	SP1_0096	47.1701	-124.6143	56.16	1878.2	0.0
8/22/2009	10:15:08	5	SP1_0097	47.1702	-124.6102	56.16	1876.3	0.0
8/22/2009	10:15:17	5	SP1_0098	47.1706	-124.6057	56.16	1875.0	0.0
8/22/2009	10:15:26	5	SP1_0099	47.1709	-124.6016	56.16	1880.9	0.0
8/22/2009	10:15:34	5	SP1_0100	47.1711	-124.5971	56.16	1871.8	0.0
8/22/2009	10:15:43	5	SP1_0101	47.1711	-124.5927	56.16	1871.8	0.0

8/22/2009	10:15:52	5	SP1_0102	47.1708	-124.5882	56.16	1878.2	55.7
8/22/2009	10:16:00	5	SP1_0103	47.1706	-124.5841	56.16	1888.7	0.0
8/22/2009	10:16:09	5	SP1_0104	47.1706	-124.5797	56.16	1880.9	0.0
8/22/2009	10:16:17	5	SP1_0105	47.1705	-124.5752	56.16	1885.5	0.0
8/22/2009	10:16:26	5	SP1_0106	47.1706	-124.5709	56.16	1880.9	0.0
8/22/2009	10:16:35	5	SP1_0107	47.1707	-124.5662	56.16	1878.2	0.0
8/22/2009	10:16:43	5	SP1_0108	47.1708	-124.5619	56.16	1884.1	208.5
8/22/2009	10:16:52	5	SP1_0109	47.1710	-124.5573	56.16	1873.6	0.0
8/22/2009	10:17:00	5	SP1_0110	47.1711	-124.5529	56.16	1869.0	0.0
8/22/2009	10:17:09	5	SP1_0111	47.1709	-124.5481	56.16	1871.8	0.0
8/22/2009	10:17:18	5	SP1_0112	47.1708	-124.5438	56.16	1886.9	277.1
8/22/2009	10:17:26	5	SP1_0113	47.1707	-124.5393	56.16	1882.3	0.0
8/22/2009	10:17:35	5	SP1_0114	47.1707	-124.5349	56.16	1882.3	0.0
8/22/2009	10:17:44	5	SP1_0115	47.1706	-124.5304	56.16	1892.8	0.0
8/22/2009	10:17:52	5	SP1_0116	47.1705	-124.5259	56.16	1886.9	0.0
8/22/2009	10:18:01	5	SP1_0117	47.1704	-124.5216	56.16	1888.7	0.0
8/22/2009	10:18:09	5	SP1_0118	47.1704	-124.5171	56.16	1888.7	0.0
8/22/2009	10:18:18	5	SP1_0119	47.1703	-124.5127	56.16	1888.7	0.0
8/22/2009	10:18:27	5	SP1_0120	47.1702	-124.5081	56.16	1891.4	0.0
8/22/2009	10:18:35	5	SP1_0121	47.1699	-124.5037	56.16	1892.8	0.0
8/22/2009	10:18:44	5	SP1_0122	47.1694	-124.4991	56.16	1892.8	0.0
8/22/2009	10:18:52	5	SP1_0123	47.1691	-124.4948	56.16	1892.8	0.0
8/22/2009	10:19:01	5	SP1_0124	47.1691	-124.4903	56.16	1896.0	185.3
8/22/2009	10:19:10	5	SP1_0125	47.1692	-124.4858	56.16	1894.6	0.0
8/22/2009	10:19:18	5	SP1_0126	47.1692	-124.4812	56.16	1897.4	0.0
8/22/2009	10:19:27	5	SP1_0127	47.1694	-124.4767	56.16	1899.2	0.0
8/22/2009	10:19:36	5	SP1_0128	47.1694	-124.4721	56.16	1892.8	0.0
8/22/2009	10:19:44	5	SP1_0129	47.1692	-124.4671	56.16	1884.1	0.0
8/22/2009	10:19:53	5	SP1_0130	47.1692	-124.4622	56.16	1886.9	0.0
8/22/2009	10:20:02	5	SP1_0131	47.1692	-124.4571	56.16	1886.9	0.0
8/22/2009	10:20:10	5	SP1_0132	47.1693	-124.4523	56.16	1876.3	0.0
8/22/2009	10:20:19	5	SP1_0133	47.1694	-124.4476	56.16	1899.2	606.2

8/22/2009	10:20:28	5	SP1_0134	47.1696	-124.4429	56.16	1903.3	0.0
8/22/2009	10:20:36	5	SP1_0135	47.1699	-124.4383	56.16	1896.0	0.0
8/22/2009	10:20:45	5	SP1_0136	47.1701	-124.4332	56.16	1882.3	0.0
8/22/2009	10:20:53	5	SP1_0137	47.1701	-124.4283	56.16	1879.5	213.7
8/22/2009	10:21:02	5	SP1_0138	47.1703	-124.4230	56.16	1878.2	788.1
8/22/2009	10:21:11	5	SP1_0139	47.1699	-124.4178	56.16	1859.9	839.6
8/22/2009	10:21:19	5	SP1_0140	47.1695	-124.4127	56.16	1852.6	567.5
8/22/2009	10:21:28	5	SP1_0141	47.1691	-124.4077	56.16	1857.1	0.0
8/22/2009	10:21:36	5	SP1_0142	47.1689	-124.4026	56.16	1858.5	404.4
8/22/2009	10:21:45	5	SP1_0143	47.1687	-124.3975	56.16	1857.1	920.7
8/22/2009	10:21:54	5	SP1_0144	47.1685	-124.3927	56.16	1855.3	204.5
8/22/2009	10:22:02	5	SP1_0145	47.1684	-124.3876	56.16	1857.1	401.8
8/22/2009	10:22:11	5	SP1_0146	47.1683	-124.3829	56.16	1863.1	0.0
8/22/2009	10:22:19	5	SP1_0147	47.1679	-124.3778	56.16	1855.3	481.8
8/22/2009	10:22:28	5	SP1_0148	47.1677	-124.3730	56.16	1858.5	0.0
8/22/2009	10:22:37	5	SP1_0149	47.1675	-124.3681	56.16	1861.7	394.4
8/22/2009	10:22:45	5	SP1_0150	47.1675	-124.3634	56.16	1865.8	1189.1
8/22/2009	10:22:54	5	SP1_0151	47.1675	-124.3584	56.16	1865.8	175.4
8/22/2009	10:23:02	5	SP1_0152	47.1674	-124.3536	56.16	1873.6	0.0
8/22/2009	10:23:11	5	SP1_0153	47.1673	-124.3488	56.16	1880.9	1090.4
8/22/2009	10:23:20	5	SP1_0154	47.1671	-124.3440	56.16	1875.0	445.0
8/22/2009	10:23:28	5	SP1_0155	47.1670	-124.3389	56.16	1869.0	613.3
8/22/2009	10:23:37	5	SP1_0156	47.1668	-124.3339	56.16	1871.8	105.6
8/22/2009	10:23:46	5	SP1_0157	47.1667	-124.3289	56.16	1869.0	169.2
8/22/2009	10:23:54	5	SP1_0158	47.1666	-124.3241	56.16	1869.0	117.5
8/22/2009	10:24:03	5	SP1_0159	47.1664	-124.3193	56.16	1865.8	0.0
8/22/2009	10:24:11	5	SP1_0160	47.1663	-124.3143	56.16	1871.8	0.0
8/22/2009	10:24:20	5	SP1_0161	47.1661	-124.3095	56.16	1876.3	36.6
8/22/2009	10:24:29	5	SP1_0162	47.1658	-124.3045	56.16	1876.3	0.0
8/22/2009	10:24:37	5	SP1_0163	47.1656	-124.2997	56.16	1875.0	0.0
8/22/2009	10:24:46	5	SP1_0164	47.1654	-124.2946	56.16	1876.3	0.0
8/22/2009	10:24:54	5	SP1_0165	47.1652	-124.2898	56.16	1882.3	0.0

8/22/2009	10:25:03	5	SP1_0166	47.1653	-124.2848	56.16	1888.7	0.0
8/22/2009	10:25:12	5	SP1_0167	47.1654	-124.2799	56.16	1884.1	0.0
8/22/2009	10:25:20	5	SP1_0168	47.1653	-124.2748	56.16	1884.1	0.0
8/22/2009	10:25:29	5	SP1_0169	47.1652	-124.2699	56.16	1885.5	0.0
8/22/2009	10:25:38	5	SP1_0170	47.1650	-124.2648	56.16	1891.4	0.0
8/22/2009	10:25:46	5	SP1_0171	47.1649	-124.2596	56.16	1870.4	0.0
8/22/2009	10:25:55	5	SP1_0172	47.1647	-124.2546	56.16	1865.8	0.0
8/22/2009	10:26:03	5	SP1_0173	47.1646	-124.2493	56.16	1863.1	0.0
8/22/2009	10:26:12	5	SP1_0174	47.1644	-124.2443	56.16	1858.5	0.0
8/22/2009	10:26:21	5	SP1_0175	47.1643	-124.2392	56.16	1858.5	0.0
8/22/2009	10:26:29	5	SP1_0176	47.1641	-124.2345	56.16	1876.3	0.0
8/22/2009	10:26:38	5	SP1_0177	47.1642	-124.2295	56.16	1878.2	0.0
8/22/2009	10:42:13	6	SP1_0213	46.9151	-124.1804	56.05	2099.9	0.0
8/22/2009	10:42:22	6	SP1_0214	46.9150	-124.1851	56.05	2107.7	0.0
8/22/2009	10:42:30	6	SP1_0215	46.9150	-124.1895	56.05	2118.2	0.0
8/22/2009	10:42:39	6	SP1_0216	46.9149	-124.1941	56.05	2132.8	0.0
8/22/2009	10:42:48	6	SP1_0217	46.9147	-124.1985	56.05	2138.8	0.0
8/22/2009	10:42:56	6	SP1_0218	46.9147	-124.2031	56.05	2147.9	0.0
8/22/2009	10:43:05	6	SP1_0219	46.9148	-124.2075	56.05	2158.4	0.0
8/22/2009	10:43:14	6	SP1_0220	46.9150	-124.2122	56.05	2166.2	0.0
8/22/2009	10:43:22	6	SP1_0221	46.9151	-124.2165	56.05	2174.9	0.0
8/22/2009	10:43:31	6	SP1_0222	46.9151	-124.2210	56.05	2193.2	0.0
8/22/2009	10:43:39	6	SP1_0223	46.9152	-124.2253	56.05	2211.0	0.0
8/22/2009	10:43:48	6	SP1_0224	46.9152	-124.2298	56.05	2222.9	0.0
8/22/2009	10:43:57	6	SP1_0225	46.9152	-124.2343	56.05	2230.7	0.0
8/22/2009	10:44:05	6	SP1_0226	46.9152	-124.2386	56.05	2239.4	0.0
8/22/2009	10:44:14	6	SP1_0227	46.9151	-124.2431	56.05	2247.1	0.0
8/22/2009	10:44:22	6	SP1_0228	46.9151	-124.2475	56.05	2253.1	0.0
8/22/2009	10:44:31	6	SP1_0229	46.9151	-124.2521	56.05	2265.0	0.0
8/22/2009	10:44:40	6	SP1_0230	46.9151	-124.2564	56.05	2282.8	0.0
8/22/2009	10:44:48	6	SP1_0231	46.9150	-124.2608	56.05	2290.6	0.0
8/22/2009	10:44:57	6	SP1_0232	46.9149	-124.2651	56.05	2301.1	0.0

8/22/2009	10:45:06	6	SP1_0233	46.9147	-124.2695	56.05	2313.0	76.3
8/22/2009	10:45:14	6	SP1_0234	46.9147	-124.2739	56.05	2305.7	0.0
8/22/2009	10:45:23	6	SP1_0235	46.9144	-124.2786	56.05	2166.2	0.0
8/22/2009	10:45:31	6	SP1_0236	46.9139	-124.2838	56.05	2014.4	0.0
8/22/2009	10:45:40	6	SP1_0237	46.9135	-124.2888	56.05	1934.9	0.0
8/22/2009	10:45:49	6	SP1_0238	46.9133	-124.2938	56.05	1885.5	0.0
8/22/2009	10:45:57	6	SP1_0239	46.9132	-124.2980	56.05	1876.3	0.0
8/22/2009	10:46:06	6	SP1_0240	46.9131	-124.3024	56.05	1870.4	0.0
8/22/2009	10:46:14	6	SP1_0241	46.9130	-124.3065	56.05	1880.9	166.0
8/22/2009	10:46:23	6	SP1_0242	46.9128	-124.3108	56.05	1882.3	1047.1
8/22/2009	10:46:32	6	SP1_0243	46.9131	-124.3148	56.05	1888.7	0.0
8/22/2009	10:46:40	6	SP1_0244	46.9136	-124.3190	56.05	1891.4	0.0
8/22/2009	10:46:49	6	SP1_0245	46.9142	-124.3232	56.05	1897.4	0.0
8/22/2009	10:46:58	6	SP1_0246	46.9146	-124.3272	56.05	1903.3	0.0
8/22/2009	10:47:06	6	SP1_0247	46.9153	-124.3313	56.05	1905.2	9080.4
8/22/2009	10:47:15	6	SP1_0248	46.9160	-124.3354	56.05	1890.1	0.0
8/22/2009	10:47:24	6	SP1_0249	46.9167	-124.3398	56.05	1890.1	0.0
8/22/2009	10:47:32	6	SP1_0250	46.9173	-124.3441	56.05	1885.5	0.0
8/22/2009	10:47:41	6	SP1_0251	46.9177	-124.3486	56.05	1885.5	16469.1
8/22/2009	10:47:49	6	SP1_0252	46.9181	-124.3529	56.05	1886.9	0.0
8/22/2009	10:47:58	6	SP1_0253	46.9185	-124.3574	56.05	1890.1	0.0
8/22/2009	10:48:06	6	SP1_0254	46.9188	-124.3617	56.05	1890.1	8876.1
8/22/2009	10:48:15	6	SP1_0255	46.9191	-124.3663	56.05	1894.6	0.0
8/22/2009	10:48:24	6	SP1_0256	46.9194	-124.3708	56.05	1896.0	0.0
8/22/2009	10:48:32	6	SP1_0257	46.9199	-124.3749	56.05	1912.5	328.9
8/22/2009	10:48:41	6	SP1_0258	46.9202	-124.3792	56.05	1915.7	3911.3
8/22/2009	10:48:50	6	SP1_0259	46.9202	-124.3833	56.05	1924.4	672.7
8/22/2009	10:48:58	6	SP1_0260	46.9201	-124.3879	56.05	1924.4	1988.3
8/22/2009	10:49:07	6	SP1_0261	46.9199	-124.3922	56.05	1921.6	209.8
8/22/2009	10:49:16	6	SP1_0262	46.9197	-124.3968	56.05	1915.7	66.3
8/22/2009	10:49:24	6	SP1_0263	46.9195	-124.4014	56.05	1892.8	295.3
8/22/2009	10:49:33	6	SP1_0264	46.9191	-124.4061	56.05	1903.3	89.0

8/22/2009	10:49:41	6	SP1_0265	46.9188	-124.4108	56.05	1899.2	58.2
8/22/2009	10:49:50	6	SP1_0266	46.9185	-124.4153	56.05	1905.2	17.2
8/22/2009	10:49:59	6	SP1_0267	46.9183	-124.4199	56.05	1917.0	0.0
8/22/2009	10:50:07	6	SP1_0268	46.9185	-124.4242	56.05	1917.0	0.0
8/22/2009	10:50:16	6	SP1_0269	46.9186	-124.4288	56.05	1917.0	0.0
8/22/2009	10:50:24	6	SP1_0270	46.9185	-124.4332	56.05	1923.0	0.0
8/22/2009	10:50:33	6	SP1_0271	46.9183	-124.4377	56.05	1933.5	0.0
8/22/2009	10:50:42	6	SP1_0272	46.9181	-124.4420	56.05	1933.5	0.0
8/22/2009	10:50:50	6	SP1_0273	46.9180	-124.4465	56.05	1933.5	0.0
8/22/2009	10:50:59	6	SP1_0274	46.9177	-124.4511	56.05	1938.1	0.0
8/22/2009	10:51:08	6	SP1_0275	46.9173	-124.4554	56.05	1938.1	0.0
8/22/2009	10:51:16	6	SP1_0276	46.9170	-124.4600	56.05	1939.4	0.0
8/22/2009	10:51:25	6	SP1_0277	46.9167	-124.4643	56.05	1951.3	0.0
8/22/2009	10:51:34	6	SP1_0278	46.9166	-124.4688	56.05	1951.3	0.0
8/22/2009	10:51:42	6	SP1_0279	46.9165	-124.4731	56.05	1947.2	0.0
8/22/2009	10:51:51	6	SP1_0280	46.9165	-124.4777	56.05	1948.6	0.0
8/22/2009	10:51:59	6	SP1_0281	46.9164	-124.4821	56.05	1947.2	0.0
8/22/2009	10:52:08	6	SP1_0282	46.9164	-124.4867	56.05	1954.5	0.0
8/22/2009	10:52:17	6	SP1_0283	46.9163	-124.4912	56.05	1965.0	0.0
8/22/2009	10:52:25	6	SP1_0284	46.9163	-124.4954	56.05	1966.4	0.0
8/22/2009	10:52:34	6	SP1_0285	46.9164	-124.4999	56.05	1960.5	0.0
8/22/2009	10:52:42	6	SP1_0286	46.9164	-124.5042	56.05	1967.8	0.0
8/22/2009	10:52:51	6	SP1_0287	46.9162	-124.5088	56.05	1974.2	0.0
8/22/2009	10:53:00	6	SP1_0288	46.9160	-124.5131	56.05	1975.6	0.0
8/22/2009	10:53:08	6	SP1_0289	46.9158	-124.5176	56.05	1976.9	0.0
8/22/2009	10:53:17	6	SP1_0290	46.9157	-124.5219	56.05	1975.6	0.0
8/22/2009	10:53:26	6	SP1_0291	46.9156	-124.5264	56.05	1974.2	0.0
8/22/2009	10:53:34	6	SP1_0292	46.9155	-124.5307	56.05	1974.2	0.0
8/22/2009	10:53:43	6	SP1_0293	46.9156	-124.5353	56.05	1976.9	0.0
8/22/2009	10:53:51	6	SP1_0294	46.9156	-124.5399	56.05	1978.3	0.0
8/22/2009	10:54:00	6	SP1_0295	46.9155	-124.5443	56.05	1975.6	0.0
8/22/2009	10:54:09	6	SP1_0296	46.9155	-124.5489	56.05	1969.6	0.0

8/22/2009	10:54:17	6	SP1_0297	46.9156	-124.5533	56.05	1969.6	0.0
8/22/2009	10:54:26	6	SP1_0298	46.9157	-124.5578	56.05	1966.4	0.0
8/22/2009	10:54:34	6	SP1_0299	46.9158	-124.5622	56.05	1965.0	0.0
8/22/2009	10:54:43	6	SP1_0300	46.9158	-124.5667	56.05	1966.4	0.0
8/22/2009	10:54:52	6	SP1_0301	46.9158	-124.5710	56.05	1967.8	0.0
8/22/2009	10:55:00	6	SP1_0302	46.9157	-124.5756	56.05	1966.4	0.0
8/22/2009	10:55:09	6	SP1_0303	46.9156	-124.5800	56.05	1969.6	0.0
8/22/2009	10:55:18	6	SP1_0304	46.9156	-124.5846	56.05	1967.8	0.0
8/22/2009	10:55:26	6	SP1_0305	46.9157	-124.5893	56.05	1915.7	0.0
8/22/2009	10:55:35	6	SP1_0306	46.9159	-124.5946	56.05	1886.9	0.0
8/22/2009	10:55:43	6	SP1_0307	46.9160	-124.5998	56.05	1876.3	0.0
8/22/2009	10:55:52	6	SP1_0308	46.9160	-124.6047	56.05	1851.2	0.0
8/22/2009	10:56:01	6	SP1_0309	46.9162	-124.6098	56.05	1834.3	0.0
8/22/2009	10:56:09	6	SP1_0310	46.9163	-124.6146	56.05	1831.5	0.0
8/22/2009	10:56:18	6	SP1_0311	46.9164	-124.6195	56.05	1828.3	0.0
8/22/2009	10:56:26	6	SP1_0312	46.9164	-124.6243	56.05	1815.1	0.0
8/22/2009	10:56:35	6	SP1_0313	46.9164	-124.6293	56.05	1803.2	0.0
8/22/2009	10:56:44	6	SP1_0314	46.9164	-124.6340	56.05	1788.1	0.0
8/22/2009	10:56:52	6	SP1_0315	46.9166	-124.6392	56.05	1750.6	0.0
8/22/2009	10:57:01	6	SP1_0316	46.9168	-124.6444	56.05	1729.6	0.0
8/22/2009	10:57:10	6	SP1_0317	46.9169	-124.6492	56.05	1735.5	0.0
8/22/2009	10:57:18	6	SP1_0318	46.9169	-124.6538	56.05	1736.9	0.0
8/22/2009	10:57:27	6	SP1_0319	46.9168	-124.6579	56.05	1755.2	0.0
8/22/2009	10:57:35	6	SP1_0320	46.9168	-124.6623	56.05	1744.7	0.0
8/22/2009	10:57:44	6	SP1_0321	46.9168	-124.6665	56.05	1747.4	0.0
8/22/2009	10:57:53	6	SP1_0322	46.9168	-124.6709	56.05	1750.6	0.0
8/22/2009	10:58:01	6	SP1_0323	46.9166	-124.6751	56.05	1748.8	0.0
8/22/2009	10:58:10	6	SP1_0324	46.9164	-124.6795	56.05	1747.4	0.0
8/22/2009	10:58:18	6	SP1_0325	46.9162	-124.6837	56.05	1752.0	0.0
8/22/2009	10:58:27	6	SP1_0326	46.9160	-124.6881	56.05	1752.0	0.0
8/22/2009	10:58:36	6	SP1_0327	46.9158	-124.6925	56.05	1753.4	0.0
8/22/2009	10:58:44	6	SP1_0328	46.9157	-124.6968	56.05	1746.0	0.0

8/22/2009	10:58:53	6	SP1_0329	46.9156	-124.7013	56.05	1744.7	0.0
8/22/2009	10:59:02	6	SP1_0330	46.9153	-124.7055	56.05	1747.4	0.0
8/22/2009	10:59:10	6	SP1_0331	46.9149	-124.7100	56.05	1744.7	0.0
8/22/2009	10:59:19	6	SP1_0332	46.9147	-124.7141	56.05	1748.8	0.0
8/22/2009	10:59:27	6	SP1_0333	46.9145	-124.7185	56.05	1747.4	0.0
8/22/2009	10:59:36	6	SP1_0334	46.9143	-124.7227	56.05	1755.2	0.0
8/22/2009	10:59:45	6	SP1_0335	46.9139	-124.7270	56.05	1759.3	0.0
8/22/2009	10:59:53	6	SP1_0336	46.9138	-124.7310	56.05	1771.7	0.0
8/22/2009	11:00:02	6	SP1_0337	46.9137	-124.7351	56.05	1779.0	0.0
8/22/2009	11:00:10	6	SP1_0338	46.9135	-124.7390	56.05	1784.9	0.0
8/22/2009	11:00:19	6	SP1_0339	46.9133	-124.7432	56.05	1783.5	0.0
8/22/2009	11:00:28	6	SP1_0340	46.9130	-124.7474	56.05	1788.1	0.0
8/22/2009	11:00:36	6	SP1_0341	46.9126	-124.7515	56.05	1792.7	0.0
8/22/2009	11:00:45	6	SP1_0342	46.9126	-124.7557	56.05	1794.1	0.0
8/22/2009	11:00:54	6	SP1_0343	46.9136	-124.7592	56.05	1798.6	0.0
8/22/2009	11:01:02	6	SP1_0344	46.9149	-124.7626	56.05	1801.4	0.0
8/22/2009	11:01:11	6	SP1_0345	46.9157	-124.7662	56.05	1792.7	0.0
8/22/2009	11:01:20	6	SP1_0346	46.9161	-124.7703	56.05	1805.9	0.0
8/22/2009	11:01:28	6	SP1_0347	46.9165	-124.7741	56.05	1800.0	0.0
8/22/2009	11:01:37	6	SP1_0348	46.9164	-124.7783	56.05	1807.3	0.0
8/22/2009	11:01:45	6	SP1_0349	46.9163	-124.7822	56.05	1815.1	0.0
8/22/2009	11:01:54	6	SP1_0350	46.9162	-124.7863	56.05	1831.5	0.0
8/22/2009	11:02:03	6	SP1_0351	46.9162	-124.7903	56.05	1824.2	0.0
8/22/2009	11:02:11	6	SP1_0352	46.9162	-124.7943	56.05	1810.5	0.0
8/22/2009	11:02:20	6	SP1_0353	46.9161	-124.7987	56.05	1810.5	0.0
8/22/2009	11:02:29	6	SP1_0354	46.9161	-124.8029	56.05	1822.4	0.0
8/22/2009	11:02:37	6	SP1_0355	46.9161	-124.8069	56.05	1821.0	0.0
8/22/2009	11:02:46	6	SP1_0356	46.9161	-124.8111	56.05	1807.3	0.0
8/22/2009	11:02:54	6	SP1_0357	46.9161	-124.8155	56.05	1815.1	0.0
8/22/2009	11:03:03	6	SP1_0358	46.9158	-124.8196	56.05	1822.4	0.0
8/22/2009	11:03:12	6	SP1_0359	46.9164	-124.8235	56.05	1825.6	0.0
8/22/2009	11:03:20	6	SP1_0360	46.9170	-124.8274	56.05	1822.4	0.0

8/22/2009	11:03:29	6	SP1_0361	46.9167	-124.8316	56.05	1827.0	0.0
8/22/2009	11:03:37	6	SP1_0362	46.9164	-124.8360	56.05	1828.3	0.0
8/22/2009	11:03:46	6	SP1_0363	46.9162	-124.8400	56.05	1832.9	0.0
8/22/2009	11:03:55	6	SP1_0364	46.9161	-124.8442	56.05	1827.0	0.0
8/22/2009	11:04:03	6	SP1_0365	46.9161	-124.8483	56.05	1822.4	0.0
8/22/2009	11:04:12	6	SP1_0366	46.9161	-124.8526	56.05	1822.4	0.0
8/22/2009	11:04:20	6	SP1_0367	46.9162	-124.8566	56.05	1830.2	0.0
8/22/2009	11:04:29	6	SP1_0368	46.9162	-124.8609	56.05	1825.6	0.0
8/22/2009	11:04:38	6	SP1_0369	46.9162	-124.8650	56.05	1828.3	0.0
8/22/2009	11:04:46	6	SP1_0370	46.9162	-124.8692	56.05	1832.9	0.0
8/22/2009	11:04:55	6	SP1_0371	46.9162	-124.8733	56.05	1831.5	0.0
8/22/2009	11:05:03	6	SP1_0372	46.9163	-124.8775	56.05	1842.1	0.0
8/22/2009	11:05:12	6	SP1_0373	46.9162	-124.8814	56.05	1844.8	0.0
8/22/2009	11:05:21	6	SP1_0374	46.9163	-124.8856	56.05	1843.4	0.0
8/22/2009	11:05:29	6	SP1_0375	46.9165	-124.8897	56.05	1846.6	0.0
8/22/2009	11:05:38	6	SP1_0376	46.9166	-124.8937	56.05	1852.6	0.0
8/22/2009	11:05:47	6	SP1_0377	46.9167	-124.8978	56.05	1849.4	0.0
8/22/2009	11:05:55	6	SP1_0378	46.9168	-124.9019	56.05	1843.4	0.0
8/22/2009	11:06:04	6	SP1_0379	46.9170	-124.9060	56.05	1838.9	0.0
8/22/2009	11:06:13	6	SP1_0380	46.9172	-124.9102	56.05	1838.9	0.0
8/22/2009	11:06:21	6	SP1_0381	46.9173	-124.9142	56.05	1843.4	0.0
8/22/2009	11:06:30	6	SP1_0382	46.9171	-124.9183	56.05	1848.0	0.0
8/22/2009	11:41:20	7	SP1_0413	46.6714	-124.8545	55.73	1855.3	0.0
8/22/2009	11:41:28	7	SP1_0414	46.6682	-124.8524	55.73	1843.4	0.0
8/22/2009	11:41:37	7	SP1_0415	46.6675	-124.8480	55.73	1830.2	0.0
8/22/2009	11:41:45	7	SP1_0416	46.6673	-124.8433	55.73	1836.1	0.0
8/22/2009	11:41:54	7	SP1_0417	46.6669	-124.8389	55.73	1843.4	0.0
8/22/2009	11:42:03	7	SP1_0418	46.6666	-124.8344	55.73	1838.9	0.0
8/22/2009	11:42:11	7	SP1_0419	46.6662	-124.8297	55.73	1834.3	0.0
8/22/2009	11:42:20	7	SP1_0420	46.6661	-124.8253	55.73	1838.9	0.0
8/22/2009	11:42:28	7	SP1_0421	46.6661	-124.8208	55.73	1837.5	0.0
8/22/2009	11:42:37	7	SP1_0422	46.6661	-124.8165	55.73	1840.7	0.0

8/22/2009	11:42:46	7	SP1_0423	46.6662	-124.8121	55.73	1844.8	0.0
8/22/2009	11:42:54	7	SP1_0424	46.6664	-124.8078	55.73	1844.8	0.0
8/22/2009	11:43:03	7	SP1_0425	46.6666	-124.8033	55.73	1849.4	0.0
8/22/2009	11:43:12	7	SP1_0426	46.6667	-124.7991	55.73	1848.0	0.0
8/22/2009	11:43:20	7	SP1_0427	46.6669	-124.7945	55.73	1848.0	0.0
8/22/2009	11:43:29	7	SP1_0428	46.6669	-124.7902	55.73	1853.9	0.0
8/22/2009	11:43:37	7	SP1_0429	46.6668	-124.7857	55.73	1853.9	0.0
8/22/2009	11:43:46	7	SP1_0430	46.6667	-124.7813	55.73	1857.1	0.0
8/22/2009	11:43:55	7	SP1_0431	46.6667	-124.7769	55.73	1861.7	0.0
8/22/2009	11:44:03	7	SP1_0432	46.6666	-124.7726	55.73	1863.1	0.0
8/22/2009	11:44:12	7	SP1_0433	46.6665	-124.7681	55.73	1864.5	0.0
8/22/2009	11:44:20	7	SP1_0434	46.6664	-124.7638	55.73	1864.5	0.0
8/22/2009	11:44:29	7	SP1_0435	46.6664	-124.7593	55.73	1869.0	0.0
8/22/2009	11:44:38	7	SP1_0436	46.6664	-124.7548	55.73	1871.8	0.0
8/22/2009	11:44:46	7	SP1_0437	46.6664	-124.7505	55.73	1870.4	0.0
8/22/2009	11:44:55	7	SP1_0438	46.6662	-124.7459	55.73	1867.7	0.0
8/22/2009	11:45:04	7	SP1_0439	46.6663	-124.7415	55.73	1859.9	0.0
8/22/2009	11:45:12	7	SP1_0440	46.6664	-124.7369	55.73	1863.1	25.3
8/22/2009	11:45:21	7	SP1_0441	46.6665	-124.7326	55.73	1864.5	0.0
8/22/2009	11:45:29	7	SP1_0442	46.6666	-124.7281	55.73	1861.7	0.0
8/22/2009	11:45:38	7	SP1_0443	46.6666	-124.7237	55.73	1864.5	0.0
8/22/2009	11:45:47	7	SP1_0444	46.6666	-124.7192	55.73	1871.8	0.0
8/22/2009	11:45:55	7	SP1_0445	46.6666	-124.7146	55.73	1870.4	0.0
8/22/2009	11:46:04	7	SP1_0446	46.6665	-124.7102	55.73	1857.1	0.0
8/22/2009	11:46:12	7	SP1_0447	46.6666	-124.7056	55.73	1870.4	0.0
8/22/2009	11:46:21	7	SP1_0448	46.6668	-124.7013	55.73	1867.7	0.0
8/22/2009	11:46:30	7	SP1_0449	46.6672	-124.6967	55.73	1865.8	0.0
8/22/2009	11:46:38	7	SP1_0450	46.6672	-124.6923	55.73	1864.5	0.0
8/22/2009	11:46:47	7	SP1_0451	46.6673	-124.6876	55.73	1878.2	0.0
8/22/2009	11:46:56	7	SP1_0452	46.6675	-124.6833	55.73	1880.9	0.0
8/22/2009	11:47:04	7	SP1_0453	46.6679	-124.6788	55.73	1878.2	0.0
8/22/2009	11:47:13	7	SP1_0454	46.6680	-124.6742	55.73	1884.1	0.0

8/22/2009	11:47:21	7	SP1_0455	46.6679	-124.6697	55.73	1876.3	0.0
8/22/2009	11:47:30	7	SP1_0456	46.6680	-124.6650	55.73	1870.4	0.0
8/22/2009	11:47:39	7	SP1_0457	46.6681	-124.6606	55.73	1882.3	0.0
8/22/2009	11:47:47	7	SP1_0458	46.6680	-124.6559	55.73	1888.7	0.0
8/22/2009	11:47:56	7	SP1_0459	46.6680	-124.6514	55.73	1882.3	0.0
8/22/2009	11:48:05	7	SP1_0460	46.6679	-124.6466	55.73	1878.2	0.0
8/22/2009	11:48:13	7	SP1_0461	46.6677	-124.6419	55.73	1878.2	0.0
8/22/2009	11:48:22	7	SP1_0462	46.6671	-124.6371	55.73	1886.9	0.0
8/22/2009	11:48:30	7	SP1_0463	46.6664	-124.6326	55.73	1890.1	0.0
8/22/2009	11:48:39	7	SP1_0464	46.6657	-124.6279	55.73	1875.0	0.0
8/22/2009	11:48:48	7	SP1_0465	46.6658	-124.6231	55.73	1879.5	42.5
8/22/2009	11:48:56	7	SP1_0466	46.6660	-124.6187	55.73	1885.5	0.0
8/22/2009	11:49:05	7	SP1_0467	46.6661	-124.6139	55.73	1882.3	0.0
8/22/2009	11:49:14	7	SP1_0468	46.6661	-124.6095	55.73	1892.8	0.0
8/22/2009	11:49:22	7	SP1_0469	46.6661	-124.6048	55.73	1896.0	0.0
8/22/2009	11:49:31	7	SP1_0470	46.6662	-124.6003	55.73	1896.0	0.0
8/22/2009	11:49:39	7	SP1_0471	46.6663	-124.5957	55.73	1897.4	0.0
8/22/2009	11:49:48	7	SP1_0472	46.6662	-124.5912	55.73	1899.2	0.0
8/22/2009	11:49:57	7	SP1_0473	46.6662	-124.5866	55.73	1902.0	16.9
8/22/2009	11:50:05	7	SP1_0474	46.6660	-124.5821	55.73	1902.0	0.0
8/22/2009	11:50:14	7	SP1_0475	46.6656	-124.5767	55.73	1900.6	0.0
8/22/2009	11:50:22	7	SP1_0476	46.6653	-124.5718	55.73	1906.5	0.0
8/22/2009	11:50:31	7	SP1_0477	46.6657	-124.5674	55.73	1899.2	29.1
8/22/2009	11:50:40	7	SP1_0478	46.6662	-124.5628	55.73	1885.5	0.0
8/22/2009	11:50:48	7	SP1_0479	46.6665	-124.5583	55.73	1886.9	0.0
8/22/2009	11:50:57	7	SP1_0480	46.6665	-124.5536	55.73	1886.9	0.0
8/22/2009	11:51:06	7	SP1_0481	46.6666	-124.5491	55.73	1891.4	0.0
8/22/2009	11:51:14	7	SP1_0482	46.6668	-124.5446	55.73	1899.2	0.0
8/22/2009	11:51:23	7	SP1_0483	46.6669	-124.5403	55.73	1905.2	0.0
8/22/2009	11:51:31	7	SP1_0484	46.6670	-124.5358	55.73	1903.3	0.0
8/22/2009	11:51:40	7	SP1_0485	46.6671	-124.5315	55.73	1907.9	0.0
8/22/2009	11:51:49	7	SP1_0486	46.6673	-124.5270	55.73	1900.6	0.0

8/22/2009	11:51:57	7	SP1_0487	46.6673	-124.5223	55.73	1902.0	0.0
8/22/2009	11:52:06	7	SP1_0488	46.6674	-124.5179	55.73	1907.9	0.0
8/22/2009	11:52:14	7	SP1_0489	46.6675	-124.5134	55.73	1917.0	0.0
8/22/2009	11:52:23	7	SP1_0490	46.6676	-124.5091	55.73	1919.8	0.0
8/22/2009	11:52:32	7	SP1_0491	46.6676	-124.5046	55.73	1919.8	0.0
8/22/2009	11:52:40	7	SP1_0492	46.6677	-124.5002	55.73	1913.8	0.0
8/22/2009	11:52:49	7	SP1_0493	46.6678	-124.4955	55.73	1906.5	0.0
8/22/2009	11:52:58	7	SP1_0494	46.6679	-124.4910	55.73	1917.0	0.0
8/22/2009	11:53:06	7	SP1_0495	46.6680	-124.4865	55.73	1923.0	0.0
8/22/2009	11:53:15	7	SP1_0496	46.6682	-124.4821	55.73	1919.8	0.0
8/22/2009	11:53:23	7	SP1_0497	46.6685	-124.4774	55.73	1911.1	0.0
8/22/2009	11:53:32	7	SP1_0498	46.6686	-124.4729	55.73	1921.6	0.0
8/22/2009	11:53:41	7	SP1_0499	46.6688	-124.4683	55.73	1918.4	0.0
8/22/2009	11:53:49	7	SP1_0500	46.6689	-124.4636	55.73	1907.9	0.0
8/22/2009	11:53:58	7	SP1_0501	46.6691	-124.4590	55.73	1918.4	0.0
8/22/2009	11:54:06	7	SP1_0502	46.6689	-124.4543	55.73	1912.5	0.0
8/22/2009	11:54:15	7	SP1_0503	46.6689	-124.4497	55.73	1909.7	0.0
8/22/2009	11:54:24	7	SP1_0504	46.6690	-124.4449	55.73	1921.6	0.0
8/22/2009	11:54:32	7	SP1_0505	46.6690	-124.4403	55.73	1902.0	0.0
8/22/2009	11:54:41	7	SP1_0506	46.6690	-124.4351	55.73	1886.9	0.0
8/22/2009	11:54:50	7	SP1_0507	46.6690	-124.4302	55.73	1876.3	0.0
8/22/2009	11:54:58	7	SP1_0508	46.6686	-124.4250	55.73	1870.4	0.0
8/22/2009	11:55:07	7	SP1_0509	46.6684	-124.4202	55.73	1876.3	0.0
8/22/2009	11:55:15	7	SP1_0510	46.6683	-124.4152	55.73	1884.1	0.0
8/22/2009	11:55:24	7	SP1_0511	46.6683	-124.4107	55.73	1900.6	0.0
8/22/2009	11:55:33	7	SP1_0512	46.6684	-124.4060	55.73	1899.2	100.8
8/22/2009	11:55:41	7	SP1_0513	46.6685	-124.4011	55.73	1897.4	48.3
8/22/2009	11:55:50	7	SP1_0514	46.6686	-124.3965	55.73	1902.0	0.0
8/22/2009	11:55:58	7	SP1_0515	46.6688	-124.3917	55.73	1907.9	0.0
8/22/2009	11:56:07	7	SP1_0516	46.6690	-124.3871	55.73	1906.5	0.0
8/22/2009	11:56:16	7	SP1_0517	46.6690	-124.3823	55.73	1912.5	0.0
8/22/2009	11:56:24	7	SP1_0518	46.6691	-124.3779	55.73	1919.8	0.0

8/22/2009	11:56:33	7	SP1_0519	46.6691	-124.3732	55.73	1927.6	0.0
8/22/2009	11:56:42	7	SP1_0520	46.6691	-124.3688	55.73	1938.1	229.5
8/22/2009	11:56:50	7	SP1_0521	46.6690	-124.3641	55.73	1945.4	0.0
8/22/2009	11:56:59	7	SP1_0522	46.6691	-124.3596	55.73	1955.9	0.0
8/22/2009	11:57:07	7	SP1_0523	46.6691	-124.3549	55.73	1961.8	0.0
8/22/2009	11:57:16	7	SP1_0524	46.6688	-124.3502	55.73	1967.8	32.5
8/22/2009	11:57:25	7	SP1_0525	46.6686	-124.3458	55.73	1981.5	0.0
8/22/2009	11:57:33	7	SP1_0526	46.6685	-124.3412	55.73	1982.9	0.0
8/22/2009	11:57:42	7	SP1_0527	46.6685	-124.3361	55.73	1923.0	0.0
8/22/2009	11:57:50	7	SP1_0528	46.6687	-124.3308	55.73	1930.3	69.0
8/22/2009	11:57:59	7	SP1_0529	46.6693	-124.3259	55.73	1918.4	0.0
8/22/2009	11:58:08	7	SP1_0530	46.6698	-124.3209	55.73	1930.3	108.2
8/22/2009	11:58:16	7	SP1_0531	46.6700	-124.3166	55.73	1930.3	0.0
8/22/2009	11:58:25	7	SP1_0532	46.6699	-124.3122	55.73	1921.6	405.1
8/22/2009	11:58:34	7	SP1_0533	46.6700	-124.3081	55.73	1911.1	91.8
8/22/2009	11:58:42	7	SP1_0534	46.6699	-124.3038	55.73	1902.0	0.0
8/22/2009	11:58:51	7	SP1_0535	46.6699	-124.2998	55.73	1884.1	360.6
8/22/2009	11:58:59	7	SP1_0536	46.6699	-124.2952	55.73	1875.0	189.9
8/22/2009	11:59:08	7	SP1_0537	46.6700	-124.2906	55.73	1867.7	45.6
8/22/2009	11:59:17	7	SP1_0538	46.6701	-124.2862	55.73	1867.7	0.0
8/22/2009	11:59:25	7	SP1_0539	46.6700	-124.2816	55.73	1869.0	115.6
8/22/2009	11:59:34	7	SP1_0540	46.6695	-124.2773	55.73	1871.8	0.0
8/22/2009	11:59:43	7	SP1_0541	46.6696	-124.2727	55.73	1867.7	0.0
8/22/2009	11:59:51	7	SP1_0542	46.6696	-124.2682	55.73	1869.0	0.0
8/22/2009	12:00:00	7	SP1_0543	46.6695	-124.2636	55.73	1869.0	57.1
8/22/2009	12:00:08	7	SP1_0544	46.6694	-124.2589	55.73	1870.4	0.0
8/22/2009	12:00:17	7	SP1_0545	46.6695	-124.2544	55.73	1870.4	58.0
8/22/2009	12:00:26	7	SP1_0546	46.6697	-124.2497	55.73	1871.8	0.0
8/22/2009	12:00:34	7	SP1_0547	46.6699	-124.2453	55.73	1878.2	0.0
8/22/2009	12:00:43	7	SP1_0548	46.6701	-124.2406	55.73	1875.0	0.0
8/22/2009	12:00:51	7	SP1_0549	46.6704	-124.2359	55.73	1864.5	0.0
8/22/2009	12:01:00	7	SP1_0550	46.6705	-124.2311	55.73	1867.7	0.0

8/22/2009	12:01:09	7	SP1_0551	46.6703	-124.2264	55.73	1865.8	0.0
8/22/2009	12:01:17	7	SP1_0552	46.6702	-124.2216	55.73	1867.7	0.0
8/22/2009	12:01:26	7	SP1_0553	46.6700	-124.2170	55.73	1867.7	0.0
8/22/2009	12:01:35	7	SP1_0554	46.6699	-124.2122	55.73	1864.5	0.0
8/22/2009	12:01:43	7	SP1_0555	46.6697	-124.2076	55.73	1865.8	374.4
8/22/2009	12:01:52	7	SP1_0556	46.6697	-124.2028	55.73	1867.7	342.7
8/22/2009	12:02:00	7	SP1_0557	46.6695	-124.1981	55.73	1869.0	0.0
8/22/2009	12:02:09	7	SP1_0558	46.6693	-124.1937	55.73	1878.2	262.5
8/22/2009	12:02:18	7	SP1_0559	46.6692	-124.1892	55.73	1878.2	332.9
8/22/2009	12:02:26	7	SP1_0560	46.6690	-124.1848	55.73	1878.2	296.8
8/22/2009	12:02:35	7	SP1_0561	46.6690	-124.1802	55.73	1873.6	0.0
8/22/2009	12:02:44	7	SP1_0562	46.6690	-124.1756	55.73	1865.8	139.7
8/22/2009	12:02:52	7	SP1_0563	46.6691	-124.1708	55.73	1865.8	0.0
8/22/2009	12:03:01	7	SP1_0564	46.6691	-124.1661	55.73	1859.9	0.0
8/22/2009	12:03:09	7	SP1_0565	46.6691	-124.1613	55.73	1859.9	0.0
8/22/2009	12:03:18	7	SP1_0566	46.6692	-124.1565	55.73	1857.1	0.0
8/22/2009	12:03:27	7	SP1_0567	46.6693	-124.1518	55.73	1858.5	0.0
8/22/2009	12:03:35	7	SP1_0568	46.6693	-124.1471	55.73	1861.7	0.0
8/22/2009	12:03:44	7	SP1_0569	46.6692	-124.1426	55.73	1863.1	0.0
8/22/2009	12:03:52	7	SP1_0570	46.6690	-124.1379	55.73	1863.1	0.0
8/22/2009	12:04:01	7	SP1_0571	46.6688	-124.1334	55.73	1859.9	0.0
8/22/2009	12:04:10	7	SP1_0572	46.6688	-124.1287	55.73	1861.7	0.0
8/22/2009	12:04:18	7	SP1_0573	46.6688	-124.1241	55.73	1857.1	0.0
8/22/2009	12:24:04	8	SP1_0608	46.4172	-124.0908	55.79	1950.0	0.0
8/22/2009	12:24:13	8	SP1_0609	46.4173	-124.0949	55.79	1957.3	0.0
8/22/2009	12:24:21	8	SP1_0610	46.4175	-124.0992	55.79	1961.8	0.0
8/22/2009	12:24:30	8	SP1_0611	46.4178	-124.1033	55.79	1972.4	0.0
8/22/2009	12:24:39	8	SP1_0612	46.4178	-124.1077	55.79	1980.1	0.0
8/22/2009	12:24:47	8	SP1_0613	46.4181	-124.1117	55.79	1986.1	0.0
8/22/2009	12:24:56	8	SP1_0614	46.4185	-124.1160	55.79	1992.0	0.0
8/22/2009	12:25:04	8	SP1_0615	46.4187	-124.1203	55.79	1999.3	0.0
8/22/2009	12:25:13	8	SP1_0616	46.4188	-124.1243	55.79	2002.5	0.0

8/22/2009	12:25:22	8	SP1_0617	46.4189	-124.1287	55.79	2007.1	0.0
8/22/2009	12:25:30	8	SP1_0618	46.4189	-124.1328	55.79	2015.8	0.0
8/22/2009	12:25:39	8	SP1_0619	46.4190	-124.1371	55.79	2017.6	0.0
8/22/2009	12:25:48	8	SP1_0620	46.4190	-124.1413	55.79	2020.4	0.0
8/22/2009	12:25:56	8	SP1_0621	46.4190	-124.1459	55.79	1972.4	0.0
8/22/2009	12:26:05	8	SP1_0622	46.4190	-124.1510	55.79	1917.0	0.0
8/22/2009	12:26:13	8	SP1_0623	46.4188	-124.1561	55.79	1902.0	0.0
8/22/2009	12:26:22	8	SP1_0624	46.4187	-124.1611	55.79	1876.3	0.0
8/22/2009	12:26:31	8	SP1_0625	46.4185	-124.1656	55.79	1876.3	0.0
8/22/2009	12:26:39	8	SP1_0626	46.4184	-124.1701	55.79	1870.4	0.0
8/22/2009	12:26:48	8	SP1_0627	46.4183	-124.1743	55.79	1876.3	0.0
8/22/2009	12:26:56	8	SP1_0628	46.4181	-124.1785	55.79	1878.2	0.0
8/22/2009	12:27:05	8	SP1_0629	46.4180	-124.1824	55.79	1879.5	0.0
8/22/2009	12:27:14	8	SP1_0630	46.4179	-124.1866	55.79	1879.5	0.0
8/22/2009	12:27:22	8	SP1_0631	46.4176	-124.1905	55.79	1878.2	0.0
8/22/2009	12:27:31	8	SP1_0632	46.4172	-124.1945	55.79	1890.1	0.0
8/22/2009	12:27:40	8	SP1_0633	46.4173	-124.1983	55.79	1875.0	0.0
8/22/2009	12:27:48	8	SP1_0634	46.4173	-124.2025	55.79	1878.2	0.0
8/22/2009	12:27:57	8	SP1_0635	46.4173	-124.2065	55.79	1873.6	0.0
8/22/2009	12:28:05	8	SP1_0636	46.4171	-124.2107	55.79	1870.4	0.0
8/22/2009	12:28:14	8	SP1_0637	46.4168	-124.2149	55.79	1873.6	0.0
8/22/2009	12:28:23	8	SP1_0638	46.4165	-124.2188	55.79	1876.3	0.0
8/22/2009	12:28:31	8	SP1_0639	46.4163	-124.2229	55.79	1870.4	0.0
8/22/2009	12:28:40	8	SP1_0640	46.4163	-124.2269	55.79	1871.8	0.0
8/22/2009	12:28:48	8	SP1_0641	46.4163	-124.2310	55.79	1875.0	0.0
8/22/2009	12:28:57	8	SP1_0642	46.4163	-124.2349	55.79	1876.3	56.1
8/22/2009	12:29:06	8	SP1_0643	46.4161	-124.2390	55.79	1879.5	0.0
8/22/2009	12:29:14	8	SP1_0644	46.4159	-124.2430	55.79	1878.2	0.0
8/22/2009	12:29:23	8	SP1_0645	46.4158	-124.2472	55.79	1880.9	0.0
8/22/2009	12:29:32	8	SP1_0646	46.4156	-124.2512	55.79	1880.9	0.0
8/22/2009	12:29:40	8	SP1_0647	46.4156	-124.2554	55.79	1882.3	0.0
8/22/2009	12:29:49	8	SP1_0648	46.4157	-124.2594	55.79	1888.7	0.0

8/22/2009	12:29:57	8	SP1_0649	46.4157	-124.2636	55.79	1886.9	0.0
8/22/2009	12:30:06	8	SP1_0650	46.4158	-124.2678	55.79	1885.5	0.0
8/22/2009	12:30:15	8	SP1_0651	46.4159	-124.2718	55.79	1888.7	0.0
8/22/2009	12:30:23	8	SP1_0652	46.4161	-124.2761	55.79	1886.9	0.0
8/22/2009	12:30:32	8	SP1_0653	46.4161	-124.2801	55.79	1892.8	0.0
8/22/2009	12:30:40	8	SP1_0654	46.4163	-124.2843	55.79	1896.0	0.0
8/22/2009	12:30:49	8	SP1_0655	46.4167	-124.2883	55.79	1891.4	0.0
8/22/2009	12:30:58	8	SP1_0656	46.4168	-124.2925	55.79	1894.6	0.0
8/22/2009	12:31:06	8	SP1_0657	46.4169	-124.2965	55.79	1899.2	0.0
8/22/2009	12:31:15	8	SP1_0658	46.4170	-124.3007	55.79	1902.0	0.0
8/22/2009	12:31:24	8	SP1_0659	46.4171	-124.3047	55.79	1899.2	0.0
8/22/2009	12:31:32	8	SP1_0660	46.4171	-124.3090	55.79	1899.2	0.0
8/22/2009	12:31:41	8	SP1_0661	46.4172	-124.3132	55.79	1902.0	0.0
8/22/2009	12:31:49	8	SP1_0662	46.4173	-124.3172	55.79	1902.0	0.0
8/22/2009	12:31:58	8	SP1_0663	46.4173	-124.3214	55.79	1906.5	0.0
8/22/2009	12:32:07	8	SP1_0664	46.4174	-124.3254	55.79	1900.6	0.0
8/22/2009	12:32:15	8	SP1_0665	46.4176	-124.3296	55.79	1900.6	0.0
8/22/2009	12:32:24	8	SP1_0666	46.4178	-124.3336	55.79	1900.6	0.0
8/22/2009	12:32:33	8	SP1_0667	46.4179	-124.3378	55.79	1894.6	0.0
8/22/2009	12:32:41	8	SP1_0668	46.4181	-124.3418	55.79	1899.2	0.0
8/22/2009	12:32:50	8	SP1_0669	46.4182	-124.3459	55.79	1897.4	0.0
8/22/2009	12:32:58	8	SP1_0670	46.4185	-124.3500	55.79	1891.4	0.0
8/22/2009	12:33:07	8	SP1_0671	46.4188	-124.3542	55.79	1891.4	0.0
8/22/2009	12:33:16	8	SP1_0672	46.4191	-124.3584	55.79	1890.1	0.0
8/22/2009	12:33:24	8	SP1_0673	46.4190	-124.3624	55.79	1890.1	0.0
8/22/2009	12:33:33	8	SP1_0674	46.4189	-124.3667	55.79	1882.3	0.0
8/22/2009	12:33:41	8	SP1_0675	46.4191	-124.3707	55.79	1882.3	0.0
8/22/2009	12:33:50	8	SP1_0676	46.4193	-124.3749	55.79	1878.2	0.0
8/22/2009	12:33:59	8	SP1_0677	46.4191	-124.3790	55.79	1876.3	0.0
8/22/2009	12:34:07	8	SP1_0678	46.4189	-124.3832	55.79	1878.2	0.0
8/22/2009	12:34:16	8	SP1_0679	46.4188	-124.3872	55.79	1879.5	0.0
8/22/2009	12:34:25	8	SP1_0680	46.4186	-124.3914	55.79	1873.6	0.0

8/22/2009	12:34:33	8	SP1_0681	46.4185	-124.3956	55.79	1869.0	0.0
8/22/2009	12:34:42	8	SP1_0682	46.4183	-124.3996	55.79	1875.0	0.0
8/22/2009	12:34:50	8	SP1_0683	46.4183	-124.4037	55.79	1876.3	0.0
8/22/2009	12:34:59	8	SP1_0684	46.4183	-124.4077	55.79	1878.2	0.0
8/22/2009	12:35:08	8	SP1_0685	46.4184	-124.4119	55.79	1878.2	0.0
8/22/2009	12:35:16	8	SP1_0686	46.4185	-124.4159	55.79	1873.6	48.3
8/22/2009	12:35:25	8	SP1_0687	46.4187	-124.4201	55.79	1875.0	0.0
8/22/2009	12:35:34	8	SP1_0688	46.4189	-124.4240	55.79	1876.3	0.0
8/22/2009	12:35:42	8	SP1_0689	46.4189	-124.4282	55.79	1871.8	0.0
8/22/2009	12:35:51	8	SP1_0690	46.4189	-124.4322	55.79	1878.2	0.0
8/22/2009	12:35:59	8	SP1_0691	46.4189	-124.4364	55.79	1873.6	0.0
8/22/2009	12:36:08	8	SP1_0692	46.4191	-124.4406	55.79	1870.4	0.0
8/22/2009	12:36:17	8	SP1_0693	46.4193	-124.4445	55.79	1865.8	0.0
8/22/2009	12:36:25	8	SP1_0694	46.4195	-124.4488	55.79	1858.5	0.0
8/22/2009	12:36:34	8	SP1_0695	46.4197	-124.4528	55.79	1864.5	0.0
8/22/2009	12:36:42	8	SP1_0696	46.4197	-124.4570	55.79	1869.0	0.0
8/22/2009	12:36:51	8	SP1_0697	46.4198	-124.4609	55.79	1865.8	0.0
8/22/2009	12:37:00	8	SP1_0698	46.4195	-124.4651	55.79	1867.7	51.3
8/22/2009	12:37:08	8	SP1_0699	46.4189	-124.4690	55.79	1869.0	262.6
8/22/2009	12:37:17	8	SP1_0700	46.4181	-124.4730	55.79	1869.0	100.2
8/22/2009	12:37:26	8	SP1_0701	46.4174	-124.4769	55.79	1873.6	0.0
8/22/2009	12:37:34	8	SP1_0702	46.4169	-124.4811	55.79	1875.0	43.3
8/22/2009	12:37:43	8	SP1_0703	46.4173	-124.4850	55.79	1879.5	29.5
8/22/2009	12:37:51	8	SP1_0704	46.4171	-124.4890	55.79	1884.1	0.0
8/22/2009	12:38:00	8	SP1_0705	46.4170	-124.4931	55.79	1886.9	56.1
8/22/2009	12:38:09	8	SP1_0706	46.4170	-124.4970	55.79	1894.6	0.0
8/22/2009	12:38:17	8	SP1_0707	46.4170	-124.5011	55.79	1896.0	0.0
8/22/2009	12:38:26	8	SP1_0708	46.4173	-124.5051	55.79	1891.4	0.0
8/22/2009	12:38:34	8	SP1_0709	46.4175	-124.5093	55.79	1899.2	9.7
8/22/2009	12:38:43	8	SP1_0710	46.4178	-124.5132	55.79	1902.0	0.0
8/22/2009	12:38:52	8	SP1_0711	46.4180	-124.5175	55.79	1899.2	0.0
8/22/2009	12:39:00	8	SP1_0712	46.4183	-124.5215	55.79	1899.2	0.0

8/22/2009	12:39:09	8	SP1_0713	46.4183	-124.5258	55.79	1903.3	0.0
8/22/2009	12:39:18	8	SP1_0714	46.4182	-124.5299	55.79	1907.9	0.0
8/22/2009	12:39:26	8	SP1_0715	46.4180	-124.5342	55.79	1907.9	0.0
8/22/2009	12:39:35	8	SP1_0716	46.4177	-124.5384	55.79	1917.0	0.0
8/22/2009	12:39:43	8	SP1_0717	46.4176	-124.5425	55.79	1919.8	0.0
8/22/2009	12:39:52	8	SP1_0718	46.4178	-124.5468	55.79	1923.0	0.0
8/22/2009	12:40:01	8	SP1_0719	46.4176	-124.5509	55.79	1927.6	0.0
8/22/2009	12:40:09	8	SP1_0720	46.4175	-124.5552	55.79	1923.0	0.0
8/22/2009	12:40:18	8	SP1_0721	46.4176	-124.5593	55.79	1927.6	0.0
8/22/2009	12:40:27	8	SP1_0722	46.4177	-124.5636	55.79	1928.9	0.0
8/22/2009	12:40:35	8	SP1_0723	46.4178	-124.5678	55.79	1924.4	0.0
8/22/2009	12:40:44	8	SP1_0724	46.4177	-124.5723	55.79	1934.9	0.0
8/22/2009	12:40:52	8	SP1_0725	46.4179	-124.5765	55.79	1933.5	0.0
8/22/2009	12:41:01	8	SP1_0726	46.4180	-124.5808	55.79	1924.4	0.0
8/22/2009	12:41:10	8	SP1_0727	46.4181	-124.5853	55.79	1926.2	0.0
8/22/2009	12:41:18	8	SP1_0728	46.4182	-124.5898	55.79	1912.5	0.0
8/22/2009	12:41:27	8	SP1_0729	46.4181	-124.5946	55.79	1905.2	0.0
8/22/2009	12:41:36	8	SP1_0730	46.4182	-124.5990	55.79	1900.6	0.0
8/22/2009	12:41:44	8	SP1_0731	46.4184	-124.6037	55.79	1891.4	0.0
8/22/2009	12:41:53	8	SP1_0732	46.4178	-124.6082	55.79	1888.7	0.0
8/22/2009	12:42:01	8	SP1_0733	46.4172	-124.6128	55.79	1878.2	0.0
8/22/2009	12:42:10	8	SP1_0734	46.4167	-124.6172	55.79	1871.8	0.0
8/22/2009	12:42:19	8	SP1_0735	46.4164	-124.6218	55.79	1871.8	0.0
8/22/2009	12:42:27	8	SP1_0736	46.4164	-124.6264	55.79	1869.0	0.0
8/22/2009	12:42:36	8	SP1_0737	46.4165	-124.6306	55.79	1879.5	0.0
8/22/2009	12:42:44	8	SP1_0738	46.4167	-124.6350	55.79	1880.9	0.0
8/22/2009	12:42:53	8	SP1_0739	46.4167	-124.6391	55.79	1884.1	0.0
8/22/2009	12:43:02	8	SP1_0740	46.4169	-124.6434	55.79	1884.1	0.0
8/22/2009	12:43:10	8	SP1_0741	46.4174	-124.6474	55.79	1880.9	0.0
8/22/2009	12:43:19	8	SP1_0742	46.4175	-124.6517	55.79	1879.5	0.0
8/22/2009	12:43:28	8	SP1_0743	46.4174	-124.6558	55.79	1876.3	0.0
8/22/2009	12:43:36	8	SP1_0744	46.4173	-124.6603	55.79	1873.6	0.0

8/22/2009	12:43:45	8	SP1_0745	46.4172	-124.6647	55.79	1876.3	0.0
8/22/2009	12:43:53	8	SP1_0746	46.4171	-124.6689	55.79	1869.0	0.0
8/22/2009	12:44:02	8	SP1_0747	46.4170	-124.6733	55.79	1863.1	0.0
8/22/2009	12:44:11	8	SP1_0748	46.4167	-124.6775	55.79	1858.5	0.0
8/22/2009	12:44:19	8	SP1_0749	46.4163	-124.6819	55.79	1864.5	0.0
8/22/2009	12:44:28	8	SP1_0750	46.4162	-124.6860	55.79	1865.8	0.0
8/22/2009	12:44:37	8	SP1_0751	46.4163	-124.6903	55.79	1865.8	0.0
8/22/2009	12:44:45	8	SP1_0752	46.4164	-124.6944	55.79	1867.7	0.0
8/22/2009	12:44:54	8	SP1_0753	46.4164	-124.6987	55.79	1867.7	0.0
8/22/2009	12:45:02	8	SP1_0754	46.4164	-124.7031	55.79	1865.8	0.0
8/22/2009	12:45:11	8	SP1_0755	46.4164	-124.7072	55.79	1870.4	0.0
8/22/2009	12:45:20	8	SP1_0756	46.4165	-124.7116	55.79	1867.7	0.0
8/22/2009	12:45:28	8	SP1_0757	46.4166	-124.7157	55.79	1870.4	0.0
8/22/2009	12:45:37	8	SP1_0758	46.4168	-124.7199	55.79	1869.0	0.0
8/22/2009	12:45:46	8	SP1_0759	46.4173	-124.7239	55.79	1861.7	0.0
8/22/2009	12:45:54	8	SP1_0760	46.4176	-124.7282	55.79	1864.5	0.0
8/22/2009	12:46:03	8	SP1_0761	46.4175	-124.7325	55.79	1859.9	0.0
8/22/2009	12:46:11	8	SP1_0762	46.4174	-124.7368	55.79	1864.5	0.0
8/22/2009	12:46:20	8	SP1_0763	46.4171	-124.7411	55.79	1865.8	0.0
8/22/2009	12:46:29	8	SP1_0764	46.4168	-124.7453	55.79	1863.1	0.0
8/22/2009	12:46:37	8	SP1_0765	46.4165	-124.7496	55.79	1859.9	0.0
8/22/2009	12:46:46	8	SP1_0766	46.4162	-124.7537	55.79	1863.1	0.0
8/22/2009	12:46:54	8	SP1_0767	46.4159	-124.7579	55.79	1863.1	0.0
8/22/2009	12:47:03	8	SP1_0768	46.4156	-124.7620	55.79	1863.1	0.0
8/22/2009	12:47:12	8	SP1_0769	46.4155	-124.7662	55.79	1859.9	0.0
8/22/2009	12:47:20	8	SP1_0770	46.4155	-124.7701	55.79	1859.9	0.0
8/22/2009	12:47:29	8	SP1_0771	46.4155	-124.7743	55.79	1859.9	0.0
8/22/2009	12:47:38	8	SP1_0772	46.4155	-124.7782	55.79	1867.7	0.0
8/22/2009	12:47:46	8	SP1_0773	46.4156	-124.7824	55.79	1873.6	0.0
8/22/2009	12:47:55	8	SP1_0774	46.4157	-124.7863	55.79	1879.5	0.0
8/22/2009	12:48:03	8	SP1_0775	46.4158	-124.7904	55.79	1880.9	0.0
8/22/2009	12:48:12	8	SP1_0776	46.4159	-124.7945	55.79	1886.9	0.0

8/22/2009	12:48:21	8	SP1_0777	46.4160	-124.7984	55.79	1888.7	0.0
8/22/2009	12:48:29	8	SP1_0778	46.4160	-124.8025	55.79	1890.1	0.0
8/22/2009	12:48:38	8	SP1_0779	46.4161	-124.8064	55.79	1886.9	0.0
8/22/2009	12:48:46	8	SP1_0780	46.4161	-124.8105	55.79	1884.1	0.0
8/22/2009	12:48:55	8	SP1_0781	46.4159	-124.8144	55.79	1885.5	0.0
8/22/2009	12:49:04	8	SP1_0782	46.4158	-124.8186	55.79	1880.9	0.0
8/22/2009	11:55:06	9	SP3_0015	46.1640	-124.0179	55.87	1843.4	0.0
8/22/2009	11:55:15	9	SP3_0016	46.1644	-124.0248	55.87	1855.3	0.0
8/22/2009	11:55:25	9	SP3_0017	46.1648	-124.0316	55.87	1865.8	0.0
8/22/2009	11:55:34	9	SP3_0018	46.1653	-124.0381	55.87	1865.8	0.0
8/22/2009	11:55:43	9	SP3_0019	46.1659	-124.0450	55.87	1848.0	0.0
8/22/2009	11:55:52	9	SP3_0020	46.1668	-124.0521	55.87	1827.0	0.0
8/22/2009	11:56:01	9	SP3_0021	46.1674	-124.0589	55.87	1831.5	0.0
8/22/2009	11:56:10	9	SP3_0022	46.1679	-124.0659	55.87	1834.3	0.0
8/22/2009	11:56:26	9	SP3_0023	46.1686	-124.0781	55.87	1832.9	0.0
8/22/2009	11:56:34	9	SP3_0024	46.1685	-124.0842	55.87	1840.7	0.0
8/22/2009	11:56:42	9	SP3_0025	46.1683	-124.0905	55.87	1831.5	0.0
8/22/2009	11:56:50	9	SP3_0026	46.1680	-124.0967	55.87	1819.7	0.0
8/22/2009	11:56:59	9	SP3_0027	46.1677	-124.1031	55.87	1819.7	0.0
8/22/2009	11:57:07	9	SP3_0028	46.1673	-124.1095	55.87	1817.8	0.0
8/22/2009	11:57:15	9	SP3_0029	46.1667	-124.1156	55.87	1805.9	0.0
8/22/2009	11:57:23	9	SP3_0030	46.1663	-124.1221	55.87	1815.1	0.0
8/22/2009	11:57:32	9	SP3_0031	46.1660	-124.1285	55.87	1827.0	0.0
8/22/2009	11:57:40	9	SP3_0032	46.1658	-124.1345	55.87	1825.6	0.0
8/22/2009	11:57:48	9	SP3_0033	46.1656	-124.1408	55.87	1822.4	0.0
8/22/2009	11:57:56	9	SP3_0034	46.1656	-124.1469	55.87	1819.7	0.0
8/22/2009	11:58:05	9	SP3_0035	46.1658	-124.1532	55.87	1816.5	0.0
8/22/2009	11:58:13	9	SP3_0036	46.1662	-124.1596	55.87	1816.5	0.0
8/22/2009	11:58:21	9	SP3_0037	46.1667	-124.1655	55.87	1821.0	0.0
8/22/2009	11:58:29	9	SP3_0038	46.1671	-124.1717	55.87	1825.6	0.0
8/22/2009	11:58:38	9	SP3_0039	46.1675	-124.1776	55.87	1821.0	0.0
8/22/2009	11:58:46	9	SP3_0040	46.1678	-124.1839	55.87	1821.0	0.0

8/22/2009	11:58:54	9	SP3_0041	46.1680	-124.1901	55.87	1819.7	0.0
8/22/2009	11:59:02	9	SP3_0042	46.1682	-124.1962	55.87	1811.9	0.0
8/22/2009	11:59:11	9	SP3_0043	46.1684	-124.2024	55.87	1824.2	0.0
8/22/2009	11:59:19	9	SP3_0044	46.1685	-124.2082	55.87	1832.9	0.0
8/22/2009	11:59:27	9	SP3_0045	46.1682	-124.2143	55.87	1827.0	0.0
8/22/2009	11:59:35	9	SP3_0046	46.1679	-124.2203	55.87	1821.0	0.0
8/22/2009	11:59:44	9	SP3_0047	46.1675	-124.2265	55.87	1827.0	0.0
8/22/2009	11:59:52	9	SP3_0048	46.1670	-124.2326	55.87	1827.0	0.0
8/22/2009	12:00:00	9	SP3_0049	46.1666	-124.2386	55.87	1821.0	0.0
8/22/2009	12:00:08	9	SP3_0050	46.1663	-124.2449	55.87	1819.7	0.0
8/22/2009	12:00:17	9	SP3_0051	46.1660	-124.2511	55.87	1815.1	0.0
8/22/2009	12:00:25	9	SP3_0052	46.1658	-124.2572	55.87	1807.3	0.0
8/22/2009	12:00:33	9	SP3_0053	46.1657	-124.2635	55.87	1807.3	0.0
8/22/2009	12:00:41	9	SP3_0054	46.1657	-124.2695	55.87	1809.1	0.0
8/22/2009	12:00:49	9	SP3_0055	46.1658	-124.2759	55.87	1811.9	0.0
8/22/2009	12:00:58	9	SP3_0056	46.1658	-124.2821	55.87	1815.1	0.0
8/22/2009	12:01:06	9	SP3_0057	46.1658	-124.2883	55.87	1813.7	0.0
8/22/2009	12:01:14	9	SP3_0058	46.1659	-124.2945	55.87	1816.5	0.0
8/22/2009	12:01:22	9	SP3_0059	46.1659	-124.3005	55.87	1810.5	0.0
8/22/2009	12:01:31	9	SP3_0060	46.1656	-124.3068	55.87	1809.1	0.0
8/22/2009	12:01:39	9	SP3_0061	46.1654	-124.3132	55.87	1811.9	0.0
8/22/2009	12:01:47	9	SP3_0062	46.1654	-124.3192	55.87	1810.5	0.0
8/22/2009	12:01:55	9	SP3_0063	46.1655	-124.3256	55.87	1805.9	0.0
8/22/2009	12:02:04	9	SP3_0064	46.1657	-124.3316	55.87	1804.6	0.0
8/22/2009	12:02:12	9	SP3_0065	46.1659	-124.3380	55.87	1809.1	0.0
8/22/2009	12:02:20	9	SP3_0066	46.1659	-124.3443	55.87	1810.5	0.0
8/22/2009	12:02:28	9	SP3_0067	46.1659	-124.3503	55.87	1811.9	0.0
8/22/2009	12:02:37	9	SP3_0068	46.1661	-124.3566	55.87	1815.1	0.0
8/22/2009	12:02:45	9	SP3_0069	46.1663	-124.3629	55.87	1815.1	0.0
8/22/2009	12:02:53	9	SP3_0070	46.1667	-124.3689	55.87	1810.5	0.0
8/22/2009	12:03:01	9	SP3_0071	46.1672	-124.3752	55.87	1810.5	0.0
8/22/2009	12:03:10	9	SP3_0072	46.1677	-124.3815	55.87	1810.5	0.0

8/22/2009	12:03:18	9	SP3_0073	46.1683	-124.3875	55.87	1810.5	0.0
8/22/2009	12:03:26	9	SP3_0074	46.1690	-124.3937	55.87	1809.1	0.0
8/22/2009	12:03:35	9	SP3_0075	46.1695	-124.3999	55.87	1810.5	0.0
8/22/2009	12:03:43	9	SP3_0076	46.1697	-124.4059	55.87	1810.5	0.0
8/22/2009	12:03:51	9	SP3_0077	46.1695	-124.4123	55.87	1804.6	0.0
8/22/2009	12:03:59	9	SP3_0078	46.1693	-124.4184	55.87	1804.6	0.0
8/22/2009	12:04:07	9	SP3_0079	46.1690	-124.4247	55.87	1815.1	0.0
8/22/2009	12:04:16	9	SP3_0080	46.1687	-124.4306	55.87	1819.7	0.0
8/22/2009	12:04:24	9	SP3_0081	46.1683	-124.4368	55.87	1817.8	0.0
8/22/2009	12:04:32	9	SP3_0082	46.1679	-124.4430	55.87	1817.8	0.0
8/22/2009	12:04:40	9	SP3_0083	46.1677	-124.4490	55.87	1821.0	0.0
8/22/2009	12:04:49	9	SP3_0084	46.1674	-124.4552	55.87	1822.4	0.0
8/22/2009	12:04:57	9	SP3_0085	46.1671	-124.4614	55.87	1811.9	0.0
8/22/2009	12:05:05	9	SP3_0086	46.1669	-124.4675	55.87	1811.9	0.0
8/22/2009	12:05:13	9	SP3_0087	46.1666	-124.4737	55.87	1822.4	0.0
8/22/2009	12:05:22	9	SP3_0088	46.1664	-124.4798	55.87	1822.4	0.0
8/22/2009	12:05:30	9	SP3_0089	46.1662	-124.4858	55.87	1816.5	0.0
8/22/2009	12:05:38	9	SP3_0090	46.1661	-124.4920	55.87	1822.4	0.0
8/22/2009	12:05:47	9	SP3_0091	46.1661	-124.4982	55.87	1825.6	0.0
8/22/2009	12:05:55	9	SP3_0092	46.1662	-124.5041	55.87	1816.5	0.0
8/22/2009	12:06:03	9	SP3_0093	46.1664	-124.5104	55.87	1816.5	0.0
8/22/2009	12:06:11	9	SP3_0094	46.1665	-124.5166	55.87	1822.4	0.0
8/22/2009	12:06:20	9	SP3_0095	46.1664	-124.5225	55.87	1816.5	0.0
8/22/2009	12:06:28	9	SP3_0096	46.1664	-124.5289	55.87	1813.7	0.0
8/22/2009	12:06:36	9	SP3_0097	46.1663	-124.5349	55.87	1815.1	0.0
8/22/2009	12:06:44	9	SP3_0098	46.1664	-124.5412	55.87	1816.5	0.0
8/22/2009	12:06:52	9	SP3_0099	46.1665	-124.5472	55.87	1815.1	0.0
8/22/2009	12:07:01	9	SP3_0100	46.1665	-124.5535	55.87	1819.7	0.0
8/22/2009	12:07:09	9	SP3_0101	46.1665	-124.5597	55.87	1819.7	0.0
8/22/2009	12:07:17	9	SP3_0102	46.1666	-124.5656	55.87	1815.1	0.0
8/22/2009	12:07:25	9	SP3_0103	46.1668	-124.5719	55.87	1819.7	0.0
8/22/2009	12:07:34	9	SP3_0104	46.1670	-124.5781	55.87	1824.2	0.0

8/22/2009	12:07:42	9	SP3_0105	46.1672	-124.5841	55.87	1821.0	0.0
8/22/2009	12:07:50	9	SP3_0106	46.1676	-124.5904	55.87	1816.5	0.0
8/22/2009	12:07:58	9	SP3_0107	46.1677	-124.5964	55.87	1821.0	0.0
8/22/2009	12:08:07	9	SP3_0108	46.1678	-124.6026	55.87	1824.2	0.0
8/22/2009	12:08:15	9	SP3_0109	46.1680	-124.6088	55.87	1824.2	0.0
8/22/2009	12:08:23	9	SP3_0110	46.1681	-124.6148	55.87	1824.2	0.0
8/22/2009	12:08:31	9	SP3_0111	46.1684	-124.6210	55.87	1827.0	0.0
8/22/2009	12:08:40	9	SP3_0112	46.1686	-124.6270	55.87	1825.6	0.0
8/22/2009	12:08:48	9	SP3_0113	46.1687	-124.6333	55.87	1831.5	0.0
8/22/2009	12:08:56	9	SP3_0114	46.1687	-124.6394	55.87	1831.5	0.0
8/22/2009	12:09:04	9	SP3_0115	46.1687	-124.6454	55.87	1817.8	0.0
8/22/2009	12:09:13	9	SP3_0116	46.1687	-124.6517	55.87	1815.1	0.0
8/22/2009	12:09:21	9	SP3_0117	46.1687	-124.6580	55.87	1822.4	0.0
8/22/2009	12:09:29	9	SP3_0118	46.1687	-124.6639	55.87	1817.8	0.0
8/22/2009	12:09:37	9	SP3_0119	46.1686	-124.6702	55.87	1810.5	0.0
8/22/2009	12:09:46	9	SP3_0120	46.1686	-124.6765	55.87	1813.7	0.0
8/22/2009	12:09:54	9	SP3_0121	46.1685	-124.6825	55.87	1822.4	0.0
8/22/2009	12:10:02	9	SP3_0122	46.1685	-124.6887	55.87	1824.2	0.0
8/22/2009	12:10:10	9	SP3_0123	46.1686	-124.6945	55.87	1822.4	0.0
8/22/2009	12:10:19	9	SP3_0124	46.1686	-124.7007	55.87	1815.1	0.0
8/22/2009	12:10:27	9	SP3_0125	46.1686	-124.7069	55.87	1810.5	0.0
8/22/2009	12:10:35	9	SP3_0126	46.1684	-124.7128	55.87	1810.5	0.0
8/22/2009	12:10:43	9	SP3_0127	46.1682	-124.7191	55.87	1816.5	0.0
8/22/2009	12:10:52	9	SP3_0128	46.1680	-124.7249	55.87	1825.6	0.0
8/22/2009	12:11:00	9	SP3_0129	46.1678	-124.7311	55.87	1815.1	0.0
8/22/2009	12:11:08	9	SP3_0130	46.1675	-124.7371	55.87	1803.2	0.0
8/22/2009	12:11:16	9	SP3_0131	46.1673	-124.7434	55.87	1807.3	0.0
8/22/2009	12:19:37	10	SP3_0136	45.9160	-124.7319	55.33	1842.1	0.0
8/22/2009	12:19:45	10	SP3_0137	45.9143	-124.7256	55.33	1836.1	0.0
8/22/2009	12:19:53	10	SP3_0138	45.9135	-124.7193	55.33	1846.6	0.0
8/22/2009	12:20:02	10	SP3_0139	45.9134	-124.7129	55.33	1849.4	0.0
8/22/2009	12:20:10	10	SP3_0140	45.9137	-124.7065	55.33	1846.6	0.0

8/22/2009	12:20:18	10	SP3_0141	45.9142	-124.7004	55.33	1844.8	0.0
8/22/2009	12:20:26	10	SP3_0142	45.9149	-124.6940	55.33	1846.6	0.0
8/22/2009	12:20:35	10	SP3_0143	45.9156	-124.6877	55.33	1842.1	0.0
8/22/2009	12:20:43	10	SP3_0144	45.9161	-124.6815	55.33	1840.7	0.0
8/22/2009	12:20:51	10	SP3_0145	45.9162	-124.6750	55.33	1844.8	0.0
8/22/2009	12:20:59	10	SP3_0146	45.9161	-124.6686	55.33	1849.4	0.0
8/22/2009	12:21:08	10	SP3_0147	45.9161	-124.6625	55.33	1849.4	0.0
8/22/2009	12:21:16	10	SP3_0148	45.9161	-124.6561	55.33	1855.3	0.0
8/22/2009	12:21:24	10	SP3_0149	45.9163	-124.6501	55.33	1855.3	0.0
8/22/2009	12:21:32	10	SP3_0150	45.9166	-124.6438	55.33	1855.3	0.0
8/22/2009	12:21:41	10	SP3_0151	45.9168	-124.6375	55.33	1858.5	0.0
8/22/2009	12:21:49	10	SP3_0152	45.9168	-124.6314	55.33	1855.3	0.0
8/22/2009	12:21:57	10	SP3_0153	45.9168	-124.6249	55.33	1848.0	0.0
8/22/2009	12:22:05	10	SP3_0154	45.9169	-124.6187	55.33	1842.1	0.0
8/22/2009	12:22:13	10	SP3_0155	45.9169	-124.6121	55.33	1840.7	0.0
8/22/2009	12:22:22	10	SP3_0156	45.9170	-124.6055	55.33	1837.5	0.0
8/22/2009	12:22:30	10	SP3_0157	45.9169	-124.5992	55.33	1825.6	0.0
8/22/2009	12:22:38	10	SP3_0158	45.9168	-124.5925	55.33	1815.1	0.0
8/22/2009	12:22:46	10	SP3_0159	45.9166	-124.5861	55.33	1811.9	0.0
8/22/2009	12:22:55	10	SP3_0160	45.9165	-124.5795	55.33	1810.5	0.0
8/22/2009	12:23:03	10	SP3_0161	45.9162	-124.5733	55.33	1816.5	0.0
8/22/2009	12:23:11	10	SP3_0162	45.9160	-124.5669	55.33	1813.7	0.0
8/22/2009	12:23:19	10	SP3_0163	45.9160	-124.5604	55.33	1810.5	0.0
8/22/2009	12:23:28	10	SP3_0164	45.9160	-124.5542	55.33	1807.3	0.0
8/22/2009	12:23:36	10	SP3_0165	45.9159	-124.5478	55.33	1804.6	0.0
8/22/2009	12:23:44	10	SP3_0166	45.9160	-124.5414	55.33	1810.5	0.0
8/22/2009	12:23:52	10	SP3_0167	45.9160	-124.5354	55.33	1811.9	0.0
8/22/2009	12:24:01	10	SP3_0168	45.9161	-124.5290	55.33	1815.1	0.0
8/22/2009	12:24:09	10	SP3_0169	45.9163	-124.5231	55.33	1817.8	0.0
8/22/2009	12:24:17	10	SP3_0170	45.9165	-124.5168	55.33	1816.5	0.0
8/22/2009	12:24:25	10	SP3_0171	45.9167	-124.5105	55.33	1819.7	0.0
8/22/2009	12:24:34	10	SP3_0172	45.9169	-124.5045	55.33	1822.4	0.0

8/22/2009	12:24:42	10	SP3_0173	45.9171	-124.4982	55.33	1821.0	0.0
8/22/2009	12:24:50	10	SP3_0174	45.9171	-124.4921	55.33	1824.2	0.0
8/22/2009	12:24:58	10	SP3_0175	45.9172	-124.4858	55.33	1825.6	0.0
8/22/2009	12:25:07	10	SP3_0176	45.9171	-124.4794	55.33	1824.2	0.0
8/22/2009	12:25:15	10	SP3_0177	45.9170	-124.4733	55.33	1825.6	0.0
8/22/2009	12:25:23	10	SP3_0178	45.9167	-124.4668	55.33	1828.3	0.0
8/22/2009	12:25:31	10	SP3_0179	45.9165	-124.4604	55.33	1825.6	0.0
8/22/2009	12:25:40	10	SP3_0180	45.9162	-124.4541	55.33	1817.8	0.0
8/22/2009	12:25:48	10	SP3_0181	45.9159	-124.4475	55.33	1819.7	0.0
8/22/2009	12:25:56	10	SP3_0182	45.9156	-124.4410	55.33	1827.0	0.0
8/22/2009	12:26:04	10	SP3_0183	45.9155	-124.4348	55.33	1831.5	0.0
8/22/2009	12:26:13	10	SP3_0184	45.9154	-124.4283	55.33	1827.0	0.0
8/22/2009	12:26:21	10	SP3_0185	45.9154	-124.4221	55.33	1828.3	0.0
8/22/2009	12:26:29	10	SP3_0186	45.9155	-124.4157	55.33	1828.3	0.0
8/22/2009	12:26:37	10	SP3_0187	45.9157	-124.4095	55.33	1821.0	0.0
8/22/2009	12:26:46	10	SP3_0188	45.9161	-124.4030	55.33	1828.3	0.0
8/22/2009	12:26:54	10	SP3_0189	45.9166	-124.3966	55.33	1830.2	0.0
8/22/2009	12:27:02	10	SP3_0190	45.9170	-124.3905	55.33	1817.8	0.0
8/22/2009	12:27:10	10	SP3_0191	45.9173	-124.3839	55.33	1817.8	0.0
8/22/2009	12:27:19	10	SP3_0192	45.9175	-124.3774	55.33	1819.7	0.0
8/22/2009	12:27:27	10	SP3_0193	45.9175	-124.3712	55.33	1819.7	0.0
8/22/2009	12:27:35	10	SP3_0194	45.9173	-124.3646	55.33	1819.7	0.0
8/22/2009	12:27:43	10	SP3_0195	45.9171	-124.3581	55.33	1825.6	0.0
8/22/2009	12:27:52	10	SP3_0196	45.9168	-124.3519	55.33	1825.6	0.0
8/22/2009	12:28:00	10	SP3_0197	45.9166	-124.3453	55.33	1819.7	0.0
8/22/2009	12:28:08	10	SP3_0198	45.9162	-124.3390	55.33	1817.8	0.0
8/22/2009	12:28:16	10	SP3_0199	45.9158	-124.3325	55.33	1816.5	0.0
8/22/2009	12:28:25	10	SP3_0200	45.9154	-124.3259	55.33	1810.5	0.0
8/22/2009	12:28:33	10	SP3_0201	45.9150	-124.3197	55.33	1811.9	0.0
8/22/2009	12:28:41	10	SP3_0202	45.9149	-124.3132	55.33	1813.7	0.0
8/22/2009	12:28:49	10	SP3_0203	45.9150	-124.3071	55.33	1813.7	0.0
8/22/2009	12:28:57	10	SP3_0204	45.9153	-124.3006	55.33	1810.5	0.0

8/22/2009	12:29:06	10	SP3_0205	45.9156	-124.2945	55.33	1810.5	0.0
8/22/2009	12:29:14	10	SP3_0206	45.9159	-124.2880	55.33	1801.4	0.0
8/22/2009	12:29:22	10	SP3_0207	45.9162	-124.2815	55.33	1800.0	0.0
8/22/2009	12:29:30	10	SP3_0208	45.9164	-124.2753	55.33	1809.1	0.0
8/22/2009	12:29:39	10	SP3_0209	45.9167	-124.2690	55.33	1810.5	0.0
8/22/2009	12:29:47	10	SP3_0210	45.9169	-124.2627	55.33	1815.1	0.0
8/22/2009	12:29:55	10	SP3_0211	45.9171	-124.2566	55.33	1810.5	0.0
8/22/2009	12:30:03	10	SP3_0212	45.9172	-124.2503	55.33	1809.1	0.0
8/22/2009	12:30:12	10	SP3_0213	45.9173	-124.2439	55.33	1809.1	0.0
8/22/2009	12:30:20	10	SP3_0214	45.9172	-124.2378	55.33	1810.5	0.0
8/22/2009	12:30:28	10	SP3_0215	45.9169	-124.2313	55.33	1807.3	0.0
8/22/2009	12:30:36	10	SP3_0216	45.9167	-124.2252	55.33	1816.5	0.0
8/22/2009	12:30:45	10	SP3_0217	45.9163	-124.2189	55.33	1816.5	0.0
8/22/2009	12:30:53	10	SP3_0218	45.9160	-124.2128	55.33	1825.6	0.0
8/22/2009	12:31:01	10	SP3_0219	45.9156	-124.2065	55.33	1834.3	0.0
8/22/2009	12:31:09	10	SP3_0220	45.9154	-124.2002	55.33	1830.2	0.0
8/22/2009	12:31:18	10	SP3_0221	45.9151	-124.1941	55.33	1827.0	0.0
8/22/2009	12:31:26	10	SP3_0222	45.9149	-124.1878	55.33	1837.5	0.0
8/22/2009	12:31:34	10	SP3_0223	45.9148	-124.1814	55.33	1832.9	0.0
8/22/2009	12:31:42	10	SP3_0224	45.9149	-124.1753	55.33	1825.6	0.0
8/22/2009	12:31:51	10	SP3_0225	45.9151	-124.1688	55.33	1828.3	0.0
8/22/2009	12:31:59	10	SP3_0226	45.9154	-124.1624	55.33	1831.5	0.0
8/22/2009	12:32:07	10	SP3_0227	45.9159	-124.1563	55.33	1830.2	0.0
8/22/2009	12:32:15	10	SP3_0228	45.9165	-124.1499	55.33	1825.6	0.0
8/22/2009	12:32:24	10	SP3_0229	45.9170	-124.1438	55.33	1819.7	85.4
8/22/2009	12:32:32	10	SP3_0230	45.9176	-124.1372	55.33	1815.1	133.8
8/22/2009	12:32:40	10	SP3_0231	45.9181	-124.1311	55.33	1815.1	505.3
8/22/2009	12:32:48	10	SP3_0232	45.9186	-124.1247	55.33	1817.8	0.0
8/22/2009	12:32:57	10	SP3_0233	45.9192	-124.1183	55.33	1816.5	0.0
8/22/2009	12:33:05	10	SP3_0234	45.9196	-124.1121	55.33	1813.7	0.0
8/22/2009	12:33:13	10	SP3_0235	45.9200	-124.1056	55.33	1803.2	164.3
8/22/2009	12:33:21	10	SP3_0236	45.9205	-124.0993	55.33	1813.7	0.0

8/22/2009	12:33:30	10	SP3_0237	45.9208	-124.0932	55.33	1815.1	0.0
8/22/2009	12:33:38	10	SP3_0238	45.9209	-124.0868	55.33	1815.1	0.0
8/22/2009	12:33:46	10	SP3_0239	45.9209	-124.0804	55.33	1816.5	219.7
8/22/2009	12:33:54	10	SP3_0240	45.9207	-124.0742	55.33	1816.5	0.0
8/22/2009	12:34:03	10	SP3_0241	45.9202	-124.0677	55.33	1810.5	34.8
8/22/2009	12:34:11	10	SP3_0242	45.9196	-124.0611	55.33	1817.8	49.5
8/22/2009	12:34:19	10	SP3_0243	45.9189	-124.0549	55.33	1817.8	99.3
8/22/2009	12:34:27	10	SP3_0244	45.9182	-124.0484	55.33	1813.7	0.0
8/22/2009	12:34:36	10	SP3_0245	45.9175	-124.0418	55.33	1817.8	0.0
8/22/2009	12:34:44	10	SP3_0246	45.9168	-124.0356	55.33	1825.6	372.0
8/22/2009	12:34:52	10	SP3_0247	45.9163	-124.0293	55.33	1831.5	0.0
8/22/2009	12:35:00	10	SP3_0248	45.9156	-124.0231	55.33	1832.9	0.0
8/22/2009	12:35:09	10	SP3_0249	45.9151	-124.0167	55.33	1842.1	0.0
8/22/2009	12:45:23	11	SP3_0264	45.6674	-123.9658	55.47	1827.0	0.0
8/22/2009	12:45:31	11	SP3_0265	45.6671	-123.9723	55.47	1828.3	0.0
8/22/2009	12:45:39	11	SP3_0266	45.6672	-123.9782	55.47	1828.3	0.0
8/22/2009	12:45:47	11	SP3_0267	45.6669	-123.9848	55.47	1819.7	0.0
8/22/2009	12:45:56	11	SP3_0268	45.6666	-123.9909	55.47	1827.0	0.0
8/22/2009	12:46:04	11	SP3_0269	45.6664	-123.9973	55.47	1830.2	0.0
8/22/2009	12:46:12	11	SP3_0270	45.6660	-124.0036	55.47	1836.1	0.0
8/22/2009	12:46:20	11	SP3_0271	45.6656	-124.0097	55.47	1842.1	0.0
8/22/2009	12:46:29	11	SP3_0272	45.6652	-124.0161	55.47	1842.1	139.3
8/22/2009	12:46:37	11	SP3_0273	45.6651	-124.0222	55.47	1843.4	0.0
8/22/2009	12:46:45	11	SP3_0274	45.6650	-124.0287	55.47	1831.5	256.1
8/22/2009	12:46:53	11	SP3_0275	45.6649	-124.0352	55.47	1830.2	101.6
8/22/2009	12:47:02	11	SP3_0276	45.6649	-124.0414	55.47	1834.3	0.0
8/22/2009	12:47:10	11	SP3_0277	45.6652	-124.0478	55.47	1836.1	0.0
8/22/2009	12:47:18	11	SP3_0278	45.6655	-124.0538	55.47	1838.9	106.9
8/22/2009	12:47:26	11	SP3_0279	45.6656	-124.0600	55.47	1827.0	91.5
8/22/2009	12:47:35	11	SP3_0280	45.6656	-124.0663	55.47	1840.7	0.0
8/22/2009	12:47:43	11	SP3_0281	45.6664	-124.0725	55.47	1837.5	596.3
8/22/2009	12:47:51	11	SP3_0282	45.6668	-124.0787	55.47	1836.1	129.6

8/22/2009	12:47:59	11	SP3_0283	45.6672	-124.0849	55.47	1831.5	0.0
8/22/2009	12:48:08	11	SP3_0284	45.6675	-124.0908	55.47	1827.0	0.0
8/22/2009	12:48:16	11	SP3_0285	45.6678	-124.0972	55.47	1824.2	0.0
8/22/2009	12:48:24	11	SP3_0286	45.6682	-124.1035	55.47	1824.2	200.2
8/22/2009	12:48:32	11	SP3_0287	45.6687	-124.1095	55.47	1827.0	0.0
8/22/2009	12:48:41	11	SP3_0288	45.6689	-124.1158	55.47	1825.6	232.4
8/22/2009	12:48:49	11	SP3_0289	45.6690	-124.1218	55.47	1819.7	0.0
8/22/2009	12:48:57	11	SP3_0290	45.6691	-124.1283	55.47	1819.7	0.0
8/22/2009	12:49:05	11	SP3_0291	45.6690	-124.1347	55.47	1827.0	1392.7
8/22/2009	12:49:14	11	SP3_0292	45.6686	-124.1407	55.47	1827.0	764.5
8/22/2009	12:49:22	11	SP3_0293	45.6681	-124.1471	55.47	1824.2	675.5
8/22/2009	12:49:30	11	SP3_0294	45.6675	-124.1531	55.47	1824.2	441.3
8/22/2009	12:49:38	11	SP3_0295	45.6670	-124.1594	55.47	1827.0	669.1
8/22/2009	12:49:47	11	SP3_0296	45.6664	-124.1657	55.47	1832.9	880.6
8/22/2009	12:49:55	11	SP3_0297	45.6658	-124.1717	55.47	1827.0	133.5
8/22/2009	12:50:03	11	SP3_0298	45.6652	-124.1781	55.47	1822.4	475.0
8/22/2009	12:50:11	11	SP3_0299	45.6650	-124.1842	55.47	1816.5	158.2
8/22/2009	12:50:19	11	SP3_0300	45.6653	-124.1906	55.47	1810.5	1770.0
8/22/2009	12:50:28	11	SP3_0301	45.6655	-124.1967	55.47	1801.4	131.6
8/22/2009	12:50:36	11	SP3_0302	45.6657	-124.2030	55.47	1807.3	659.8
8/22/2009	12:50:44	11	SP3_0303	45.6659	-124.2093	55.47	1817.8	724.9
8/22/2009	12:50:52	11	SP3_0304	45.6660	-124.2152	55.47	1815.1	801.6
8/22/2009	12:51:01	11	SP3_0305	45.6662	-124.2215	55.47	1819.7	250.9
8/22/2009	12:51:09	11	SP3_0306	45.6665	-124.2273	55.47	1825.6	0.0
8/22/2009	12:51:17	11	SP3_0307	45.6668	-124.2335	55.47	1828.3	153.3
8/22/2009	12:51:25	11	SP3_0308	45.6672	-124.2396	55.47	1822.4	0.0
8/22/2009	12:51:34	11	SP3_0309	45.6675	-124.2455	55.47	1821.0	565.7
8/22/2009	12:51:42	11	SP3_0310	45.6678	-124.2516	55.47	1827.0	324.8
8/22/2009	12:51:50	11	SP3_0311	45.6680	-124.2579	55.47	1815.1	128.5
8/22/2009	12:51:58	11	SP3_0312	45.6682	-124.2639	55.47	1805.9	67.1
8/22/2009	12:52:07	11	SP3_0313	45.6683	-124.2702	55.47	1815.1	279.9
8/22/2009	12:52:15	11	SP3_0314	45.6683	-124.2761	55.47	1816.5	0.0

8/22/2009	12:52:23	11	SP3_0315	45.6683	-124.2824	55.47	1811.9	370.2
8/22/2009	12:52:31	11	SP3_0316	45.6682	-124.2886	55.47	1817.8	295.9
8/22/2009	12:52:40	11	SP3_0317	45.6680	-124.2945	55.47	1816.5	99.2
8/22/2009	12:52:48	11	SP3_0318	45.6676	-124.3007	55.47	1803.2	486.9
8/22/2009	12:52:56	11	SP3_0319	45.6673	-124.3068	55.47	1800.0	49.2
8/22/2009	12:53:04	11	SP3_0320	45.6672	-124.3131	55.47	1803.2	129.6
8/22/2009	12:53:13	11	SP3_0321	45.6672	-124.3194	55.47	1803.2	247.9
8/22/2009	12:53:21	11	SP3_0322	45.6672	-124.3254	55.47	1792.7	256.2
8/22/2009	12:53:29	11	SP3_0323	45.6671	-124.3318	55.47	1789.5	0.0
8/22/2009	12:53:37	11	SP3_0324	45.6670	-124.3381	55.47	1800.0	0.0
8/22/2009	12:53:46	11	SP3_0325	45.6669	-124.3441	55.47	1789.5	729.8
8/22/2009	12:53:54	11	SP3_0326	45.6669	-124.3505	55.47	1780.3	273.2
8/22/2009	12:54:02	11	SP3_0327	45.6667	-124.3564	55.47	1804.6	1256.2
8/22/2009	12:54:10	11	SP3_0328	45.6664	-124.3625	55.47	1810.5	1128.5
8/22/2009	12:54:19	11	SP3_0329	45.6660	-124.3686	55.47	1807.3	766.2
8/22/2009	12:54:27	11	SP3_0330	45.6657	-124.3744	55.47	1805.9	887.4
8/22/2009	12:54:35	11	SP3_0331	45.6655	-124.3805	55.47	1813.7	289.4
8/22/2009	12:54:43	11	SP3_0332	45.6654	-124.3863	55.47	1810.5	556.4
8/22/2009	12:54:51	11	SP3_0333	45.6655	-124.3925	55.47	1809.1	128.2
8/22/2009	12:55:00	11	SP3_0334	45.6657	-124.3982	55.47	1816.5	0.0
8/22/2009	12:55:08	11	SP3_0335	45.6660	-124.4042	55.47	1824.2	64.2
8/22/2009	12:55:16	11	SP3_0336	45.6663	-124.4102	55.47	1822.4	0.0
8/22/2009	12:55:24	11	SP3_0337	45.6665	-124.4160	55.47	1824.2	0.0
8/22/2009	12:55:33	11	SP3_0338	45.6668	-124.4221	55.47	1825.6	0.0
8/22/2009	12:55:41	11	SP3_0339	45.6671	-124.4279	55.47	1831.5	0.0
8/22/2009	12:55:49	11	SP3_0340	45.6673	-124.4339	55.47	1840.7	0.0
8/22/2009	12:55:57	11	SP3_0341	45.6675	-124.4399	55.47	1840.7	0.0
8/22/2009	12:56:06	11	SP3_0342	45.6678	-124.4456	55.47	1836.1	0.0
8/22/2009	12:56:14	11	SP3_0343	45.6681	-124.4517	55.47	1838.9	0.0
8/22/2009	12:56:22	11	SP3_0344	45.6683	-124.4575	55.47	1837.5	0.0
8/22/2009	12:56:30	11	SP3_0345	45.6684	-124.4636	55.47	1836.1	0.0
8/22/2009	12:56:39	11	SP3_0346	45.6684	-124.4699	55.47	1837.5	0.0

8/22/2009	12:56:47	11	SP3_0347	45.6682	-124.4758	55.47	1843.4	0.0
8/22/2009	12:56:55	11	SP3_0348	45.6679	-124.4821	55.47	1840.7	0.0
8/22/2009	12:57:03	11	SP3_0349	45.6676	-124.4884	55.47	1834.3	0.0
8/22/2009	12:57:12	11	SP3_0350	45.6673	-124.4944	55.47	1834.3	0.0
8/22/2009	12:57:20	11	SP3_0351	45.6671	-124.5007	55.47	1836.1	0.0
8/22/2009	12:57:28	11	SP3_0352	45.6670	-124.5071	55.47	1828.3	0.0
8/22/2009	12:57:36	11	SP3_0353	45.6669	-124.5132	55.47	1828.3	0.0
8/22/2009	12:57:45	11	SP3_0354	45.6668	-124.5195	55.47	1830.2	0.0
8/22/2009	12:57:53	11	SP3_0355	45.6668	-124.5258	55.47	1832.9	0.0
8/22/2009	12:58:01	11	SP3_0356	45.6670	-124.5318	55.47	1832.9	0.0
8/22/2009	12:58:09	11	SP3_0357	45.6672	-124.5380	55.47	1838.9	0.0
8/22/2009	12:58:18	11	SP3_0358	45.6674	-124.5443	55.47	1840.7	0.0
8/22/2009	12:58:26	11	SP3_0359	45.6676	-124.5502	55.47	1842.1	0.0
8/22/2009	12:58:34	11	SP3_0360	45.6678	-124.5564	55.47	1846.6	0.0
8/22/2009	12:58:42	11	SP3_0361	45.6677	-124.5623	55.47	1851.2	0.0
8/22/2009	12:58:51	11	SP3_0362	45.6677	-124.5684	55.47	1844.8	0.0
8/22/2009	12:58:59	11	SP3_0363	45.6676	-124.5744	55.47	1837.5	0.0
8/22/2009	12:59:07	11	SP3_0364	45.6676	-124.5807	55.47	1837.5	0.0
8/22/2009	12:59:15	11	SP3_0365	45.6678	-124.5870	55.47	1832.9	0.0
8/22/2009	12:59:23	11	SP3_0366	45.6679	-124.5930	55.47	1830.2	0.0
8/22/2009	12:59:32	11	SP3_0367	45.6679	-124.5993	55.47	1832.9	0.0
8/22/2009	12:59:40	11	SP3_0368	45.6678	-124.6055	55.47	1836.1	0.0
8/22/2009	12:59:48	11	SP3_0369	45.6676	-124.6115	55.47	1832.9	0.0
8/22/2009	12:59:57	11	SP3_0370	45.6674	-124.6177	55.47	1830.2	0.0
8/22/2009	13:00:05	11	SP3_0371	45.6671	-124.6240	55.47	1831.5	0.0
8/22/2009	13:00:13	11	SP3_0372	45.6668	-124.6300	55.47	1836.1	0.0
8/22/2009	13:00:21	11	SP3_0373	45.6665	-124.6363	55.47	1836.1	0.0
8/22/2009	13:00:30	11	SP3_0374	45.6663	-124.6423	55.47	1831.5	0.0
8/22/2009	13:00:38	11	SP3_0375	45.6661	-124.6487	55.47	1832.9	0.0
8/22/2009	13:00:46	11	SP3_0376	45.6659	-124.6550	55.47	1840.7	0.0
8/22/2009	13:00:54	11	SP3_0377	45.6658	-124.6610	55.47	1848.0	0.0
8/22/2009	13:01:03	11	SP3_0378	45.6656	-124.6673	55.47	1848.0	0.0

8/22/2009	13:01:11	11	SP3_0379	45.6654	-124.6733	55.47	1840.7	0.0
8/22/2009	13:01:19	11	SP3_0380	45.6652	-124.6797	55.47	1851.2	0.0
8/22/2009	13:11:01	12	SP3_0383	45.4172	-124.7133	55.78	1861.7	0.0
8/22/2009	13:11:09	12	SP3_0384	45.4169	-124.7068	55.78	1858.5	0.0
8/22/2009	13:11:17	12	SP3_0385	45.4167	-124.7007	55.78	1855.3	0.0
8/22/2009	13:11:25	12	SP3_0386	45.4164	-124.6941	55.78	1846.6	0.0
8/22/2009	13:11:34	12	SP3_0387	45.4162	-124.6875	55.78	1832.9	0.0
8/22/2009	13:11:42	12	SP3_0388	45.4161	-124.6812	55.78	1838.9	0.0
8/22/2009	13:11:50	12	SP3_0389	45.4159	-124.6747	55.78	1843.4	0.0
8/22/2009	13:11:58	12	SP3_0390	45.4157	-124.6686	55.78	1837.5	0.0
8/22/2009	13:12:06	12	SP3_0391	45.4156	-124.6622	55.78	1838.9	0.0
8/22/2009	13:12:15	12	SP3_0392	45.4154	-124.6558	55.78	1837.5	0.0
8/22/2009	13:12:23	12	SP3_0393	45.4153	-124.6497	55.78	1843.4	0.0
8/22/2009	13:12:31	12	SP3_0394	45.4154	-124.6434	55.78	1843.4	0.0
8/22/2009	13:12:39	12	SP3_0395	45.4156	-124.6373	55.78	1832.9	0.0
8/22/2009	13:12:48	12	SP3_0396	45.4159	-124.6309	55.78	1831.5	0.0
8/22/2009	13:12:56	12	SP3_0397	45.4163	-124.6246	55.78	1830.2	0.0
8/22/2009	13:13:04	12	SP3_0398	45.4167	-124.6185	55.78	1828.3	0.0
8/22/2009	13:13:13	12	SP3_0399	45.4172	-124.6122	55.78	1825.6	0.0
8/22/2009	13:13:21	12	SP3_0400	45.4175	-124.6062	55.78	1824.2	0.0
8/22/2009	13:13:29	12	SP3_0401	45.4179	-124.5998	55.78	1821.0	0.0
8/22/2009	13:13:37	12	SP3_0402	45.4182	-124.5937	55.78	1817.8	0.0
8/22/2009	13:13:45	12	SP3_0403	45.4185	-124.5874	55.78	1811.9	0.0
8/22/2009	13:13:54	12	SP3_0404	45.4185	-124.5810	55.78	1815.1	0.0
8/22/2009	13:14:02	12	SP3_0405	45.4184	-124.5750	55.78	1819.7	0.0
8/22/2009	13:14:10	12	SP3_0406	45.4182	-124.5687	55.78	1821.0	0.0
8/22/2009	13:14:19	12	SP3_0407	45.4180	-124.5624	55.78	1819.7	0.0
8/22/2009	13:14:27	12	SP3_0408	45.4179	-124.5564	55.78	1819.7	0.0
8/22/2009	13:14:35	12	SP3_0409	45.4178	-124.5501	55.78	1822.4	0.0
8/22/2009	13:14:43	12	SP3_0410	45.4178	-124.5441	55.78	1816.5	0.0
8/22/2009	13:14:51	12	SP3_0411	45.4180	-124.5378	55.78	1821.0	0.0
8/22/2009	13:15:00	12	SP3_0412	45.4180	-124.5316	55.78	1822.4	0.0

8/22/2009	13:15:08	12	SP3_0413	45.4179	-124.5256	55.78	1813.7	0.0
8/22/2009	13:15:16	12	SP3_0414	45.4178	-124.5192	55.78	1813.7	0.0
8/22/2009	13:15:25	12	SP3_0415	45.4177	-124.5129	55.78	1822.4	0.0
8/22/2009	13:15:33	12	SP3_0416	45.4177	-124.5070	55.78	1824.2	0.0
8/22/2009	13:15:41	12	SP3_0417	45.4174	-124.5007	55.78	1819.7	0.0
8/22/2009	13:15:49	12	SP3_0418	45.4173	-124.4946	55.78	1822.4	0.0
8/22/2009	13:15:57	12	SP3_0419	45.4170	-124.4883	55.78	1827.0	0.0
8/22/2009	13:16:06	12	SP3_0420	45.4167	-124.4820	55.78	1824.2	0.0
8/22/2009	13:16:14	12	SP3_0421	45.4163	-124.4759	55.78	1827.0	0.0
8/22/2009	13:16:22	12	SP3_0422	45.4159	-124.4697	55.78	1842.1	0.0
8/22/2009	13:16:30	12	SP3_0423	45.4157	-124.4637	55.78	1838.9	0.0
8/22/2009	13:16:39	12	SP3_0424	45.4156	-124.4574	55.78	1831.5	0.0
8/22/2009	13:16:47	12	SP3_0425	45.4156	-124.4513	55.78	1836.1	0.0
8/22/2009	13:16:55	12	SP3_0426	45.4157	-124.4450	55.78	1837.5	0.0
8/22/2009	13:17:03	12	SP3_0427	45.4160	-124.4386	55.78	1837.5	0.0
8/22/2009	13:17:11	12	SP3_0428	45.4162	-124.4326	55.78	1836.1	0.0
8/22/2009	13:17:20	12	SP3_0429	45.4163	-124.4262	55.78	1836.1	0.0
8/22/2009	13:17:28	12	SP3_0430	45.4165	-124.4199	55.78	1828.3	45.7
8/22/2009	13:17:36	12	SP3_0431	45.4167	-124.4137	55.78	1830.2	0.0
8/22/2009	13:17:45	12	SP3_0432	45.4170	-124.4074	55.78	1836.1	139.7
8/22/2009	13:17:53	12	SP3_0433	45.4171	-124.4010	55.78	1836.1	68.6
8/22/2009	13:18:01	12	SP3_0434	45.4172	-124.3949	55.78	1830.2	49.2
8/22/2009	13:18:09	12	SP3_0435	45.4172	-124.3885	55.78	1830.2	59.3
8/22/2009	13:18:17	12	SP3_0436	45.4172	-124.3824	55.78	1842.1	18.7
8/22/2009	13:18:26	12	SP3_0437	45.4171	-124.3760	55.78	1842.1	0.0
8/22/2009	13:18:34	12	SP3_0438	45.4168	-124.3696	55.78	1837.5	0.0
8/22/2009	13:18:42	12	SP3_0439	45.4165	-124.3635	55.78	1842.1	0.0
8/22/2009	13:18:51	12	SP3_0440	45.4161	-124.3572	55.78	1848.0	0.0
8/22/2009	13:18:59	12	SP3_0441	45.4156	-124.3512	55.78	1843.4	69.4
8/22/2009	13:19:07	12	SP3_0442	45.4151	-124.3448	55.78	1843.4	0.0
8/22/2009	13:19:15	12	SP3_0443	45.4145	-124.3384	55.78	1844.8	0.0
8/22/2009	13:19:23	12	SP3_0444	45.4136	-124.3324	55.78	1843.4	0.0

8/22/2009	13:19:32	12	SP3_0445	45.4127	-124.3260	55.78	1849.4	0.0
8/22/2009	13:19:40	12	SP3_0446	45.4124	-124.3200	55.78	1858.5	0.0
8/22/2009	13:19:48	12	SP3_0447	45.4124	-124.3137	55.78	1858.5	0.0
8/22/2009	13:19:56	12	SP3_0448	45.4126	-124.3077	55.78	1853.9	0.0
8/22/2009	13:20:05	12	SP3_0449	45.4128	-124.3015	55.78	1855.3	0.0
8/22/2009	13:20:13	12	SP3_0450	45.4131	-124.2952	55.78	1858.5	0.0
8/22/2009	13:20:21	12	SP3_0451	45.4136	-124.2893	55.78	1855.3	0.0
8/22/2009	13:20:29	12	SP3_0452	45.4140	-124.2830	55.78	1859.9	0.0
8/22/2009	13:20:37	12	SP3_0453	45.4145	-124.2771	55.78	1858.5	21.2
8/22/2009	13:20:46	12	SP3_0454	45.4151	-124.2710	55.78	1861.7	0.0
8/22/2009	13:20:54	12	SP3_0455	45.4156	-124.2648	55.78	1861.7	0.0
8/22/2009	13:21:02	12	SP3_0456	45.4162	-124.2589	55.78	1861.7	0.0
8/22/2009	13:21:11	12	SP3_0457	45.4167	-124.2527	55.78	1852.6	0.0
8/22/2009	13:21:19	12	SP3_0458	45.4169	-124.2466	55.78	1844.8	0.0
8/22/2009	13:21:27	12	SP3_0459	45.4168	-124.2402	55.78	1848.0	0.0
8/22/2009	13:21:35	12	SP3_0460	45.4166	-124.2338	55.78	1852.6	0.0
8/22/2009	13:21:43	12	SP3_0461	45.4164	-124.2277	55.78	1852.6	0.0
8/22/2009	13:21:52	12	SP3_0462	45.4161	-124.2213	55.78	1852.6	0.0
8/22/2009	13:22:00	12	SP3_0463	45.4159	-124.2149	55.78	1849.4	0.0
8/22/2009	13:22:08	12	SP3_0464	45.4156	-124.2088	55.78	1846.6	0.0
8/22/2009	13:22:17	12	SP3_0465	45.4154	-124.2023	55.78	1842.1	0.0
8/22/2009	13:22:25	12	SP3_0466	45.4155	-124.1958	55.78	1842.1	0.0
8/22/2009	13:22:33	12	SP3_0467	45.4156	-124.1897	55.78	1837.5	0.0
8/22/2009	13:22:41	12	SP3_0468	45.4156	-124.1832	55.78	1840.7	0.0
8/22/2009	13:22:49	12	SP3_0469	45.4158	-124.1771	55.78	1831.5	0.0
8/22/2009	13:22:58	12	SP3_0470	45.4159	-124.1707	55.78	1831.5	0.0
8/22/2009	13:23:06	12	SP3_0471	45.4162	-124.1646	55.78	1844.8	0.0
8/22/2009	13:23:14	12	SP3_0472	45.4164	-124.1584	55.78	1840.7	0.0
8/22/2009	13:23:23	12	SP3_0473	45.4167	-124.1520	55.78	1831.5	0.0
8/22/2009	13:23:31	12	SP3_0474	45.4170	-124.1460	55.78	1825.6	0.0
8/22/2009	13:23:39	12	SP3_0475	45.4172	-124.1396	55.78	1828.3	0.0
8/22/2009	13:23:47	12	SP3_0476	45.4175	-124.1333	55.78	1837.5	0.0

8/22/2009	13:23:55	12	SP3_0477	45.4176	-124.1274	55.78	1842.1	0.0
8/22/2009	13:24:04	12	SP3_0478	45.4177	-124.1211	55.78	1844.8	0.0
8/22/2009	13:24:12	12	SP3_0479	45.4176	-124.1152	55.78	1849.4	0.0
8/22/2009	13:24:20	12	SP3_0480	45.4175	-124.1090	55.78	1849.4	0.0
8/22/2009	13:24:29	12	SP3_0481	45.4172	-124.1026	55.78	1834.3	0.0
8/22/2009	13:24:37	12	SP3_0482	45.4168	-124.0967	55.78	1832.9	0.0
8/22/2009	13:24:45	12	SP3_0483	45.4165	-124.0903	55.78	1825.6	0.0
8/22/2009	13:24:53	12	SP3_0484	45.4163	-124.0843	55.78	1828.3	0.0
8/22/2009	13:25:01	12	SP3_0485	45.4160	-124.0780	55.78	1825.6	0.0
8/22/2009	13:25:09	12	SP3_0486	45.4158	-124.0720	55.78	1824.2	0.0
8/22/2009	13:25:18	12	SP3_0487	45.4156	-124.0657	55.78	1819.7	0.0
8/22/2009	13:25:26	12	SP3_0488	45.4154	-124.0594	55.78	1821.0	0.0
8/22/2009	13:25:34	12	SP3_0489	45.4153	-124.0535	55.78	1828.3	0.0
8/22/2009	13:25:43	12	SP3_0490	45.4151	-124.0473	55.78	1834.3	0.0
8/22/2009	13:25:51	12	SP3_0491	45.4148	-124.0411	55.78	1827.0	0.0
8/22/2009	13:25:59	12	SP3_0492	45.4143	-124.0351	55.78	1827.0	0.0
8/22/2009	13:26:07	12	SP3_0493	45.4137	-124.0289	55.78	1834.3	0.0
8/22/2009	13:26:16	12	SP3_0494	45.4129	-124.0227	55.78	1842.1	0.0
8/22/2009	13:26:24	12	SP3_0495	45.4122	-124.0169	55.78	1837.5	0.0
8/22/2009	13:26:32	12	SP3_0496	45.4113	-124.0107	55.78	1824.2	0.0
8/22/2009	13:26:40	12	SP3_0497	45.4105	-124.0048	55.78	1834.3	0.0
8/22/2009	13:26:49	12	SP3_0498	45.4101	-123.9987	55.78	1848.0	0.0
8/22/2009	13:36:43	13	SP3_0513	45.1653	-124.0156	55.56	1842.1	0.0
8/22/2009	13:36:51	13	SP3_0514	45.1648	-124.0218	55.56	1846.6	0.0
8/22/2009	13:36:59	13	SP3_0515	45.1645	-124.0283	55.56	1844.8	0.0
8/22/2009	13:37:07	13	SP3_0516	45.1643	-124.0349	55.56	1851.2	0.0
8/22/2009	13:37:15	13	SP3_0517	45.1645	-124.0410	55.56	1864.5	0.0
8/22/2009	13:37:24	13	SP3_0518	45.1649	-124.0472	55.56	1869.0	0.0
8/22/2009	13:37:32	13	SP3_0519	45.1655	-124.0532	55.56	1861.7	0.0
8/22/2009	13:37:40	13	SP3_0520	45.1662	-124.0597	55.56	1858.5	0.0
8/22/2009	13:37:49	13	SP3_0521	45.1668	-124.0660	55.56	1873.6	0.0
8/22/2009	13:37:57	13	SP3_0522	45.1674	-124.0720	55.56	1882.3	0.0

8/22/2009	13:38:05	13	SP3_0523	45.1678	-124.0784	55.56	1875.0	0.0
8/22/2009	13:38:13	13	SP3_0524	45.1682	-124.0846	55.56	1864.5	0.0
8/22/2009	13:38:21	13	SP3_0525	45.1685	-124.0912	55.56	1848.0	0.0
8/22/2009	13:38:29	13	SP3_0526	45.1687	-124.0976	55.56	1852.6	0.0
8/22/2009	13:38:38	13	SP3_0527	45.1687	-124.1042	55.56	1851.2	0.0
8/22/2009	13:38:46	13	SP3_0528	45.1686	-124.1109	55.56	1851.2	0.0
8/22/2009	13:38:54	13	SP3_0529	45.1685	-124.1171	55.56	1855.3	0.0
8/22/2009	13:39:03	13	SP3_0530	45.1682	-124.1238	55.56	1849.4	0.0
8/22/2009	13:39:11	13	SP3_0531	45.1678	-124.1304	55.56	1848.0	0.0
8/22/2009	13:39:19	13	SP3_0532	45.1674	-124.1367	55.56	1849.4	0.0
8/22/2009	13:39:37	13	SP3_0533	45.1664	-124.1509	55.56	1836.1	0.0
8/22/2009	13:39:45	13	SP3_0534	45.1658	-124.1574	55.56	1837.5	0.0
8/22/2009	13:39:53	13	SP3_0535	45.1651	-124.1637	55.56	1849.4	0.0
8/22/2009	13:40:01	13	SP3_0536	45.1642	-124.1699	55.56	1852.6	0.0
8/22/2009	13:40:09	13	SP3_0537	45.1634	-124.1757	55.56	1851.2	0.0
8/22/2009	13:40:17	13	SP3_0538	45.1627	-124.1820	55.56	1840.7	0.0
8/22/2009	13:40:25	13	SP3_0539	45.1619	-124.1883	55.56	1834.3	0.0
8/22/2009	13:40:33	13	SP3_0540	45.1612	-124.1946	55.56	1834.3	0.0
8/22/2009	13:40:40	13	SP3_0541	45.1609	-124.2006	55.56	1836.1	0.0
8/22/2009	13:40:48	13	SP3_0542	45.1611	-124.2069	55.56	1838.9	0.0
8/22/2009	13:40:56	13	SP3_0543	45.1616	-124.2130	55.56	1840.7	0.0
8/22/2009	13:41:04	13	SP3_0544	45.1623	-124.2191	55.56	1851.2	0.0
8/22/2009	13:41:12	13	SP3_0545	45.1630	-124.2247	55.56	1852.6	0.0
8/22/2009	13:41:20	13	SP3_0546	45.1638	-124.2307	55.56	1853.9	0.0
8/22/2009	13:41:28	13	SP3_0547	45.1645	-124.2366	55.56	1861.7	0.0
8/22/2009	13:41:36	13	SP3_0548	45.1654	-124.2425	55.56	1859.9	0.0
8/22/2009	13:41:43	13	SP3_0549	45.1662	-124.2481	55.56	1861.7	0.0
8/22/2009	13:41:51	13	SP3_0550	45.1669	-124.2540	55.56	1865.8	0.0
8/22/2009	13:41:59	13	SP3_0551	45.1672	-124.2601	55.56	1858.5	0.0
8/22/2009	13:42:07	13	SP3_0552	45.1676	-124.2662	55.56	1852.6	0.0
8/22/2009	13:42:15	13	SP3_0553	45.1679	-124.2720	55.56	1852.6	0.0
8/22/2009	13:42:23	13	SP3_0554	45.1682	-124.2780	55.56	1858.5	0.0

8/22/2009	13:42:31	13	SP3_0555	45.1682	-124.2840	55.56	1853.9	0.0
8/22/2009	13:42:39	13	SP3_0556	45.1680	-124.2900	55.56	1842.1	0.0
8/22/2009	13:42:47	13	SP3_0557	45.1678	-124.2958	55.56	1832.9	0.0
8/22/2009	13:42:55	13	SP3_0558	45.1677	-124.3020	55.56	1825.6	0.0
8/22/2009	13:43:03	13	SP3_0559	45.1675	-124.3081	55.56	1824.2	0.0
8/22/2009	13:43:11	13	SP3_0560	45.1674	-124.3142	55.56	1824.2	0.0
8/22/2009	13:43:18	13	SP3_0561	45.1673	-124.3199	55.56	1830.2	0.0
8/22/2009	13:43:26	13	SP3_0562	45.1674	-124.3259	55.56	1834.3	0.0
8/22/2009	13:43:34	13	SP3_0563	45.1675	-124.3318	55.56	1838.9	0.0
8/22/2009	13:43:42	13	SP3_0564	45.1679	-124.3377	55.56	1834.3	0.0
8/22/2009	13:43:50	13	SP3_0565	45.1684	-124.3433	55.56	1825.6	0.0
8/22/2009	13:43:58	13	SP3_0566	45.1690	-124.3492	55.56	1825.6	0.0
8/22/2009	13:44:06	13	SP3_0567	45.1694	-124.3551	55.56	1828.3	0.0
8/22/2009	13:44:14	13	SP3_0568	45.1696	-124.3611	55.56	1824.2	0.0
8/22/2009	13:44:28	13	SP3_0569	45.1704	-124.3714	55.56	1830.2	0.0
8/22/2009	13:44:36	13	SP3_0570	45.1710	-124.3771	55.56	1832.9	0.0
8/22/2009	13:44:44	13	SP3_0571	45.1714	-124.3832	55.56	1832.9	0.0
8/22/2009	13:44:54	13	SP3_0572	45.1714	-124.3903	55.56	1828.3	0.0
8/22/2009	13:45:02	13	SP3_0573	45.1713	-124.3966	55.56	1824.2	0.0
8/22/2009	13:45:10	13	SP3_0574	45.1710	-124.4026	55.56	1822.4	0.0
8/22/2009	13:45:18	13	SP3_0575	45.1705	-124.4089	55.56	1817.8	0.0
8/22/2009	13:45:27	13	SP3_0576	45.1701	-124.4149	55.56	1813.7	0.0
8/22/2009	13:45:35	13	SP3_0577	45.1694	-124.4212	55.56	1811.9	30.0
8/22/2009	13:45:43	13	SP3_0578	45.1686	-124.4275	55.56	1811.9	0.0
8/22/2009	13:45:51	13	SP3_0579	45.1678	-124.4334	55.56	1816.5	0.0
8/22/2009	13:46:00	13	SP3_0580	45.1674	-124.4397	55.56	1817.8	0.0
8/22/2009	13:46:08	13	SP3_0581	45.1673	-124.4456	55.56	1815.1	0.0
8/22/2009	13:46:16	13	SP3_0582	45.1677	-124.4518	55.56	1816.5	0.0
8/22/2009	13:46:24	13	SP3_0583	45.1682	-124.4579	55.56	1813.7	0.0
8/22/2009	13:46:33	13	SP3_0584	45.1685	-124.4638	55.56	1811.9	0.0
8/22/2009	13:46:41	13	SP3_0585	45.1688	-124.4700	55.56	1815.1	0.0
8/22/2009	13:46:49	13	SP3_0586	45.1689	-124.4759	55.56	1811.9	0.0

8/22/2009	13:46:57	13	SP3_0587	45.1690	-124.4821	55.56	1815.1	0.0
8/22/2009	13:47:06	13	SP3_0588	45.1691	-124.4883	55.56	1811.9	0.0
8/22/2009	13:47:14	13	SP3_0589	45.1692	-124.4942	55.56	1813.7	0.0
8/22/2009	13:47:22	13	SP3_0590	45.1693	-124.5004	55.56	1811.9	0.0
8/22/2009	13:47:30	13	SP3_0591	45.1691	-124.5063	55.56	1815.1	0.0
8/22/2009	13:47:38	13	SP3_0592	45.1688	-124.5125	55.56	1819.7	0.0
8/22/2009	13:47:47	13	SP3_0593	45.1685	-124.5184	55.56	1810.5	0.0
8/22/2009	13:47:55	13	SP3_0594	45.1682	-124.5247	55.56	1804.6	0.0
8/22/2009	13:48:11	13	SP3_0595	45.1674	-124.5368	55.56	1807.3	0.0
8/22/2009	13:48:20	13	SP3_0596	45.1667	-124.5431	55.56	1800.0	0.0
8/22/2009	13:48:28	13	SP3_0597	45.1656	-124.5493	55.56	1807.3	0.0
8/22/2009	13:48:36	13	SP3_0598	45.1641	-124.5549	55.56	1817.8	0.0
8/22/2009	13:48:44	13	SP3_0599	45.1629	-124.5608	55.56	1825.6	0.0
8/22/2009	13:48:53	13	SP3_0600	45.1627	-124.5668	55.56	1842.1	0.0
8/22/2009	13:49:01	13	SP3_0601	45.1632	-124.5723	55.56	1849.4	0.0
8/22/2009	13:49:09	13	SP3_0602	45.1642	-124.5780	55.56	1840.7	0.0
8/22/2009	13:49:17	13	SP3_0603	45.1657	-124.5834	55.56	1838.9	0.0
8/22/2009	13:49:26	13	SP3_0604	45.1674	-124.5888	55.56	1842.1	0.0
8/22/2009	13:49:34	13	SP3_0605	45.1689	-124.5941	55.56	1844.8	0.0
8/22/2009	13:49:42	13	SP3_0606	45.1702	-124.5998	55.56	1849.4	0.0
8/22/2009	13:49:59	13	SP3_0607	45.1718	-124.6116	55.56	1848.0	0.0
8/22/2009	13:50:08	13	SP3_0608	45.1721	-124.6180	55.56	1853.9	0.0
8/22/2009	13:50:17	13	SP3_0609	45.1720	-124.6247	55.56	1851.2	0.0
8/22/2009	13:50:26	13	SP3_0610	45.1716	-124.6311	55.56	1849.4	0.0
8/22/2009	13:50:35	13	SP3_0611	45.1709	-124.6379	55.56	1840.7	0.0
8/22/2009	13:50:44	13	SP3_0612	45.1702	-124.6447	55.56	1836.1	0.0
8/22/2009	13:50:53	13	SP3_0613	45.1696	-124.6514	55.56	1831.5	0.0
8/22/2009	13:51:02	13	SP3_0614	45.1691	-124.6583	55.56	1836.1	0.0
8/22/2009	13:51:11	13	SP3_0615	45.1685	-124.6648	55.56	1837.5	0.0
8/22/2009	13:51:20	13	SP3_0616	45.1677	-124.6716	55.56	1838.9	0.0
8/22/2009	13:51:29	13	SP3_0617	45.1669	-124.6781	55.56	1843.4	0.0
8/22/2009	13:51:38	13	SP3_0618	45.1662	-124.6850	55.56	1848.0	0.0

8/22/2009	13:51:47	13	SP3_0619	45.1658	-124.6918	55.56	1853.9	0.0
8/22/2009	13:51:56	13	SP3_0620	45.1657	-124.6983	55.56	1859.9	0.0
8/22/2009	13:52:05	13	SP3_0621	45.1658	-124.7051	55.56	1861.7	0.0
8/22/2009	13:52:14	13	SP3_0622	45.1662	-124.7115	55.56	1867.7	0.0
8/22/2009	13:52:23	13	SP3_0623	45.1668	-124.7181	55.56	1875.0	0.0
8/22/2009	13:52:32	13	SP3_0624	45.1673	-124.7244	55.56	1882.3	0.0
8/22/2009	14:02:03	14	SP3_0630	44.9132	-124.7740	55.8	1819.7	0.0
8/22/2009	14:02:11	14	SP3_0631	44.9135	-124.7676	55.8	1809.1	0.0
8/22/2009	14:02:19	14	SP3_0632	44.9138	-124.7614	55.8	1804.6	0.0
8/22/2009	14:02:27	14	SP3_0633	44.9141	-124.7551	55.8	1822.4	0.0
8/22/2009	14:02:36	14	SP3_0634	44.9143	-124.7489	55.8	1825.6	0.0
8/22/2009	14:02:44	14	SP3_0635	44.9147	-124.7430	55.8	1824.2	0.0
8/22/2009	14:02:52	14	SP3_0636	44.9151	-124.7368	55.8	1827.0	0.0
8/22/2009	14:03:00	14	SP3_0637	44.9155	-124.7306	55.8	1836.1	0.0
8/22/2009	14:03:09	14	SP3_0638	44.9159	-124.7247	55.8	1832.9	0.0
8/22/2009	14:03:17	14	SP3_0639	44.9163	-124.7185	55.8	1831.5	0.0
8/22/2009	14:03:25	14	SP3_0640	44.9166	-124.7125	55.8	1831.5	0.0
8/22/2009	14:03:33	14	SP3_0641	44.9169	-124.7061	55.8	1819.7	0.0
8/22/2009	14:03:41	14	SP3_0642	44.9170	-124.7000	55.8	1813.7	0.0
8/22/2009	14:03:50	14	SP3_0643	44.9172	-124.6936	55.8	1816.5	0.0
8/22/2009	14:03:58	14	SP3_0644	44.9173	-124.6872	55.8	1819.7	0.0
8/22/2009	14:04:06	14	SP3_0645	44.9174	-124.6811	55.8	1815.1	0.0
8/22/2009	14:04:14	14	SP3_0646	44.9175	-124.6747	55.8	1815.1	0.0
8/22/2009	14:04:23	14	SP3_0647	44.9174	-124.6683	55.8	1811.9	0.0
8/22/2009	14:04:31	14	SP3_0648	44.9172	-124.6622	55.8	1816.5	0.0
8/22/2009	14:04:39	14	SP3_0649	44.9170	-124.6558	55.8	1821.0	0.0
8/22/2009	14:04:48	14	SP3_0650	44.9168	-124.6494	55.8	1817.8	0.0
8/22/2009	14:04:56	14	SP3_0651	44.9166	-124.6433	55.8	1821.0	0.0
8/22/2009	14:05:04	14	SP3_0652	44.9165	-124.6369	55.8	1827.0	0.0
8/22/2009	14:05:12	14	SP3_0653	44.9165	-124.6309	55.8	1827.0	0.0
8/22/2009	14:05:20	14	SP3_0654	44.9165	-124.6245	55.8	1830.2	0.0
8/22/2009	14:05:29	14	SP3_0655	44.9168	-124.6183	55.8	1832.9	0.0

8/22/2009	14:05:37	14	SP3_0656	44.9172	-124.6123	55.8	1830.2	0.0
8/22/2009	14:05:45	14	SP3_0657	44.9177	-124.6060	55.8	1834.3	0.0
8/22/2009	14:05:53	14	SP3_0658	44.9181	-124.6001	55.8	1836.1	0.0
8/22/2009	14:06:02	14	SP3_0659	44.9185	-124.5938	55.8	1836.1	0.0
8/22/2009	14:06:10	14	SP3_0660	44.9185	-124.5877	55.8	1830.2	0.0
8/22/2009	14:06:18	14	SP3_0661	44.9185	-124.5813	55.8	1831.5	0.0
8/22/2009	14:06:26	14	SP3_0662	44.9183	-124.5749	55.8	1828.3	0.0
8/22/2009	14:06:35	14	SP3_0663	44.9179	-124.5687	55.8	1831.5	0.0
8/22/2009	14:06:43	14	SP3_0664	44.9173	-124.5624	55.8	1848.0	0.0
8/22/2009	14:06:51	14	SP3_0665	44.9166	-124.5562	55.8	1857.1	0.0
8/22/2009	14:06:59	14	SP3_0666	44.9160	-124.5503	55.8	1863.1	0.0
8/22/2009	14:07:08	14	SP3_0667	44.9153	-124.5441	55.8	1863.1	0.0
8/22/2009	14:07:16	14	SP3_0668	44.9145	-124.5379	55.8	1871.8	0.0
8/22/2009	14:07:24	14	SP3_0669	44.9138	-124.5321	55.8	1882.3	0.0
8/22/2009	14:07:32	14	SP3_0670	44.9129	-124.5260	55.8	1878.2	0.0
8/22/2009	14:07:41	14	SP3_0671	44.9119	-124.5202	55.8	1878.2	0.0
8/22/2009	14:07:49	14	SP3_0672	44.9108	-124.5141	55.8	1884.1	0.0
8/22/2009	14:07:57	14	SP3_0673	44.9096	-124.5081	55.8	1882.3	0.0
8/22/2009	14:08:05	14	SP3_0674	44.9085	-124.5024	55.8	1886.9	0.0
8/22/2009	14:08:14	14	SP3_0675	44.9073	-124.4965	55.8	1888.7	0.0
8/22/2009	14:08:22	14	SP3_0676	44.9064	-124.4908	55.8	1886.9	0.0
8/22/2009	14:08:30	14	SP3_0677	44.9060	-124.4846	55.8	1884.1	0.0
8/22/2009	14:08:38	14	SP3_0678	44.9058	-124.4787	55.8	1873.6	0.0
8/22/2009	14:08:46	14	SP3_0679	44.9059	-124.4724	55.8	1867.7	0.0
8/22/2009	14:08:55	14	SP3_0680	44.9060	-124.4661	55.8	1864.5	0.0
8/22/2009	14:09:03	14	SP3_0681	44.9064	-124.4602	55.8	1869.0	0.0
8/22/2009	14:09:11	14	SP3_0682	44.9070	-124.4542	55.8	1876.3	0.0
8/22/2009	14:09:20	14	SP3_0683	44.9077	-124.4481	55.8	1871.8	0.0
8/22/2009	14:09:28	14	SP3_0684	44.9084	-124.4424	55.8	1865.8	0.0
8/22/2009	14:09:36	14	SP3_0685	44.9092	-124.4363	55.8	1869.0	0.0
8/22/2009	14:09:44	14	SP3_0686	44.9100	-124.4304	55.8	1867.7	0.0
8/22/2009	14:09:53	14	SP3_0687	44.9108	-124.4247	55.8	1870.4	0.0

8/22/2009	14:10:01	14	SP3_0688	44.9116	-124.4188	55.8	1869.0	0.0
8/22/2009	14:10:09	14	SP3_0689	44.9124	-124.4128	55.8	1867.7	0.0
8/22/2009	14:10:17	14	SP3_0690	44.9131	-124.4071	55.8	1870.4	0.0
8/22/2009	14:10:26	14	SP3_0691	44.9138	-124.4012	55.8	1873.6	0.0
8/22/2009	14:10:34	14	SP3_0692	44.9144	-124.3955	55.8	1871.8	0.0
8/22/2009	14:10:42	14	SP3_0693	44.9150	-124.3895	55.8	1870.4	0.0
8/22/2009	14:10:50	14	SP3_0694	44.9152	-124.3833	55.8	1865.8	0.0
8/22/2009	14:10:59	14	SP3_0695	44.9150	-124.3775	55.8	1867.7	0.0
8/22/2009	14:11:07	14	SP3_0696	44.9145	-124.3713	55.8	1863.1	0.0
8/22/2009	14:11:15	14	SP3_0697	44.9140	-124.3652	55.8	1867.7	0.0
8/22/2009	14:11:23	14	SP3_0698	44.9141	-124.3595	55.8	1864.5	0.0
8/22/2009	14:11:32	14	SP3_0699	44.9143	-124.3533	55.8	1853.9	0.0
8/22/2009	14:11:40	14	SP3_0700	44.9146	-124.3475	55.8	1857.1	0.0
8/22/2009	14:11:48	14	SP3_0701	44.9152	-124.3414	55.8	1846.6	0.0
8/22/2009	14:11:56	14	SP3_0702	44.9158	-124.3353	55.8	1842.1	0.0
8/22/2009	14:12:05	14	SP3_0703	44.9166	-124.3295	55.8	1843.4	0.0
8/22/2009	14:12:13	14	SP3_0704	44.9173	-124.3234	55.8	1834.3	0.0
8/22/2009	14:12:21	14	SP3_0705	44.9176	-124.3175	55.8	1837.5	0.0
8/22/2009	14:12:29	14	SP3_0706	44.9175	-124.3114	55.8	1846.6	0.0
8/22/2009	14:12:38	14	SP3_0707	44.9174	-124.3052	55.8	1842.1	0.0
8/22/2009	14:12:46	14	SP3_0708	44.9174	-124.2993	55.8	1834.3	0.0
8/22/2009	14:12:54	14	SP3_0709	44.9173	-124.2932	55.8	1843.4	0.0
8/22/2009	14:13:02	14	SP3_0710	44.9173	-124.2874	55.8	1852.6	0.0
8/22/2009	14:13:10	14	SP3_0711	44.9172	-124.2814	55.8	1851.2	0.0
8/22/2009	14:13:19	14	SP3_0712	44.9172	-124.2755	55.8	1848.0	0.0
8/22/2009	14:13:27	14	SP3_0713	44.9172	-124.2695	55.8	1857.1	0.0
8/22/2009	14:13:35	14	SP3_0714	44.9170	-124.2634	55.8	1853.9	0.0
8/22/2009	14:13:43	14	SP3_0715	44.9167	-124.2575	55.8	1855.3	0.0
8/22/2009	14:13:52	14	SP3_0716	44.9165	-124.2515	55.8	1867.7	0.0
8/22/2009	14:14:00	14	SP3_0717	44.9164	-124.2455	55.8	1873.6	0.0
8/22/2009	14:14:08	14	SP3_0718	44.9163	-124.2398	55.8	1864.5	0.0
8/22/2009	14:14:16	14	SP3_0719	44.9162	-124.2337	55.8	1867.7	0.0

8/22/2009	14:14:25	14	SP3_0720	44.9162	-124.2277	55.8	1875.0	0.0
8/22/2009	14:14:33	14	SP3_0721	44.9162	-124.2219	55.8	1864.5	0.0
8/22/2009	14:14:41	14	SP3_0722	44.9161	-124.2157	55.8	1865.8	0.0
8/22/2009	14:14:49	14	SP3_0723	44.9158	-124.2099	55.8	1875.0	0.0
8/22/2009	14:14:58	14	SP3_0724	44.9157	-124.2038	55.8	1876.3	0.0
8/22/2009	14:15:06	14	SP3_0725	44.9158	-124.1977	55.8	1871.8	0.0
8/22/2009	14:15:14	14	SP3_0726	44.9159	-124.1919	55.8	1878.2	0.0
8/22/2009	14:15:22	14	SP3_0727	44.9161	-124.1859	55.8	1885.5	0.0
8/22/2009	14:15:31	14	SP3_0728	44.9164	-124.1803	55.8	1892.8	0.0
8/22/2009	14:15:39	14	SP3_0729	44.9168	-124.1742	55.8	1871.8	0.0
8/22/2009	14:15:47	14	SP3_0730	44.9171	-124.1681	55.8	1870.4	0.0
8/22/2009	14:15:55	14	SP3_0731	44.9174	-124.1623	55.8	1878.2	0.0
8/22/2009	14:16:04	14	SP3_0732	44.9178	-124.1562	55.8	1879.5	0.0
8/22/2009	14:16:12	14	SP3_0733	44.9182	-124.1505	55.8	1867.7	0.0
8/22/2009	14:16:20	14	SP3_0734	44.9185	-124.1443	55.8	1853.9	0.0
8/22/2009	14:16:28	14	SP3_0735	44.9186	-124.1381	55.8	1865.8	0.0
8/22/2009	14:16:37	14	SP3_0736	44.9187	-124.1323	55.8	1875.0	0.0
8/22/2009	14:16:45	14	SP3_0737	44.9189	-124.1263	55.8	1867.7	0.0
8/22/2009	14:16:53	14	SP3_0738	44.9192	-124.1204	55.8	1848.0	0.0
8/22/2009	14:17:01	14	SP3_0739	44.9193	-124.1141	55.8	1848.0	0.0
8/22/2009	14:17:09	14	SP3_0740	44.9193	-124.1083	55.8	1853.9	0.0
8/22/2009	14:17:18	14	SP3_0741	44.9195	-124.1021	55.8	1852.6	0.0
8/22/2009	14:17:26	14	SP3_0742	44.9196	-124.0960	55.8	1840.7	0.0
8/22/2009	14:17:34	14	SP3_0743	44.9196	-124.0900	55.8	1834.3	0.0
8/22/2009	14:17:42	14	SP3_0744	44.9195	-124.0837	55.8	1836.1	0.0
8/22/2009	14:17:51	14	SP3_0745	44.9193	-124.0775	55.8	1842.1	0.0
8/22/2009	14:17:59	14	SP3_0746	44.9190	-124.0716	55.8	1843.4	0.0
8/22/2009	14:18:07	14	SP3_0747	44.9186	-124.0655	55.8	1843.4	0.0
8/23/2009	11:09:46	15	SP1_0015	44.6658	-124.0974	55.92	1831.5	0.0
8/23/2009	11:09:55	15	SP1_0016	44.6656	-124.1018	55.92	1822.4	0.0
8/23/2009	11:10:03	15	SP1_0017	44.6655	-124.1064	55.92	1824.2	0.0
8/23/2009	11:10:12	15	SP1_0018	44.6654	-124.1106	55.92	1827.0	0.0

8/23/2009	11:10:21	15	SP1_0019	44.6654	-124.1149	55.92	1815.1	0.0
8/23/2009	11:10:29	15	SP1_0020	44.6654	-124.1193	55.92	1810.5	0.0
8/23/2009	11:10:38	15	SP1_0021	44.6656	-124.1233	55.92	1815.1	0.0
8/23/2009	11:10:46	15	SP1_0022	44.6658	-124.1274	55.92	1821.0	0.0
8/23/2009	11:10:55	15	SP1_0023	44.6660	-124.1313	55.92	1821.0	0.0
8/23/2009	11:11:04	15	SP1_0024	44.6663	-124.1354	55.92	1827.0	0.0
8/23/2009	11:11:12	15	SP1_0025	44.6662	-124.1394	55.92	1834.3	0.0
8/23/2009	11:11:21	15	SP1_0026	44.6660	-124.1436	55.92	1834.3	0.0
8/23/2009	11:11:30	15	SP1_0027	44.6663	-124.1475	55.92	1834.3	0.0
8/23/2009	11:11:38	15	SP1_0028	44.6666	-124.1514	55.92	1842.1	0.0
8/23/2009	11:11:47	15	SP1_0029	44.6668	-124.1554	55.92	1838.9	0.0
8/23/2009	11:11:55	15	SP1_0030	44.6668	-124.1593	55.92	1846.6	0.0
8/23/2009	11:12:04	15	SP1_0031	44.6669	-124.1632	55.92	1849.4	0.0
8/23/2009	11:12:13	15	SP1_0032	44.6669	-124.1670	55.92	1843.4	0.0
8/23/2009	11:12:21	15	SP1_0033	44.6670	-124.1710	55.92	1844.8	0.0
8/23/2009	11:12:30	15	SP1_0034	44.6670	-124.1747	55.92	1843.4	0.0
8/23/2009	11:12:39	15	SP1_0035	44.6670	-124.1788	55.92	1837.5	0.0
8/23/2009	11:12:47	15	SP1_0036	44.6669	-124.1826	55.92	1840.7	0.0
8/23/2009	11:12:56	15	SP1_0037	44.6669	-124.1866	55.92	1840.7	0.0
8/23/2009	11:13:04	15	SP1_0038	44.6668	-124.1904	55.92	1837.5	0.0
8/23/2009	11:13:13	15	SP1_0039	44.6667	-124.1944	55.92	1837.5	0.0
8/23/2009	11:13:22	15	SP1_0040	44.6667	-124.1985	55.92	1838.9	0.0
8/23/2009	11:13:30	15	SP1_0041	44.6667	-124.2023	55.92	1843.4	0.0
8/23/2009	11:13:39	15	SP1_0042	44.6668	-124.2062	55.92	1840.7	0.0
8/23/2009	11:13:47	15	SP1_0043	44.6671	-124.2099	55.92	1842.1	0.0
8/23/2009	11:13:56	15	SP1_0044	44.6672	-124.2138	55.92	1842.1	0.0
8/23/2009	11:14:05	15	SP1_0045	44.6672	-124.2176	55.92	1840.7	0.0
8/23/2009	11:14:13	15	SP1_0046	44.6673	-124.2215	55.92	1846.6	0.0
8/23/2009	11:14:22	15	SP1_0047	44.6675	-124.2253	55.92	1843.4	0.0
8/23/2009	11:14:31	15	SP1_0048	44.6677	-124.2292	55.92	1842.1	0.0
8/23/2009	11:14:39	15	SP1_0049	44.6678	-124.2330	55.92	1842.1	0.0
8/23/2009	11:14:48	15	SP1_0050	44.6677	-124.2370	55.92	1842.1	0.0

8/23/2009	11:14:56	15	SP1_0051	44.6674	-124.2411	55.92	1840.7	0.0
8/23/2009	11:15:05	15	SP1_0052	44.6672	-124.2450	55.92	1849.4	0.0
8/23/2009	11:15:14	15	SP1_0053	44.6672	-124.2490	55.92	1851.2	0.0
8/23/2009	11:15:22	15	SP1_0054	44.6672	-124.2528	55.92	1855.3	0.0
8/23/2009	11:15:31	15	SP1_0055	44.6672	-124.2568	55.92	1859.9	0.0
8/23/2009	11:15:40	15	SP1_0056	44.6670	-124.2608	55.92	1859.9	0.0
8/23/2009	11:15:48	15	SP1_0057	44.6668	-124.2649	55.92	1858.5	0.0
8/23/2009	11:15:57	15	SP1_0058	44.6666	-124.2689	55.92	1857.1	0.0
8/23/2009	11:16:05	15	SP1_0059	44.6662	-124.2730	55.92	1857.1	0.0
8/23/2009	11:16:14	15	SP1_0060	44.6663	-124.2768	55.92	1857.1	0.0
8/23/2009	11:16:23	15	SP1_0061	44.6663	-124.2807	55.92	1863.1	0.0
8/23/2009	11:16:31	15	SP1_0062	44.6662	-124.2847	55.92	1859.9	0.0
8/23/2009	11:16:40	15	SP1_0063	44.6661	-124.2886	55.92	1858.5	0.0
8/23/2009	11:16:48	15	SP1_0064	44.6661	-124.2926	55.92	1858.5	0.0
8/23/2009	11:16:57	15	SP1_0065	44.6660	-124.2964	55.92	1855.3	0.0
8/23/2009	11:17:06	15	SP1_0066	44.6659	-124.3004	55.92	1857.1	0.0
8/23/2009	11:17:14	15	SP1_0067	44.6659	-124.3043	55.92	1857.1	0.0
8/23/2009	11:17:23	15	SP1_0068	44.6658	-124.3082	55.92	1858.5	0.0
8/23/2009	11:17:32	15	SP1_0069	44.6658	-124.3121	55.92	1858.5	0.0
8/23/2009	11:17:40	15	SP1_0070	44.6658	-124.3161	55.92	1859.9	0.0
8/23/2009	11:17:49	15	SP1_0071	44.6657	-124.3199	55.92	1861.7	0.0
8/23/2009	11:17:57	15	SP1_0072	44.6656	-124.3240	55.92	1858.5	0.0
8/23/2009	11:18:06	15	SP1_0073	44.6657	-124.3279	55.92	1864.5	0.0
8/23/2009	11:18:15	15	SP1_0074	44.6658	-124.3316	55.92	1869.0	0.0
8/23/2009	11:18:23	15	SP1_0075	44.6658	-124.3355	55.92	1870.4	0.0
8/23/2009	11:18:32	15	SP1_0076	44.6658	-124.3393	55.92	1867.7	0.0
8/23/2009	11:18:40	15	SP1_0077	44.6656	-124.3433	55.92	1865.8	0.0
8/23/2009	11:18:49	15	SP1_0078	44.6653	-124.3472	55.92	1873.6	0.0
8/23/2009	11:18:58	15	SP1_0079	44.6650	-124.3512	55.92	1875.0	0.0
8/23/2009	11:19:06	15	SP1_0080	44.6649	-124.3550	55.92	1875.0	0.0
8/23/2009	11:19:15	15	SP1_0081	44.6648	-124.3590	55.92	1876.3	0.0
8/23/2009	11:19:24	15	SP1_0082	44.6648	-124.3629	55.92	1880.9	0.0

8/23/2009	11:19:32	15	SP1_0083	44.6650	-124.3666	55.92	1882.3	0.0
8/23/2009	11:19:41	15	SP1_0084	44.6653	-124.3703	55.92	1890.1	0.0
8/23/2009	11:19:49	15	SP1_0085	44.6655	-124.3739	55.92	1886.9	0.0
8/23/2009	11:19:58	15	SP1_0086	44.6658	-124.3777	55.92	1886.9	0.0
8/23/2009	11:20:07	15	SP1_0087	44.6661	-124.3813	55.92	1890.1	0.0
8/23/2009	11:20:15	15	SP1_0088	44.6663	-124.3852	55.92	1879.5	0.0
8/23/2009	11:20:24	15	SP1_0089	44.6664	-124.3889	55.92	1884.1	0.0
8/23/2009	11:20:33	15	SP1_0090	44.6665	-124.3928	55.92	1878.2	0.0
8/23/2009	11:20:41	15	SP1_0091	44.6666	-124.3965	55.92	1873.6	0.0
8/23/2009	11:20:50	15	SP1_0092	44.6668	-124.4004	55.92	1876.3	0.0
8/23/2009	11:20:58	15	SP1_0093	44.6668	-124.4043	55.92	1871.8	0.0
8/23/2009	11:21:07	15	SP1_0094	44.6669	-124.4081	55.92	1871.8	0.0
8/23/2009	11:21:16	15	SP1_0095	44.6669	-124.4120	55.92	1871.8	0.0
8/23/2009	11:21:24	15	SP1_0096	44.6669	-124.4157	55.92	1871.8	0.0
8/23/2009	11:21:33	15	SP1_0097	44.6671	-124.4196	55.92	1869.0	0.0
8/23/2009	11:21:42	15	SP1_0098	44.6670	-124.4233	55.92	1870.4	0.0
8/23/2009	11:21:50	15	SP1_0099	44.6668	-124.4273	55.92	1871.8	0.0
8/23/2009	11:21:59	15	SP1_0100	44.6667	-124.4311	55.92	1871.8	0.0
8/23/2009	11:22:07	15	SP1_0101	44.6665	-124.4351	55.92	1873.6	0.0
8/23/2009	11:22:16	15	SP1_0102	44.6660	-124.4390	55.92	1878.2	0.0
8/23/2009	11:22:25	15	SP1_0103	44.6658	-124.4428	55.92	1880.9	0.0
8/23/2009	11:22:33	15	SP1_0104	44.6656	-124.4467	55.92	1879.5	0.0
8/23/2009	11:22:42	15	SP1_0105	44.6653	-124.4505	55.92	1876.3	0.0
8/23/2009	11:22:51	15	SP1_0106	44.6654	-124.4544	55.92	1869.0	0.0
8/23/2009	11:22:59	15	SP1_0107	44.6658	-124.4580	55.92	1861.7	0.0
8/23/2009	11:23:08	15	SP1_0108	44.6660	-124.4619	55.92	1859.9	0.0
8/23/2009	11:23:16	15	SP1_0109	44.6660	-124.4657	55.92	1852.6	0.0
8/23/2009	11:23:25	15	SP1_0110	44.6660	-124.4697	55.92	1849.4	0.0
8/23/2009	11:23:34	15	SP1_0111	44.6662	-124.4737	55.92	1843.4	0.0
8/23/2009	11:23:42	15	SP1_0112	44.6662	-124.4775	55.92	1838.9	0.0
8/23/2009	11:23:51	15	SP1_0113	44.6661	-124.4815	55.92	1836.1	0.0
8/23/2009	11:23:59	15	SP1_0114	44.6660	-124.4854	55.92	1837.5	0.0

8/23/2009	11:24:08	15	SP1_0115	44.6658	-124.4893	55.92	1838.9	0.0
8/23/2009	11:24:17	15	SP1_0116	44.6657	-124.4931	55.92	1836.1	32.6
8/23/2009	11:24:25	15	SP1_0117	44.6656	-124.4971	55.92	1830.2	0.0
8/23/2009	11:24:34	15	SP1_0118	44.6662	-124.5006	55.92	1830.2	0.0
8/23/2009	11:24:43	15	SP1_0119	44.6662	-124.5045	55.92	1831.5	0.0
8/23/2009	11:24:51	15	SP1_0120	44.6661	-124.5083	55.92	1825.6	0.0
8/23/2009	11:25:00	15	SP1_0121	44.6661	-124.5122	55.92	1822.4	0.0
8/23/2009	11:25:08	15	SP1_0122	44.6662	-124.5161	55.92	1815.1	0.0
8/23/2009	11:25:17	15	SP1_0123	44.6664	-124.5198	55.92	1811.9	0.0
8/23/2009	11:25:26	15	SP1_0124	44.6666	-124.5236	55.92	1816.5	0.0
8/23/2009	11:25:34	15	SP1_0125	44.6668	-124.5272	55.92	1809.1	0.0
8/23/2009	11:25:43	15	SP1_0126	44.6671	-124.5310	55.92	1807.3	0.0
8/23/2009	11:25:52	15	SP1_0127	44.6672	-124.5346	55.92	1810.5	0.0
8/23/2009	11:26:00	15	SP1_0128	44.6673	-124.5384	55.92	1807.3	0.0
8/23/2009	11:26:09	15	SP1_0129	44.6674	-124.5420	55.92	1800.0	0.0
8/23/2009	11:26:17	15	SP1_0130	44.6674	-124.5458	55.92	1800.0	0.0
8/23/2009	11:26:26	15	SP1_0131	44.6674	-124.5495	55.92	1800.0	0.0
8/23/2009	11:26:35	15	SP1_0132	44.6675	-124.5531	55.92	1804.6	0.0
8/23/2009	11:26:43	15	SP1_0133	44.6675	-124.5567	55.92	1800.0	0.0
8/23/2009	11:26:52	15	SP1_0134	44.6676	-124.5602	55.92	1803.2	0.0
8/23/2009	11:27:00	15	SP1_0135	44.6676	-124.5640	55.92	1807.3	0.0
8/23/2009	11:27:09	15	SP1_0136	44.6674	-124.5676	55.92	1815.1	0.0
8/23/2009	11:27:18	15	SP1_0137	44.6674	-124.5714	55.92	1827.0	0.0
8/23/2009	11:27:26	15	SP1_0138	44.6675	-124.5750	55.92	1827.0	0.0
8/23/2009	11:27:35	15	SP1_0139	44.6678	-124.5787	55.92	1825.6	0.0
8/23/2009	11:27:44	15	SP1_0140	44.6682	-124.5823	55.92	1819.7	0.0
8/23/2009	11:27:52	15	SP1_0141	44.6689	-124.5858	55.92	1837.5	0.0
8/23/2009	11:28:01	15	SP1_0142	44.6695	-124.5893	55.92	1842.1	0.0
8/23/2009	11:28:09	15	SP1_0143	44.6696	-124.5931	55.92	1834.3	0.0
8/23/2009	11:28:18	15	SP1_0144	44.6696	-124.5971	55.92	1836.1	0.0
8/23/2009	11:28:27	15	SP1_0145	44.6695	-124.6009	55.92	1838.9	0.0
8/23/2009	11:28:35	15	SP1_0146	44.6695	-124.6049	55.92	1836.1	0.0

8/23/2009	11:28:44	15	SP1_0147	44.6695	-124.6087	55.92	1834.3	0.0
8/23/2009	11:28:53	15	SP1_0148	44.6695	-124.6127	55.92	1838.9	0.0
8/23/2009	11:29:01	15	SP1_0149	44.6695	-124.6164	55.92	1837.5	0.0
8/23/2009	11:29:10	15	SP1_0150	44.6696	-124.6204	55.92	1840.7	0.0
8/23/2009	11:29:18	15	SP1_0151	44.6693	-124.6244	55.92	1840.7	0.0
8/23/2009	11:29:27	15	SP1_0152	44.6693	-124.6282	55.92	1837.5	0.0
8/23/2009	11:29:36	15	SP1_0153	44.6692	-124.6322	55.92	1837.5	0.0
8/23/2009	11:29:44	15	SP1_0154	44.6690	-124.6362	55.92	1834.3	0.0
8/23/2009	11:29:53	15	SP1_0155	44.6688	-124.6403	55.92	1834.3	0.0
8/23/2009	11:30:02	15	SP1_0156	44.6686	-124.6441	55.92	1837.5	0.0
8/23/2009	11:30:10	15	SP1_0157	44.6683	-124.6482	55.92	1836.1	0.0
8/23/2009	11:30:19	15	SP1_0158	44.6682	-124.6521	55.92	1832.9	0.0
8/23/2009	11:30:27	15	SP1_0159	44.6679	-124.6562	55.92	1837.5	0.0
8/23/2009	11:30:36	15	SP1_0160	44.6677	-124.6602	55.92	1840.7	0.0
8/23/2009	11:30:45	15	SP1_0161	44.6673	-124.6642	55.92	1836.1	0.0
8/23/2009	11:30:53	15	SP1_0162	44.6669	-124.6683	55.92	1843.4	0.0
8/23/2009	11:31:02	15	SP1_0163	44.6665	-124.6722	55.92	1846.6	0.0
8/23/2009	11:31:10	15	SP1_0164	44.6663	-124.6763	55.92	1842.1	0.0
8/23/2009	11:31:19	15	SP1_0165	44.6663	-124.6801	55.92	1843.4	0.0
8/23/2009	11:31:28	15	SP1_0166	44.6662	-124.6842	55.92	1842.1	0.0
8/23/2009	11:31:36	15	SP1_0167	44.6662	-124.6880	55.92	1838.9	0.0
8/23/2009	11:31:45	15	SP1_0168	44.6661	-124.6920	55.92	1838.9	0.0
8/23/2009	11:31:54	15	SP1_0169	44.6659	-124.6959	55.92	1831.5	0.0
8/23/2009	11:32:02	15	SP1_0170	44.6657	-124.7000	55.92	1832.9	0.0
8/23/2009	11:32:11	15	SP1_0171	44.6654	-124.7040	55.92	1831.5	0.0
8/23/2009	11:32:19	15	SP1_0172	44.6656	-124.7076	55.92	1830.2	0.0
8/23/2009	11:32:28	15	SP1_0173	44.6660	-124.7113	55.92	1827.0	0.0
8/23/2009	11:32:37	15	SP1_0174	44.6665	-124.7146	55.92	1834.3	0.0
8/23/2009	11:32:45	15	SP1_0175	44.6665	-124.7185	55.92	1830.2	0.0
8/23/2009	11:32:54	15	SP1_0176	44.6664	-124.7221	55.92	1836.1	0.0
8/23/2009	11:33:02	15	SP1_0177	44.6664	-124.7260	55.92	1824.2	0.0
8/23/2009	11:33:11	15	SP1_0178	44.6666	-124.7296	55.92	1830.2	0.0

8/23/2009	11:33:20	15	SP1_0179	44.6667	-124.7334	55.92	1828.3	0.0
8/23/2009	11:33:28	15	SP1_0180	44.6667	-124.7370	55.92	1828.3	0.0
8/23/2009	11:33:37	15	SP1_0181	44.6668	-124.7407	55.92	1827.0	0.0
8/23/2009	11:33:46	15	SP1_0182	44.6668	-124.7443	55.92	1827.0	0.0
8/23/2009	11:33:54	15	SP1_0183	44.6668	-124.7481	55.92	1828.3	0.0
8/23/2009	11:34:03	15	SP1_0184	44.6668	-124.7519	55.92	1824.2	0.0
8/23/2009	11:34:11	15	SP1_0185	44.6669	-124.7555	55.92	1825.6	0.0
8/23/2009	11:34:20	15	SP1_0186	44.6668	-124.7593	55.92	1825.6	0.0
8/23/2009	11:34:29	15	SP1_0187	44.6667	-124.7631	55.92	1821.0	0.0
8/23/2009	11:34:37	15	SP1_0188	44.6668	-124.7668	55.92	1824.2	0.0
8/23/2009	11:34:46	15	SP1_0189	44.6671	-124.7704	55.92	1821.0	0.0
8/23/2009	11:34:55	15	SP1_0190	44.6673	-124.7741	55.92	1821.0	0.0
8/23/2009	11:35:03	15	SP1_0191	44.6672	-124.7777	55.92	1817.8	0.0
8/23/2009	11:35:12	15	SP1_0192	44.6672	-124.7816	55.92	1809.1	0.0
8/23/2009	11:35:20	15	SP1_0193	44.6676	-124.7853	55.92	1813.7	0.0
8/23/2009	11:35:29	15	SP1_0194	44.6677	-124.7889	55.92	1807.3	0.0
8/23/2009	11:35:38	15	SP1_0195	44.6674	-124.7929	55.92	1803.2	0.0
8/23/2009	11:35:46	15	SP1_0196	44.6671	-124.7967	55.92	1804.6	0.0
8/23/2009	11:35:55	15	SP1_0197	44.6669	-124.8007	55.92	1798.6	0.0
8/23/2009	11:36:04	15	SP1_0198	44.6667	-124.8045	55.92	1800.0	0.0
8/23/2009	11:51:58	16	SP1_0201	44.4136	-124.8324	55.92	1784.9	0.0
8/23/2009	11:52:07	16	SP1_0202	44.4138	-124.8286	55.92	1794.1	0.0
8/23/2009	11:52:15	16	SP1_0203	44.4137	-124.8249	55.92	1789.5	0.0
8/23/2009	11:52:24	16	SP1_0204	44.4137	-124.8210	55.92	1798.6	0.0
8/23/2009	11:52:33	16	SP1_0205	44.4136	-124.8172	55.92	1809.1	0.0
8/23/2009	11:52:41	16	SP1_0206	44.4136	-124.8133	55.92	1830.2	0.0
8/23/2009	11:52:50	16	SP1_0207	44.4135	-124.8097	55.92	1842.1	0.0
8/23/2009	11:52:59	16	SP1_0208	44.4137	-124.8060	55.92	1851.2	0.0
8/23/2009	11:53:07	16	SP1_0209	44.4137	-124.8023	55.92	1855.3	0.0
8/23/2009	11:53:16	16	SP1_0210	44.4138	-124.7983	55.92	1865.8	0.0
8/23/2009	11:53:24	16	SP1_0211	44.4142	-124.7947	55.92	1876.3	0.0
8/23/2009	11:53:33	16	SP1_0212	44.4144	-124.7908	55.92	1880.9	0.0

8/23/2009	11:53:42	16	SP1_0213	44.4144	-124.7867	55.92	1888.7	0.0
8/23/2009	11:53:50	16	SP1_0214	44.4145	-124.7829	55.92	1896.0	0.0
8/23/2009	11:53:59	16	SP1_0215	44.4149	-124.7791	55.92	1903.3	0.0
8/23/2009	11:54:07	16	SP1_0216	44.4153	-124.7755	55.92	1917.0	0.0
8/23/2009	11:54:16	16	SP1_0217	44.4159	-124.7718	55.92	1918.4	0.0
8/23/2009	11:54:25	16	SP1_0218	44.4165	-124.7684	55.92	1934.9	0.0
8/23/2009	11:54:33	16	SP1_0219	44.4172	-124.7650	55.92	1944.0	0.0
8/23/2009	11:54:42	16	SP1_0220	44.4171	-124.7610	55.92	1950.0	0.0
8/23/2009	11:54:51	16	SP1_0221	44.4163	-124.7567	55.92	1961.8	0.0
8/23/2009	11:54:59	16	SP1_0222	44.4155	-124.7525	55.92	1966.4	0.0
8/23/2009	11:55:08	16	SP1_0223	44.4147	-124.7482	55.92	1975.6	0.0
8/23/2009	11:55:16	16	SP1_0224	44.4143	-124.7441	55.92	1978.3	0.0
8/23/2009	11:55:25	16	SP1_0225	44.4147	-124.7402	55.92	1982.9	0.0
8/23/2009	11:55:34	16	SP1_0226	44.4149	-124.7360	55.92	1990.6	0.0
8/23/2009	11:55:42	16	SP1_0227	44.4149	-124.7320	55.92	1998.0	0.0
8/23/2009	11:55:51	16	SP1_0228	44.4149	-124.7278	55.92	1999.3	0.0
8/23/2009	11:55:59	16	SP1_0229	44.4150	-124.7237	55.92	2008.5	0.0
8/23/2009	11:56:08	16	SP1_0230	44.4150	-124.7195	55.92	2014.4	0.0
8/23/2009	11:56:17	16	SP1_0231	44.4149	-124.7154	55.92	2011.7	0.0
8/23/2009	11:56:25	16	SP1_0232	44.4149	-124.7111	55.92	2015.8	0.0
8/23/2009	11:56:34	16	SP1_0233	44.4149	-124.7071	55.92	2026.3	0.0
8/23/2009	11:56:43	16	SP1_0234	44.4149	-124.7027	55.92	2008.5	0.0
8/23/2009	11:56:51	16	SP1_0235	44.4150	-124.6980	55.92	1967.8	0.0
8/23/2009	11:57:00	16	SP1_0236	44.4149	-124.6929	55.92	1965.0	0.0
8/23/2009	11:57:08	16	SP1_0237	44.4145	-124.6879	55.92	1966.4	0.0
8/23/2009	11:57:17	16	SP1_0238	44.4141	-124.6832	55.92	1967.8	0.0
8/23/2009	11:57:26	16	SP1_0239	44.4134	-124.6785	55.92	1987.4	0.0
8/23/2009	11:57:34	16	SP1_0240	44.4125	-124.6742	55.92	1981.5	0.0
8/23/2009	11:57:43	16	SP1_0241	44.4119	-124.6695	55.92	1966.4	0.0
8/23/2009	11:57:51	16	SP1_0242	44.4116	-124.6650	55.92	1960.5	0.0
8/23/2009	11:58:00	16	SP1_0243	44.4119	-124.6607	55.92	1947.2	0.0
8/23/2009	11:58:09	16	SP1_0244	44.4122	-124.6567	55.92	1960.5	0.0

8/23/2009	11:58:17	16	SP1_0245	44.4121	-124.6526	55.92	1953.2	0.0
8/23/2009	11:58:26	16	SP1_0246	44.4120	-124.6484	55.92	1942.6	0.0
8/23/2009	11:58:35	16	SP1_0247	44.4123	-124.6444	55.92	1954.5	0.0
8/23/2009	11:58:43	16	SP1_0248	44.4124	-124.6402	55.92	1951.3	0.0
8/23/2009	11:58:52	16	SP1_0249	44.4125	-124.6361	55.92	1947.2	0.0
8/23/2009	11:59:00	16	SP1_0250	44.4124	-124.6319	55.92	1947.2	0.0
8/23/2009	11:59:09	16	SP1_0251	44.4126	-124.6280	55.92	1950.0	0.0
8/23/2009	11:59:18	16	SP1_0252	44.4128	-124.6240	55.92	1950.0	0.0
8/23/2009	11:59:26	16	SP1_0253	44.4130	-124.6201	55.92	1951.3	0.0
8/23/2009	11:59:35	16	SP1_0254	44.4131	-124.6160	55.92	1953.2	0.0
8/23/2009	11:59:44	16	SP1_0255	44.4132	-124.6121	55.92	1947.2	0.0
8/23/2009	11:59:52	16	SP1_0256	44.4132	-124.6080	55.92	1939.4	0.0
8/23/2009	12:00:01	16	SP1_0257	44.4130	-124.6039	55.92	1930.3	0.0
8/23/2009	12:00:09	16	SP1_0258	44.4128	-124.5995	55.92	1921.6	0.0
8/23/2009	12:00:18	16	SP1_0259	44.4127	-124.5953	55.92	1927.6	0.0
8/23/2009	12:00:27	16	SP1_0260	44.4129	-124.5914	55.92	1948.6	0.0
8/23/2009	12:00:35	16	SP1_0261	44.4134	-124.5877	55.92	1940.8	0.0
8/23/2009	12:00:44	16	SP1_0262	44.4138	-124.5841	55.92	1940.8	0.0
8/23/2009	12:00:52	16	SP1_0263	44.4141	-124.5802	55.92	1940.8	0.0
8/23/2009	12:01:01	16	SP1_0264	44.4142	-124.5763	55.92	1940.8	0.0
8/23/2009	12:01:10	16	SP1_0265	44.4141	-124.5721	55.92	1944.0	0.0
8/23/2009	12:01:18	16	SP1_0266	44.4141	-124.5682	55.92	1932.1	0.0
8/23/2009	12:01:27	16	SP1_0267	44.4149	-124.5645	55.92	1928.9	0.0
8/23/2009	12:01:36	16	SP1_0268	44.4154	-124.5607	55.92	1915.7	0.0
8/23/2009	12:01:44	16	SP1_0269	44.4159	-124.5566	55.92	1907.9	0.0
8/23/2009	12:01:53	16	SP1_0270	44.4161	-124.5526	55.92	1897.4	0.0
8/23/2009	12:02:01	16	SP1_0271	44.4160	-124.5483	55.92	1894.6	0.0
8/23/2009	12:02:10	16	SP1_0272	44.4161	-124.5441	55.92	1888.7	0.0
8/23/2009	12:02:19	16	SP1_0273	44.4163	-124.5401	55.92	1888.7	0.0
8/23/2009	12:02:27	16	SP1_0274	44.4163	-124.5360	55.92	1885.5	0.0
8/23/2009	12:02:36	16	SP1_0275	44.4162	-124.5320	55.92	1880.9	0.0
8/23/2009	12:02:45	16	SP1_0276	44.4163	-124.5279	55.92	1878.2	0.0

8/23/2009	12:02:53	16	SP1_0277	44.4162	-124.5240	55.92	1882.3	0.0
8/23/2009	12:03:02	16	SP1_0278	44.4162	-124.5200	55.92	1884.1	0.0
8/23/2009	12:03:10	16	SP1_0279	44.4162	-124.5163	55.92	1891.4	0.0
8/23/2009	12:03:19	16	SP1_0280	44.4162	-124.5125	55.92	1892.8	0.0
8/23/2009	12:03:28	16	SP1_0281	44.4161	-124.5086	55.92	1890.1	0.0
8/23/2009	12:03:36	16	SP1_0282	44.4160	-124.5048	55.92	1890.1	0.0
8/23/2009	12:03:45	16	SP1_0283	44.4160	-124.5010	55.92	1888.7	0.0
8/23/2009	12:03:54	16	SP1_0284	44.4160	-124.4974	55.92	1890.1	0.0
8/23/2009	12:04:02	16	SP1_0285	44.4156	-124.4934	55.92	1888.7	0.0
8/23/2009	12:04:11	16	SP1_0286	44.4152	-124.4897	55.92	1892.8	0.0
8/23/2009	12:04:19	16	SP1_0287	44.4152	-124.4859	55.92	1891.4	0.0
8/23/2009	12:04:28	16	SP1_0288	44.4153	-124.4824	55.92	1892.8	0.0
8/23/2009	12:04:37	16	SP1_0289	44.4154	-124.4786	55.92	1896.0	0.0
8/23/2009	12:04:45	16	SP1_0290	44.4154	-124.4749	55.92	1896.0	0.0
8/23/2009	12:04:54	16	SP1_0291	44.4156	-124.4712	55.92	1896.0	0.0
8/23/2009	12:05:02	16	SP1_0292	44.4157	-124.4674	55.92	1896.0	0.0
8/23/2009	12:05:11	16	SP1_0293	44.4157	-124.4637	55.92	1896.0	0.0
8/23/2009	12:05:20	16	SP1_0294	44.4157	-124.4600	55.92	1891.4	0.0
8/23/2009	12:05:28	16	SP1_0295	44.4158	-124.4563	55.92	1890.1	0.0
8/23/2009	12:05:37	16	SP1_0296	44.4158	-124.4526	55.92	1894.6	0.0
8/23/2009	12:05:46	16	SP1_0297	44.4159	-124.4492	55.92	1891.4	0.0
8/23/2009	12:05:54	16	SP1_0298	44.4162	-124.4456	55.92	1886.9	0.0
8/23/2009	12:06:03	16	SP1_0299	44.4164	-124.4422	55.92	1894.6	0.0
8/23/2009	12:06:11	16	SP1_0300	44.4164	-124.4387	55.92	1900.6	0.0
8/23/2009	12:06:20	16	SP1_0301	44.4164	-124.4352	55.92	1909.7	0.0
8/23/2009	12:06:29	16	SP1_0302	44.4164	-124.4315	55.92	1906.5	0.0
8/23/2009	12:06:37	16	SP1_0303	44.4163	-124.4278	55.92	1912.5	0.0
8/23/2009	12:06:46	16	SP1_0304	44.4163	-124.4243	55.92	1912.5	0.0
8/23/2009	12:06:54	16	SP1_0305	44.4164	-124.4206	55.92	1912.5	0.0
8/23/2009	12:07:03	16	SP1_0306	44.4164	-124.4170	55.92	1909.7	0.0
8/23/2009	12:07:12	16	SP1_0307	44.4165	-124.4132	55.92	1905.2	0.0
8/23/2009	12:07:20	16	SP1_0308	44.4165	-124.4095	55.92	1909.7	0.0

8/23/2009	12:07:29	16	SP1_0309	44.4165	-124.4056	55.92	1909.7	0.0
8/23/2009	12:07:38	16	SP1_0310	44.4164	-124.4020	55.92	1906.5	0.0
8/23/2009	12:07:46	16	SP1_0311	44.4164	-124.3981	55.92	1905.2	0.0
8/23/2009	12:07:55	16	SP1_0312	44.4165	-124.3944	55.92	1907.9	0.0
8/23/2009	12:08:03	16	SP1_0313	44.4165	-124.3906	55.92	1918.4	0.0
8/23/2009	12:08:12	16	SP1_0314	44.4165	-124.3871	55.92	1917.0	0.0
8/23/2009	12:08:21	16	SP1_0315	44.4165	-124.3833	55.92	1907.9	0.0
8/23/2009	12:08:29	16	SP1_0316	44.4165	-124.3795	55.92	1894.6	0.0
8/23/2009	12:08:38	16	SP1_0317	44.4167	-124.3757	55.92	1899.2	0.0
8/23/2009	12:08:46	16	SP1_0318	44.4168	-124.3719	55.92	1903.3	0.0
8/23/2009	12:08:55	16	SP1_0319	44.4166	-124.3682	55.92	1897.4	0.0
8/23/2009	12:09:04	16	SP1_0320	44.4162	-124.3641	55.92	1894.6	0.0
8/23/2009	12:09:12	16	SP1_0321	44.4161	-124.3603	55.92	1896.0	0.0
8/23/2009	12:09:21	16	SP1_0322	44.4161	-124.3564	55.92	1900.6	0.0
8/23/2009	12:09:30	16	SP1_0323	44.4159	-124.3527	55.92	1903.3	0.0
8/23/2009	12:09:38	16	SP1_0324	44.4158	-124.3488	55.92	1900.6	0.0
8/23/2009	12:09:47	16	SP1_0325	44.4157	-124.3450	55.92	1905.2	0.0
8/23/2009	12:09:55	16	SP1_0326	44.4158	-124.3412	55.92	1906.5	0.0
8/23/2009	12:10:04	16	SP1_0327	44.4158	-124.3375	55.92	1909.7	0.0
8/23/2009	12:10:13	16	SP1_0328	44.4157	-124.3337	55.92	1912.5	0.0
8/23/2009	12:10:21	16	SP1_0329	44.4156	-124.3297	55.92	1913.8	0.0
8/23/2009	12:10:30	16	SP1_0330	44.4157	-124.3261	55.92	1915.7	0.0
8/23/2009	12:10:38	16	SP1_0331	44.4157	-124.3221	55.92	1915.7	0.0
8/23/2009	12:10:47	16	SP1_0332	44.4157	-124.3184	55.92	1917.0	0.0
8/23/2009	12:10:56	16	SP1_0333	44.4158	-124.3146	55.92	1917.0	0.0
8/23/2009	12:11:04	16	SP1_0334	44.4159	-124.3110	55.92	1921.6	0.0
8/23/2009	12:11:13	16	SP1_0335	44.4158	-124.3073	55.92	1921.6	0.0
8/23/2009	12:11:22	16	SP1_0336	44.4158	-124.3038	55.92	1921.6	0.0
8/23/2009	12:11:30	16	SP1_0337	44.4157	-124.3001	55.92	1923.0	0.0
8/23/2009	12:11:39	16	SP1_0338	44.4155	-124.2966	55.92	1928.9	0.0
8/23/2009	12:11:47	16	SP1_0339	44.4153	-124.2929	55.92	1926.2	0.0
8/23/2009	12:11:56	16	SP1_0340	44.4152	-124.2892	55.92	1924.4	0.0

8/23/2009	12:12:05	16	SP1_0341	44.4150	-124.2856	55.92	1927.6	0.0
8/23/2009	12:12:13	16	SP1_0342	44.4149	-124.2818	55.92	1923.0	0.0
8/23/2009	12:12:22	16	SP1_0343	44.4150	-124.2783	55.92	1928.9	0.0
8/23/2009	12:12:31	16	SP1_0344	44.4151	-124.2745	55.92	1928.9	0.0
8/23/2009	12:12:39	16	SP1_0345	44.4151	-124.2709	55.92	1933.5	0.0
8/23/2009	12:12:48	16	SP1_0346	44.4150	-124.2670	55.92	1927.6	0.0
8/23/2009	12:12:56	16	SP1_0347	44.4150	-124.2633	55.92	1927.6	0.0
8/23/2009	12:13:05	16	SP1_0348	44.4151	-124.2596	55.92	1928.9	0.0
8/23/2009	12:13:14	16	SP1_0349	44.4151	-124.2557	55.92	1927.6	0.0
8/23/2009	12:13:22	16	SP1_0350	44.4150	-124.2521	55.92	1932.1	0.0
8/23/2009	12:13:31	16	SP1_0351	44.4148	-124.2482	55.92	1928.9	0.0
8/23/2009	12:13:39	16	SP1_0352	44.4147	-124.2445	55.92	1926.2	0.0
8/23/2009	12:13:48	16	SP1_0353	44.4144	-124.2405	55.92	1919.8	0.0
8/23/2009	12:13:57	16	SP1_0354	44.4141	-124.2367	55.92	1919.8	0.0
8/23/2009	12:14:05	16	SP1_0355	44.4137	-124.2328	55.92	1930.3	0.0
8/23/2009	12:14:14	16	SP1_0356	44.4135	-124.2292	55.92	1928.9	0.0
8/23/2009	12:14:23	16	SP1_0357	44.4136	-124.2254	55.92	1924.4	0.0
8/23/2009	12:14:31	16	SP1_0358	44.4138	-124.2217	55.92	1926.2	0.0
8/23/2009	12:14:40	16	SP1_0359	44.4140	-124.2179	55.92	1928.9	0.0
8/23/2009	12:14:48	16	SP1_0360	44.4140	-124.2139	55.92	1917.0	0.0
8/23/2009	12:14:57	16	SP1_0361	44.4139	-124.2100	55.92	1913.8	0.0
8/23/2009	12:15:06	16	SP1_0362	44.4141	-124.2060	55.92	1913.8	0.0
8/23/2009	12:15:14	16	SP1_0363	44.4142	-124.2022	55.92	1911.1	0.0
8/23/2009	12:15:23	16	SP1_0364	44.4143	-124.1981	55.92	1905.2	0.0
8/23/2009	12:15:32	16	SP1_0365	44.4144	-124.1942	55.92	1906.5	0.0
8/23/2009	12:15:40	16	SP1_0366	44.4147	-124.1901	55.92	1909.7	0.0
8/23/2009	12:15:49	16	SP1_0367	44.4149	-124.1864	55.92	1907.9	0.0
8/23/2009	12:15:57	16	SP1_0368	44.4150	-124.1823	55.92	1905.2	0.0
8/23/2009	12:16:06	16	SP1_0369	44.4151	-124.1784	55.92	1899.2	0.0
8/23/2009	12:16:15	16	SP1_0370	44.4153	-124.1743	55.92	1891.4	0.0
8/23/2009	12:16:23	16	SP1_0371	44.4153	-124.1703	55.92	1890.1	0.0
8/23/2009	12:16:32	16	SP1_0372	44.4155	-124.1661	55.92	1878.2	0.0

8/23/2009	12:16:40	16	SP1_0373	44.4157	-124.1618	55.92	1870.4	0.0
8/23/2009	12:16:49	16	SP1_0374	44.4159	-124.1577	55.92	1861.7	0.0
8/23/2009	12:16:58	16	SP1_0375	44.4161	-124.1533	55.92	1855.3	0.0
8/23/2009	12:17:06	16	SP1_0376	44.4162	-124.1491	55.92	1851.2	0.0
8/23/2009	12:17:15	16	SP1_0377	44.4163	-124.1448	55.92	1855.3	0.0
8/23/2009	12:17:23	16	SP1_0378	44.4162	-124.1407	55.92	1863.1	0.0
8/23/2009	12:17:32	16	SP1_0379	44.4163	-124.1365	55.92	1864.5	0.0
8/23/2009	12:17:41	16	SP1_0380	44.4164	-124.1326	55.92	1867.7	0.0
8/23/2009	12:17:49	16	SP1_0381	44.4164	-124.1284	55.92	1859.9	0.0
8/23/2009	12:34:36	17	SP1_0408	44.1667	-124.1618	55.52	1827.0	0.0
8/23/2009	12:34:47	17	SP1_0409	44.1665	-124.1670	55.52	1827.0	0.0
8/23/2009	12:34:57	17	SP1_0410	44.1664	-124.1725	55.52	1834.3	0.0
8/23/2009	12:35:08	17	SP1_0411	44.1662	-124.1777	55.52	1840.7	0.0
8/23/2009	12:35:18	17	SP1_0412	44.1660	-124.1829	55.52	1837.5	0.0
8/23/2009	12:35:29	17	SP1_0413	44.1662	-124.1881	55.52	1843.4	0.0
8/23/2009	12:35:39	17	SP1_0414	44.1665	-124.1933	55.52	1834.3	0.0
8/23/2009	12:35:50	17	SP1_0415	44.1668	-124.1986	55.52	1837.5	0.0
8/23/2009	12:36:00	17	SP1_0416	44.1669	-124.2037	55.52	1836.1	0.0
8/23/2009	12:36:11	17	SP1_0417	44.1672	-124.2089	55.52	1840.7	0.0
8/23/2009	12:36:21	17	SP1_0418	44.1675	-124.2140	55.52	1838.9	0.0
8/23/2009	12:36:32	17	SP1_0419	44.1675	-124.2191	55.52	1843.4	0.0
8/23/2009	12:36:42	17	SP1_0420	44.1672	-124.2244	55.52	1834.3	0.0
8/23/2009	12:36:53	17	SP1_0421	44.1670	-124.2296	55.52	1830.2	0.0
8/23/2009	12:37:03	17	SP1_0422	44.1668	-124.2348	55.52	1842.1	0.0
8/23/2009	12:37:14	17	SP1_0423	44.1664	-124.2401	55.52	1858.5	0.0
8/23/2009	12:37:25	17	SP1_0424	44.1661	-124.2452	55.52	1876.3	0.0
8/23/2009	12:37:35	17	SP1_0425	44.1660	-124.2504	55.52	1884.1	0.0
8/23/2009	12:37:46	17	SP1_0426	44.1658	-124.2558	55.52	1882.3	0.0
8/23/2009	12:37:56	17	SP1_0427	44.1657	-124.2609	55.52	1876.3	0.0
8/23/2009	12:38:07	17	SP1_0428	44.1657	-124.2660	55.52	1879.5	0.0
8/23/2009	12:38:17	17	SP1_0429	44.1655	-124.2714	55.52	1876.3	0.0
8/23/2009	12:38:28	17	SP1_0430	44.1655	-124.2766	55.52	1879.5	0.0

8/23/2009	12:38:38	17	SP1_0431	44.1657	-124.2817	55.52	1884.1	0.0
8/23/2009	12:38:49	17	SP1_0432	44.1661	-124.2871	55.52	1873.6	0.0
8/23/2009	12:38:59	17	SP1_0433	44.1663	-124.2924	55.52	1876.3	0.0
8/23/2009	12:39:10	17	SP1_0434	44.1665	-124.2976	55.52	1880.9	0.0
8/23/2009	12:39:20	17	SP1_0435	44.1667	-124.3030	55.52	1875.0	0.0
8/23/2009	12:39:31	17	SP1_0436	44.1669	-124.3083	55.52	1871.8	0.0
8/23/2009	12:39:41	17	SP1_0437	44.1670	-124.3135	55.52	1871.8	0.0
8/23/2009	12:39:52	17	SP1_0438	44.1673	-124.3189	55.52	1867.7	0.0
8/23/2009	12:40:02	17	SP1_0439	44.1676	-124.3241	55.52	1870.4	0.0
8/23/2009	12:40:13	17	SP1_0440	44.1680	-124.3292	55.52	1859.9	0.0
8/23/2009	12:40:24	17	SP1_0441	44.1682	-124.3346	55.52	1867.7	0.0
8/23/2009	12:40:34	17	SP1_0442	44.1683	-124.3397	55.52	1879.5	0.0
8/23/2009	12:40:45	17	SP1_0443	44.1684	-124.3448	55.52	1879.5	0.0
8/23/2009	12:40:55	17	SP1_0444	44.1685	-124.3500	55.52	1878.2	0.0
8/23/2009	12:41:06	17	SP1_0445	44.1688	-124.3551	55.52	1871.8	0.0
8/23/2009	12:41:16	17	SP1_0446	44.1689	-124.3602	55.52	1880.9	0.0
8/23/2009	12:41:27	17	SP1_0447	44.1690	-124.3654	55.52	1884.1	0.0
8/23/2009	12:41:37	17	SP1_0448	44.1694	-124.3703	55.52	1882.3	0.0
8/23/2009	12:41:48	17	SP1_0449	44.1695	-124.3754	55.52	1878.2	0.0
8/23/2009	12:41:58	17	SP1_0450	44.1694	-124.3807	55.52	1879.5	0.0
8/23/2009	12:42:09	17	SP1_0451	44.1694	-124.3858	55.52	1875.0	0.0
8/23/2009	12:42:19	17	SP1_0452	44.1695	-124.3910	55.52	1876.3	0.0
8/23/2009	12:42:30	17	SP1_0453	44.1694	-124.3964	55.52	1876.3	0.0
8/23/2009	12:42:40	17	SP1_0454	44.1693	-124.4017	55.52	1875.0	0.0
8/23/2009	12:42:51	17	SP1_0455	44.1692	-124.4069	55.52	1879.5	0.0
8/23/2009	12:43:02	17	SP1_0456	44.1693	-124.4124	55.52	1876.3	0.0
8/23/2009	12:43:12	17	SP1_0457	44.1696	-124.4175	55.52	1876.3	0.0
8/23/2009	12:43:23	17	SP1_0458	44.1697	-124.4228	55.52	1875.0	0.0
8/23/2009	12:43:33	17	SP1_0459	44.1695	-124.4283	55.52	1867.7	0.0
8/23/2009	12:43:44	17	SP1_0460	44.1694	-124.4337	55.52	1865.8	0.0
8/23/2009	12:43:54	17	SP1_0461	44.1694	-124.4390	55.52	1870.4	0.0
8/23/2009	12:44:05	17	SP1_0462	44.1694	-124.4445	55.52	1873.6	0.0

8/23/2009	12:44:15	17	SP1_0463	44.1696	-124.4498	55.52	1858.5	0.0
8/23/2009	12:44:26	17	SP1_0464	44.1698	-124.4553	55.52	1853.9	0.0
8/23/2009	12:44:36	17	SP1_0465	44.1701	-124.4608	55.52	1859.9	0.0
8/23/2009	12:44:47	17	SP1_0466	44.1703	-124.4661	55.52	1861.7	0.0
8/23/2009	12:44:57	17	SP1_0467	44.1707	-124.4713	55.52	1859.9	0.0
8/23/2009	12:45:08	17	SP1_0468	44.1711	-124.4767	55.52	1855.3	0.0
8/23/2009	12:45:18	17	SP1_0469	44.1713	-124.4820	55.52	1849.4	0.0
8/23/2009	12:45:29	17	SP1_0470	44.1717	-124.4872	55.52	1846.6	0.0
8/23/2009	12:45:40	17	SP1_0471	44.1718	-124.4927	55.52	1848.0	0.0
8/23/2009	12:45:50	17	SP1_0472	44.1719	-124.4981	55.52	1853.9	0.0
8/23/2009	12:46:01	17	SP1_0473	44.1722	-124.5031	55.52	1858.5	0.0
8/23/2009	12:46:11	17	SP1_0474	44.1726	-124.5084	55.52	1855.3	0.0
8/23/2009	12:46:22	17	SP1_0475	44.1728	-124.5134	55.52	1857.1	0.0
8/23/2009	12:46:32	17	SP1_0476	44.1729	-124.5187	55.52	1853.9	0.0
8/23/2009	12:46:43	17	SP1_0477	44.1731	-124.5239	55.52	1859.9	0.0
8/23/2009	12:46:53	17	SP1_0478	44.1731	-124.5292	55.52	1858.5	0.0
8/23/2009	12:47:04	17	SP1_0479	44.1729	-124.5345	55.52	1863.1	0.0
8/23/2009	12:47:14	17	SP1_0480	44.1729	-124.5396	55.52	1864.5	0.0
8/23/2009	12:47:25	17	SP1_0481	44.1728	-124.5450	55.52	1861.7	0.0
8/23/2009	12:47:35	17	SP1_0482	44.1728	-124.5501	55.52	1865.8	0.0
8/23/2009	12:47:46	17	SP1_0483	44.1727	-124.5552	55.52	1867.7	0.0
8/23/2009	12:47:56	17	SP1_0484	44.1727	-124.5606	55.52	1865.8	0.0
8/23/2009	12:48:07	17	SP1_0485	44.1728	-124.5656	55.52	1873.6	0.0
8/23/2009	12:48:17	17	SP1_0486	44.1728	-124.5706	55.52	1869.0	0.0
8/23/2009	12:48:28	17	SP1_0487	44.1729	-124.5757	55.52	1873.6	0.0
8/23/2009	12:48:39	17	SP1_0488	44.1731	-124.5807	55.52	1871.8	0.0
8/23/2009	12:48:49	17	SP1_0489	44.1733	-124.5856	55.52	1870.4	0.0
8/23/2009	12:49:00	17	SP1_0490	44.1736	-124.5908	55.52	1870.4	0.0
8/23/2009	12:49:10	17	SP1_0491	44.1736	-124.5958	55.52	1867.7	0.0
8/23/2009	12:49:21	17	SP1_0492	44.1738	-124.6008	55.52	1864.5	0.0
8/23/2009	12:49:31	17	SP1_0493	44.1740	-124.6060	55.52	1858.5	0.0
8/23/2009	12:49:42	17	SP1_0494	44.1741	-124.6110	55.52	1858.5	0.0

8/23/2009	12:49:52	17	SP1_0495	44.1742	-124.6161	55.52	1855.3	0.0
8/23/2009	12:50:03	17	SP1_0496	44.1743	-124.6214	55.52	1863.1	0.0
8/23/2009	12:50:13	17	SP1_0497	44.1743	-124.6265	55.52	1863.1	0.0
8/23/2009	12:50:24	17	SP1_0498	44.1743	-124.6316	55.52	1861.7	0.0
8/23/2009	12:50:34	17	SP1_0499	44.1743	-124.6370	55.52	1852.6	0.0
8/23/2009	12:50:45	17	SP1_0500	44.1742	-124.6422	55.52	1852.6	0.0
8/23/2009	12:50:55	17	SP1_0501	44.1742	-124.6474	55.52	1852.6	0.0
8/23/2009	12:51:06	17	SP1_0502	44.1740	-124.6528	55.52	1846.6	0.0
8/23/2009	12:51:16	17	SP1_0503	44.1740	-124.6580	55.52	1846.6	0.0
8/23/2009	12:51:27	17	SP1_0504	44.1741	-124.6632	55.52	1842.1	0.0
8/23/2009	12:51:38	17	SP1_0505	44.1742	-124.6685	55.52	1843.4	0.0
8/23/2009	12:51:48	17	SP1_0506	44.1740	-124.6737	55.52	1842.1	0.0
8/23/2009	12:51:59	17	SP1_0507	44.1738	-124.6787	55.52	1849.4	0.0
8/23/2009	12:52:09	17	SP1_0508	44.1737	-124.6840	55.52	1842.1	0.0
8/23/2009	12:52:20	17	SP1_0509	44.1736	-124.6890	55.52	1843.4	0.0
8/23/2009	12:52:30	17	SP1_0510	44.1735	-124.6940	55.52	1842.1	0.0
8/23/2009	12:52:41	17	SP1_0511	44.1734	-124.6990	55.52	1843.4	0.0
8/23/2009	12:52:51	17	SP1_0512	44.1734	-124.7038	55.52	1842.1	0.0
8/23/2009	12:53:02	17	SP1_0513	44.1732	-124.7086	55.52	1837.5	0.0
8/23/2009	12:53:12	17	SP1_0514	44.1731	-124.7136	55.52	1828.3	0.0
8/23/2009	12:53:23	17	SP1_0515	44.1730	-124.7184	55.52	1830.2	0.0
8/23/2009	12:53:33	17	SP1_0516	44.1730	-124.7232	55.52	1830.2	0.0
8/23/2009	12:53:44	17	SP1_0517	44.1730	-124.7281	55.52	1832.9	0.0
8/23/2009	12:53:54	17	SP1_0518	44.1729	-124.7328	55.52	1827.0	0.0
8/23/2009	12:54:05	17	SP1_0519	44.1729	-124.7376	55.52	1821.0	0.0
8/23/2009	12:54:16	17	SP1_0520	44.1727	-124.7426	55.52	1828.3	0.0
8/23/2009	12:54:26	17	SP1_0521	44.1726	-124.7473	55.52	1831.5	0.0
8/23/2009	12:54:37	17	SP1_0522	44.1724	-124.7520	55.52	1828.3	0.0
8/23/2009	12:54:47	17	SP1_0523	44.1723	-124.7570	55.52	1822.4	0.0
8/23/2009	12:54:58	17	SP1_0524	44.1724	-124.7615	55.52	1815.1	0.0
8/23/2009	12:55:08	17	SP1_0525	44.1728	-124.7660	55.52	1809.1	0.0
8/23/2009	12:55:19	17	SP1_0526	44.1725	-124.7710	55.52	1809.1	0.0

8/23/2009	12:55:29	17	SP1_0527	44.1722	-124.7758	55.52	1804.6	0.0
8/23/2009	12:55:40	17	SP1_0528	44.1719	-124.7806	55.52	1801.4	0.0
8/23/2009	12:55:50	17	SP1_0529	44.1714	-124.7855	55.52	1805.9	0.0
8/23/2009	12:56:01	17	SP1_0530	44.1696	-124.7903	55.52	1804.6	0.0
8/23/2009	12:56:11	17	SP1_0531	44.1677	-124.7952	55.52	1795.4	0.0
8/23/2009	12:56:22	17	SP1_0532	44.1663	-124.8003	55.52	1794.1	0.0
8/23/2009	12:56:32	17	SP1_0533	44.1658	-124.8050	55.52	1794.1	0.0
8/23/2009	12:56:43	17	SP1_0534	44.1653	-124.8097	55.52	1795.4	0.0
8/23/2009	12:56:54	17	SP1_0535	44.1646	-124.8146	55.52	1794.1	0.0
8/23/2009	12:57:04	17	SP1_0536	44.1640	-124.8193	55.52	1796.8	0.0
8/23/2009	12:57:15	17	SP1_0537	44.1634	-124.8240	55.52	1794.1	0.0
8/23/2009	12:57:25	17	SP1_0538	44.1630	-124.8288	55.52	1794.1	0.0
8/23/2009	12:57:36	17	SP1_0539	44.1629	-124.8334	55.52	1792.7	0.0
8/23/2009	12:57:46	17	SP1_0540	44.1626	-124.8379	55.52	1794.1	0.0
8/23/2009	12:57:57	17	SP1_0541	44.1625	-124.8427	55.52	1789.5	0.0
8/23/2009	12:58:07	17	SP1_0542	44.1621	-124.8473	55.52	1795.4	0.0
8/23/2009	12:58:18	17	SP1_0543	44.1616	-124.8520	55.52	1792.7	0.0
8/23/2009	12:58:28	17	SP1_0544	44.1612	-124.8568	55.52	1792.7	0.0
8/23/2009	12:58:43	17	SP1_0545	44.1611	-124.8631	55.52	1786.3	0.0
8/23/2009	13:13:47	18	SP1_0555	43.9161	-124.8941	56.18	1911.1	56.7
8/23/2009	13:13:58	18	SP1_0556	43.9162	-124.8897	56.18	1918.4	0.0
8/23/2009	13:14:08	18	SP1_0557	43.9161	-124.8851	56.18	1912.5	29.5
8/23/2009	13:14:19	18	SP1_0558	43.9159	-124.8804	56.18	1906.5	84.7
8/23/2009	13:14:29	18	SP1_0559	43.9159	-124.8759	56.18	1918.4	51.0
8/23/2009	13:14:40	18	SP1_0560	43.9158	-124.8715	56.18	1918.4	39.1
8/23/2009	13:14:50	18	SP1_0561	43.9158	-124.8671	56.18	1926.2	0.0
8/23/2009	13:15:01	18	SP1_0562	43.9158	-124.8625	56.18	1927.6	372.3
8/23/2009	13:15:11	18	SP1_0563	43.9158	-124.8582	56.18	1932.1	218.0
8/23/2009	13:15:22	18	SP1_0564	43.9158	-124.8538	56.18	1933.5	22.7
8/23/2009	13:15:32	18	SP1_0565	43.9158	-124.8492	56.18	1932.1	214.3
8/23/2009	13:15:43	18	SP1_0566	43.9160	-124.8449	56.18	1932.1	0.0
8/23/2009	13:15:53	18	SP1_0567	43.9161	-124.8405	56.18	1930.3	497.4

8/23/2009	13:16:04	18	SP1_0568	43.9158	-124.8358	56.18	1934.9	103.7
8/23/2009	13:16:15	18	SP1_0569	43.9163	-124.8317	56.18	1932.1	0.0
8/23/2009	13:16:25	18	SP1_0570	43.9166	-124.8276	56.18	1933.5	214.2
8/23/2009	13:16:36	18	SP1_0571	43.9163	-124.8230	56.18	1932.1	56.5
8/23/2009	13:16:46	18	SP1_0572	43.9162	-124.8186	56.18	1933.5	0.0
8/23/2009	13:16:57	18	SP1_0573	43.9163	-124.8142	56.18	1936.7	21.0
8/23/2009	13:17:07	18	SP1_0574	43.9163	-124.8097	56.18	1938.1	0.0
8/23/2009	13:17:18	18	SP1_0575	43.9162	-124.8052	56.18	1939.4	0.0
8/23/2009	13:17:28	18	SP1_0576	43.9160	-124.8006	56.18	1948.6	37.4
8/23/2009	13:17:39	18	SP1_0577	43.9166	-124.7961	56.18	1954.5	0.0
8/23/2009	13:17:49	18	SP1_0578	43.9172	-124.7918	56.18	1950.0	33.6
8/23/2009	13:18:00	18	SP1_0579	43.9175	-124.7873	56.18	1951.3	0.0
8/23/2009	13:18:10	18	SP1_0580	43.9178	-124.7826	56.18	1950.0	22.2
8/23/2009	13:18:21	18	SP1_0581	43.9180	-124.7780	56.18	1953.2	0.0
8/23/2009	13:18:31	18	SP1_0582	43.9181	-124.7735	56.18	1951.3	0.0
8/23/2009	13:18:42	18	SP1_0583	43.9179	-124.7687	56.18	1950.0	0.0
8/23/2009	13:18:52	18	SP1_0584	43.9177	-124.7641	56.18	1948.6	0.0
8/23/2009	13:19:03	18	SP1_0585	43.9177	-124.7595	56.18	1947.2	0.0
8/23/2009	13:19:14	18	SP1_0586	43.9175	-124.7548	56.18	1951.3	0.0
8/23/2009	13:19:24	18	SP1_0587	43.9174	-124.7502	56.18	1950.0	0.0
8/23/2009	13:19:35	18	SP1_0588	43.9177	-124.7456	56.18	1947.2	0.0
8/23/2009	13:19:45	18	SP1_0589	43.9179	-124.7408	56.18	1948.6	0.0
8/23/2009	13:19:56	18	SP1_0590	43.9179	-124.7362	56.18	1950.0	0.0
8/23/2009	13:20:06	18	SP1_0591	43.9179	-124.7315	56.18	1954.5	0.0
8/23/2009	13:20:17	18	SP1_0592	43.9179	-124.7267	56.18	1939.4	0.0
8/23/2009	13:20:27	18	SP1_0593	43.9179	-124.7219	56.18	1947.2	0.0
8/23/2009	13:20:38	18	SP1_0594	43.9178	-124.7173	56.18	1947.2	0.0
8/23/2009	13:20:48	18	SP1_0595	43.9176	-124.7123	56.18	1947.2	0.0
8/23/2009	13:20:59	18	SP1_0596	43.9175	-124.7077	56.18	1939.4	0.0
8/23/2009	13:21:09	18	SP1_0597	43.9178	-124.7031	56.18	1938.1	0.0
8/23/2009	13:21:20	18	SP1_0598	43.9182	-124.6984	56.18	1938.1	0.0
8/23/2009	13:21:30	18	SP1_0599	43.9183	-124.6937	56.18	1945.4	0.0

8/23/2009	13:21:41	18	SP1_0600	43.9178	-124.6890	56.18	1945.4	0.0
8/23/2009	13:21:52	18	SP1_0601	43.9172	-124.6841	56.18	1951.3	0.0
8/23/2009	13:22:02	18	SP1_0602	43.9167	-124.6795	56.18	1957.3	0.0
8/23/2009	13:22:13	18	SP1_0603	43.9163	-124.6748	56.18	1951.3	0.0
8/23/2009	13:22:23	18	SP1_0604	43.9158	-124.6699	56.18	1948.6	0.0
8/23/2009	13:22:34	18	SP1_0605	43.9155	-124.6651	56.18	1955.9	0.0
8/23/2009	13:22:44	18	SP1_0606	43.9155	-124.6605	56.18	1954.5	0.0
8/23/2009	13:22:55	18	SP1_0607	43.9155	-124.6556	56.18	1953.2	0.0
8/23/2009	13:23:05	18	SP1_0608	43.9156	-124.6509	56.18	1942.6	0.0
8/23/2009	13:23:16	18	SP1_0609	43.9156	-124.6460	56.18	1944.0	0.0
8/23/2009	13:23:26	18	SP1_0610	43.9156	-124.6409	56.18	1928.9	0.0
8/23/2009	13:23:37	18	SP1_0611	43.9159	-124.6361	56.18	1934.9	0.0
8/23/2009	13:23:47	18	SP1_0612	43.9162	-124.6314	56.18	1934.9	0.0
8/23/2009	13:23:58	18	SP1_0613	43.9166	-124.6265	56.18	1938.1	0.0
8/23/2009	13:24:08	18	SP1_0614	43.9166	-124.6217	56.18	1942.6	0.0
8/23/2009	13:24:19	18	SP1_0615	43.9166	-124.6169	56.18	1940.8	0.0
8/23/2009	13:24:30	18	SP1_0616	43.9165	-124.6118	56.18	1926.2	0.0
8/23/2009	13:24:40	18	SP1_0617	43.9162	-124.6067	56.18	1915.7	0.0
8/23/2009	13:24:51	18	SP1_0618	43.9156	-124.6017	56.18	1915.7	0.0
8/23/2009	13:25:01	18	SP1_0619	43.9152	-124.5965	56.18	1915.7	0.0
8/23/2009	13:25:12	18	SP1_0620	43.9149	-124.5916	56.18	1912.5	0.0
8/23/2009	13:25:22	18	SP1_0621	43.9149	-124.5867	56.18	1913.8	0.0
8/23/2009	13:25:33	18	SP1_0622	43.9150	-124.5817	56.18	1915.7	0.0
8/23/2009	13:25:43	18	SP1_0623	43.9153	-124.5770	56.18	1915.7	0.0
8/23/2009	13:25:54	18	SP1_0624	43.9157	-124.5722	56.18	1912.5	0.0
8/23/2009	13:26:04	18	SP1_0625	43.9163	-124.5674	56.18	1907.9	0.0
8/23/2009	13:26:15	18	SP1_0626	43.9170	-124.5629	56.18	1906.5	0.0
8/23/2009	13:26:25	18	SP1_0627	43.9173	-124.5581	56.18	1897.4	0.0
8/23/2009	13:26:36	18	SP1_0628	43.9169	-124.5529	56.18	1897.4	0.0
8/23/2009	13:26:46	18	SP1_0629	43.9168	-124.5480	56.18	1894.6	0.0
8/23/2009	13:26:57	18	SP1_0630	43.9168	-124.5431	56.18	1899.2	0.0
8/23/2009	13:27:07	18	SP1_0631	43.9169	-124.5382	56.18	1891.4	0.0

8/23/2009	13:27:18	18	SP1_0632	43.9168	-124.5329	56.18	1892.8	0.0
8/23/2009	13:27:29	18	SP1_0633	43.9167	-124.5279	56.18	1890.1	0.0
8/23/2009	13:27:39	18	SP1_0634	43.9167	-124.5229	56.18	1892.8	0.0
8/23/2009	13:27:50	18	SP1_0635	43.9166	-124.5177	56.18	1899.2	0.0
8/23/2009	13:28:00	18	SP1_0636	43.9163	-124.5127	56.18	1892.8	0.0
8/23/2009	13:28:11	18	SP1_0637	43.9160	-124.5076	56.18	1892.8	0.0
8/23/2009	13:28:21	18	SP1_0638	43.9155	-124.5024	56.18	1886.9	0.0
8/23/2009	13:28:32	18	SP1_0639	43.9150	-124.4974	56.18	1882.3	0.0
8/23/2009	13:28:42	18	SP1_0640	43.9148	-124.4924	56.18	1879.5	0.0
8/23/2009	13:28:53	18	SP1_0641	43.9148	-124.4873	56.18	1875.0	0.0
8/23/2009	13:29:03	18	SP1_0642	43.9148	-124.4823	56.18	1873.6	0.0
8/23/2009	13:29:14	18	SP1_0643	43.9148	-124.4772	56.18	1875.0	0.0
8/23/2009	13:29:25	18	SP1_0644	43.9148	-124.4722	56.18	1879.5	0.0
8/23/2009	13:29:35	18	SP1_0645	43.9144	-124.4672	56.18	1878.2	0.0
8/23/2009	13:29:46	18	SP1_0646	43.9140	-124.4620	56.18	1875.0	0.0
8/23/2009	13:29:56	18	SP1_0647	43.9134	-124.4570	56.18	1869.0	0.0
8/23/2009	13:30:07	18	SP1_0648	43.9128	-124.4521	56.18	1871.8	0.0
8/23/2009	13:30:17	18	SP1_0649	43.9121	-124.4469	56.18	1867.7	0.0
8/23/2009	13:30:28	18	SP1_0650	43.9114	-124.4419	56.18	1864.5	0.0
8/23/2009	13:30:38	18	SP1_0651	43.9110	-124.4370	56.18	1871.8	0.0
8/23/2009	13:30:49	18	SP1_0652	43.9105	-124.4319	56.18	1873.6	0.0
8/23/2009	13:30:59	18	SP1_0653	43.9101	-124.4270	56.18	1873.6	0.0
8/23/2009	13:31:10	18	SP1_0654	43.9104	-124.4222	56.18	1873.6	0.0
8/23/2009	13:31:20	18	SP1_0655	43.9106	-124.4173	56.18	1870.4	0.0
8/23/2009	13:31:31	18	SP1_0656	43.9106	-124.4125	56.18	1875.0	0.0
8/23/2009	13:31:41	18	SP1_0657	43.9105	-124.4079	56.18	1880.9	0.0
8/23/2009	13:31:52	18	SP1_0658	43.9105	-124.4032	56.18	1878.2	0.0
8/23/2009	13:32:03	18	SP1_0659	43.9105	-124.3986	56.18	1870.4	0.0
8/23/2009	13:32:13	18	SP1_0660	43.9108	-124.3940	56.18	1869.0	0.0
8/23/2009	13:32:24	18	SP1_0661	43.9111	-124.3893	56.18	1867.7	0.0
8/23/2009	13:32:34	18	SP1_0662	43.9112	-124.3847	56.18	1876.3	0.0
8/23/2009	13:32:45	18	SP1_0663	43.9113	-124.3801	56.18	1870.4	0.0

8/23/2009	13:32:55	18	SP1_0664	43.9111	-124.3753	56.18	1865.8	0.0
8/23/2009	13:33:06	18	SP1_0665	43.9109	-124.3707	56.18	1863.1	0.0
8/23/2009	13:33:16	18	SP1_0666	43.9105	-124.3659	56.18	1861.7	0.0
8/23/2009	13:33:27	18	SP1_0667	43.9104	-124.3610	56.18	1871.8	0.0
8/23/2009	13:33:37	18	SP1_0668	43.9103	-124.3564	56.18	1880.9	0.0
8/23/2009	13:33:48	18	SP1_0669	43.9102	-124.3518	56.18	1880.9	0.0
8/23/2009	13:33:58	18	SP1_0670	43.9099	-124.3470	56.18	1888.7	0.0
8/23/2009	13:34:09	18	SP1_0671	43.9099	-124.3424	56.18	1884.1	0.0
8/23/2009	13:34:19	18	SP1_0672	43.9098	-124.3379	56.18	1879.5	0.0
8/23/2009	13:34:30	18	SP1_0673	43.9098	-124.3332	56.18	1875.0	0.0
8/23/2009	13:34:41	18	SP1_0674	43.9098	-124.3285	56.18	1885.5	0.0
8/23/2009	13:34:51	18	SP1_0675	43.9095	-124.3238	56.18	1890.1	0.0
8/23/2009	13:35:02	18	SP1_0676	43.9091	-124.3189	56.18	1891.4	0.0
8/23/2009	13:35:12	18	SP1_0677	43.9091	-124.3143	56.18	1882.3	0.0
8/23/2009	13:35:23	18	SP1_0678	43.9091	-124.3097	56.18	1876.3	0.0
8/23/2009	13:35:33	18	SP1_0679	43.9091	-124.3049	56.18	1876.3	0.0
8/23/2009	13:35:44	18	SP1_0680	43.9090	-124.3003	56.18	1876.3	0.0
8/23/2009	13:35:54	18	SP1_0681	43.9087	-124.2957	56.18	1876.3	0.0
8/23/2009	13:36:05	18	SP1_0682	43.9087	-124.2909	56.18	1873.6	0.0
8/23/2009	13:36:15	18	SP1_0683	43.9089	-124.2865	56.18	1879.5	0.0
8/23/2009	13:36:26	18	SP1_0684	43.9092	-124.2821	56.18	1880.9	0.0
8/23/2009	13:36:36	18	SP1_0685	43.9095	-124.2776	56.18	1884.1	0.0
8/23/2009	13:36:47	18	SP1_0686	43.9100	-124.2734	56.18	1884.1	0.0
8/23/2009	13:36:57	18	SP1_0687	43.9106	-124.2693	56.18	1886.9	0.0
8/23/2009	13:37:08	18	SP1_0688	43.9112	-124.2649	56.18	1894.6	0.0
8/23/2009	13:37:18	18	SP1_0689	43.9118	-124.2607	56.18	1894.6	0.0
8/23/2009	13:37:29	18	SP1_0690	43.9125	-124.2565	56.18	1897.4	0.0
8/23/2009	13:37:40	18	SP1_0691	43.9129	-124.2521	56.18	1899.2	0.0
8/23/2009	13:37:50	18	SP1_0692	43.9132	-124.2478	56.18	1903.3	0.0
8/23/2009	13:38:01	18	SP1_0693	43.9132	-124.2434	56.18	1913.8	0.0
8/23/2009	13:38:11	18	SP1_0694	43.9130	-124.2387	56.18	1924.4	0.0
8/23/2009	13:38:22	18	SP1_0695	43.9131	-124.2344	56.18	1938.1	0.0

8/23/2009	13:38:32	18	SP1_0696	43.9131	-124.2300	56.18	1950.0	0.0
8/23/2009	13:38:43	18	SP1_0697	43.9131	-124.2255	56.18	1947.2	0.0
8/23/2009	13:38:53	18	SP1_0698	43.9131	-124.2211	56.18	1939.4	0.0
8/23/2009	13:39:04	18	SP1_0699	43.9131	-124.2166	56.18	1926.2	0.0
8/23/2009	13:39:14	18	SP1_0700	43.9130	-124.2118	56.18	1909.7	0.0
8/23/2009	13:39:25	18	SP1_0701	43.9128	-124.2071	56.18	1900.6	0.0
8/23/2009	13:39:35	18	SP1_0702	43.9124	-124.2024	56.18	1894.6	0.0
8/23/2009	13:39:46	18	SP1_0703	43.9118	-124.1974	56.18	1896.0	0.0
8/23/2009	13:39:56	18	SP1_0704	43.9111	-124.1928	56.18	1905.2	0.0
8/23/2009	13:55:36	19	SP1_0729	43.6674	-124.2449	56.13	1906.5	0.0
8/23/2009	13:55:46	19	SP1_0730	43.6670	-124.2507	56.13	1899.2	0.0
8/23/2009	13:55:57	19	SP1_0731	43.6670	-124.2560	56.13	1897.4	0.0
8/23/2009	13:56:07	19	SP1_0732	43.6669	-124.2614	56.13	1880.9	0.0
8/23/2009	13:56:18	19	SP1_0733	43.6666	-124.2669	56.13	1886.9	0.0
8/23/2009	13:56:28	19	SP1_0734	43.6668	-124.2722	56.13	1871.8	0.0
8/23/2009	13:56:39	19	SP1_0735	43.6670	-124.2774	56.13	1878.2	0.0
8/23/2009	13:56:50	19	SP1_0736	43.6671	-124.2829	56.13	1879.5	0.0
8/23/2009	13:57:00	19	SP1_0737	43.6672	-124.2880	56.13	1882.3	0.0
8/23/2009	13:57:11	19	SP1_0738	43.6673	-124.2932	56.13	1878.2	0.0
8/23/2009	13:57:21	19	SP1_0739	43.6674	-124.2986	56.13	1879.5	0.0
8/23/2009	13:57:32	19	SP1_0740	43.6676	-124.3038	56.13	1886.9	0.0
8/23/2009	13:57:42	19	SP1_0741	43.6678	-124.3089	56.13	1896.0	0.0
8/23/2009	13:57:53	19	SP1_0742	43.6679	-124.3141	56.13	1900.6	0.0
8/23/2009	13:58:03	19	SP1_0743	43.6680	-124.3192	56.13	1902.0	0.0
8/23/2009	13:58:14	19	SP1_0744	43.6682	-124.3243	56.13	1897.4	0.0
8/23/2009	13:58:24	19	SP1_0745	43.6684	-124.3296	56.13	1892.8	0.0
8/23/2009	13:58:35	19	SP1_0746	43.6686	-124.3347	56.13	1890.1	0.0
8/23/2009	13:58:45	19	SP1_0747	43.6690	-124.3398	56.13	1890.1	0.0
8/23/2009	13:58:56	19	SP1_0748	43.6693	-124.3450	56.13	1888.7	0.0
8/23/2009	13:59:06	19	SP1_0749	43.6699	-124.3500	56.13	1885.5	0.0
8/23/2009	13:59:17	19	SP1_0750	43.6706	-124.3549	56.13	1891.4	0.0
8/23/2009	13:59:27	19	SP1_0751	43.6714	-124.3598	56.13	1886.9	0.0

8/23/2009	13:59:38	19	SP1_0752	43.6724	-124.3648	56.13	1888.7	0.0
8/23/2009	13:59:49	19	SP1_0753	43.6733	-124.3696	56.13	1886.9	0.0
8/23/2009	13:59:59	19	SP1_0754	43.6743	-124.3742	56.13	1888.7	0.0
8/23/2009	14:00:10	19	SP1_0755	43.6753	-124.3790	56.13	1891.4	0.0
8/23/2009	14:00:20	19	SP1_0756	43.6762	-124.3837	56.13	1891.4	0.0
8/23/2009	14:00:31	19	SP1_0757	43.6762	-124.3888	56.13	1896.0	0.0
8/23/2009	14:00:41	19	SP1_0758	43.6760	-124.3941	56.13	1905.2	0.0
8/23/2009	14:00:52	19	SP1_0759	43.6757	-124.3990	56.13	1909.7	0.0
8/23/2009	14:01:02	19	SP1_0760	43.6754	-124.4041	56.13	1912.5	0.0
8/23/2009	14:01:13	19	SP1_0761	43.6749	-124.4094	56.13	1913.8	0.0
8/23/2009	14:01:23	19	SP1_0762	43.6744	-124.4145	56.13	1912.5	0.0
8/23/2009	14:01:34	19	SP1_0763	43.6740	-124.4197	56.13	1919.8	0.0
8/23/2009	14:01:45	19	SP1_0764	43.6737	-124.4246	56.13	1918.4	0.0
8/23/2009	14:01:55	19	SP1_0765	43.6735	-124.4295	56.13	1921.6	0.0
8/23/2009	14:02:06	19	SP1_0766	43.6734	-124.4345	56.13	1912.5	0.0
8/23/2009	14:02:16	19	SP1_0767	43.6734	-124.4395	56.13	1913.8	0.0
8/23/2009	14:02:27	19	SP1_0768	43.6735	-124.4442	56.13	1924.4	0.0
8/23/2009	14:02:37	19	SP1_0769	43.6735	-124.4492	56.13	1924.4	0.0
8/23/2009	14:02:48	19	SP1_0770	43.6735	-124.4539	56.13	1928.9	0.0
8/23/2009	14:02:58	19	SP1_0771	43.6735	-124.4587	56.13	1926.2	0.0
8/23/2009	14:03:09	19	SP1_0772	43.6733	-124.4637	56.13	1923.0	0.0
8/23/2009	14:03:19	19	SP1_0773	43.6733	-124.4688	56.13	1909.7	0.0
8/23/2009	14:03:30	19	SP1_0774	43.6734	-124.4738	56.13	1911.1	0.0
8/23/2009	14:03:40	19	SP1_0775	43.6734	-124.4789	56.13	1909.7	0.0
8/23/2009	14:03:51	19	SP1_0776	43.6733	-124.4838	56.13	1911.1	0.0
8/23/2009	14:04:01	19	SP1_0777	43.6733	-124.4888	56.13	1911.1	0.0
8/23/2009	14:04:12	19	SP1_0778	43.6733	-124.4939	56.13	1913.8	0.0
8/23/2009	14:04:23	19	SP1_0779	43.6731	-124.4987	56.13	1918.4	0.0
8/23/2009	14:04:33	19	SP1_0780	43.6731	-124.5034	56.13	1917.0	0.0
8/23/2009	14:04:44	19	SP1_0781	43.6732	-124.5085	56.13	1918.4	0.0
8/23/2009	14:04:54	19	SP1_0782	43.6730	-124.5133	56.13	1928.9	0.0
8/23/2009	14:05:05	19	SP1_0783	43.6729	-124.5181	56.13	1924.4	0.0

8/23/2009	14:05:15	19	SP1_0784	43.6732	-124.5231	56.13	1926.2	0.0
8/23/2009	14:05:26	19	SP1_0785	43.6732	-124.5280	56.13	1921.6	0.0
8/23/2009	14:05:36	19	SP1_0786	43.6731	-124.5329	56.13	1928.9	0.0
8/23/2009	14:05:47	19	SP1_0787	43.6734	-124.5380	56.13	1921.6	0.0
8/23/2009	14:05:57	19	SP1_0788	43.6738	-124.5428	56.13	1923.0	0.0
8/23/2009	14:06:08	19	SP1_0789	43.6742	-124.5477	56.13	1912.5	0.0
8/23/2009	14:06:18	19	SP1_0790	43.6741	-124.5530	56.13	1921.6	0.0
8/23/2009	14:06:29	19	SP1_0791	43.6742	-124.5581	56.13	1919.8	0.0
8/23/2009	14:06:39	19	SP1_0792	43.6743	-124.5633	56.13	1923.0	0.0
8/23/2009	14:06:50	19	SP1_0793	43.6739	-124.5688	56.13	1921.6	0.0
8/23/2009	14:07:00	19	SP1_0794	43.6736	-124.5741	56.13	1915.7	0.0
8/23/2009	14:07:11	19	SP1_0795	43.6736	-124.5794	56.13	1913.8	0.0
8/23/2009	14:07:22	19	SP1_0796	43.6734	-124.5848	56.13	1912.5	0.0
8/23/2009	14:07:32	19	SP1_0797	43.6733	-124.5900	56.13	1905.2	0.0
8/23/2009	14:07:43	19	SP1_0798	43.6731	-124.5952	56.13	1911.1	0.0
8/23/2009	14:07:53	19	SP1_0799	43.6728	-124.6007	56.13	1909.7	0.0
8/23/2009	14:08:04	19	SP1_0800	43.6727	-124.6058	56.13	1911.1	0.0
8/23/2009	14:08:14	19	SP1_0801	43.6726	-124.6110	56.13	1911.1	0.0
8/23/2009	14:08:25	19	SP1_0802	43.6725	-124.6163	56.13	1917.0	0.0
8/23/2009	14:08:35	19	SP1_0803	43.6724	-124.6215	56.13	1913.8	0.0
8/23/2009	14:08:46	19	SP1_0804	43.6723	-124.6268	56.13	1915.7	0.0
8/23/2009	14:08:56	19	SP1_0805	43.6721	-124.6322	56.13	1913.8	0.0
8/23/2009	14:09:07	19	SP1_0806	43.6720	-124.6376	56.13	1907.9	0.0
8/23/2009	14:09:17	19	SP1_0807	43.6722	-124.6428	56.13	1907.9	0.0
8/23/2009	14:09:28	19	SP1_0808	43.6722	-124.6482	56.13	1906.5	0.0
8/23/2009	14:09:38	19	SP1_0809	43.6723	-124.6533	56.13	1902.0	0.0
8/23/2009	14:09:49	19	SP1_0810	43.6723	-124.6585	56.13	1902.0	0.0
8/23/2009	14:10:00	19	SP1_0811	43.6724	-124.6638	56.13	1902.0	0.0
8/23/2009	14:10:10	19	SP1_0812	43.6724	-124.6689	56.13	1892.8	0.0
8/23/2009	14:10:21	19	SP1_0813	43.6722	-124.6741	56.13	1888.7	0.0
8/23/2009	14:10:31	19	SP1_0814	43.6720	-124.6796	56.13	1873.6	0.0
8/23/2009	14:10:42	19	SP1_0815	43.6717	-124.6850	56.13	1870.4	0.0

8/23/2009	14:10:52	19	SP1_0816	43.6717	-124.6900	56.13	1867.7	0.0
8/23/2009	14:11:03	19	SP1_0817	43.6718	-124.6952	56.13	1864.5	0.0
8/23/2009	14:11:13	19	SP1_0818	43.6717	-124.7000	56.13	1864.5	0.0
8/23/2009	14:11:24	19	SP1_0819	43.6717	-124.7050	56.13	1853.9	0.0
8/23/2009	14:11:34	19	SP1_0820	43.6717	-124.7102	56.13	1846.6	0.0
8/23/2009	14:11:45	19	SP1_0821	43.6717	-124.7152	56.13	1840.7	0.0
8/23/2009	14:11:55	19	SP1_0822	43.6718	-124.7203	56.13	1844.8	0.0
8/23/2009	14:12:06	19	SP1_0823	43.6718	-124.7254	56.13	1852.6	0.0
8/23/2009	14:12:16	19	SP1_0824	43.6718	-124.7304	56.13	1849.4	0.0
8/23/2009	14:12:27	19	SP1_0825	43.6718	-124.7355	56.13	1844.8	0.0
8/23/2009	14:12:38	19	SP1_0826	43.6718	-124.7407	56.13	1844.8	0.0
8/23/2009	14:12:48	19	SP1_0827	43.6719	-124.7458	56.13	1834.3	0.0
8/23/2009	14:12:59	19	SP1_0828	43.6722	-124.7509	56.13	1830.2	0.0
8/23/2009	14:13:09	19	SP1_0829	43.6721	-124.7560	56.13	1832.9	0.0
8/23/2009	14:13:20	19	SP1_0830	43.6720	-124.7612	56.13	1840.7	0.0
8/23/2009	14:13:30	19	SP1_0831	43.6718	-124.7663	56.13	1832.9	0.0
8/23/2009	14:13:41	19	SP1_0832	43.6718	-124.7716	56.13	1832.9	0.0
8/23/2009	14:13:51	19	SP1_0833	43.6718	-124.7766	56.13	1831.5	0.0
8/23/2009	14:14:02	19	SP1_0834	43.6717	-124.7816	56.13	1834.3	0.0
8/23/2009	14:14:12	19	SP1_0835	43.6717	-124.7866	56.13	1831.5	0.0
8/23/2009	14:14:23	19	SP1_0836	43.6718	-124.7918	56.13	1828.3	0.0
8/23/2009	14:14:33	19	SP1_0837	43.6720	-124.7969	56.13	1822.4	0.0
8/23/2009	14:14:44	19	SP1_0838	43.6721	-124.8019	56.13	1827.0	0.0
8/23/2009	14:14:54	19	SP1_0839	43.6722	-124.8070	56.13	1827.0	0.0
8/23/2009	14:15:05	19	SP1_0840	43.6723	-124.8121	56.13	1821.0	0.0
8/23/2009	14:15:15	19	SP1_0841	43.6723	-124.8172	56.13	1813.7	0.0
8/23/2009	14:15:26	19	SP1_0842	43.6721	-124.8228	56.13	1803.2	0.0
8/23/2009	14:15:37	19	SP1_0843	43.6720	-124.8280	56.13	1804.6	0.0
8/23/2009	14:15:47	19	SP1_0844	43.6717	-124.8334	56.13	1800.0	0.0
8/23/2009	14:15:58	19	SP1_0845	43.6715	-124.8386	56.13	1795.4	0.0
8/23/2009	14:16:08	19	SP1_0846	43.6715	-124.8439	56.13	1792.7	0.0
8/23/2009	14:16:19	19	SP1_0847	43.6714	-124.8493	56.13	1788.1	0.0

8/23/2009	14:16:29	19	SP1_0848	43.6715	-124.8544	56.13	1783.5	0.0
8/23/2009	14:16:40	19	SP1_0849	43.6715	-124.8596	56.13	1774.4	0.0
8/23/2009	14:16:50	19	SP1_0850	43.6714	-124.8650	56.13	1773.0	0.0
8/23/2009	14:17:01	19	SP1_0851	43.6715	-124.8701	56.13	1768.4	0.0
8/23/2009	14:17:11	19	SP1_0852	43.6716	-124.8752	56.13	1769.8	0.0
8/23/2009	14:17:22	19	SP1_0853	43.6717	-124.8805	56.13	1765.7	0.0
8/23/2009	14:17:33	19	SP1_0854	43.6716	-124.8858	56.13	1765.7	0.0
8/23/2009	14:17:43	19	SP1_0855	43.6713	-124.8909	56.13	1769.8	0.0
8/23/2009	14:17:54	19	SP1_0856	43.6708	-124.8963	56.13	1767.1	0.0
8/23/2009	14:18:04	19	SP1_0857	43.6704	-124.9015	56.13	1762.5	0.0
8/23/2009	14:18:15	19	SP1_0858	43.6700	-124.9067	56.13	1756.6	0.0
8/23/2009	14:18:25	19	SP1_0859	43.6699	-124.9121	56.13	1755.2	0.0
8/23/2009	14:18:36	19	SP1_0860	43.6698	-124.9172	56.13	1767.1	0.0
8/23/2009	14:18:46	19	SP1_0861	43.6698	-124.9220	56.13	1767.1	0.0
8/23/2009	14:18:57	19	SP1_0862	43.6691	-124.9273	56.13	1771.7	0.0
8/23/2009	14:19:07	19	SP1_0863	43.6685	-124.9323	56.13	1771.7	0.0
8/23/2009	14:19:18	19	SP1_0864	43.6680	-124.9374	56.13	1769.8	0.0
8/23/2009	14:19:28	19	SP1_0865	43.6667	-124.9428	56.13	1769.8	0.0
8/23/2009	14:31:06	20	SP1_0866	43.4121	-125.0097	52.4	1828.3	0.0
8/23/2009	14:31:17	20	SP1_0867	43.4134	-125.0059	52.4	1828.3	0.0
8/23/2009	14:31:27	20	SP1_0868	43.4145	-125.0019	52.4	1836.1	0.0
8/23/2009	14:31:38	20	SP1_0869	43.4154	-124.9977	52.4	1836.1	0.0
8/23/2009	14:31:48	20	SP1_0870	43.4159	-124.9933	52.4	1838.9	0.0
8/23/2009	14:31:59	20	SP1_0871	43.4161	-124.9886	52.4	1843.4	0.0
8/23/2009	14:32:09	20	SP1_0872	43.4162	-124.9841	52.4	1848.0	0.0
8/23/2009	14:32:20	20	SP1_0873	43.4163	-124.9795	52.4	1842.1	0.0
8/23/2009	14:32:30	20	SP1_0874	43.4165	-124.9747	52.4	1849.4	0.0
8/23/2009	14:32:41	20	SP1_0875	43.4166	-124.9701	52.4	1853.9	0.0
8/23/2009	14:32:51	20	SP1_0876	43.4165	-124.9654	52.4	1857.1	0.0
8/23/2009	14:33:02	20	SP1_0877	43.4163	-124.9605	52.4	1857.1	0.0
8/23/2009	14:33:13	20	SP1_0878	43.4162	-124.9558	52.4	1863.1	0.0
8/23/2009	14:33:23	20	SP1_0879	43.4160	-124.9512	52.4	1865.8	0.0

8/23/2009	14:33:34	20	SP1_0880	43.4157	-124.9462	52.4	1865.8	0.0
8/23/2009	14:33:44	20	SP1_0881	43.4160	-124.9416	52.4	1869.0	0.0
8/23/2009	14:33:55	20	SP1_0882	43.4164	-124.9374	52.4	1878.2	0.0
8/23/2009	14:34:05	20	SP1_0883	43.4165	-124.9327	52.4	1873.6	0.0
8/23/2009	14:34:16	20	SP1_0884	43.4165	-124.9281	52.4	1879.5	0.0
8/23/2009	14:34:26	20	SP1_0885	43.4165	-124.9235	52.4	1884.1	0.0
8/23/2009	14:34:37	20	SP1_0886	43.4164	-124.9186	52.4	1878.2	0.0
8/23/2009	14:34:47	20	SP1_0887	43.4165	-124.9142	52.4	1880.9	0.0
8/23/2009	14:34:58	20	SP1_0888	43.4166	-124.9098	52.4	1880.9	0.0
8/23/2009	14:35:08	20	SP1_0889	43.4166	-124.9050	52.4	1876.3	0.0
8/23/2009	14:35:19	20	SP1_0890	43.4164	-124.9002	52.4	1875.0	0.0
8/23/2009	14:35:29	20	SP1_0891	43.4160	-124.8956	52.4	1886.9	0.0
8/23/2009	14:35:40	20	SP1_0892	43.4156	-124.8909	52.4	1885.5	0.0
8/23/2009	14:35:50	20	SP1_0893	43.4158	-124.8865	52.4	1882.3	0.0
8/23/2009	14:36:01	20	SP1_0894	43.4162	-124.8823	52.4	1885.5	0.0
8/23/2009	14:36:12	20	SP1_0895	43.4164	-124.8778	52.4	1882.3	0.0
8/23/2009	14:36:22	20	SP1_0896	43.4165	-124.8733	52.4	1882.3	0.0
8/23/2009	14:36:33	20	SP1_0897	43.4165	-124.8689	52.4	1882.3	0.0
8/23/2009	14:36:43	20	SP1_0898	43.4166	-124.8643	52.4	1878.2	0.0
8/23/2009	14:36:54	20	SP1_0899	43.4166	-124.8598	52.4	1878.2	0.0
8/23/2009	14:37:04	20	SP1_0900	43.4165	-124.8554	52.4	1879.5	0.0
8/23/2009	14:37:15	20	SP1_0901	43.4163	-124.8507	52.4	1879.5	0.0
8/23/2009	14:37:25	20	SP1_0902	43.4161	-124.8461	52.4	1878.2	0.0
8/23/2009	14:37:36	20	SP1_0903	43.4157	-124.8414	52.4	1880.9	0.0
8/23/2009	14:37:46	20	SP1_0904	43.4152	-124.8365	52.4	1882.3	0.0
8/23/2009	14:37:57	20	SP1_0905	43.4147	-124.8318	52.4	1879.5	0.0
8/23/2009	14:38:07	20	SP1_0906	43.4144	-124.8272	52.4	1885.5	0.0
8/23/2009	14:38:18	20	SP1_0907	43.4147	-124.8227	52.4	1879.5	0.0
8/23/2009	14:38:28	20	SP1_0908	43.4151	-124.8185	52.4	1880.9	0.0
8/23/2009	14:38:39	20	SP1_0909	43.4154	-124.8141	52.4	1876.3	0.0
8/23/2009	14:38:50	20	SP1_0910	43.4156	-124.8096	52.4	1882.3	0.0
8/23/2009	14:39:00	20	SP1_0911	43.4158	-124.8053	52.4	1879.5	0.0

8/23/2009	14:39:11	20	SP1_0912	43.4158	-124.8008	52.4	1876.3	0.0
8/23/2009	14:39:21	20	SP1_0913	43.4157	-124.7962	52.4	1875.0	0.0
8/23/2009	14:39:32	20	SP1_0914	43.4156	-124.7918	52.4	1873.6	0.0
8/23/2009	14:39:42	20	SP1_0915	43.4157	-124.7873	52.4	1875.0	0.0
8/23/2009	14:39:53	20	SP1_0916	43.4160	-124.7828	52.4	1878.2	0.0
8/23/2009	14:40:03	20	SP1_0917	43.4163	-124.7785	52.4	1885.5	0.0
8/23/2009	14:40:14	20	SP1_0918	43.4166	-124.7741	52.4	1884.1	0.0
8/23/2009	14:40:24	20	SP1_0919	43.4165	-124.7694	52.4	1882.3	0.0
8/23/2009	14:40:35	20	SP1_0920	43.4166	-124.7649	52.4	1880.9	0.0
8/23/2009	14:40:45	20	SP1_0921	43.4167	-124.7605	52.4	1879.5	0.0
8/23/2009	14:40:56	20	SP1_0922	43.4170	-124.7559	52.4	1880.9	0.0
8/23/2009	14:41:06	20	SP1_0923	43.4175	-124.7516	52.4	1878.2	0.0
8/23/2009	14:41:17	20	SP1_0924	43.4180	-124.7474	52.4	1880.9	0.0
8/23/2009	14:41:28	20	SP1_0925	43.4180	-124.7427	52.4	1882.3	0.0
8/23/2009	14:41:38	20	SP1_0926	43.4178	-124.7381	52.4	1879.5	0.0
8/23/2009	14:41:49	20	SP1_0927	43.4174	-124.7334	52.4	1876.3	0.0
8/23/2009	14:41:59	20	SP1_0928	43.4172	-124.7287	52.4	1869.0	0.0
8/23/2009	14:42:10	20	SP1_0929	43.4171	-124.7238	52.4	1865.8	0.0
8/23/2009	14:42:20	20	SP1_0930	43.4167	-124.7191	52.4	1864.5	0.0
8/23/2009	14:42:31	20	SP1_0931	43.4167	-124.7145	52.4	1863.1	0.0
8/23/2009	14:42:41	20	SP1_0932	43.4166	-124.7095	52.4	1859.9	0.0
8/23/2009	14:42:52	20	SP1_0933	43.4164	-124.7048	52.4	1869.0	0.0
8/23/2009	14:43:02	20	SP1_0934	43.4165	-124.7002	52.4	1863.1	0.0
8/23/2009	14:43:13	20	SP1_0935	43.4170	-124.6955	52.4	1859.9	0.0
8/23/2009	14:43:23	20	SP1_0936	43.4173	-124.6910	52.4	1859.9	0.0
8/23/2009	14:43:34	20	SP1_0937	43.4175	-124.6864	52.4	1861.7	0.0
8/23/2009	14:43:44	20	SP1_0938	43.4177	-124.6816	52.4	1852.6	0.0
8/23/2009	14:43:55	20	SP1_0939	43.4177	-124.6769	52.4	1846.6	0.0
8/23/2009	14:44:05	20	SP1_0940	43.4176	-124.6721	52.4	1858.5	0.0
8/23/2009	14:44:16	20	SP1_0941	43.4175	-124.6673	52.4	1855.3	0.0
8/23/2009	14:44:27	20	SP1_0942	43.4173	-124.6626	52.4	1853.9	0.0
8/23/2009	14:44:37	20	SP1_0943	43.4171	-124.6578	52.4	1853.9	0.0

8/23/2009	14:44:48	20	SP1_0944	43.4173	-124.6532	52.4	1859.9	0.0
8/23/2009	14:44:58	20	SP1_0945	43.4174	-124.6488	52.4	1861.7	0.0
8/23/2009	14:45:09	20	SP1_0946	43.4175	-124.6442	52.4	1861.7	0.0
8/23/2009	14:45:19	20	SP1_0947	43.4175	-124.6398	52.4	1861.7	0.0
8/23/2009	14:45:30	20	SP1_0948	43.4176	-124.6353	52.4	1861.7	0.0
8/23/2009	14:45:40	20	SP1_0949	43.4176	-124.6307	52.4	1870.4	0.0
8/23/2009	14:45:51	20	SP1_0950	43.4173	-124.6262	52.4	1865.8	0.0
8/23/2009	14:46:01	20	SP1_0951	43.4169	-124.6217	52.4	1873.6	0.0
8/23/2009	14:46:12	20	SP1_0952	43.4172	-124.6173	52.4	1873.6	0.0
8/23/2009	14:46:22	20	SP1_0953	43.4174	-124.6131	52.4	1875.0	0.0
8/23/2009	14:46:33	20	SP1_0954	43.4172	-124.6088	52.4	1884.1	0.0
8/23/2009	14:46:44	20	SP1_0955	43.4167	-124.6042	52.4	1882.3	0.0
8/23/2009	14:46:54	20	SP1_0956	43.4162	-124.5999	52.4	1886.9	0.0
8/23/2009	14:47:05	20	SP1_0957	43.4162	-124.5956	52.4	1885.5	0.0
8/23/2009	14:47:15	20	SP1_0958	43.4164	-124.5912	52.4	1890.1	0.0
8/23/2009	14:47:26	20	SP1_0959	43.4163	-124.5867	52.4	1892.8	0.0
8/23/2009	14:47:36	20	SP1_0960	43.4164	-124.5824	52.4	1891.4	0.0
8/23/2009	14:47:47	20	SP1_0961	43.4163	-124.5779	52.4	1885.5	0.0
8/23/2009	14:47:57	20	SP1_0962	43.4160	-124.5735	52.4	1885.5	0.0
8/23/2009	14:48:08	20	SP1_0963	43.4152	-124.5690	52.4	1878.2	0.0
8/23/2009	14:48:18	20	SP1_0964	43.4145	-124.5644	52.4	1894.6	0.0
8/23/2009	14:48:29	20	SP1_0965	43.4139	-124.5601	52.4	1890.1	0.0
8/23/2009	14:48:39	20	SP1_0966	43.4132	-124.5557	52.4	1890.1	0.0
8/23/2009	14:48:50	20	SP1_0967	43.4124	-124.5511	52.4	1888.7	0.0
8/23/2009	14:49:00	20	SP1_0968	43.4115	-124.5466	52.4	1892.8	0.0
8/23/2009	14:49:11	20	SP1_0969	43.4107	-124.5422	52.4	1899.2	0.0
8/23/2009	14:49:22	20	SP1_0970	43.4096	-124.5375	52.4	1894.6	0.0
8/23/2009	14:49:32	20	SP1_0971	43.4089	-124.5331	52.4	1892.8	0.0
8/23/2009	14:49:43	20	SP1_0972	43.4091	-124.5290	52.4	1899.2	0.0
8/23/2009	14:49:53	20	SP1_0973	43.4094	-124.5248	52.4	1892.8	0.0
8/23/2009	14:50:04	20	SP1_0974	43.4098	-124.5208	52.4	1882.3	0.0
8/23/2009	14:50:14	20	SP1_0975	43.4102	-124.5168	52.4	1885.5	0.0

8/23/2009	14:50:25	20	SP1_0976	43.4104	-124.5125	52.4	1880.9	0.0
8/23/2009	14:50:35	20	SP1_0977	43.4102	-124.5082	52.4	1886.9	0.0
8/23/2009	14:50:46	20	SP1_0978	43.4100	-124.5040	52.4	1891.4	0.0
8/23/2009	14:50:56	20	SP1_0979	43.4104	-124.4996	52.4	1890.1	0.0
8/23/2009	14:51:07	20	SP1_0980	43.4108	-124.4955	52.4	1896.0	0.0
8/23/2009	14:51:17	20	SP1_0981	43.4113	-124.4913	52.4	1900.6	0.0
8/23/2009	14:51:28	20	SP1_0982	43.4118	-124.4870	52.4	1906.5	0.0
8/23/2009	14:51:38	20	SP1_0983	43.4117	-124.4826	52.4	1900.6	0.0
8/23/2009	14:51:49	20	SP1_0984	43.4113	-124.4781	52.4	1907.9	0.0
8/23/2009	14:52:00	20	SP1_0985	43.4108	-124.4735	52.4	1906.5	0.0
8/23/2009	14:52:10	20	SP1_0986	43.4103	-124.4690	52.4	1911.1	0.0
8/23/2009	14:52:21	20	SP1_0987	43.4095	-124.4645	52.4	1907.9	0.0
8/23/2009	14:52:31	20	SP1_0988	43.4086	-124.4598	52.4	1906.5	0.0
8/23/2009	14:52:42	20	SP1_0989	43.4086	-124.4554	52.4	1903.3	0.0
8/23/2009	14:52:52	20	SP1_0990	43.4089	-124.4512	52.4	1905.2	0.0
8/23/2009	14:53:03	20	SP1_0991	43.4089	-124.4467	52.4	1905.2	0.0
8/23/2009	14:53:13	20	SP1_0992	43.4090	-124.4423	52.4	1907.9	0.0
8/23/2009	14:53:24	20	SP1_0993	43.4090	-124.4380	52.4	1907.9	0.0
8/23/2009	14:53:34	20	SP1_0994	43.4093	-124.4335	52.4	1913.8	0.0
8/23/2009	14:53:45	20	SP1_0995	43.4095	-124.4293	52.4	1918.4	0.0
8/23/2009	14:53:55	20	SP1_0996	43.4096	-124.4249	52.4	1919.8	0.0
8/23/2009	14:54:06	20	SP1_0997	43.4095	-124.4204	52.4	1926.2	0.0
8/23/2009	14:54:16	20	SP1_0998	43.4097	-124.4160	52.4	1933.5	0.0
8/23/2009	14:54:27	20	SP1_0999	43.4100	-124.4117	52.4	1940.8	0.0
8/23/2009	14:54:37	20	SP1_1000	43.4103	-124.4075	52.4	1945.4	0.0
8/23/2009	14:54:48	20	SP1_1001	43.4106	-124.4031	52.4	1953.2	0.0
8/23/2009	14:54:59	20	SP1_1002	43.4109	-124.3989	52.4	1951.3	0.0
8/23/2009	14:55:09	20	SP1_1003	43.4109	-124.3946	52.4	1948.6	0.0
8/23/2009	14:55:20	20	SP1_1004	43.4108	-124.3902	52.4	1945.4	0.0
8/23/2009	14:55:30	20	SP1_1005	43.4109	-124.3861	52.4	1945.4	0.0
8/23/2009	14:55:41	20	SP1_1006	43.4108	-124.3818	52.4	1926.2	0.0
8/23/2009	14:55:51	20	SP1_1007	43.4109	-124.3775	52.4	1927.6	0.0

8/23/2009	14:56:02	20	SP1_1008	43.4114	-124.3734	52.4	1918.4	0.0
8/23/2009	14:56:12	20	SP1_1009	43.4119	-124.3691	52.4	1912.5	0.0
8/23/2009	14:56:23	20	SP1_1010	43.4123	-124.3650	52.4	1917.0	0.0
8/23/2009	14:56:33	20	SP1_1011	43.4125	-124.3609	52.4	1915.7	0.0
8/24/2009	11:33:28	21	SP1_0024	43.1668	-124.4600	56	1844.8	0.0
8/24/2009	11:33:39	21	SP1_0025	43.1673	-124.4652	56	1834.3	0.0
8/24/2009	11:33:49	21	SP1_0026	43.1678	-124.4706	56	1830.2	0.0
8/24/2009	11:34:00	21	SP1_0027	43.1684	-124.4758	56	1821.0	0.0
8/24/2009	11:34:10	21	SP1_0028	43.1693	-124.4810	56	1811.9	0.0
8/24/2009	11:34:21	21	SP1_0029	43.1701	-124.4863	56	1805.9	0.0
8/24/2009	11:34:31	21	SP1_0030	43.1701	-124.4914	56	1801.4	0.0
8/24/2009	11:34:42	21	SP1_0031	43.1700	-124.4966	56	1798.6	0.0
8/24/2009	11:34:52	21	SP1_0032	43.1702	-124.5017	56	1803.2	0.0
8/24/2009	11:35:03	21	SP1_0033	43.1703	-124.5067	56	1809.1	0.0
8/24/2009	11:35:13	21	SP1_0034	43.1701	-124.5116	56	1813.7	0.0
8/24/2009	11:35:24	21	SP1_0035	43.1700	-124.5167	56	1819.7	0.0
8/24/2009	11:35:34	21	SP1_0036	43.1701	-124.5217	56	1819.7	0.0
8/24/2009	11:35:45	21	SP1_0037	43.1703	-124.5266	56	1821.0	0.0
8/24/2009	11:35:56	21	SP1_0038	43.1706	-124.5317	56	1815.1	0.0
8/24/2009	11:36:06	21	SP1_0039	43.1703	-124.5367	56	1815.1	0.0
8/24/2009	11:36:17	21	SP1_0040	43.1702	-124.5416	56	1815.1	0.0
8/24/2009	11:36:27	21	SP1_0041	43.1702	-124.5468	56	1817.8	0.0
8/24/2009	11:36:38	21	SP1_0042	43.1703	-124.5518	56	1819.7	0.0
8/24/2009	11:36:48	21	SP1_0043	43.1698	-124.5567	56	1825.6	0.0
8/24/2009	11:36:59	21	SP1_0044	43.1693	-124.5617	56	1830.2	0.0
8/24/2009	11:37:09	21	SP1_0045	43.1689	-124.5665	56	1836.1	0.0
8/24/2009	11:37:20	21	SP1_0046	43.1685	-124.5714	56	1834.3	0.0
8/24/2009	11:37:30	21	SP1_0047	43.1681	-124.5765	56	1831.5	0.0
8/24/2009	11:37:41	21	SP1_0048	43.1675	-124.5814	56	1836.1	0.0
8/24/2009	11:37:51	21	SP1_0049	43.1674	-124.5863	56	1832.9	0.0
8/24/2009	11:38:02	21	SP1_0050	43.1675	-124.5914	56	1846.6	0.0
8/24/2009	11:38:12	21	SP1_0051	43.1676	-124.5962	56	1842.1	0.0

8/24/2009	11:38:23	21	SP1_0052	43.1678	-124.6011	56	1844.8	0.0
8/24/2009	11:38:34	21	SP1_0053	43.1682	-124.6061	56	1840.7	0.0
8/24/2009	11:38:44	21	SP1_0054	43.1686	-124.6110	56	1848.0	0.0
8/24/2009	11:38:55	21	SP1_0055	43.1689	-124.6158	56	1843.4	0.0
8/24/2009	11:39:05	21	SP1_0056	43.1691	-124.6209	56	1846.6	0.0
8/24/2009	11:39:16	21	SP1_0057	43.1693	-124.6258	56	1843.4	0.0
8/24/2009	11:39:26	21	SP1_0058	43.1691	-124.6307	56	1842.1	0.0
8/24/2009	11:39:37	21	SP1_0059	43.1688	-124.6356	56	1843.4	0.0
8/24/2009	11:39:47	21	SP1_0060	43.1683	-124.6407	56	1844.8	0.0
8/24/2009	11:39:58	21	SP1_0061	43.1677	-124.6455	56	1848.0	0.0
8/24/2009	11:40:08	21	SP1_0062	43.1675	-124.6503	56	1851.2	0.0
8/24/2009	11:40:19	21	SP1_0063	43.1672	-124.6553	56	1858.5	0.0
8/24/2009	11:40:29	21	SP1_0064	43.1670	-124.6601	56	1859.9	0.0
8/24/2009	11:40:40	21	SP1_0065	43.1669	-124.6650	56	1858.5	0.0
8/24/2009	11:40:50	21	SP1_0066	43.1670	-124.6700	56	1863.1	0.0
8/24/2009	11:41:01	21	SP1_0067	43.1671	-124.6748	56	1863.1	0.0
8/24/2009	11:41:11	21	SP1_0068	43.1670	-124.6797	56	1864.5	0.0
8/24/2009	11:41:22	21	SP1_0069	43.1672	-124.6847	56	1867.7	0.0
8/24/2009	11:41:33	21	SP1_0070	43.1676	-124.6895	56	1873.6	0.0
8/24/2009	11:41:43	21	SP1_0071	43.1678	-124.6943	56	1875.0	0.0
8/24/2009	11:41:54	21	SP1_0072	43.1676	-124.6993	56	1875.0	0.0
8/24/2009	11:42:04	21	SP1_0073	43.1675	-124.7040	56	1879.5	0.0
8/24/2009	11:42:15	21	SP1_0074	43.1675	-124.7088	56	1878.2	0.0
8/24/2009	11:42:25	21	SP1_0075	43.1674	-124.7138	56	1879.5	0.0
8/24/2009	11:42:36	21	SP1_0076	43.1673	-124.7186	56	1885.5	0.0
8/24/2009	11:42:46	21	SP1_0077	43.1672	-124.7233	56	1879.5	0.0
8/24/2009	11:42:57	21	SP1_0078	43.1672	-124.7284	56	1880.9	0.0
8/24/2009	11:43:07	21	SP1_0079	43.1672	-124.7332	56	1878.2	0.0
8/24/2009	11:43:18	21	SP1_0080	43.1672	-124.7380	56	1876.3	0.0
8/24/2009	11:43:28	21	SP1_0081	43.1674	-124.7431	56	1878.2	0.0
8/24/2009	11:43:39	21	SP1_0082	43.1674	-124.7480	56	1876.3	0.0
8/24/2009	11:43:49	21	SP1_0083	43.1674	-124.7529	56	1873.6	0.0

8/24/2009	11:44:00	21	SP1_0084	43.1674	-124.7580	56	1870.4	0.0
8/24/2009	11:44:10	21	SP1_0085	43.1673	-124.7629	56	1869.0	0.0
8/24/2009	11:44:21	21	SP1_0086	43.1673	-124.7678	56	1865.8	0.0
8/24/2009	11:44:32	21	SP1_0087	43.1673	-124.7729	56	1865.8	0.0
8/24/2009	11:44:42	21	SP1_0088	43.1673	-124.7778	56	1865.8	0.0
8/24/2009	11:44:53	21	SP1_0089	43.1674	-124.7826	56	1863.1	0.0
8/24/2009	11:45:03	21	SP1_0090	43.1677	-124.7877	56	1858.5	0.0
8/24/2009	11:45:14	21	SP1_0091	43.1676	-124.7926	56	1861.7	0.0
8/24/2009	11:45:24	21	SP1_0092	43.1675	-124.7974	56	1864.5	0.0
8/24/2009	11:45:35	21	SP1_0093	43.1674	-124.8023	56	1864.5	0.0
8/24/2009	11:45:45	21	SP1_0094	43.1674	-124.8071	56	1863.1	0.0
8/24/2009	11:45:56	21	SP1_0095	43.1674	-124.8119	56	1870.4	0.0
8/24/2009	11:46:06	21	SP1_0096	43.1673	-124.8169	56	1875.0	0.0
8/24/2009	11:46:17	21	SP1_0097	43.1671	-124.8217	56	1873.6	0.0
8/24/2009	11:46:27	21	SP1_0098	43.1668	-124.8265	56	1879.5	0.0
8/24/2009	11:46:38	21	SP1_0099	43.1667	-124.8314	56	1878.2	0.0
8/24/2009	11:46:48	21	SP1_0100	43.1668	-124.8362	56	1884.1	0.0
8/24/2009	11:46:59	21	SP1_0101	43.1669	-124.8410	56	1885.5	0.0
8/24/2009	11:47:10	21	SP1_0102	43.1670	-124.8460	56	1890.1	0.0
8/24/2009	11:47:20	21	SP1_0103	43.1671	-124.8509	56	1892.8	0.0
8/24/2009	11:47:31	21	SP1_0104	43.1671	-124.8556	56	1899.2	0.0
8/24/2009	11:47:41	21	SP1_0105	43.1671	-124.8605	56	1900.6	0.0
8/24/2009	11:47:52	21	SP1_0106	43.1671	-124.8654	56	1900.6	0.0
8/24/2009	11:48:02	21	SP1_0107	43.1670	-124.8701	56	1912.5	0.0
8/24/2009	11:48:13	21	SP1_0108	43.1669	-124.8750	56	1906.5	0.0
8/24/2009	11:48:23	21	SP1_0109	43.1670	-124.8799	56	1912.5	0.0
8/24/2009	11:48:34	21	SP1_0110	43.1670	-124.8846	56	1919.8	0.0
8/24/2009	11:48:44	21	SP1_0111	43.1671	-124.8895	56	1919.8	0.0
8/24/2009	11:48:55	21	SP1_0112	43.1671	-124.8943	56	1923.0	0.0
8/24/2009	11:49:05	21	SP1_0113	43.1671	-124.8991	56	1911.1	0.0
8/24/2009	11:49:16	21	SP1_0114	43.1671	-124.9042	56	1923.0	0.0
8/24/2009	11:49:26	21	SP1_0115	43.1670	-124.9090	56	1918.4	0.0

8/24/2009	11:49:37	21	SP1_0116	43.1671	-124.9139	56	1921.6	0.0
8/24/2009	11:49:48	21	SP1_0117	43.1672	-124.9190	56	1921.6	0.0
8/24/2009	11:49:58	21	SP1_0118	43.1674	-124.9238	56	1921.6	0.0
8/24/2009	11:50:09	21	SP1_0119	43.1674	-124.9286	56	1927.6	0.0
8/24/2009	11:50:19	21	SP1_0120	43.1675	-124.9337	56	1930.3	0.0
8/24/2009	11:50:30	21	SP1_0121	43.1676	-124.9387	56	1928.9	0.0
8/24/2009	11:50:40	21	SP1_0122	43.1675	-124.9436	56	1940.8	0.0
8/24/2009	11:50:51	21	SP1_0123	43.1676	-124.9486	56	1936.7	0.0
8/24/2009	11:51:01	21	SP1_0124	43.1677	-124.9536	56	1939.4	0.0
8/24/2009	11:51:12	21	SP1_0125	43.1678	-124.9586	56	1942.6	0.0
8/24/2009	11:51:22	21	SP1_0126	43.1680	-124.9637	56	1939.4	0.0
8/24/2009	11:51:33	21	SP1_0127	43.1681	-124.9686	56	1940.8	0.0
8/24/2009	11:51:43	21	SP1_0128	43.1682	-124.9735	56	1939.4	0.0
8/24/2009	11:51:54	21	SP1_0129	43.1682	-124.9784	56	1936.7	0.0
8/24/2009	11:52:04	21	SP1_0130	43.1685	-124.9835	56	1928.9	0.0
8/24/2009	11:52:15	21	SP1_0131	43.1688	-124.9884	56	1928.9	0.0
8/24/2009	11:52:25	21	SP1_0132	43.1689	-124.9931	56	1934.9	0.0
8/24/2009	11:52:36	21	SP1_0133	43.1691	-124.9980	56	1927.6	0.0
8/24/2009	11:52:47	21	SP1_0134	43.1694	-125.0027	56	1928.9	0.0
8/24/2009	11:52:57	21	SP1_0135	43.1697	-125.0074	56	1924.4	0.0
8/24/2009	11:53:08	21	SP1_0136	43.1701	-125.0123	56	1924.4	0.0
8/24/2009	11:53:18	21	SP1_0137	43.1707	-125.0170	56	1917.0	0.0
8/24/2009	11:53:29	21	SP1_0138	43.1711	-125.0217	56	1919.8	0.0
8/24/2009	11:53:39	21	SP1_0139	43.1714	-125.0266	56	1917.0	0.0
8/24/2009	11:53:50	21	SP1_0140	43.1719	-125.0313	56	1915.7	0.0
8/24/2009	11:54:00	21	SP1_0141	43.1725	-125.0360	56	1912.5	0.0
8/24/2009	11:54:11	21	SP1_0142	43.1730	-125.0409	56	1917.0	0.0
8/24/2009	11:54:21	21	SP1_0143	43.1732	-125.0455	56	1921.6	0.0
8/24/2009	11:54:32	21	SP1_0144	43.1733	-125.0502	56	1926.2	0.0
8/24/2009	11:54:42	21	SP1_0145	43.1736	-125.0551	56	1924.4	0.0
8/24/2009	11:54:53	21	SP1_0146	43.1741	-125.0598	56	1926.2	0.0
8/24/2009	11:55:03	21	SP1_0147	43.1744	-125.0645	56	1924.4	0.0

8/24/2009	11:55:14	21	SP1_0148	43.1741	-125.0693	56	1927.6	0.0
8/24/2009	11:55:24	21	SP1_0149	43.1740	-125.0741	56	1928.9	0.0
8/24/2009	11:55:35	21	SP1_0150	43.1740	-125.0787	56	1930.3	0.0
8/24/2009	11:55:46	21	SP1_0151	43.1736	-125.0836	56	1930.3	0.0
8/24/2009	11:55:56	21	SP1_0152	43.1732	-125.0883	56	1930.3	0.0
8/24/2009	11:56:07	21	SP1_0153	43.1730	-125.0930	56	1930.3	0.0
8/24/2009	11:56:17	21	SP1_0154	43.1725	-125.0978	56	1936.7	0.0
8/24/2009	11:56:28	21	SP1_0155	43.1719	-125.1024	56	1938.1	0.0
8/24/2009	11:56:38	21	SP1_0156	43.1715	-125.1070	56	1934.9	0.0
8/24/2009	11:56:49	21	SP1_0157	43.1711	-125.1120	56	1936.7	0.0
8/24/2009	11:56:59	21	SP1_0158	43.1708	-125.1167	56	1939.4	0.0
8/24/2009	11:57:10	21	SP1_0159	43.1705	-125.1215	56	1938.1	0.0
8/24/2009	11:57:20	21	SP1_0160	43.1702	-125.1265	56	1939.4	0.0
8/24/2009	11:57:31	21	SP1_0161	43.1699	-125.1313	56	1939.4	0.0
8/24/2009	11:57:41	21	SP1_0162	43.1688	-125.1359	56	1940.8	0.0
8/24/2009	11:57:52	21	SP1_0163	43.1677	-125.1407	56	1934.9	0.0
8/24/2009	11:58:02	21	SP1_0164	43.1670	-125.1456	56	1923.0	0.0
8/24/2009	11:58:13	21	SP1_0165	43.1664	-125.1506	56	1924.4	0.0
8/24/2009	12:15:48	22	SP1_0167	42.9177	-125.2475	55.99	1894.6	0.0
8/24/2009	12:15:59	22	SP1_0168	42.9163	-125.2434	55.99	1879.5	0.0
8/24/2009	12:16:09	22	SP1_0169	42.9169	-125.2386	55.99	1876.3	0.0
8/24/2009	12:16:20	22	SP1_0170	42.9173	-125.2338	55.99	1876.3	0.0
8/24/2009	12:16:30	22	SP1_0171	42.9179	-125.2288	55.99	1878.2	0.0
8/24/2009	12:16:41	22	SP1_0172	42.9182	-125.2240	55.99	1879.5	0.0
8/24/2009	12:16:51	22	SP1_0173	42.9180	-125.2193	55.99	1884.1	0.0
8/24/2009	12:17:02	22	SP1_0174	42.9180	-125.2143	55.99	1888.7	0.0
8/24/2009	12:17:12	22	SP1_0175	42.9181	-125.2095	55.99	1890.1	0.0
8/24/2009	12:17:23	22	SP1_0176	42.9181	-125.2046	55.99	1892.8	0.0
8/24/2009	12:17:34	22	SP1_0177	42.9181	-125.1997	55.99	1896.0	0.0
8/24/2009	12:17:44	22	SP1_0178	42.9181	-125.1949	55.99	1896.0	0.0
8/24/2009	12:17:55	22	SP1_0179	42.9183	-125.1901	55.99	1896.0	0.0
8/24/2009	12:18:05	22	SP1_0180	42.9183	-125.1851	55.99	1894.6	0.0

8/24/2009	12:18:16	22	SP1_0181	42.9184	-125.1803	55.99	1894.6	0.0
8/24/2009	12:18:26	22	SP1_0182	42.9183	-125.1754	55.99	1896.0	0.0
8/24/2009	12:18:37	22	SP1_0183	42.9183	-125.1705	55.99	1897.4	0.0
8/24/2009	12:18:47	22	SP1_0184	42.9182	-125.1656	55.99	1899.2	0.0
8/24/2009	12:18:58	22	SP1_0185	42.9181	-125.1607	55.99	1900.6	0.0
8/24/2009	12:19:08	22	SP1_0186	42.9181	-125.1557	55.99	1900.6	0.0
8/24/2009	12:19:19	22	SP1_0187	42.9182	-125.1507	55.99	1896.0	0.0
8/24/2009	12:19:29	22	SP1_0188	42.9183	-125.1457	55.99	1897.4	0.0
8/24/2009	12:19:40	22	SP1_0189	42.9183	-125.1406	55.99	1897.4	0.0
8/24/2009	12:19:50	22	SP1_0190	42.9183	-125.1357	55.99	1896.0	0.0
8/24/2009	12:20:01	22	SP1_0191	42.9183	-125.1306	55.99	1891.4	0.0
8/24/2009	12:20:12	22	SP1_0192	42.9183	-125.1254	55.99	1891.4	0.0
8/24/2009	12:20:22	22	SP1_0193	42.9183	-125.1204	55.99	1890.1	0.0
8/24/2009	12:20:33	22	SP1_0194	42.9184	-125.1153	55.99	1891.4	0.0
8/24/2009	12:20:43	22	SP1_0195	42.9187	-125.1101	55.99	1891.4	0.0
8/24/2009	12:20:54	22	SP1_0196	42.9191	-125.1051	55.99	1886.9	0.0
8/24/2009	12:21:04	22	SP1_0197	42.9195	-125.1000	55.99	1886.9	0.0
8/24/2009	12:21:15	22	SP1_0198	42.9196	-125.0948	55.99	1884.1	0.0
8/24/2009	12:21:25	22	SP1_0199	42.9197	-125.0897	55.99	1890.1	0.0
8/24/2009	12:21:36	22	SP1_0200	42.9198	-125.0848	55.99	1885.5	0.0
8/24/2009	12:21:46	22	SP1_0201	42.9197	-125.0795	55.99	1886.9	0.0
8/24/2009	12:21:57	22	SP1_0202	42.9198	-125.0745	55.99	1890.1	0.0
8/24/2009	12:22:07	22	SP1_0203	42.9199	-125.0695	55.99	1886.9	0.0
8/24/2009	12:22:18	22	SP1_0204	42.9199	-125.0643	55.99	1888.7	0.0
8/24/2009	12:22:28	22	SP1_0205	42.9198	-125.0594	55.99	1891.4	0.0
8/24/2009	12:22:39	22	SP1_0206	42.9197	-125.0544	55.99	1888.7	0.0
8/24/2009	12:22:49	22	SP1_0207	42.9195	-125.0494	55.99	1890.1	0.0
8/24/2009	12:23:00	22	SP1_0208	42.9191	-125.0442	55.99	1888.7	0.0
8/24/2009	12:23:11	22	SP1_0209	42.9188	-125.0392	55.99	1888.7	0.0
8/24/2009	12:23:21	22	SP1_0210	42.9186	-125.0342	55.99	1882.3	0.0
8/24/2009	12:23:32	22	SP1_0211	42.9184	-125.0289	55.99	1884.1	0.0
8/24/2009	12:23:42	22	SP1_0212	42.9183	-125.0240	55.99	1885.5	0.0

8/24/2009	12:23:53	22	SP1_0213	42.9181	-125.0189	55.99	1885.5	0.0
8/24/2009	12:24:03	22	SP1_0214	42.9181	-125.0137	55.99	1885.5	0.0
8/24/2009	12:24:14	22	SP1_0215	42.9180	-125.0087	55.99	1890.1	0.0
8/24/2009	12:24:24	22	SP1_0216	42.9178	-125.0038	55.99	1890.1	0.0
8/24/2009	12:24:35	22	SP1_0217	42.9176	-124.9986	55.99	1890.1	0.0
8/24/2009	12:24:45	22	SP1_0218	42.9177	-124.9936	55.99	1894.6	0.0
8/24/2009	12:24:56	22	SP1_0219	42.9176	-124.9886	55.99	1888.7	0.0
8/24/2009	12:25:06	22	SP1_0220	42.9175	-124.9834	55.99	1894.6	0.0
8/24/2009	12:25:17	22	SP1_0221	42.9174	-124.9785	55.99	1891.4	0.0
8/24/2009	12:25:27	22	SP1_0222	42.9172	-124.9734	55.99	1890.1	0.0
8/24/2009	12:25:38	22	SP1_0223	42.9172	-124.9682	55.99	1894.6	0.0
8/24/2009	12:25:49	22	SP1_0224	42.9174	-124.9632	55.99	1891.4	0.0
8/24/2009	12:25:59	22	SP1_0225	42.9176	-124.9582	55.99	1894.6	0.0
8/24/2009	12:26:10	22	SP1_0226	42.9176	-124.9530	55.99	1896.0	0.0
8/24/2009	12:26:20	22	SP1_0227	42.9175	-124.9480	55.99	1896.0	0.0
8/24/2009	12:26:31	22	SP1_0228	42.9175	-124.9431	55.99	1899.2	0.0
8/24/2009	12:26:41	22	SP1_0229	42.9176	-124.9379	55.99	1894.6	0.0
8/24/2009	12:26:52	22	SP1_0230	42.9177	-124.9329	55.99	1903.3	0.0
8/24/2009	12:27:02	22	SP1_0231	42.9176	-124.9279	55.99	1899.2	0.0
8/24/2009	12:27:13	22	SP1_0232	42.9174	-124.9227	55.99	1903.3	0.0
8/24/2009	12:27:23	22	SP1_0233	42.9171	-124.9178	55.99	1899.2	0.0
8/24/2009	12:27:34	22	SP1_0234	42.9168	-124.9127	55.99	1903.3	0.0
8/24/2009	12:27:44	22	SP1_0235	42.9169	-124.9077	55.99	1907.9	0.0
8/24/2009	12:27:55	22	SP1_0236	42.9169	-124.9027	55.99	1906.5	0.0
8/24/2009	12:28:05	22	SP1_0237	42.9170	-124.8977	55.99	1911.1	0.0
8/24/2009	12:28:16	22	SP1_0238	42.9170	-124.8926	55.99	1906.5	0.0
8/24/2009	12:28:26	22	SP1_0239	42.9171	-124.8876	55.99	1902.0	0.0
8/24/2009	12:28:37	22	SP1_0240	42.9170	-124.8826	55.99	1900.6	0.0
8/24/2009	12:28:48	22	SP1_0241	42.9170	-124.8774	55.99	1900.6	0.0
8/24/2009	12:28:58	22	SP1_0242	42.9171	-124.8725	55.99	1900.6	0.0
8/24/2009	12:29:09	22	SP1_0243	42.9170	-124.8675	55.99	1899.2	0.0
8/24/2009	12:29:19	22	SP1_0244	42.9168	-124.8624	55.99	1900.6	0.0

8/24/2009	12:29:30	22	SP1_0245	42.9166	-124.8574	55.99	1892.8	0.0
8/24/2009	12:29:40	22	SP1_0246	42.9165	-124.8523	55.99	1900.6	0.0
8/24/2009	12:29:51	22	SP1_0247	42.9164	-124.8472	55.99	1902.0	0.0
8/24/2009	12:30:01	22	SP1_0248	42.9164	-124.8422	55.99	1903.3	0.0
8/24/2009	12:30:12	22	SP1_0249	42.9164	-124.8372	55.99	1899.2	0.0
8/24/2009	12:30:22	22	SP1_0250	42.9163	-124.8319	55.99	1897.4	0.0
8/24/2009	12:30:33	22	SP1_0251	42.9164	-124.8269	55.99	1899.2	0.0
8/24/2009	12:30:43	22	SP1_0252	42.9166	-124.8219	55.99	1894.6	0.0
8/24/2009	12:30:54	22	SP1_0253	42.9167	-124.8166	55.99	1891.4	0.0
8/24/2009	12:31:04	22	SP1_0254	42.9168	-124.8116	55.99	1888.7	0.0
8/24/2009	12:31:15	22	SP1_0255	42.9169	-124.8065	55.99	1885.5	0.0
8/24/2009	12:31:26	22	SP1_0256	42.9170	-124.8013	55.99	1885.5	0.0
8/24/2009	12:31:36	22	SP1_0257	42.9171	-124.7963	55.99	1886.9	0.0
8/24/2009	12:31:47	22	SP1_0258	42.9172	-124.7912	55.99	1882.3	0.0
8/24/2009	12:31:57	22	SP1_0259	42.9174	-124.7860	55.99	1885.5	0.0
8/24/2009	12:32:08	22	SP1_0260	42.9174	-124.7809	55.99	1880.9	0.0
8/24/2009	12:32:18	22	SP1_0261	42.9173	-124.7759	55.99	1876.3	0.0
8/24/2009	12:32:29	22	SP1_0262	42.9172	-124.7707	55.99	1878.2	0.0
8/24/2009	12:32:39	22	SP1_0263	42.9172	-124.7656	55.99	1879.5	0.0
8/24/2009	12:32:50	22	SP1_0264	42.9171	-124.7605	55.99	1876.3	0.0
8/24/2009	12:33:00	22	SP1_0265	42.9170	-124.7553	55.99	1880.9	0.0
8/24/2009	12:33:11	22	SP1_0266	42.9170	-124.7502	55.99	1875.0	0.0
8/24/2009	12:33:21	22	SP1_0267	42.9169	-124.7451	55.99	1884.1	0.0
8/24/2009	12:33:32	22	SP1_0268	42.9168	-124.7399	55.99	1880.9	0.0
8/24/2009	12:33:42	22	SP1_0269	42.9168	-124.7347	55.99	1880.9	0.0
8/24/2009	12:33:53	22	SP1_0270	42.9168	-124.7297	55.99	1885.5	0.0
8/24/2009	12:34:03	22	SP1_0271	42.9169	-124.7246	55.99	1882.3	0.0
8/24/2009	12:34:14	22	SP1_0272	42.9169	-124.7193	55.99	1880.9	0.0
8/24/2009	12:34:25	22	SP1_0273	42.9169	-124.7142	55.99	1879.5	0.0
8/24/2009	12:34:35	22	SP1_0274	42.9168	-124.7090	55.99	1878.2	0.0
8/24/2009	12:34:46	22	SP1_0275	42.9168	-124.7037	55.99	1876.3	0.0
8/24/2009	12:34:56	22	SP1_0276	42.9167	-124.6985	55.99	1875.0	0.0

8/24/2009	12:35:07	22	SP1_0277	42.9166	-124.6934	55.99	1873.6	0.0
8/24/2009	12:35:17	22	SP1_0278	42.9164	-124.6881	55.99	1870.4	0.0
8/24/2009	12:35:28	22	SP1_0279	42.9164	-124.6829	55.99	1875.0	0.0
8/24/2009	12:35:38	22	SP1_0280	42.9162	-124.6778	55.99	1871.8	0.0
8/24/2009	12:35:49	22	SP1_0281	42.9161	-124.6724	55.99	1871.8	0.0
8/24/2009	12:35:59	22	SP1_0282	42.9160	-124.6673	55.99	1869.0	0.0
8/24/2009	12:36:10	22	SP1_0283	42.9158	-124.6621	55.99	1870.4	0.0
8/24/2009	12:36:20	22	SP1_0284	42.9156	-124.6568	55.99	1870.4	0.0
8/24/2009	12:36:31	22	SP1_0285	42.9156	-124.6517	55.99	1869.0	0.0
8/24/2009	12:36:41	22	SP1_0286	42.9155	-124.6465	55.99	1870.4	0.0
8/24/2009	12:36:52	22	SP1_0287	42.9155	-124.6413	55.99	1873.6	0.0
8/24/2009	12:37:03	22	SP1_0288	42.9156	-124.6362	55.99	1875.0	0.0
8/24/2009	12:37:13	22	SP1_0289	42.9157	-124.6312	55.99	1875.0	0.0
8/24/2009	12:37:24	22	SP1_0290	42.9156	-124.6259	55.99	1879.5	0.0
8/24/2009	12:37:34	22	SP1_0291	42.9155	-124.6210	55.99	1876.3	0.0
8/24/2009	12:37:45	22	SP1_0292	42.9155	-124.6160	55.99	1879.5	0.0
8/24/2009	12:37:55	22	SP1_0293	42.9153	-124.6108	55.99	1879.5	0.0
8/24/2009	12:38:06	22	SP1_0294	42.9151	-124.6059	55.99	1879.5	0.0
8/24/2009	12:38:16	22	SP1_0295	42.9150	-124.6009	55.99	1873.6	0.0
8/24/2009	12:38:27	22	SP1_0296	42.9148	-124.5956	55.99	1871.8	0.0
8/24/2009	12:38:37	22	SP1_0297	42.9147	-124.5906	55.99	1871.8	0.0
8/24/2009	12:38:48	22	SP1_0298	42.9146	-124.5856	55.99	1871.8	0.0
8/24/2009	12:38:58	22	SP1_0299	42.9147	-124.5804	55.99	1870.4	0.0
8/24/2009	12:39:09	22	SP1_0300	42.9148	-124.5753	55.99	1871.8	0.0
8/24/2009	12:39:19	22	SP1_0301	42.9151	-124.5702	55.99	1875.0	0.0
8/24/2009	12:39:30	22	SP1_0302	42.9154	-124.5651	55.99	1876.3	0.0
8/24/2009	12:39:40	22	SP1_0303	42.9156	-124.5600	55.99	1875.0	0.0
8/24/2009	12:58:58	23	SP1_0323	42.6674	-124.4356	58.23	1805.9	0.0
8/24/2009	12:59:08	23	SP1_0324	42.6670	-124.4403	58.23	1790.9	0.0
8/24/2009	12:59:19	23	SP1_0325	42.6666	-124.4449	58.23	1795.4	0.0
8/24/2009	12:59:29	23	SP1_0326	42.6662	-124.4494	58.23	1800.0	0.0
8/24/2009	12:59:40	23	SP1_0327	42.6662	-124.4542	58.23	1800.0	0.0

8/24/2009	12:59:50	23	SP1_0328	42.6661	-124.4588	58.23	1803.2	0.0
8/24/2009	13:00:01	23	SP1_0329	42.6662	-124.4634	58.23	1803.2	0.0
8/24/2009	13:00:12	23	SP1_0330	42.6663	-124.4682	58.23	1804.6	0.0
8/24/2009	13:00:22	23	SP1_0331	42.6660	-124.4726	58.23	1813.7	0.0
8/24/2009	13:00:33	23	SP1_0332	42.6660	-124.4771	58.23	1811.9	0.0
8/24/2009	13:00:43	23	SP1_0333	42.6662	-124.4820	58.23	1816.5	0.0
8/24/2009	13:00:54	23	SP1_0334	42.6665	-124.4865	58.23	1817.8	0.0
8/24/2009	13:01:04	23	SP1_0335	42.6665	-124.4912	58.23	1816.5	0.0
8/24/2009	13:01:15	23	SP1_0336	42.6667	-124.4959	58.23	1827.0	0.0
8/24/2009	13:01:25	23	SP1_0337	42.6669	-124.5005	58.23	1821.0	0.0
8/24/2009	13:01:36	23	SP1_0338	42.6668	-124.5051	58.23	1830.2	0.0
8/24/2009	13:01:46	23	SP1_0339	42.6667	-124.5099	58.23	1832.9	0.0
8/24/2009	13:01:57	23	SP1_0340	42.6665	-124.5145	58.23	1834.3	0.0
8/24/2009	13:02:07	23	SP1_0341	42.6663	-124.5190	58.23	1832.9	0.0
8/24/2009	13:02:18	23	SP1_0342	42.6658	-124.5237	58.23	1840.7	0.0
8/24/2009	13:02:28	23	SP1_0343	42.6650	-124.5279	58.23	1852.6	0.0
8/24/2009	13:02:39	23	SP1_0344	42.6641	-124.5322	58.23	1852.6	0.0
8/24/2009	13:02:50	23	SP1_0345	42.6631	-124.5365	58.23	1858.5	0.0
8/24/2009	13:03:00	23	SP1_0346	42.6621	-124.5407	58.23	1853.9	0.0
8/24/2009	13:03:11	23	SP1_0347	42.6608	-124.5448	58.23	1859.9	0.0
8/24/2009	13:03:21	23	SP1_0348	42.6610	-124.5495	58.23	1853.9	0.0
8/24/2009	13:03:32	23	SP1_0349	42.6614	-124.5540	58.23	1857.1	0.0
8/24/2009	13:03:42	23	SP1_0350	42.6616	-124.5585	58.23	1859.9	0.0
8/24/2009	13:03:53	23	SP1_0351	42.6617	-124.5631	58.23	1861.7	0.0
8/24/2009	13:04:03	23	SP1_0352	42.6618	-124.5676	58.23	1865.8	0.0
8/24/2009	13:04:14	23	SP1_0353	42.6620	-124.5721	58.23	1863.1	0.0
8/24/2009	13:04:24	23	SP1_0354	42.6622	-124.5767	58.23	1873.6	0.0
8/24/2009	13:04:35	23	SP1_0355	42.6625	-124.5811	58.23	1871.8	0.0
8/24/2009	13:04:45	23	SP1_0356	42.6629	-124.5856	58.23	1871.8	0.0
8/24/2009	13:04:56	23	SP1_0357	42.6633	-124.5903	58.23	1871.8	0.0
8/24/2009	13:05:06	23	SP1_0358	42.6638	-124.5948	58.23	1875.0	0.0
8/24/2009	13:05:17	23	SP1_0359	42.6643	-124.5994	58.23	1878.2	0.0

8/24/2009	13:05:28	23	SP1_0360	42.6648	-124.6040	58.23	1880.9	0.0
8/24/2009	13:05:38	23	SP1_0361	42.6653	-124.6085	58.23	1884.1	0.0
8/24/2009	13:05:49	23	SP1_0362	42.6659	-124.6130	58.23	1885.5	0.0
8/24/2009	13:05:59	23	SP1_0363	42.6664	-124.6177	58.23	1890.1	0.0
8/24/2009	13:06:10	23	SP1_0364	42.6663	-124.6222	58.23	1892.8	0.0
8/24/2009	13:06:20	23	SP1_0365	42.6658	-124.6265	58.23	1900.6	0.0
8/24/2009	13:06:31	23	SP1_0366	42.6652	-124.6309	58.23	1905.2	0.0
8/24/2009	13:06:41	23	SP1_0367	42.6648	-124.6354	58.23	1907.9	0.0
8/24/2009	13:06:52	23	SP1_0368	42.6647	-124.6400	58.23	1902.0	0.0
8/24/2009	13:07:02	23	SP1_0369	42.6646	-124.6444	58.23	1909.7	0.0
8/24/2009	13:07:13	23	SP1_0370	42.6655	-124.6491	58.23	1897.4	0.0
8/24/2009	13:07:23	23	SP1_0371	42.6668	-124.6534	58.23	1907.9	0.0
8/24/2009	13:07:34	23	SP1_0372	42.6674	-124.6579	58.23	1902.0	0.0
8/24/2009	13:07:44	23	SP1_0373	42.6671	-124.6626	58.23	1907.9	0.0
8/24/2009	13:07:55	23	SP1_0374	42.6672	-124.6671	58.23	1906.5	0.0
8/24/2009	13:08:05	23	SP1_0375	42.6674	-124.6718	58.23	1903.3	0.0
8/24/2009	13:08:16	23	SP1_0376	42.6675	-124.6767	58.23	1903.3	0.0
8/24/2009	13:08:27	23	SP1_0377	42.6675	-124.6812	58.23	1903.3	0.0
8/24/2009	13:08:37	23	SP1_0378	42.6676	-124.6859	58.23	1903.3	0.0
8/24/2009	13:08:48	23	SP1_0379	42.6678	-124.6907	58.23	1896.0	0.0
8/24/2009	13:08:58	23	SP1_0380	42.6676	-124.6954	58.23	1902.0	0.0
8/24/2009	13:09:09	23	SP1_0381	42.6676	-124.6999	58.23	1899.2	0.0
8/24/2009	13:09:19	23	SP1_0382	42.6676	-124.7048	58.23	1897.4	0.0
8/24/2009	13:09:30	23	SP1_0383	42.6677	-124.7094	58.23	1897.4	0.0
8/24/2009	13:09:40	23	SP1_0384	42.6679	-124.7142	58.23	1896.0	0.0
8/24/2009	13:09:51	23	SP1_0385	42.6681	-124.7190	58.23	1903.3	0.0
8/24/2009	13:10:01	23	SP1_0386	42.6683	-124.7237	58.23	1903.3	0.0
8/24/2009	13:10:12	23	SP1_0387	42.6686	-124.7283	58.23	1902.0	0.0
8/24/2009	13:10:22	23	SP1_0388	42.6690	-124.7332	58.23	1897.4	0.0
8/24/2009	13:10:33	23	SP1_0389	42.6692	-124.7379	58.23	1902.0	0.0
8/24/2009	13:10:43	23	SP1_0390	42.6693	-124.7426	58.23	1896.0	0.0
8/24/2009	13:10:54	23	SP1_0391	42.6695	-124.7476	58.23	1899.2	0.0

8/24/2009	13:11:04	23	SP1_0392	42.6697	-124.7522	58.23	1899.2	0.0
8/24/2009	13:11:15	23	SP1_0393	42.6696	-124.7569	58.23	1900.6	0.0
8/24/2009	13:11:26	23	SP1_0394	42.6696	-124.7618	58.23	1896.0	0.0
8/24/2009	13:11:36	23	SP1_0395	42.6695	-124.7665	58.23	1899.2	0.0
8/24/2009	13:11:47	23	SP1_0396	42.6695	-124.7712	58.23	1892.8	0.0
8/24/2009	13:11:57	23	SP1_0397	42.6694	-124.7760	58.23	1897.4	0.0
8/24/2009	13:12:08	23	SP1_0398	42.6694	-124.7807	58.23	1900.6	0.0
8/24/2009	13:12:18	23	SP1_0399	42.6696	-124.7853	58.23	1899.2	0.0
8/24/2009	13:12:29	23	SP1_0400	42.6696	-124.7901	58.23	1900.6	0.0
8/24/2009	13:12:39	23	SP1_0401	42.6697	-124.7947	58.23	1900.6	0.0
8/24/2009	13:12:50	23	SP1_0402	42.6700	-124.7993	58.23	1903.3	0.0
8/24/2009	13:13:00	23	SP1_0403	42.6702	-124.8041	58.23	1903.3	0.0
8/24/2009	13:13:11	23	SP1_0404	42.6701	-124.8086	58.23	1905.2	0.0
8/24/2009	13:13:21	23	SP1_0405	42.6701	-124.8133	58.23	1897.4	0.0
8/24/2009	13:13:32	23	SP1_0406	42.6701	-124.8180	58.23	1900.6	0.0
8/24/2009	13:13:42	23	SP1_0407	42.6702	-124.8227	58.23	1892.8	0.0
8/24/2009	13:13:53	23	SP1_0408	42.6701	-124.8273	58.23	1899.2	0.0
8/24/2009	13:14:04	23	SP1_0409	42.6701	-124.8320	58.23	1892.8	0.0
8/24/2009	13:14:14	23	SP1_0410	42.6701	-124.8366	58.23	1896.0	0.0
8/24/2009	13:14:25	23	SP1_0411	42.6702	-124.8412	58.23	1892.8	0.0
8/24/2009	13:14:35	23	SP1_0412	42.6702	-124.8459	58.23	1896.0	0.0
8/24/2009	13:14:46	23	SP1_0413	42.6701	-124.8505	58.23	1899.2	0.0
8/24/2009	13:14:56	23	SP1_0414	42.6700	-124.8551	58.23	1896.0	0.0
8/24/2009	13:15:07	23	SP1_0415	42.6699	-124.8598	58.23	1900.6	0.0
8/24/2009	13:15:17	23	SP1_0416	42.6700	-124.8644	58.23	1903.3	0.0
8/24/2009	13:15:28	23	SP1_0417	42.6701	-124.8689	58.23	1911.1	0.0
8/24/2009	13:15:38	23	SP1_0418	42.6704	-124.8736	58.23	1907.9	0.0
8/24/2009	13:15:49	23	SP1_0419	42.6709	-124.8780	58.23	1909.7	0.0
8/24/2009	13:15:59	23	SP1_0420	42.6712	-124.8825	58.23	1909.7	0.0
8/24/2009	13:16:10	23	SP1_0421	42.6715	-124.8871	58.23	1911.1	0.0
8/24/2009	13:16:20	23	SP1_0422	42.6719	-124.8915	58.23	1913.8	0.0
8/24/2009	13:16:31	23	SP1_0423	42.6724	-124.8959	58.23	1909.7	0.0

8/24/2009	13:16:42	23	SP1_0424	42.6727	-124.9004	58.23	1915.7	0.0
8/24/2009	13:16:52	23	SP1_0425	42.6729	-124.9048	58.23	1911.1	0.0
8/24/2009	13:17:03	23	SP1_0426	42.6731	-124.9093	58.23	1915.7	0.0
8/24/2009	13:17:13	23	SP1_0427	42.6730	-124.9139	58.23	1913.8	0.0
8/24/2009	13:17:24	23	SP1_0428	42.6727	-124.9184	58.23	1915.7	0.0
8/24/2009	13:17:34	23	SP1_0429	42.6723	-124.9229	58.23	1912.5	0.0
8/24/2009	13:17:45	23	SP1_0430	42.6718	-124.9275	58.23	1912.5	0.0
8/24/2009	13:17:55	23	SP1_0431	42.6712	-124.9319	58.23	1911.1	0.0
8/24/2009	13:18:06	23	SP1_0432	42.6705	-124.9363	58.23	1913.8	0.0
8/24/2009	13:18:16	23	SP1_0433	42.6699	-124.9409	58.23	1915.7	0.0
8/24/2009	13:18:27	23	SP1_0434	42.6693	-124.9453	58.23	1917.0	0.0
8/24/2009	13:18:37	23	SP1_0435	42.6689	-124.9498	58.23	1913.8	0.0
8/24/2009	13:18:48	23	SP1_0436	42.6687	-124.9545	58.23	1919.8	0.0
8/24/2009	13:18:58	23	SP1_0437	42.6686	-124.9590	58.23	1915.7	0.0
8/24/2009	13:19:09	23	SP1_0438	42.6685	-124.9634	58.23	1918.4	0.0
8/24/2009	13:19:19	23	SP1_0439	42.6682	-124.9679	58.23	1917.0	0.0
8/24/2009	13:19:30	23	SP1_0440	42.6679	-124.9725	58.23	1913.8	0.0
8/24/2009	13:19:41	23	SP1_0441	42.6678	-124.9771	58.23	1912.5	0.0
8/24/2009	13:19:51	23	SP1_0442	42.6677	-124.9815	58.23	1912.5	0.0
8/24/2009	13:20:02	23	SP1_0443	42.6677	-124.9862	58.23	1911.1	0.0
8/24/2009	13:20:12	23	SP1_0444	42.6676	-124.9907	58.23	1915.7	0.0
8/24/2009	13:20:23	23	SP1_0445	42.6676	-124.9951	58.23	1909.7	0.0
8/24/2009	13:20:33	23	SP1_0446	42.6676	-124.9998	58.23	1915.7	0.0
8/24/2009	13:20:44	23	SP1_0447	42.6677	-125.0043	58.23	1911.1	0.0
8/24/2009	13:20:54	23	SP1_0448	42.6678	-125.0088	58.23	1913.8	0.0
8/24/2009	13:21:05	23	SP1_0449	42.6679	-125.0134	58.23	1915.7	0.0
8/24/2009	13:21:15	23	SP1_0450	42.6681	-125.0179	58.23	1915.7	0.0
8/24/2009	13:21:26	23	SP1_0451	42.6681	-125.0223	58.23	1917.0	0.0
8/24/2009	13:21:36	23	SP1_0452	42.6681	-125.0270	58.23	1915.7	0.0
8/24/2009	13:21:47	23	SP1_0453	42.6682	-125.0315	58.23	1918.4	0.0
8/24/2009	13:21:57	23	SP1_0454	42.6681	-125.0360	58.23	1913.8	0.0
8/24/2009	13:22:08	23	SP1_0455	42.6680	-125.0406	58.23	1915.7	0.0

8/24/2009	13:22:19	23	SP1_0456	42.6680	-125.0451	58.23	1912.5	0.0
8/24/2009	13:22:29	23	SP1_0457	42.6678	-125.0496	58.23	1913.8	0.0
8/24/2009	13:22:40	23	SP1_0458	42.6678	-125.0543	58.23	1912.5	0.0
8/24/2009	13:22:50	23	SP1_0459	42.6678	-125.0588	58.23	1913.8	0.0
8/24/2009	13:23:01	23	SP1_0460	42.6679	-125.0634	58.23	1912.5	0.0
8/24/2009	13:23:11	23	SP1_0461	42.6680	-125.0681	58.23	1911.1	0.0
8/24/2009	13:23:22	23	SP1_0462	42.6681	-125.0726	58.23	1911.1	0.0
8/24/2009	13:23:32	23	SP1_0463	42.6680	-125.0772	58.23	1913.8	0.0
8/24/2009	13:23:43	23	SP1_0464	42.6680	-125.0819	58.23	1909.7	0.0
8/24/2009	13:23:53	23	SP1_0465	42.6681	-125.0867	58.23	1896.0	0.0
8/24/2009	13:24:04	23	SP1_0466	42.6681	-125.0914	58.23	1892.8	0.0
8/24/2009	13:24:14	23	SP1_0467	42.6679	-125.0963	58.23	1896.0	0.0
8/24/2009	13:24:25	23	SP1_0468	42.6679	-125.1008	58.23	1897.4	0.0
8/24/2009	13:24:35	23	SP1_0469	42.6679	-125.1055	58.23	1897.4	0.0
8/24/2009	13:24:46	23	SP1_0470	42.6680	-125.1103	58.23	1899.2	0.0
8/24/2009	13:24:56	23	SP1_0471	42.6682	-125.1149	58.23	1900.6	0.0
8/24/2009	13:25:07	23	SP1_0472	42.6682	-125.1195	58.23	1902.0	0.0
8/24/2009	13:25:18	23	SP1_0473	42.6682	-125.1243	58.23	1906.5	0.0
8/24/2009	13:25:28	23	SP1_0474	42.6682	-125.1289	58.23	1905.2	0.0
8/24/2009	13:25:39	23	SP1_0475	42.6682	-125.1335	58.23	1906.5	0.0
8/24/2009	13:25:49	23	SP1_0476	42.6684	-125.1383	58.23	1896.0	0.0
8/24/2009	13:26:00	23	SP1_0477	42.6683	-125.1431	58.23	1894.6	0.0
8/24/2009	13:26:10	23	SP1_0478	42.6679	-125.1478	58.23	1890.1	0.0
8/24/2009	13:39:36	24	SP1_0480	42.4213	-125.1330	55.35	1959.1	0.0
8/24/2009	13:39:46	24	SP1_0481	42.4224	-125.1282	55.35	1947.2	0.0
8/24/2009	13:39:57	24	SP1_0482	42.4220	-125.1231	55.35	1947.2	0.0
8/24/2009	13:40:07	24	SP1_0483	42.4213	-125.1183	55.35	1960.5	0.0
8/24/2009	13:40:18	24	SP1_0484	42.4211	-125.1131	55.35	1942.6	0.0
8/24/2009	13:40:29	24	SP1_0485	42.4210	-125.1079	55.35	1936.7	0.0
8/24/2009	13:40:39	24	SP1_0486	42.4209	-125.1026	55.35	1926.2	0.0
8/24/2009	13:40:50	24	SP1_0487	42.4209	-125.0971	55.35	1926.2	0.0
8/24/2009	13:41:00	24	SP1_0488	42.4209	-125.0919	55.35	1923.0	0.0

8/24/2009	13:41:11	24	SP1_0489	42.4208	-125.0866	55.35	1919.8	0.0
8/24/2009	13:41:21	24	SP1_0490	42.4207	-125.0811	55.35	1917.0	0.0
8/24/2009	13:41:32	24	SP1_0491	42.4205	-125.0759	55.35	1913.8	0.0
8/24/2009	13:41:42	24	SP1_0492	42.4203	-125.0706	55.35	1912.5	0.0
8/24/2009	13:41:53	24	SP1_0493	42.4201	-125.0651	55.35	1907.9	0.0
8/24/2009	13:42:03	24	SP1_0494	42.4200	-125.0598	55.35	1905.2	0.0
8/24/2009	13:42:14	24	SP1_0495	42.4199	-125.0544	55.35	1900.6	0.0
8/24/2009	13:42:24	24	SP1_0496	42.4199	-125.0489	55.35	1900.6	0.0
8/24/2009	13:42:35	24	SP1_0497	42.4199	-125.0436	55.35	1900.6	0.0
8/24/2009	13:42:45	24	SP1_0498	42.4198	-125.0383	55.35	1896.0	0.0
8/24/2009	13:42:56	24	SP1_0499	42.4198	-125.0327	55.35	1899.2	0.0
8/24/2009	13:43:07	24	SP1_0500	42.4197	-125.0275	55.35	1899.2	0.0
8/24/2009	13:43:17	24	SP1_0501	42.4197	-125.0222	55.35	1897.4	0.0
8/24/2009	13:43:28	24	SP1_0502	42.4198	-125.0168	55.35	1894.6	0.0
8/24/2009	13:43:38	24	SP1_0503	42.4198	-125.0116	55.35	1890.1	0.0
8/24/2009	13:43:49	24	SP1_0504	42.4198	-125.0062	55.35	1885.5	0.0
8/24/2009	13:43:59	24	SP1_0505	42.4198	-125.0007	55.35	1885.5	0.0
8/24/2009	13:44:10	24	SP1_0506	42.4198	-124.9954	55.35	1884.1	0.0
8/24/2009	13:44:20	24	SP1_0507	42.4199	-124.9901	55.35	1879.5	0.0
8/24/2009	13:44:31	24	SP1_0508	42.4200	-124.9846	55.35	1878.2	0.0
8/24/2009	13:44:41	24	SP1_0509	42.4200	-124.9793	55.35	1875.0	0.0
8/24/2009	13:44:52	24	SP1_0510	42.4199	-124.9740	55.35	1873.6	0.0
8/24/2009	13:45:02	24	SP1_0511	42.4197	-124.9685	55.35	1873.6	0.0
8/24/2009	13:45:13	24	SP1_0512	42.4196	-124.9632	55.35	1870.4	0.0
8/24/2009	13:45:23	24	SP1_0513	42.4194	-124.9578	55.35	1869.0	0.0
8/24/2009	13:45:34	24	SP1_0514	42.4192	-124.9523	55.35	1864.5	0.0
8/24/2009	13:45:44	24	SP1_0515	42.4189	-124.9470	55.35	1863.1	0.0
8/24/2009	13:45:55	24	SP1_0516	42.4187	-124.9416	55.35	1863.1	0.0
8/24/2009	13:46:06	24	SP1_0517	42.4185	-124.9361	55.35	1859.9	0.0
8/24/2009	13:46:16	24	SP1_0518	42.4183	-124.9308	55.35	1857.1	0.0
8/24/2009	13:46:26	24	SP1_0519	42.4180	-124.9255	55.35	1851.2	0.0
8/24/2009	13:46:37	24	SP1_0520	42.4176	-124.9199	55.35	1843.4	0.0

8/24/2009	13:46:48	24	SP1_0521	42.4173	-124.9144	55.35	1838.9	0.0
8/24/2009	13:46:58	24	SP1_0522	42.4170	-124.9091	55.35	1843.4	0.0
8/24/2009	13:47:09	24	SP1_0523	42.4168	-124.9035	55.35	1843.4	0.0
8/24/2009	13:47:19	24	SP1_0524	42.4166	-124.8981	55.35	1838.9	0.0
8/24/2009	13:47:30	24	SP1_0525	42.4163	-124.8927	55.35	1840.7	0.0
8/24/2009	13:47:40	24	SP1_0526	42.4160	-124.8871	55.35	1837.5	0.0
8/24/2009	13:47:51	24	SP1_0527	42.4157	-124.8817	55.35	1834.3	0.0
8/24/2009	13:48:01	24	SP1_0528	42.4155	-124.8763	55.35	1834.3	0.0
8/24/2009	13:48:12	24	SP1_0529	42.4152	-124.8708	55.35	1837.5	0.0
8/24/2009	13:48:22	24	SP1_0530	42.4150	-124.8654	55.35	1834.3	0.0
8/24/2009	13:48:33	24	SP1_0531	42.4149	-124.8599	55.35	1834.3	0.0
8/24/2009	13:48:44	24	SP1_0532	42.4150	-124.8543	55.35	1831.5	0.0
8/24/2009	13:48:54	24	SP1_0533	42.4150	-124.8490	55.35	1832.9	0.0
8/24/2009	13:49:04	24	SP1_0534	42.4150	-124.8436	55.35	1827.0	0.0
8/24/2009	13:49:15	24	SP1_0535	42.4150	-124.8381	55.35	1828.3	0.0
8/24/2009	13:49:26	24	SP1_0536	42.4151	-124.8328	55.35	1825.6	0.0
8/24/2009	13:49:36	24	SP1_0537	42.4150	-124.8274	55.35	1822.4	0.0
8/24/2009	13:49:47	24	SP1_0538	42.4149	-124.8220	55.35	1827.0	0.0
8/24/2009	13:49:57	24	SP1_0539	42.4148	-124.8166	55.35	1819.7	0.0
8/24/2009	13:50:08	24	SP1_0540	42.4147	-124.8113	55.35	1824.2	0.0
8/24/2009	13:50:18	24	SP1_0541	42.4146	-124.8058	55.35	1817.8	0.0
8/24/2009	13:50:29	24	SP1_0542	42.4145	-124.8005	55.35	1816.5	0.0
8/24/2009	13:50:39	24	SP1_0543	42.4144	-124.7952	55.35	1813.7	0.0
8/24/2009	13:50:50	24	SP1_0544	42.4142	-124.7897	55.35	1813.7	0.0
8/24/2009	13:51:00	24	SP1_0545	42.4139	-124.7844	55.35	1811.9	0.0
8/24/2009	13:51:11	24	SP1_0546	42.4142	-124.7791	55.35	1807.3	0.0
8/24/2009	13:51:22	24	SP1_0547	42.4146	-124.7738	55.35	1811.9	0.0
8/24/2009	13:51:32	24	SP1_0548	42.4149	-124.7686	55.35	1810.5	0.0
8/24/2009	13:51:42	24	SP1_0549	42.4152	-124.7634	55.35	1807.3	0.0
8/24/2009	13:51:53	24	SP1_0550	42.4155	-124.7580	55.35	1803.2	0.0
8/24/2009	13:52:04	24	SP1_0551	42.4156	-124.7527	55.35	1803.2	0.0
8/24/2009	13:52:14	24	SP1_0552	42.4156	-124.7475	55.35	1804.6	0.0

8/24/2009	13:52:25	24	SP1_0553	42.4159	-124.7421	55.35	1803.2	0.0
8/24/2009	13:52:35	24	SP1_0554	42.4161	-124.7370	55.35	1801.4	0.0
8/24/2009	13:52:46	24	SP1_0555	42.4166	-124.7320	55.35	1803.2	0.0
8/24/2009	13:52:56	24	SP1_0556	42.4170	-124.7270	55.35	1804.6	0.0
8/24/2009	13:53:07	24	SP1_0557	42.4172	-124.7217	55.35	1803.2	0.0
8/24/2009	13:53:17	24	SP1_0558	42.4174	-124.7165	55.35	1800.0	0.0
8/24/2009	13:53:28	24	SP1_0559	42.4175	-124.7114	55.35	1805.9	0.0
8/24/2009	13:53:38	24	SP1_0560	42.4176	-124.7060	55.35	1800.0	0.0
8/24/2009	13:53:49	24	SP1_0561	42.4177	-124.7008	55.35	1801.4	0.0
8/24/2009	13:53:59	24	SP1_0562	42.4180	-124.6957	55.35	1800.0	0.0
8/24/2009	13:54:10	24	SP1_0563	42.4185	-124.6903	55.35	1796.8	0.0
8/24/2009	13:54:20	24	SP1_0564	42.4193	-124.6852	55.35	1795.4	0.0
8/24/2009	13:54:31	24	SP1_0565	42.4201	-124.6801	55.35	1796.8	0.0
8/24/2009	13:54:42	24	SP1_0566	42.4200	-124.6748	55.35	1796.8	0.0
8/24/2009	13:54:52	24	SP1_0567	42.4201	-124.6695	55.35	1790.9	0.0
8/24/2009	13:55:02	24	SP1_0568	42.4203	-124.6643	55.35	1792.7	0.0
8/24/2009	13:55:13	24	SP1_0569	42.4205	-124.6588	55.35	1792.7	0.0
8/24/2009	13:55:24	24	SP1_0570	42.4205	-124.6536	55.35	1792.7	0.0
8/24/2009	13:55:34	24	SP1_0571	42.4208	-124.6484	55.35	1795.4	0.0
8/24/2009	13:55:45	24	SP1_0572	42.4209	-124.6431	55.35	1796.8	0.0
8/24/2009	13:55:55	24	SP1_0573	42.4206	-124.6380	55.35	1800.0	0.0
8/24/2009	13:56:06	24	SP1_0574	42.4204	-124.6329	55.35	1807.3	0.0
8/24/2009	13:56:16	24	SP1_0575	42.4203	-124.6277	55.35	1805.9	0.0
8/24/2009	13:56:27	24	SP1_0576	42.4201	-124.6226	55.35	1805.9	0.0
8/24/2009	13:56:37	24	SP1_0577	42.4200	-124.6177	55.35	1822.4	0.0
8/24/2009	13:56:48	24	SP1_0578	42.4200	-124.6126	55.35	1817.8	0.0
8/24/2009	13:56:58	24	SP1_0579	42.4203	-124.6076	55.35	1821.0	0.0
8/24/2009	13:57:09	24	SP1_0580	42.4205	-124.6026	55.35	1821.0	0.0
8/24/2009	13:57:20	24	SP1_0581	42.4208	-124.5973	55.35	1825.6	0.0
8/24/2009	13:57:30	24	SP1_0582	42.4207	-124.5923	55.35	1821.0	0.0
8/24/2009	13:57:40	24	SP1_0583	42.4206	-124.5872	55.35	1822.4	0.0
8/24/2009	13:57:51	24	SP1_0584	42.4206	-124.5819	55.35	1828.3	0.0

8/24/2009	13:58:02	24	SP1_0585	42.4205	-124.5769	55.35	1827.0	0.0
8/24/2009	13:58:12	24	SP1_0586	42.4205	-124.5718	55.35	1832.9	0.0
8/24/2009	13:58:23	24	SP1_0587	42.4205	-124.5665	55.35	1827.0	0.0
8/24/2009	13:58:33	24	SP1_0588	42.4205	-124.5614	55.35	1827.0	0.0
8/24/2009	13:58:44	24	SP1_0589	42.4203	-124.5564	55.35	1824.2	0.0
8/24/2009	13:58:54	24	SP1_0590	42.4201	-124.5511	55.35	1824.2	0.0
8/24/2009	13:59:05	24	SP1_0591	42.4198	-124.5460	55.35	1822.4	0.0
8/24/2009	13:59:15	24	SP1_0592	42.4194	-124.5409	55.35	1825.6	0.0
8/24/2009	13:59:26	24	SP1_0593	42.4191	-124.5356	55.35	1827.0	0.0
8/24/2009	13:59:36	24	SP1_0594	42.4190	-124.5304	55.35	1830.2	0.0
8/24/2009	13:59:47	24	SP1_0595	42.4188	-124.5253	55.35	1827.0	0.0
8/24/2009	13:59:57	24	SP1_0596	42.4186	-124.5200	55.35	1827.0	0.0
8/24/2009	14:00:08	24	SP1_0597	42.4186	-124.5149	55.35	1831.5	0.0
8/24/2009	14:00:18	24	SP1_0598	42.4187	-124.5098	55.35	1832.9	0.0
8/24/2009	14:00:29	24	SP1_0599	42.4189	-124.5044	55.35	1825.6	0.0
8/24/2009	14:00:39	24	SP1_0600	42.4189	-124.4993	55.35	1831.5	0.0
8/24/2009	14:00:50	24	SP1_0601	42.4186	-124.4942	55.35	1831.5	0.0
8/24/2009	14:01:01	24	SP1_0602	42.4184	-124.4891	55.35	1840.7	0.0
8/24/2009	14:01:11	24	SP1_0603	42.4182	-124.4841	55.35	1848.0	0.0
8/24/2009	14:01:22	24	SP1_0604	42.4183	-124.4791	55.35	1855.3	0.0
8/24/2009	14:01:32	24	SP1_0605	42.4186	-124.4740	55.35	1864.5	0.0
8/24/2009	14:01:43	24	SP1_0606	42.4184	-124.4690	55.35	1852.6	0.0
8/24/2009	14:01:53	24	SP1_0607	42.4184	-124.4640	55.35	1858.5	0.0
8/24/2009	14:02:04	24	SP1_0608	42.4183	-124.4588	55.35	1859.9	0.0
8/25/2009	13:39:54	25	SP1_0025	42.1663	-124.4140	55.42	1794.1	0.0
8/25/2009	13:40:05	25	SP1_0026	42.1668	-124.4183	55.42	1798.6	0.0
8/25/2009	13:40:15	25	SP1_0027	42.1668	-124.4227	55.42	1796.8	0.0
8/25/2009	13:40:26	25	SP1_0028	42.1667	-124.4273	55.42	1811.9	0.0
8/25/2009	13:40:37	25	SP1_0029	42.1668	-124.4321	55.42	1810.5	0.0
8/25/2009	13:40:47	25	SP1_0030	42.1668	-124.4367	55.42	1822.4	0.0
8/25/2009	13:40:58	25	SP1_0031	42.1666	-124.4413	55.42	1822.4	0.0
8/25/2009	13:41:08	25	SP1_0032	42.1665	-124.4461	55.42	1830.2	0.0

8/25/2009	13:41:19	25	SP1_0033	42.1666	-124.4507	55.42	1832.9	0.0
8/25/2009	13:41:29	25	SP1_0034	42.1667	-124.4553	55.42	1831.5	0.0
8/25/2009	13:41:40	25	SP1_0035	42.1668	-124.4600	55.42	1836.1	0.0
8/25/2009	13:41:50	25	SP1_0036	42.1669	-124.4646	55.42	1836.1	0.0
8/25/2009	13:42:01	25	SP1_0037	42.1671	-124.4692	55.42	1842.1	0.0
8/25/2009	13:42:11	25	SP1_0038	42.1671	-124.4740	55.42	1840.7	0.0
8/25/2009	13:42:22	25	SP1_0039	42.1669	-124.4785	55.42	1846.6	0.0
8/25/2009	13:42:32	25	SP1_0040	42.1669	-124.4832	55.42	1844.8	0.0
8/25/2009	13:42:43	25	SP1_0041	42.1668	-124.4879	55.42	1853.9	0.0
8/25/2009	13:42:53	25	SP1_0042	42.1668	-124.4925	55.42	1851.2	0.0
8/25/2009	13:43:04	25	SP1_0043	42.1669	-124.4972	55.42	1853.9	0.0
8/25/2009	13:43:15	25	SP1_0044	42.1671	-124.5020	55.42	1861.7	0.0
8/25/2009	13:43:25	25	SP1_0045	42.1673	-124.5068	55.42	1859.9	0.0
8/25/2009	13:43:36	25	SP1_0046	42.1676	-124.5115	55.42	1861.7	0.0
8/25/2009	13:43:46	25	SP1_0047	42.1679	-124.5165	55.42	1861.7	0.0
8/25/2009	13:43:57	25	SP1_0048	42.1681	-124.5212	55.42	1864.5	0.0
8/25/2009	13:44:07	25	SP1_0049	42.1683	-124.5260	55.42	1867.7	0.0
8/25/2009	13:44:18	25	SP1_0050	42.1682	-124.5307	55.42	1870.4	0.0
8/25/2009	13:44:28	25	SP1_0051	42.1679	-124.5356	55.42	1871.8	0.0
8/25/2009	13:44:39	25	SP1_0052	42.1679	-124.5404	55.42	1875.0	0.0
8/25/2009	13:44:49	25	SP1_0053	42.1680	-124.5453	55.42	1870.4	0.0
8/25/2009	13:45:00	25	SP1_0054	42.1680	-124.5501	55.42	1873.6	0.0
8/25/2009	13:45:10	25	SP1_0055	42.1680	-124.5549	55.42	1870.4	0.0
8/25/2009	13:45:21	25	SP1_0056	42.1682	-124.5597	55.42	1873.6	0.0
8/25/2009	13:45:31	25	SP1_0057	42.1685	-124.5647	55.42	1876.3	0.0
8/25/2009	13:45:42	25	SP1_0058	42.1685	-124.5694	55.42	1876.3	0.0
8/25/2009	13:45:52	25	SP1_0059	42.1683	-124.5742	55.42	1878.2	0.0
8/25/2009	13:46:03	25	SP1_0060	42.1681	-124.5791	55.42	1880.9	0.0
8/25/2009	13:46:14	25	SP1_0061	42.1679	-124.5838	55.42	1880.9	0.0
8/25/2009	13:46:24	25	SP1_0062	42.1675	-124.5885	55.42	1882.3	0.0
8/25/2009	13:46:35	25	SP1_0063	42.1673	-124.5933	55.42	1885.5	0.0
8/25/2009	13:46:45	25	SP1_0064	42.1673	-124.5981	55.42	1886.9	0.0

8/25/2009	13:46:56	25	SP1_0065	42.1673	-124.6027	55.42	1886.9	0.0
8/25/2009	13:47:06	25	SP1_0066	42.1672	-124.6076	55.42	1886.9	0.0
8/25/2009	13:47:17	25	SP1_0067	42.1670	-124.6122	55.42	1899.2	0.0
8/25/2009	13:47:27	25	SP1_0068	42.1670	-124.6168	55.42	1897.4	0.0
8/25/2009	13:47:38	25	SP1_0069	42.1669	-124.6216	55.42	1903.3	0.0
8/25/2009	13:47:48	25	SP1_0070	42.1671	-124.6262	55.42	1902.0	0.0
8/25/2009	13:47:59	25	SP1_0071	42.1675	-124.6309	55.42	1900.6	0.0
8/25/2009	13:48:09	25	SP1_0072	42.1675	-124.6358	55.42	1897.4	0.0
8/25/2009	13:48:20	25	SP1_0073	42.1674	-124.6406	55.42	1897.4	0.0
8/25/2009	13:48:30	25	SP1_0074	42.1672	-124.6453	55.42	1897.4	0.0
8/25/2009	13:48:41	25	SP1_0075	42.1675	-124.6502	55.42	1900.6	0.0
8/25/2009	13:48:52	25	SP1_0076	42.1677	-124.6550	55.42	1899.2	0.0
8/25/2009	13:49:02	25	SP1_0077	42.1676	-124.6597	55.42	1902.0	0.0
8/25/2009	13:49:13	25	SP1_0078	42.1677	-124.6647	55.42	1899.2	0.0
8/25/2009	13:49:23	25	SP1_0079	42.1680	-124.6695	55.42	1899.2	0.0
8/25/2009	13:49:34	25	SP1_0080	42.1683	-124.6742	55.42	1899.2	0.0
8/25/2009	13:49:44	25	SP1_0081	42.1685	-124.6792	55.42	1897.4	0.0
8/25/2009	13:49:55	25	SP1_0082	42.1686	-124.6839	55.42	1903.3	0.0
8/25/2009	13:50:05	25	SP1_0083	42.1687	-124.6887	55.42	1899.2	0.0
8/25/2009	13:50:16	25	SP1_0084	42.1688	-124.6936	55.42	1903.3	0.0
8/25/2009	13:50:26	25	SP1_0085	42.1687	-124.6984	55.42	1903.3	0.0
8/25/2009	13:50:37	25	SP1_0086	42.1687	-124.7031	55.42	1900.6	0.0
8/25/2009	13:50:47	25	SP1_0087	42.1687	-124.7080	55.42	1905.2	0.0
8/25/2009	13:50:58	25	SP1_0088	42.1686	-124.7127	55.42	1903.3	0.0
8/25/2009	13:51:08	25	SP1_0089	42.1687	-124.7173	55.42	1907.9	0.0
8/25/2009	13:51:19	25	SP1_0090	42.1686	-124.7221	55.42	1911.1	0.0
8/25/2009	13:51:29	25	SP1_0091	42.1684	-124.7269	55.42	1899.2	0.0
8/25/2009	13:51:40	25	SP1_0092	42.1682	-124.7317	55.42	1892.8	0.0
8/25/2009	13:51:51	25	SP1_0093	42.1681	-124.7365	55.42	1902.0	0.0
8/25/2009	13:52:01	25	SP1_0094	42.1679	-124.7411	55.42	1892.8	0.0
8/25/2009	13:52:12	25	SP1_0095	42.1681	-124.7457	55.42	1896.0	0.0
8/25/2009	13:52:22	25	SP1_0096	42.1683	-124.7505	55.42	1892.8	0.0

8/25/2009	13:52:33	25	SP1_0097	42.1685	-124.7552	55.42	1891.4	0.0
8/25/2009	13:52:43	25	SP1_0098	42.1687	-124.7599	55.42	1892.8	0.0
8/25/2009	13:52:54	25	SP1_0099	42.1685	-124.7647	55.42	1891.4	0.0
8/25/2009	13:53:04	25	SP1_0100	42.1685	-124.7693	55.42	1892.8	0.0
8/25/2009	13:53:15	25	SP1_0101	42.1685	-124.7738	55.42	1892.8	0.0
8/25/2009	13:53:25	25	SP1_0102	42.1685	-124.7786	55.42	1888.7	0.0
8/25/2009	13:53:36	25	SP1_0103	42.1685	-124.7832	55.42	1894.6	0.0
8/25/2009	13:53:46	25	SP1_0104	42.1685	-124.7877	55.42	1891.4	0.0
8/25/2009	13:53:57	25	SP1_0105	42.1686	-124.7925	55.42	1894.6	0.0
8/25/2009	13:54:07	25	SP1_0106	42.1687	-124.7970	55.42	1894.6	0.0
8/25/2009	13:54:18	25	SP1_0107	42.1688	-124.8016	55.42	1894.6	0.0
8/25/2009	13:54:29	25	SP1_0108	42.1688	-124.8064	55.42	1890.1	0.0
8/25/2009	13:54:39	25	SP1_0109	42.1687	-124.8109	55.42	1885.5	0.0
8/25/2009	13:54:50	25	SP1_0110	42.1685	-124.8155	55.42	1882.3	0.0
8/25/2009	13:55:00	25	SP1_0111	42.1684	-124.8202	55.42	1884.1	0.0
8/25/2009	13:55:11	25	SP1_0112	42.1683	-124.8248	55.42	1882.3	0.0
8/25/2009	13:55:21	25	SP1_0113	42.1683	-124.8294	55.42	1882.3	0.0
8/25/2009	13:55:32	25	SP1_0114	42.1682	-124.8341	55.42	1878.2	0.0
8/25/2009	13:55:42	25	SP1_0115	42.1682	-124.8388	55.42	1878.2	0.0
8/25/2009	13:55:53	25	SP1_0116	42.1683	-124.8434	55.42	1876.3	0.0
8/25/2009	13:56:03	25	SP1_0117	42.1683	-124.8482	55.42	1878.2	0.0
8/25/2009	13:56:14	25	SP1_0118	42.1684	-124.8528	55.42	1876.3	0.0
8/25/2009	13:56:24	25	SP1_0119	42.1684	-124.8574	55.42	1873.6	0.0
8/25/2009	13:56:35	25	SP1_0120	42.1684	-124.8622	55.42	1871.8	0.0
8/25/2009	13:56:45	25	SP1_0121	42.1683	-124.8668	55.42	1869.0	0.0
8/25/2009	13:56:56	25	SP1_0122	42.1682	-124.8714	55.42	1871.8	0.0
8/25/2009	13:57:06	25	SP1_0123	42.1682	-124.8760	55.42	1869.0	0.0
8/25/2009	13:57:17	25	SP1_0124	42.1681	-124.8807	55.42	1867.7	0.0
8/25/2009	13:57:28	25	SP1_0125	42.1679	-124.8853	55.42	1863.1	0.0
8/25/2009	13:57:38	25	SP1_0126	42.1679	-124.8898	55.42	1863.1	0.0
8/25/2009	13:57:49	25	SP1_0127	42.1677	-124.8945	55.42	1858.5	0.0
8/25/2009	13:57:59	25	SP1_0128	42.1673	-124.8991	55.42	1852.6	0.0

8/25/2009	13:58:10	25	SP1_0129	42.1670	-124.9037	55.42	1851.2	0.0
8/25/2009	13:58:20	25	SP1_0130	42.1667	-124.9084	55.42	1846.6	0.0
8/25/2009	13:58:31	25	SP1_0131	42.1665	-124.9130	55.42	1849.4	0.0
8/25/2009	13:58:41	25	SP1_0132	42.1665	-124.9176	55.42	1851.2	0.0
8/25/2009	13:58:52	25	SP1_0133	42.1667	-124.9224	55.42	1852.6	0.0
8/25/2009	13:59:02	25	SP1_0134	42.1671	-124.9269	55.42	1858.5	0.0
8/25/2009	13:59:13	25	SP1_0135	42.1674	-124.9314	55.42	1857.1	0.0
8/25/2009	13:59:23	25	SP1_0136	42.1677	-124.9361	55.42	1857.1	0.0
8/25/2009	13:59:34	25	SP1_0137	42.1678	-124.9407	55.42	1855.3	0.0
8/25/2009	13:59:44	25	SP1_0138	42.1676	-124.9452	55.42	1852.6	0.0
8/25/2009	13:59:55	25	SP1_0139	42.1673	-124.9499	55.42	1848.0	0.0
8/25/2009	14:00:06	25	SP1_0140	42.1673	-124.9545	55.42	1848.0	0.0
8/25/2009	14:00:16	25	SP1_0141	42.1674	-124.9591	55.42	1853.9	0.0
8/25/2009	14:00:27	25	SP1_0142	42.1675	-124.9638	55.42	1849.4	0.0
8/25/2009	14:00:37	25	SP1_0143	42.1676	-124.9684	55.42	1848.0	0.0
8/25/2009	14:00:48	25	SP1_0144	42.1676	-124.9730	55.42	1848.0	0.0
8/25/2009	14:00:58	25	SP1_0145	42.1677	-124.9778	55.42	1843.4	0.0
8/25/2009	14:01:09	25	SP1_0146	42.1678	-124.9824	55.42	1844.8	0.0
8/25/2009	14:01:19	25	SP1_0147	42.1679	-124.9870	55.42	1844.8	0.0
8/25/2009	14:01:30	25	SP1_0148	42.1679	-124.9918	55.42	1843.4	0.0
8/25/2009	14:01:40	25	SP1_0149	42.1679	-124.9965	55.42	1842.1	0.0
8/25/2009	14:01:51	25	SP1_0150	42.1678	-125.0012	55.42	1837.5	0.0
8/25/2009	14:02:01	25	SP1_0151	42.1676	-125.0060	55.42	1834.3	0.0
8/25/2009	14:02:12	25	SP1_0152	42.1676	-125.0108	55.42	1836.1	0.0
8/25/2009	14:02:22	25	SP1_0153	42.1675	-125.0154	55.42	1837.5	0.0
8/25/2009	14:02:33	25	SP1_0154	42.1676	-125.0203	55.42	1836.1	0.0
8/25/2009	14:02:43	25	SP1_0155	42.1674	-125.0250	55.42	1840.7	0.0
8/25/2009	14:02:54	25	SP1_0156	42.1673	-125.0296	55.42	1832.9	0.0
8/25/2009	14:03:05	25	SP1_0157	42.1673	-125.0345	55.42	1836.1	0.0
8/25/2009	14:03:15	25	SP1_0158	42.1671	-125.0392	55.42	1830.2	0.0
8/25/2009	14:03:26	25	SP1_0159	42.1669	-125.0438	55.42	1832.9	0.0
8/25/2009	14:03:36	25	SP1_0160	42.1666	-125.0487	55.42	1830.2	0.0

8/25/2009	14:03:47	25	SP1_0161	42.1663	-125.0534	55.42	1828.3	0.0
8/25/2009	14:03:57	25	SP1_0162	42.1662	-125.0580	55.42	1831.5	0.0
8/25/2009	14:04:08	25	SP1_0163	42.1665	-125.0629	55.42	1832.9	0.0
8/25/2009	14:04:18	25	SP1_0164	42.1669	-125.0675	55.42	1834.3	0.0
8/25/2009	14:04:29	25	SP1_0165	42.1671	-125.0722	55.42	1837.5	0.0
8/25/2009	14:04:39	25	SP1_0166	42.1673	-125.0770	55.42	1836.1	0.0
8/25/2009	14:04:50	25	SP1_0167	42.1672	-125.0818	55.42	1832.9	0.0
8/25/2009	14:05:00	25	SP1_0168	42.1671	-125.0864	55.42	1836.1	0.0
8/25/2009	14:25:18	26	SP1_0173	41.9161	-124.9004	55.82	1852.6	0.0
8/25/2009	14:25:29	26	SP1_0174	41.9163	-124.8954	55.82	1859.9	0.0
8/25/2009	14:25:39	26	SP1_0175	41.9161	-124.8902	55.82	1871.8	0.0
8/25/2009	14:25:50	26	SP1_0176	41.9160	-124.8852	55.82	1875.0	0.0
8/25/2009	14:26:00	26	SP1_0177	41.9160	-124.8801	55.82	1882.3	0.0
8/25/2009	14:26:11	26	SP1_0178	41.9160	-124.8749	55.82	1885.5	0.0
8/25/2009	14:26:21	26	SP1_0179	41.9158	-124.8698	55.82	1897.4	0.0
8/25/2009	14:26:32	26	SP1_0180	41.9157	-124.8648	55.82	1902.0	0.0
8/25/2009	14:26:43	26	SP1_0181	41.9155	-124.8596	55.82	1903.3	0.0
8/25/2009	14:26:53	26	SP1_0182	41.9153	-124.8545	55.82	1906.5	0.0
8/25/2009	14:27:04	26	SP1_0183	41.9149	-124.8496	55.82	1905.2	0.0
8/25/2009	14:27:14	26	SP1_0184	41.9145	-124.8443	55.82	1902.0	0.0
8/25/2009	14:27:25	26	SP1_0185	41.9144	-124.8393	55.82	1903.3	0.0
8/25/2009	14:27:35	26	SP1_0186	41.9144	-124.8341	55.82	1900.6	0.0
8/25/2009	14:27:46	26	SP1_0187	41.9143	-124.8290	55.82	1907.9	0.0
8/25/2009	14:27:56	26	SP1_0188	41.9141	-124.8240	55.82	1905.2	0.0
8/25/2009	14:28:07	26	SP1_0189	41.9140	-124.8191	55.82	1911.1	0.0
8/25/2009	14:28:17	26	SP1_0190	41.9139	-124.8140	55.82	1909.7	0.0
8/25/2009	14:28:28	26	SP1_0191	41.9138	-124.8091	55.82	1917.0	0.0
8/25/2009	14:28:38	26	SP1_0192	41.9138	-124.8042	55.82	1917.0	0.0
8/25/2009	14:28:49	26	SP1_0193	41.9137	-124.7991	55.82	1919.8	0.0
8/25/2009	14:28:59	26	SP1_0194	41.9137	-124.7941	55.82	1912.5	0.0
8/25/2009	14:29:10	26	SP1_0195	41.9135	-124.7892	55.82	1917.0	0.0
8/25/2009	14:29:21	26	SP1_0196	41.9135	-124.7840	55.82	1917.0	0.0

8/25/2009	14:29:31	26	SP1_0197	41.9133	-124.7791	55.82	1917.0	0.0
8/25/2009	14:29:42	26	SP1_0198	41.9133	-124.7742	55.82	1918.4	0.0
8/25/2009	14:29:52	26	SP1_0199	41.9135	-124.7690	55.82	1918.4	0.0
8/25/2009	14:30:03	26	SP1_0200	41.9134	-124.7641	55.82	1917.0	0.0
8/25/2009	14:30:13	26	SP1_0201	41.9133	-124.7591	55.82	1917.0	0.0
8/25/2009	14:30:24	26	SP1_0202	41.9133	-124.7540	55.82	1918.4	0.0
8/25/2009	14:30:34	26	SP1_0203	41.9132	-124.7490	55.82	1917.0	0.0
8/25/2009	14:30:45	26	SP1_0204	41.9132	-124.7441	55.82	1918.4	0.0
8/25/2009	14:30:55	26	SP1_0205	41.9130	-124.7390	55.82	1918.4	0.0
8/25/2009	14:31:06	26	SP1_0206	41.9128	-124.7341	55.82	1918.4	0.0
8/25/2009	14:31:16	26	SP1_0207	41.9126	-124.7292	55.82	1919.8	0.0
8/25/2009	14:31:27	26	SP1_0208	41.9121	-124.7242	55.82	1919.8	0.0
8/25/2009	14:31:37	26	SP1_0209	41.9116	-124.7193	55.82	1919.8	0.0
8/25/2009	14:31:48	26	SP1_0210	41.9116	-124.7144	55.82	1918.4	0.0
8/25/2009	14:31:59	26	SP1_0211	41.9121	-124.7092	55.82	1919.8	0.0
8/25/2009	14:32:20	26	SP1_0213	41.9125	-124.6992	55.82	1919.8	0.0
8/25/2009	14:32:30	26	SP1_0214	41.9126	-124.6943	55.82	1918.4	0.0
8/25/2009	14:32:41	26	SP1_0215	41.9128	-124.6891	55.82	1924.4	0.0
8/25/2009	14:32:51	26	SP1_0216	41.9132	-124.6842	55.82	1926.2	0.0
8/25/2009	14:33:02	26	SP1_0217	41.9135	-124.6793	55.82	1927.6	0.0
8/25/2009	14:33:12	26	SP1_0218	41.9138	-124.6741	55.82	1928.9	0.0
8/25/2009	14:33:23	26	SP1_0219	41.9142	-124.6692	55.82	1933.5	0.0
8/25/2009	14:33:33	26	SP1_0220	41.9149	-124.6645	55.82	1933.5	0.0
8/25/2009	14:33:44	26	SP1_0221	41.9152	-124.6594	55.82	1934.9	0.0
8/25/2009	14:33:54	26	SP1_0222	41.9151	-124.6545	55.82	1932.1	0.0
8/25/2009	14:34:05	26	SP1_0223	41.9147	-124.6497	55.82	1933.5	0.0
8/25/2009	14:34:15	26	SP1_0224	41.9142	-124.6447	55.82	1936.7	0.0
8/25/2009	14:34:26	26	SP1_0225	41.9138	-124.6400	55.82	1934.9	0.0
8/25/2009	14:34:47	26	SP1_0227	41.9140	-124.6301	55.82	1934.9	0.0
8/25/2009	14:34:58	26	SP1_0228	41.9143	-124.6253	55.82	1939.4	0.0
8/25/2009	14:35:08	26	SP1_0229	41.9145	-124.6206	55.82	1940.8	0.0
8/25/2009	14:35:19	26	SP1_0230	41.9144	-124.6157	55.82	1940.8	0.0

8/25/2009	14:35:29	26	SP1_0231	41.9144	-124.6110	55.82	1947.2	0.0
8/25/2009	14:35:40	26	SP1_0232	41.9145	-124.6062	55.82	1942.6	0.0
8/25/2009	14:35:50	26	SP1_0233	41.9145	-124.6013	55.82	1950.0	0.0
8/25/2009	14:36:01	26	SP1_0234	41.9145	-124.5966	55.82	1948.6	0.0
8/25/2009	14:36:11	26	SP1_0235	41.9145	-124.5918	55.82	1953.2	0.0
8/25/2009	14:36:22	26	SP1_0236	41.9146	-124.5869	55.82	1948.6	0.0
8/25/2009	14:36:32	26	SP1_0237	41.9148	-124.5821	55.82	1954.5	0.0
8/25/2009	14:36:43	26	SP1_0238	41.9150	-124.5774	55.82	1954.5	0.0
8/25/2009	14:36:53	26	SP1_0239	41.9151	-124.5724	55.82	1950.0	0.0
8/25/2009	14:37:04	26	SP1_0240	41.9152	-124.5676	55.82	1948.6	0.0
8/25/2009	14:37:14	26	SP1_0241	41.9155	-124.5628	55.82	1945.4	0.0
8/25/2009	14:37:25	26	SP1_0242	41.9159	-124.5578	55.82	1942.6	0.0
8/25/2009	14:37:35	26	SP1_0243	41.9164	-124.5530	55.82	1940.8	0.0
8/25/2009	14:37:46	26	SP1_0244	41.9167	-124.5482	55.82	1940.8	0.0
8/25/2009	14:37:57	26	SP1_0245	41.9171	-124.5433	55.82	1936.7	0.0
8/25/2009	14:38:07	26	SP1_0246	41.9177	-124.5385	55.82	1938.1	0.0
8/25/2009	14:38:18	26	SP1_0247	41.9184	-124.5338	55.82	1938.1	0.0
8/25/2009	14:38:28	26	SP1_0248	41.9186	-124.5288	55.82	1934.9	0.0
8/25/2009	14:38:39	26	SP1_0249	41.9187	-124.5240	55.82	1936.7	0.0
8/25/2009	14:38:49	26	SP1_0250	41.9188	-124.5192	55.82	1934.9	0.0
8/25/2009	14:39:00	26	SP1_0251	41.9189	-124.5142	55.82	1934.9	0.0
8/25/2009	14:39:10	26	SP1_0252	41.9188	-124.5094	55.82	1934.9	0.0
8/25/2009	14:39:21	26	SP1_0253	41.9189	-124.5047	55.82	1933.5	0.0
8/25/2009	14:39:31	26	SP1_0254	41.9192	-124.4997	55.82	1932.1	0.0
8/25/2009	14:39:42	26	SP1_0255	41.9193	-124.4949	55.82	1927.6	0.0
8/25/2009	14:39:52	26	SP1_0256	41.9196	-124.4901	55.82	1928.9	0.0
8/25/2009	14:40:03	26	SP1_0257	41.9198	-124.4850	55.82	1924.4	0.0
8/25/2009	14:40:13	26	SP1_0258	41.9199	-124.4802	55.82	1926.2	0.0
8/25/2009	14:40:24	26	SP1_0259	41.9198	-124.4753	55.82	1923.0	0.0
8/25/2009	14:40:35	26	SP1_0260	41.9197	-124.4703	55.82	1926.2	0.0
8/25/2009	14:40:45	26	SP1_0261	41.9197	-124.4654	55.82	1926.2	0.0
8/25/2009	14:40:56	26	SP1_0262	41.9198	-124.4606	55.82	1924.4	0.0

8/25/2009	14:41:06	26	SP1_0263	41.9198	-124.4556	55.82	1921.6	0.0
8/25/2009	14:41:17	26	SP1_0264	41.9198	-124.4507	55.82	1921.6	0.0
8/25/2009	14:41:27	26	SP1_0265	41.9198	-124.4458	55.82	1919.8	0.0
8/25/2009	14:41:38	26	SP1_0266	41.9200	-124.4407	55.82	1923.0	0.0
8/25/2009	14:41:48	26	SP1_0267	41.9203	-124.4358	55.82	1918.4	0.0
8/25/2009	14:41:59	26	SP1_0268	41.9208	-124.4309	55.82	1919.8	0.0
8/25/2009	14:42:09	26	SP1_0269	41.9214	-124.4257	55.82	1906.5	0.0
8/25/2009	14:42:30	26	SP1_0271	41.9228	-124.4156	55.82	1903.3	0.0
8/25/2009	14:42:51	26	SP1_0273	41.9241	-124.4054	55.82	1897.4	0.0
8/25/2009	14:43:02	26	SP1_0274	41.9248	-124.4003	55.82	1896.0	0.0
8/25/2009	14:43:13	26	SP1_0275	41.9255	-124.3951	55.82	1896.0	0.0
8/25/2009	14:43:23	26	SP1_0276	41.9258	-124.3902	55.82	1899.2	0.0
8/25/2009	14:43:34	26	SP1_0277	41.9256	-124.3853	55.82	1907.9	0.0
8/25/2009	14:43:44	26	SP1_0278	41.9253	-124.3804	55.82	1906.5	0.0
8/25/2009	14:43:55	26	SP1_0279	41.9250	-124.3752	55.82	1897.4	0.0
8/25/2009	14:44:05	26	SP1_0280	41.9249	-124.3702	55.82	1897.4	0.0
8/25/2009	14:44:16	26	SP1_0281	41.9250	-124.3652	55.82	1894.6	0.0
8/25/2009	14:44:26	26	SP1_0282	41.9252	-124.3600	55.82	1896.0	0.0
8/25/2009	14:44:37	26	SP1_0283	41.9244	-124.3552	55.82	1897.4	0.0
8/25/2009	14:44:47	26	SP1_0284	41.9234	-124.3505	55.82	1899.2	0.0
8/25/2009	14:44:58	26	SP1_0285	41.9232	-124.3453	55.82	1894.6	0.0
8/25/2009	14:45:08	26	SP1_0286	41.9233	-124.3404	55.82	1897.4	0.0
8/25/2009	14:45:19	26	SP1_0287	41.9235	-124.3355	55.82	1902.0	0.0
8/25/2009	14:45:29	26	SP1_0288	41.9234	-124.3304	55.82	1906.5	0.0
8/25/2009	14:45:40	26	SP1_0289	41.9232	-124.3255	55.82	1907.9	0.0
8/25/2009	14:45:50	26	SP1_0290	41.9228	-124.3206	55.82	1907.9	0.0
8/25/2009	14:46:01	26	SP1_0291	41.9225	-124.3155	55.82	1907.9	0.0
8/25/2009	14:46:12	26	SP1_0292	41.9224	-124.3106	55.82	1906.5	0.0
8/25/2009	14:46:22	26	SP1_0293	41.9222	-124.3057	55.82	1906.5	0.0
8/25/2009	14:46:33	26	SP1_0294	41.9220	-124.3006	55.82	1905.2	0.0
8/25/2009	14:46:43	26	SP1_0295	41.9216	-124.2957	55.82	1906.5	0.0
8/25/2009	14:46:54	26	SP1_0296	41.9212	-124.2907	55.82	1902.0	0.0

8/25/2009	14:47:04	26	SP1_0297	41.9207	-124.2856	55.82	1900.6	0.0
8/25/2009	14:47:15	26	SP1_0298	41.9202	-124.2806	55.82	1902.0	0.0
8/25/2009	14:47:25	26	SP1_0299	41.9198	-124.2756	55.82	1905.2	0.0
8/25/2009	14:47:36	26	SP1_0300	41.9193	-124.2705	55.82	1906.5	0.0
8/25/2009	14:47:46	26	SP1_0301	41.9189	-124.2657	55.82	1907.9	0.0
8/25/2009	14:47:57	26	SP1_0302	41.9183	-124.2607	55.82	1903.3	0.0
8/25/2009	14:48:07	26	SP1_0303	41.9178	-124.2557	55.82	1909.7	0.0
8/25/2009	14:48:18	26	SP1_0304	41.9172	-124.2508	55.82	1905.2	0.0
8/25/2009	14:48:28	26	SP1_0305	41.9169	-124.2460	55.82	1906.5	0.0
8/25/2009	14:48:39	26	SP1_0306	41.9173	-124.2408	55.82	1903.3	0.0
8/25/2009	14:48:49	26	SP1_0307	41.9172	-124.2359	55.82	1906.5	0.0
8/25/2009	14:49:00	26	SP1_0308	41.9169	-124.2310	55.82	1906.5	0.0
8/25/2009	14:49:11	26	SP1_0309	41.9166	-124.2259	55.82	1905.2	0.0
8/25/2009	17:31:26	27	SP1_0409	41.6648	-124.1676	55.24	1831.5	0.0
8/25/2009	17:31:36	27	SP1_0410	41.6647	-124.1723	55.24	1831.5	0.0
8/25/2009	17:31:47	27	SP1_0411	41.6649	-124.1770	55.24	1827.0	0.0
8/25/2009	17:31:57	27	SP1_0412	41.6654	-124.1819	55.24	1819.7	0.0
8/25/2009	17:32:08	27	SP1_0413	41.6659	-124.1867	55.24	1816.5	0.0
8/25/2009	17:32:18	27	SP1_0414	41.6663	-124.1915	55.24	1811.9	0.0
8/25/2009	17:32:29	27	SP1_0415	41.6668	-124.1965	55.24	1813.7	0.0
8/25/2009	17:32:39	27	SP1_0416	41.6667	-124.2014	55.24	1817.8	0.0
8/25/2009	17:32:50	27	SP1_0417	41.6666	-124.2062	55.24	1817.8	0.0
8/25/2009	17:33:00	27	SP1_0418	41.6666	-124.2112	55.24	1819.7	0.0
8/25/2009	17:33:11	27	SP1_0419	41.6664	-124.2159	55.24	1834.3	0.0
8/25/2009	17:33:21	27	SP1_0420	41.6660	-124.2205	55.24	1832.9	0.0
8/25/2009	17:33:32	27	SP1_0421	41.6654	-124.2252	55.24	1846.6	0.0
8/25/2009	17:33:42	27	SP1_0422	41.6649	-124.2298	55.24	1843.4	0.0
8/25/2009	17:33:53	27	SP1_0423	41.6644	-124.2344	55.24	1846.6	0.0
8/25/2009	17:34:04	27	SP1_0424	41.6639	-124.2392	55.24	1851.2	0.0
8/25/2009	17:34:14	27	SP1_0425	41.6643	-124.2437	55.24	1844.8	0.0
8/25/2009	17:34:25	27	SP1_0426	41.6646	-124.2482	55.24	1848.0	0.0
8/25/2009	17:34:35	27	SP1_0427	41.6650	-124.2528	55.24	1852.6	0.0

8/25/2009	17:34:46	27	SP1_0428	41.6654	-124.2574	55.24	1846.6	0.0
8/25/2009	17:34:56	27	SP1_0429	41.6659	-124.2618	55.24	1851.2	0.0
8/25/2009	17:35:07	27	SP1_0430	41.6664	-124.2665	55.24	1852.6	0.0
8/25/2009	17:35:17	27	SP1_0431	41.6665	-124.2711	55.24	1849.4	0.0
8/25/2009	17:35:28	27	SP1_0432	41.6669	-124.2757	55.24	1852.6	0.0
8/25/2009	17:35:38	27	SP1_0433	41.6666	-124.2805	55.24	1858.5	0.0
8/25/2009	17:35:49	27	SP1_0434	41.6663	-124.2850	55.24	1861.7	0.0
8/25/2009	17:35:59	27	SP1_0435	41.6666	-124.2895	55.24	1865.8	0.0
8/25/2009	17:36:20	27	SP1_0437	41.6673	-124.2986	55.24	1869.0	0.0
8/25/2009	17:36:31	27	SP1_0438	41.6676	-124.3030	55.24	1879.5	0.0
8/25/2009	17:36:42	27	SP1_0439	41.6680	-124.3077	55.24	1876.3	0.0
8/25/2009	17:36:52	27	SP1_0440	41.6682	-124.3124	55.24	1873.6	0.0
8/25/2009	17:37:03	27	SP1_0441	41.6681	-124.3171	55.24	1876.3	0.0
8/25/2009	17:37:13	27	SP1_0442	41.6682	-124.3216	55.24	1880.9	0.0
8/25/2009	17:37:24	27	SP1_0443	41.6684	-124.3264	55.24	1879.5	0.0
8/25/2009	17:37:34	27	SP1_0444	41.6688	-124.3310	55.24	1885.5	0.0
8/25/2009	17:37:45	27	SP1_0445	41.6693	-124.3356	55.24	1880.9	0.0
8/25/2009	17:37:55	27	SP1_0446	41.6699	-124.3404	55.24	1878.2	0.0
8/25/2009	17:38:06	27	SP1_0447	41.6706	-124.3451	55.24	1884.1	0.0
8/25/2009	17:38:16	27	SP1_0448	41.6710	-124.3496	55.24	1899.2	0.0
8/25/2009	17:38:27	27	SP1_0449	41.6716	-124.3542	55.24	1894.6	0.0
8/25/2009	17:38:37	27	SP1_0450	41.6723	-124.3586	55.24	1899.2	0.0
8/25/2009	17:38:48	27	SP1_0451	41.6730	-124.3630	55.24	1894.6	0.0
8/25/2009	17:38:58	27	SP1_0452	41.6739	-124.3676	55.24	1896.0	0.0
8/25/2009	17:39:09	27	SP1_0453	41.6751	-124.3718	55.24	1892.8	0.0
8/25/2009	17:39:19	27	SP1_0454	41.6756	-124.3764	55.24	1886.9	0.0
8/25/2009	17:39:30	27	SP1_0455	41.6755	-124.3813	55.24	1880.9	0.0
8/25/2009	17:39:41	27	SP1_0456	41.6752	-124.3862	55.24	1876.3	0.0
8/25/2009	17:39:51	27	SP1_0457	41.6749	-124.3909	55.24	1891.4	0.0
8/25/2009	17:40:02	27	SP1_0458	41.6745	-124.3956	55.24	1886.9	0.0
8/25/2009	17:40:12	27	SP1_0459	41.6743	-124.4003	55.24	1892.8	0.0
8/25/2009	17:40:23	27	SP1_0460	41.6744	-124.4048	55.24	1897.4	0.0

8/25/2009	17:40:33	27	SP1_0461	41.6745	-124.4097	55.24	1897.4	0.0
8/25/2009	17:40:44	27	SP1_0462	41.6747	-124.4142	55.24	1906.5	0.0
8/25/2009	17:40:54	27	SP1_0463	41.6746	-124.4187	55.24	1903.3	0.0
8/25/2009	17:41:05	27	SP1_0464	41.6744	-124.4234	55.24	1906.5	0.0
8/25/2009	17:41:15	27	SP1_0465	41.6743	-124.4280	55.24	1909.7	0.0
8/25/2009	17:41:26	27	SP1_0466	41.6742	-124.4324	55.24	1907.9	0.0
8/25/2009	17:41:36	27	SP1_0467	41.6741	-124.4372	55.24	1905.2	0.0
8/25/2009	17:41:47	27	SP1_0468	41.6740	-124.4417	55.24	1909.7	0.0
8/25/2009	17:41:57	27	SP1_0469	41.6741	-124.4462	55.24	1903.3	0.0
8/25/2009	17:42:08	27	SP1_0470	41.6740	-124.4509	55.24	1905.2	0.0
8/25/2009	17:42:18	27	SP1_0471	41.6731	-124.4553	55.24	1907.9	0.0
8/25/2009	17:42:29	27	SP1_0472	41.6723	-124.4597	55.24	1902.0	0.0
8/25/2009	17:42:40	27	SP1_0473	41.6713	-124.4643	55.24	1903.3	0.0
8/25/2009	17:42:50	27	SP1_0474	41.6710	-124.4687	55.24	1899.2	0.0
8/25/2009	17:43:01	27	SP1_0475	41.6712	-124.4732	55.24	1902.0	0.0
8/25/2009	17:43:11	27	SP1_0476	41.6710	-124.4779	55.24	1899.2	0.0
8/25/2009	17:43:22	27	SP1_0477	41.6707	-124.4824	55.24	1905.2	0.0
8/25/2009	17:43:32	27	SP1_0478	41.6703	-124.4868	55.24	1905.2	0.0
8/25/2009	17:43:43	27	SP1_0479	41.6704	-124.4913	55.24	1905.2	0.0
8/25/2009	17:43:53	27	SP1_0480	41.6707	-124.4957	55.24	1900.6	0.0
8/25/2009	17:44:04	27	SP1_0481	41.6698	-124.4999	55.24	1911.1	0.0
8/25/2009	17:44:14	27	SP1_0482	41.6696	-124.5043	55.24	1905.2	0.0
8/25/2009	17:44:25	27	SP1_0483	41.6695	-124.5087	55.24	1906.5	0.0
8/25/2009	17:44:35	27	SP1_0484	41.6692	-124.5130	55.24	1909.7	0.0
8/25/2009	17:44:46	27	SP1_0485	41.6693	-124.5176	55.24	1907.9	0.0
8/25/2009	17:44:56	27	SP1_0486	41.6693	-124.5220	55.24	1909.7	0.0
8/25/2009	17:45:07	27	SP1_0487	41.6692	-124.5265	55.24	1912.5	0.0
8/25/2009	17:45:18	27	SP1_0488	41.6690	-124.5309	55.24	1915.7	0.0
8/25/2009	17:45:28	27	SP1_0489	41.6688	-124.5354	55.24	1907.9	0.0
8/25/2009	17:45:39	27	SP1_0490	41.6685	-124.5399	55.24	1911.1	0.0
8/25/2009	17:45:49	27	SP1_0491	41.6683	-124.5445	55.24	1917.0	0.0
8/25/2009	17:46:00	27	SP1_0492	41.6680	-124.5489	55.24	1919.8	0.0

8/25/2009	17:46:10	27	SP1_0493	41.6678	-124.5533	55.24	1926.2	0.0
8/25/2009	17:46:21	27	SP1_0494	41.6678	-124.5578	55.24	1926.2	0.0
8/25/2009	17:46:31	27	SP1_0495	41.6680	-124.5622	55.24	1919.8	0.0
8/25/2009	17:46:42	27	SP1_0496	41.6675	-124.5665	55.24	1921.6	0.0
8/25/2009	17:46:52	27	SP1_0497	41.6672	-124.5710	55.24	1921.6	0.0
8/25/2009	17:47:03	27	SP1_0498	41.6671	-124.5754	55.24	1919.8	0.0
8/25/2009	17:47:13	27	SP1_0499	41.6669	-124.5798	55.24	1923.0	0.0
8/25/2009	17:47:24	27	SP1_0500	41.6667	-124.5844	55.24	1919.8	0.0
8/25/2009	17:47:34	27	SP1_0501	41.6666	-124.5888	55.24	1926.2	0.0
8/25/2009	17:47:45	27	SP1_0502	41.6666	-124.5931	55.24	1926.2	0.0
8/25/2009	17:47:55	27	SP1_0503	41.6666	-124.5977	55.24	1903.3	0.0
8/25/2009	17:48:06	27	SP1_0504	41.6666	-124.6028	55.24	1891.4	0.0
8/25/2009	17:48:17	27	SP1_0505	41.6664	-124.6077	55.24	1880.9	0.0
8/25/2009	17:48:27	27	SP1_0506	41.6661	-124.6125	55.24	1879.5	0.0
8/25/2009	17:48:42	27	SP1_0507	41.6661	-124.6196	55.24	1855.3	0.0
8/25/2009	17:48:48	27	SP1_0508	41.6661	-124.6227	55.24	1853.9	0.0
8/25/2009	17:48:59	27	SP1_0509	41.6660	-124.6276	55.24	1867.7	0.0
8/25/2009	17:49:09	27	SP1_0510	41.6658	-124.6324	55.24	1865.8	0.0
8/25/2009	17:49:20	27	SP1_0511	41.6658	-124.6372	55.24	1864.5	0.0
8/25/2009	17:49:30	27	SP1_0512	41.6659	-124.6420	55.24	1865.8	0.0
8/25/2009	17:49:41	27	SP1_0513	41.6660	-124.6470	55.24	1863.1	0.0
8/25/2009	17:49:51	27	SP1_0514	41.6660	-124.6518	55.24	1859.9	0.0
8/25/2009	17:50:02	27	SP1_0515	41.6657	-124.6565	55.24	1863.1	0.0
8/25/2009	17:50:12	27	SP1_0516	41.6655	-124.6615	55.24	1864.5	0.0
8/25/2009	17:50:23	27	SP1_0517	41.6655	-124.6662	55.24	1871.8	0.0
8/25/2009	17:50:33	27	SP1_0518	41.6654	-124.6708	55.24	1869.0	0.0
8/25/2009	17:50:44	27	SP1_0519	41.6650	-124.6757	55.24	1869.0	0.0
8/25/2009	17:50:55	27	SP1_0520	41.6649	-124.6803	55.24	1875.0	0.0
8/25/2009	17:51:05	27	SP1_0521	41.6647	-124.6849	55.24	1876.3	0.0
8/25/2009	17:51:16	27	SP1_0522	41.6646	-124.6897	55.24	1876.3	0.0
8/25/2009	17:51:26	27	SP1_0523	41.6644	-124.6942	55.24	1876.3	0.0
8/25/2009	17:51:37	27	SP1_0524	41.6643	-124.6988	55.24	1879.5	0.0

8/25/2009	17:51:47	27	SP1_0525	41.6641	-124.7036	55.24	1879.5	0.0
8/25/2009	17:51:58	27	SP1_0526	41.6641	-124.7082	55.24	1878.2	0.0
8/25/2009	17:52:08	27	SP1_0527	41.6640	-124.7128	55.24	1878.2	0.0
8/25/2009	17:52:19	27	SP1_0528	41.6639	-124.7176	55.24	1878.2	0.0
8/25/2009	17:52:29	27	SP1_0529	41.6640	-124.7223	55.24	1880.9	0.0
8/25/2009	17:52:40	27	SP1_0530	41.6640	-124.7270	55.24	1884.1	0.0
8/25/2009	17:52:50	27	SP1_0531	41.6639	-124.7318	55.24	1885.5	0.0
8/25/2009	17:53:01	27	SP1_0532	41.6639	-124.7366	55.24	1886.9	0.0
8/25/2009	17:53:11	27	SP1_0533	41.6641	-124.7414	55.24	1882.3	0.0
8/25/2009	17:53:22	27	SP1_0534	41.6642	-124.7463	55.24	1885.5	0.0
8/25/2009	17:53:32	27	SP1_0535	41.6644	-124.7511	55.24	1884.1	0.0
8/25/2009	17:53:43	27	SP1_0536	41.6645	-124.7559	55.24	1884.1	0.0
8/25/2009	17:53:54	27	SP1_0537	41.6646	-124.7609	55.24	1886.9	0.0
8/25/2009	17:54:04	27	SP1_0538	41.6646	-124.7657	55.24	1882.3	0.0
8/25/2009	17:54:15	27	SP1_0539	41.6645	-124.7705	55.24	1885.5	0.0
8/25/2009	17:54:25	27	SP1_0540	41.6643	-124.7755	55.24	1885.5	0.0
8/25/2009	17:54:36	27	SP1_0541	41.6645	-124.7803	55.24	1888.7	0.0
8/25/2009	17:54:46	27	SP1_0542	41.6647	-124.7851	55.24	1890.1	0.0
8/25/2009	17:54:57	27	SP1_0543	41.6649	-124.7901	55.24	1886.9	0.0
8/25/2009	17:55:07	27	SP1_0544	41.6647	-124.7948	55.24	1890.1	0.0
8/25/2009	17:55:18	27	SP1_0545	41.6647	-124.7995	55.24	1890.1	0.0
8/25/2009	17:55:28	27	SP1_0546	41.6657	-124.8042	55.24	1892.8	0.0
8/25/2009	17:55:39	27	SP1_0547	41.6661	-124.8089	55.24	1896.0	0.0
8/25/2009	17:55:49	27	SP1_0548	41.6663	-124.8136	55.24	1897.4	0.0
8/25/2009	17:56:00	27	SP1_0549	41.6666	-124.8184	55.24	1899.2	0.0
8/25/2009	17:56:10	27	SP1_0550	41.6668	-124.8231	55.24	1900.6	0.0
8/25/2009	17:56:21	27	SP1_0551	41.6670	-124.8277	55.24	1899.2	0.0
8/25/2009	17:56:32	27	SP1_0552	41.6671	-124.8326	55.24	1897.4	0.0
8/25/2009	18:16:06	28	SP1_0579	41.4173	-124.7645	48.87	1873.6	0.0
8/25/2009	18:16:17	28	SP1_0580	41.4164	-124.7598	48.87	1869.0	0.0
8/25/2009	18:16:28	28	SP1_0581	41.4164	-124.7546	48.87	1871.8	0.0
8/25/2009	18:16:38	28	SP1_0582	41.4163	-124.7497	48.87	1876.3	0.0

8/25/2009	18:16:49	28	SP1_0583	41.4166	-124.7447	48.87	1876.3	0.0
8/25/2009	18:16:59	28	SP1_0584	41.4169	-124.7395	48.87	1882.3	0.0
8/25/2009	18:17:10	28	SP1_0585	41.4175	-124.7346	48.87	1884.1	0.0
8/25/2009	18:17:20	28	SP1_0586	41.4180	-124.7296	48.87	1885.5	0.0
8/25/2009	18:17:31	28	SP1_0587	41.4181	-124.7242	48.87	1880.9	0.0
8/25/2009	18:17:41	28	SP1_0588	41.4178	-124.7188	48.87	1871.8	0.0
8/25/2009	18:17:52	28	SP1_0589	41.4175	-124.7136	48.87	1879.5	0.0
8/25/2009	18:18:02	28	SP1_0590	41.4174	-124.7081	48.87	1876.3	0.0
8/25/2009	18:18:13	28	SP1_0591	41.4175	-124.7029	48.87	1878.2	0.0
8/25/2009	18:18:23	28	SP1_0592	41.4175	-124.6976	48.87	1876.3	0.0
8/25/2009	18:18:55	28	SP1_0595	41.4176	-124.6818	48.87	1886.9	0.0
8/25/2009	18:19:06	28	SP1_0596	41.4175	-124.6764	48.87	1890.1	0.0
8/25/2009	18:19:16	28	SP1_0597	41.4177	-124.6712	48.87	1886.9	0.0
8/25/2009	18:19:27	28	SP1_0598	41.4180	-124.6659	48.87	1890.1	0.0
8/25/2009	18:19:37	28	SP1_0599	41.4182	-124.6605	48.87	1890.1	0.0
8/25/2009	18:19:48	28	SP1_0600	41.4182	-124.6552	48.87	1885.5	0.0
8/25/2009	18:19:58	28	SP1_0601	41.4184	-124.6499	48.87	1888.7	0.0
8/25/2009	18:20:09	28	SP1_0602	41.4189	-124.6444	48.87	1886.9	0.0
8/25/2009	18:20:19	28	SP1_0603	41.4197	-124.6392	48.87	1886.9	0.0
8/25/2009	18:20:30	28	SP1_0604	41.4204	-124.6339	48.87	1886.9	0.0
8/25/2009	18:20:40	28	SP1_0605	41.4199	-124.6285	48.87	1888.7	0.0
8/25/2009	18:20:51	28	SP1_0606	41.4193	-124.6233	48.87	1894.6	0.0
8/25/2009	18:21:01	28	SP1_0607	41.4189	-124.6181	48.87	1892.8	0.0
8/25/2009	18:21:12	28	SP1_0608	41.4184	-124.6126	48.87	1891.4	0.0
8/25/2009	18:21:22	28	SP1_0609	41.4181	-124.6072	48.87	1894.6	0.0
8/25/2009	18:21:33	28	SP1_0610	41.4179	-124.6020	48.87	1897.4	0.0
8/25/2009	18:21:44	28	SP1_0611	41.4178	-124.5965	48.87	1897.4	0.0
8/25/2009	18:21:54	28	SP1_0612	41.4177	-124.5912	48.87	1896.0	0.0
8/25/2009	18:22:05	28	SP1_0613	41.4177	-124.5859	48.87	1897.4	0.0
8/25/2009	18:22:15	28	SP1_0614	41.4175	-124.5805	48.87	1897.4	0.0
8/25/2009	18:22:26	28	SP1_0615	41.4173	-124.5752	48.87	1900.6	0.0
8/25/2009	18:22:36	28	SP1_0616	41.4171	-124.5699	48.87	1900.6	0.0

8/25/2009	18:22:47	28	SP1_0617	41.4169	-124.5644	48.87	1903.3	0.0
8/25/2009	18:22:57	28	SP1_0618	41.4167	-124.5592	48.87	1902.0	0.0
8/25/2009	18:23:08	28	SP1_0619	41.4166	-124.5539	48.87	1902.0	0.0
8/25/2009	18:23:18	28	SP1_0620	41.4165	-124.5484	48.87	1903.3	0.0
8/25/2009	18:23:29	28	SP1_0621	41.4163	-124.5432	48.87	1907.9	0.0
8/25/2009	18:23:39	28	SP1_0622	41.4160	-124.5379	48.87	1909.7	0.0
8/25/2009	18:23:50	28	SP1_0623	41.4158	-124.5325	48.87	1913.8	0.0
8/25/2009	18:24:00	28	SP1_0624	41.4153	-124.5272	48.87	1909.7	0.0
8/25/2009	18:24:11	28	SP1_0625	41.4150	-124.5219	48.87	1911.1	0.0
8/25/2009	18:24:21	28	SP1_0626	41.4148	-124.5167	48.87	1917.0	0.0
8/25/2009	18:24:32	28	SP1_0627	41.4145	-124.5114	48.87	1917.0	0.0
8/25/2009	18:24:43	28	SP1_0628	41.4146	-124.5062	48.87	1918.4	0.0
8/25/2009	18:24:53	28	SP1_0629	41.4147	-124.5010	48.87	1919.8	0.0
8/25/2009	18:25:04	28	SP1_0630	41.4148	-124.4956	48.87	1913.8	0.0
8/25/2009	18:25:14	28	SP1_0631	41.4147	-124.4903	48.87	1921.6	0.0
8/25/2009	18:25:25	28	SP1_0632	41.4144	-124.4851	48.87	1919.8	0.0
8/25/2009	18:25:35	28	SP1_0633	41.4141	-124.4797	48.87	1926.2	0.0
8/25/2009	18:25:46	28	SP1_0634	41.4137	-124.4744	48.87	1924.4	0.0
8/25/2009	18:25:56	28	SP1_0635	41.4134	-124.4692	48.87	1932.1	0.0
8/25/2009	18:26:07	28	SP1_0636	41.4134	-124.4639	48.87	1932.1	0.0
8/25/2009	18:26:17	28	SP1_0637	41.4133	-124.4587	48.87	1930.3	0.0
8/25/2009	18:26:28	28	SP1_0638	41.4132	-124.4535	48.87	1932.1	0.0
8/25/2009	18:26:38	28	SP1_0639	41.4129	-124.4480	48.87	1928.9	0.0
8/25/2009	18:26:49	28	SP1_0640	41.4126	-124.4428	48.87	1930.3	0.0
8/25/2009	18:26:59	28	SP1_0641	41.4129	-124.4377	48.87	1932.1	0.0
8/25/2009	18:27:10	28	SP1_0642	41.4131	-124.4324	48.87	1932.1	0.0
8/25/2009	18:27:20	28	SP1_0643	41.4132	-124.4273	48.87	1936.7	0.0
8/25/2009	18:27:31	28	SP1_0644	41.4133	-124.4222	48.87	1932.1	0.0
8/25/2009	18:27:42	28	SP1_0645	41.4135	-124.4169	48.87	1938.1	0.0
8/25/2009	18:27:52	28	SP1_0646	41.4136	-124.4118	48.87	1934.9	0.0
8/25/2009	18:28:03	28	SP1_0647	41.4136	-124.4066	48.87	1921.6	0.0
8/25/2009	18:28:13	28	SP1_0648	41.4136	-124.4011	48.87	1930.3	0.0

8/25/2009	18:28:24	28	SP1_0649	41.4137	-124.3959	48.87	1924.4	0.0
8/25/2009	18:28:34	28	SP1_0650	41.4139	-124.3908	48.87	1926.2	0.0
8/25/2009	18:28:45	28	SP1_0651	41.4141	-124.3854	48.87	1923.0	0.0
8/25/2009	18:28:55	28	SP1_0652	41.4141	-124.3803	48.87	1927.6	0.0
8/25/2009	18:29:06	28	SP1_0653	41.4141	-124.3751	48.87	1919.8	0.0
8/25/2009	18:29:16	28	SP1_0654	41.4142	-124.3696	48.87	1888.7	0.0
8/25/2009	18:29:27	28	SP1_0655	41.4142	-124.3642	48.87	1870.4	0.0
8/25/2009	18:29:37	28	SP1_0656	41.4144	-124.3589	48.87	1863.1	0.0
8/25/2009	18:29:48	28	SP1_0657	41.4147	-124.3535	48.87	1855.3	0.0
8/25/2009	18:29:58	28	SP1_0658	41.4150	-124.3483	48.87	1851.2	0.0
8/25/2009	18:30:09	28	SP1_0659	41.4151	-124.3432	48.87	1844.8	0.0
8/25/2009	18:30:20	28	SP1_0660	41.4151	-124.3378	48.87	1844.8	0.0
8/25/2009	18:30:30	28	SP1_0661	41.4151	-124.3328	48.87	1836.1	0.0
8/25/2009	18:30:41	28	SP1_0662	41.4153	-124.3277	48.87	1828.3	0.0
8/25/2009	18:30:51	28	SP1_0663	41.4154	-124.3224	48.87	1819.7	0.0
8/25/2009	18:31:02	28	SP1_0664	41.4155	-124.3173	48.87	1817.8	0.0
8/25/2009	18:31:12	28	SP1_0665	41.4158	-124.3123	48.87	1821.0	0.0
8/25/2009	18:31:23	28	SP1_0666	41.4160	-124.3071	48.87	1824.2	0.0
8/25/2009	18:31:33	28	SP1_0667	41.4161	-124.3020	48.87	1822.4	0.0
8/25/2009	18:31:44	28	SP1_0668	41.4160	-124.2970	48.87	1827.0	0.0
8/25/2009	18:31:54	28	SP1_0669	41.4161	-124.2918	48.87	1827.0	0.0
8/25/2009	18:32:05	28	SP1_0670	41.4165	-124.2869	48.87	1832.9	0.0
8/25/2009	18:32:15	28	SP1_0671	41.4165	-124.2820	48.87	1832.9	0.0
8/25/2009	18:32:26	28	SP1_0672	41.4168	-124.2769	48.87	1837.5	0.0
8/25/2009	18:32:36	28	SP1_0673	41.4168	-124.2720	48.87	1842.1	0.0
8/25/2009	18:32:47	28	SP1_0674	41.4167	-124.2671	48.87	1849.4	0.0
8/25/2009	18:32:58	28	SP1_0675	41.4167	-124.2620	48.87	1846.6	0.0
8/25/2009	18:33:08	28	SP1_0676	41.4169	-124.2570	48.87	1844.8	0.0
8/25/2009	18:33:19	28	SP1_0677	41.4171	-124.2521	48.87	1855.3	0.0
8/25/2009	18:33:29	28	SP1_0678	41.4173	-124.2470	48.87	1846.6	0.0
8/25/2009	18:33:40	28	SP1_0679	41.4175	-124.2420	48.87	1855.3	0.0
8/25/2009	18:33:50	28	SP1_0680	41.4174	-124.2370	48.87	1848.0	0.0

8/25/2009	18:34:01	28	SP1_0681	41.4172	-124.2318	48.87	1851.2	0.0
8/25/2009	18:34:22	28	SP1_0683	41.4181	-124.2220	48.87	1851.2	0.0
8/25/2009	18:34:32	28	SP1_0684	41.4184	-124.2170	48.87	1853.9	0.0
8/25/2009	18:34:43	28	SP1_0685	41.4183	-124.2121	48.87	1858.5	0.0
8/25/2009	18:34:53	28	SP1_0686	41.4184	-124.2073	48.87	1863.1	0.0
8/25/2009	18:35:14	28	SP1_0688	41.4189	-124.1976	48.87	1885.5	0.0
8/25/2009	18:35:25	28	SP1_0689	41.4193	-124.1931	48.87	1892.8	0.0
8/25/2009	18:35:35	28	SP1_0690	41.4193	-124.1884	48.87	1888.7	0.0
8/25/2009	18:35:46	28	SP1_0691	41.4191	-124.1833	48.87	1885.5	0.0
8/25/2009	18:35:57	28	SP1_0692	41.4188	-124.1784	48.87	1888.7	0.0
9/2/2009	13:58:15	29	SP1_0018	41.1680	-124.1756	55.9	1816.5	0.0
9/2/2009	13:58:25	29	SP1_0019	41.1680	-124.1802	55.9	1804.6	0.0
9/2/2009	13:58:36	29	SP1_0020	41.1679	-124.1844	55.9	1800.0	0.0
9/2/2009	13:58:46	29	SP1_0021	41.1677	-124.1886	55.9	1801.4	0.0
9/2/2009	13:58:57	29	SP1_0022	41.1675	-124.1928	55.9	1800.0	0.0
9/2/2009	13:59:07	29	SP1_0023	41.1673	-124.1969	55.9	1801.4	0.0
9/2/2009	13:59:18	29	SP1_0024	41.1671	-124.2009	55.9	1803.2	0.0
9/2/2009	13:59:29	29	SP1_0025	41.1670	-124.2052	55.9	1803.2	0.0
9/2/2009	13:59:39	29	SP1_0026	41.1672	-124.2094	55.9	1798.6	0.0
9/2/2009	13:59:50	29	SP1_0027	41.1676	-124.2136	55.9	1804.6	0.0
9/2/2009	14:00:00	29	SP1_0028	41.1675	-124.2179	55.9	1803.2	0.0
9/2/2009	14:00:11	29	SP1_0029	41.1675	-124.2219	55.9	1804.6	0.0
9/2/2009	14:00:21	29	SP1_0030	41.1674	-124.2260	55.9	1803.2	0.0
9/2/2009	14:00:32	29	SP1_0031	41.1674	-124.2302	55.9	1803.2	0.0
9/2/2009	14:00:42	29	SP1_0032	41.1674	-124.2343	55.9	1803.2	0.0
9/2/2009	14:00:53	29	SP1_0033	41.1673	-124.2384	55.9	1803.2	0.0
9/2/2009	14:01:03	29	SP1_0034	41.1673	-124.2424	55.9	1809.1	0.0
9/2/2009	14:01:14	29	SP1_0035	41.1673	-124.2466	55.9	1804.6	0.0
9/2/2009	14:01:24	29	SP1_0036	41.1676	-124.2507	55.9	1807.3	0.0
9/2/2009	14:01:35	29	SP1_0037	41.1680	-124.2548	55.9	1805.9	0.0
9/2/2009	14:01:45	29	SP1_0038	41.1680	-124.2591	55.9	1804.6	0.0
9/2/2009	14:01:56	29	SP1_0039	41.1678	-124.2631	55.9	1807.3	0.0

9/2/2009	14:02:06	29	SP1_0040	41.1676	-124.2670	55.9	1805.9	0.0
9/2/2009	14:02:17	29	SP1_0041	41.1672	-124.2710	55.9	1807.3	0.0
9/2/2009	14:02:28	29	SP1_0042	41.1674	-124.2751	55.9	1804.6	0.0
9/2/2009	14:02:38	29	SP1_0043	41.1676	-124.2792	55.9	1804.6	0.0
9/2/2009	14:02:49	29	SP1_0044	41.1677	-124.2834	55.9	1798.6	0.0
9/2/2009	14:02:59	29	SP1_0045	41.1675	-124.2874	55.9	1803.2	0.0
9/2/2009	14:03:10	29	SP1_0046	41.1672	-124.2913	55.9	1800.0	0.0
9/2/2009	14:03:20	29	SP1_0047	41.1671	-124.2954	55.9	1800.0	0.0
9/2/2009	14:03:31	29	SP1_0048	41.1670	-124.2994	55.9	1800.0	0.0
9/2/2009	14:03:41	29	SP1_0049	41.1668	-124.3033	55.9	1800.0	0.0
9/2/2009	14:03:52	29	SP1_0050	41.1668	-124.3075	55.9	1803.2	0.0
9/2/2009	14:04:02	29	SP1_0051	41.1671	-124.3116	55.9	1805.9	0.0
9/2/2009	14:04:13	29	SP1_0052	41.1675	-124.3157	55.9	1809.1	0.0
9/2/2009	14:04:23	29	SP1_0053	41.1677	-124.3200	55.9	1807.3	0.0
9/2/2009	14:04:34	29	SP1_0054	41.1678	-124.3241	55.9	1810.5	0.0
9/2/2009	14:04:44	29	SP1_0055	41.1677	-124.3282	55.9	1813.7	0.0
9/2/2009	14:04:55	29	SP1_0056	41.1677	-124.3324	55.9	1821.0	0.0
9/2/2009	14:05:05	29	SP1_0057	41.1678	-124.3366	55.9	1827.0	0.0
9/2/2009	14:05:16	29	SP1_0058	41.1680	-124.3407	55.9	1831.5	0.0
9/2/2009	14:05:27	29	SP1_0059	41.1681	-124.3448	55.9	1840.7	0.0
9/2/2009	14:05:37	29	SP1_0060	41.1684	-124.3489	55.9	1834.3	0.0
9/2/2009	14:05:48	29	SP1_0061	41.1685	-124.3530	55.9	1848.0	0.0
9/2/2009	14:05:58	29	SP1_0062	41.1685	-124.3571	55.9	1843.4	0.0
9/2/2009	14:06:09	29	SP1_0063	41.1686	-124.3612	55.9	1848.0	0.0
9/2/2009	14:06:19	29	SP1_0064	41.1686	-124.3652	55.9	1853.9	0.0
9/2/2009	14:06:30	29	SP1_0065	41.1686	-124.3693	55.9	1855.3	0.0
9/2/2009	14:06:40	29	SP1_0066	41.1686	-124.3734	55.9	1857.1	0.0
9/2/2009	14:06:51	29	SP1_0067	41.1688	-124.3775	55.9	1857.1	0.0
9/2/2009	14:07:01	29	SP1_0068	41.1690	-124.3817	55.9	1865.8	0.0
9/2/2009	14:07:12	29	SP1_0069	41.1693	-124.3859	55.9	1864.5	0.0
9/2/2009	14:07:22	29	SP1_0070	41.1692	-124.3899	55.9	1873.6	0.0
9/2/2009	14:07:33	29	SP1_0071	41.1690	-124.3940	55.9	1870.4	0.0

9/2/2009	14:07:43	29	SP1_0072	41.1690	-124.3981	55.9	1879.5	0.0
9/2/2009	14:07:54	29	SP1_0073	41.1690	-124.4021	55.9	1875.0	0.0
9/2/2009	14:08:05	29	SP1_0074	41.1687	-124.4064	55.9	1875.0	0.0
9/2/2009	14:08:15	29	SP1_0075	41.1685	-124.4106	55.9	1871.8	0.0
9/2/2009	14:08:26	29	SP1_0076	41.1682	-124.4146	55.9	1879.5	0.0
9/2/2009	14:08:36	29	SP1_0077	41.1677	-124.4188	55.9	1873.6	0.0
9/2/2009	14:08:47	29	SP1_0078	41.1674	-124.4229	55.9	1876.3	0.0
9/2/2009	14:08:57	29	SP1_0079	41.1674	-124.4271	55.9	1878.2	0.0
9/2/2009	14:09:08	29	SP1_0080	41.1674	-124.4314	55.9	1882.3	0.0
9/2/2009	14:09:18	29	SP1_0081	41.1675	-124.4356	55.9	1882.3	0.0
9/2/2009	14:09:29	29	SP1_0082	41.1675	-124.4398	55.9	1880.9	0.0
9/2/2009	14:09:39	29	SP1_0083	41.1675	-124.4442	55.9	1878.2	0.0
9/2/2009	14:09:50	29	SP1_0084	41.1677	-124.4485	55.9	1879.5	0.0
9/2/2009	14:10:00	29	SP1_0085	41.1678	-124.4527	55.9	1880.9	0.0
9/2/2009	14:10:11	29	SP1_0086	41.1680	-124.4571	55.9	1880.9	0.0
9/2/2009	14:10:21	29	SP1_0087	41.1682	-124.4615	55.9	1873.6	0.0
9/2/2009	14:10:32	29	SP1_0088	41.1682	-124.4659	55.9	1875.0	0.0
9/2/2009	14:10:43	29	SP1_0089	41.1680	-124.4703	55.9	1878.2	0.0
9/2/2009	14:10:53	29	SP1_0090	41.1680	-124.4746	55.9	1876.3	0.0
9/2/2009	14:11:04	29	SP1_0091	41.1682	-124.4790	55.9	1878.2	0.0
9/2/2009	14:11:14	29	SP1_0092	41.1684	-124.4835	55.9	1876.3	0.0
9/2/2009	14:11:25	29	SP1_0093	41.1685	-124.4879	55.9	1878.2	0.0
9/2/2009	14:11:35	29	SP1_0094	41.1686	-124.4924	55.9	1870.4	0.0
9/2/2009	14:11:46	29	SP1_0095	41.1685	-124.4968	55.9	1873.6	0.0
9/2/2009	14:11:56	29	SP1_0096	41.1684	-124.5014	55.9	1869.0	0.0
9/2/2009	14:12:07	29	SP1_0097	41.1683	-124.5058	55.9	1870.4	0.0
9/2/2009	14:12:17	29	SP1_0098	41.1680	-124.5102	55.9	1870.4	0.0
9/2/2009	14:12:28	29	SP1_0099	41.1677	-124.5147	55.9	1867.7	0.0
9/2/2009	14:12:38	29	SP1_0100	41.1675	-124.5192	55.9	1867.7	0.0
9/2/2009	14:12:49	29	SP1_0101	41.1676	-124.5235	55.9	1871.8	0.0
9/2/2009	14:12:59	29	SP1_0102	41.1676	-124.5281	55.9	1865.8	0.0
9/2/2009	14:13:10	29	SP1_0103	41.1677	-124.5326	55.9	1869.0	0.0

9/2/2009	14:13:20	29	SP1_0104	41.1677	-124.5370	55.9	1873.6	0.0
9/2/2009	14:13:31	29	SP1_0105	41.1677	-124.5414	55.9	1879.5	0.0
9/2/2009	14:13:42	29	SP1_0106	41.1677	-124.5456	55.9	1880.9	0.0
9/2/2009	14:13:52	29	SP1_0107	41.1675	-124.5499	55.9	1879.5	0.0
9/2/2009	14:14:03	29	SP1_0108	41.1671	-124.5543	55.9	1884.1	0.0
9/2/2009	14:14:13	29	SP1_0109	41.1671	-124.5586	55.9	1871.8	0.0
9/2/2009	14:14:24	29	SP1_0110	41.1674	-124.5630	55.9	1876.3	0.0
9/2/2009	14:14:34	29	SP1_0111	41.1676	-124.5675	55.9	1878.2	0.0
9/2/2009	14:14:45	29	SP1_0112	41.1676	-124.5719	55.9	1870.4	0.0
9/2/2009	14:14:55	29	SP1_0113	41.1673	-124.5762	55.9	1870.4	0.0
9/2/2009	14:15:06	29	SP1_0114	41.1668	-124.5806	55.9	1871.8	0.0
9/2/2009	14:15:16	29	SP1_0115	41.1666	-124.5848	55.9	1873.6	0.0
9/2/2009	14:15:27	29	SP1_0116	41.1662	-124.5891	55.9	1878.2	0.0
9/2/2009	14:15:37	29	SP1_0117	41.1660	-124.5935	55.9	1880.9	0.0
9/2/2009	14:15:48	29	SP1_0118	41.1659	-124.5978	55.9	1878.2	0.0
9/2/2009	14:15:58	29	SP1_0119	41.1658	-124.6022	55.9	1878.2	0.0
9/2/2009	14:16:09	29	SP1_0120	41.1658	-124.6066	55.9	1875.0	0.0
9/2/2009	14:16:20	29	SP1_0121	41.1657	-124.6110	55.9	1873.6	0.0
9/2/2009	14:16:30	29	SP1_0122	41.1656	-124.6153	55.9	1873.6	0.0
9/2/2009	14:16:41	29	SP1_0123	41.1653	-124.6197	55.9	1870.4	0.0
9/2/2009	14:16:51	29	SP1_0124	41.1647	-124.6238	55.9	1869.0	0.0
9/2/2009	14:17:02	29	SP1_0125	41.1644	-124.6279	55.9	1870.4	0.0
9/2/2009	14:17:12	29	SP1_0126	41.1643	-124.6324	55.9	1869.0	0.0
9/2/2009	14:17:23	29	SP1_0127	41.1644	-124.6367	55.9	1875.0	0.0
9/2/2009	14:17:33	29	SP1_0128	41.1646	-124.6411	55.9	1875.0	0.0
9/2/2009	14:17:44	29	SP1_0129	41.1647	-124.6456	55.9	1876.3	0.0
9/2/2009	14:17:54	29	SP1_0130	41.1647	-124.6498	55.9	1878.2	0.0
9/2/2009	14:18:05	29	SP1_0131	41.1648	-124.6541	55.9	1876.3	0.0
9/2/2009	14:18:15	29	SP1_0132	41.1649	-124.6586	55.9	1879.5	0.0
9/2/2009	14:18:26	29	SP1_0133	41.1649	-124.6629	55.9	1879.5	0.0
9/2/2009	14:18:36	29	SP1_0134	41.1649	-124.6672	55.9	1879.5	0.0
9/2/2009	14:18:47	29	SP1_0135	41.1649	-124.6717	55.9	1882.3	0.0

9/2/2009	14:18:57	29	SP1_0136	41.1648	-124.6760	55.9	1879.5	0.0
9/2/2009	14:19:08	29	SP1_0137	41.1649	-124.6803	55.9	1882.3	0.0
9/2/2009	14:19:19	29	SP1_0138	41.1650	-124.6848	55.9	1882.3	0.0
9/2/2009	14:19:29	29	SP1_0139	41.1650	-124.6892	55.9	1879.5	0.0
9/2/2009	14:19:40	29	SP1_0140	41.1653	-124.6936	55.9	1882.3	0.0
9/2/2009	14:19:50	29	SP1_0141	41.1657	-124.6982	55.9	1882.3	0.0
9/2/2009	14:20:01	29	SP1_0142	41.1660	-124.7027	55.9	1885.5	0.0
9/2/2009	14:20:11	29	SP1_0143	41.1663	-124.7071	55.9	1885.5	0.0
9/2/2009	14:20:22	29	SP1_0144	41.1661	-124.7117	55.9	1885.5	0.0
9/2/2009	14:20:32	29	SP1_0145	41.1662	-124.7161	55.9	1884.1	0.0
9/2/2009	14:20:43	29	SP1_0146	41.1662	-124.7205	55.9	1888.7	0.0
9/2/2009	14:20:53	29	SP1_0147	41.1662	-124.7251	55.9	1886.9	0.0
9/2/2009	14:21:04	29	SP1_0148	41.1661	-124.7295	55.9	1890.1	0.0
9/2/2009	14:21:14	29	SP1_0149	41.1661	-124.7339	55.9	1888.7	0.0
9/2/2009	14:21:25	29	SP1_0150	41.1661	-124.7384	55.9	1896.0	0.0
9/2/2009	14:21:35	29	SP1_0151	41.1662	-124.7428	55.9	1894.6	0.0
9/2/2009	14:21:46	29	SP1_0152	41.1664	-124.7472	55.9	1899.2	0.0
9/2/2009	14:21:57	29	SP1_0153	41.1666	-124.7518	55.9	1897.4	0.0
9/2/2009	14:22:07	29	SP1_0154	41.1667	-124.7563	55.9	1897.4	0.0
9/2/2009	14:22:18	29	SP1_0155	41.1668	-124.7607	55.9	1894.6	0.0
9/2/2009	14:22:28	29	SP1_0156	41.1666	-124.7654	55.9	1894.6	0.0
9/2/2009	14:22:39	29	SP1_0157	41.1666	-124.7698	55.9	1897.4	0.0
9/2/2009	14:22:49	29	SP1_0158	41.1666	-124.7742	55.9	1897.4	0.0
9/2/2009	14:23:00	29	SP1_0159	41.1666	-124.7788	55.9	1903.3	0.0
9/2/2009	14:23:10	29	SP1_0160	41.1667	-124.7836	55.9	1851.2	0.0
9/2/2009	14:23:21	29	SP1_0161	41.1667	-124.7888	55.9	1851.2	0.0
9/2/2009	14:23:31	29	SP1_0162	41.1668	-124.7938	55.9	1855.3	0.0
9/2/2009	14:23:42	29	SP1_0163	41.1670	-124.7983	55.9	1859.9	0.0
9/2/2009	14:23:52	29	SP1_0164	41.1672	-124.8028	55.9	1858.5	0.0
9/2/2009	14:24:03	29	SP1_0165	41.1674	-124.8073	55.9	1853.9	0.0
9/2/2009	14:24:13	29	SP1_0166	41.1674	-124.8119	55.9	1851.2	0.0
9/2/2009	14:24:24	29	SP1_0167	41.1672	-124.8164	55.9	1844.8	0.0

9/2/2009	14:24:34	29	SP1_0168	41.1671	-124.8209	55.9	1840.7	0.0
9/2/2009	14:24:45	29	SP1_0169	41.1670	-124.8255	55.9	1836.1	0.0
9/2/2009	14:24:56	29	SP1_0170	41.1668	-124.8299	55.9	1832.9	0.0
9/2/2009	14:25:06	29	SP1_0171	41.1667	-124.8344	55.9	1828.3	0.0
9/2/2009	14:25:17	29	SP1_0172	41.1667	-124.8390	55.9	1827.0	0.0
9/2/2009	14:25:27	29	SP1_0173	41.1666	-124.8434	55.9	1828.3	0.0
9/2/2009	14:39:24	30	SP1_0176	40.9147	-124.8412	55.91	1863.1	0.0
9/2/2009	14:39:34	30	SP1_0177	40.9150	-124.8362	55.91	1855.3	0.0
9/2/2009	14:39:45	30	SP1_0178	40.9148	-124.8313	55.91	1873.6	0.0
9/2/2009	14:39:55	30	SP1_0179	40.9146	-124.8265	55.91	1867.7	0.0
9/2/2009	14:40:06	30	SP1_0180	40.9146	-124.8213	55.91	1869.0	0.0
9/2/2009	14:40:16	30	SP1_0181	40.9148	-124.8163	55.91	1867.7	0.0
9/2/2009	14:40:27	30	SP1_0182	40.9149	-124.8114	55.91	1870.4	0.0
9/2/2009	14:40:37	30	SP1_0183	40.9150	-124.8062	55.91	1873.6	0.0
9/2/2009	14:40:48	30	SP1_0184	40.9152	-124.8013	55.91	1871.8	0.0
9/2/2009	14:40:58	30	SP1_0185	40.9153	-124.7963	55.91	1878.2	0.0
9/2/2009	14:41:09	30	SP1_0186	40.9154	-124.7911	55.91	1878.2	0.0
9/2/2009	14:41:19	30	SP1_0187	40.9156	-124.7863	55.91	1888.7	0.0
9/2/2009	14:41:30	30	SP1_0188	40.9155	-124.7814	55.91	1888.7	0.0
9/2/2009	14:41:41	30	SP1_0189	40.9154	-124.7764	55.91	1897.4	0.0
9/2/2009	14:41:51	30	SP1_0190	40.9153	-124.7715	55.91	1892.8	0.0
9/2/2009	14:42:02	30	SP1_0191	40.9147	-124.7668	55.91	1896.0	0.0
9/2/2009	14:42:12	30	SP1_0192	40.9136	-124.7621	55.91	1899.2	0.0
9/2/2009	14:42:23	30	SP1_0193	40.9121	-124.7579	55.91	1900.6	0.0
9/2/2009	14:42:33	30	SP1_0194	40.9106	-124.7537	55.91	1905.2	0.0
9/2/2009	14:42:44	30	SP1_0195	40.9090	-124.7493	55.91	1902.0	0.0
9/2/2009	14:42:54	30	SP1_0196	40.9074	-124.7452	55.91	1905.2	0.0
9/2/2009	14:43:05	30	SP1_0197	40.9057	-124.7411	55.91	1902.0	0.0
9/2/2009	14:43:15	30	SP1_0198	40.9045	-124.7363	55.91	1886.9	0.0
9/2/2009	14:43:26	30	SP1_0199	40.9050	-124.7311	55.91	1906.5	0.0
9/2/2009	14:43:36	30	SP1_0200	40.9058	-124.7261	55.91	1892.8	0.0
9/2/2009	14:43:47	30	SP1_0201	40.9066	-124.7207	55.91	1902.0	0.0

9/2/2009	14:43:57	30	SP1_0202	40.9072	-124.7157	55.91	1897.4	0.0
9/2/2009	14:44:08	30	SP1_0203	40.9078	-124.7105	55.91	1902.0	0.0
9/2/2009	14:44:19	30	SP1_0204	40.9083	-124.7053	55.91	1903.3	0.0
9/2/2009	14:44:29	30	SP1_0205	40.9086	-124.7001	55.91	1907.9	32.4
9/2/2009	14:44:40	30	SP1_0206	40.9090	-124.6950	55.91	1906.5	19.2
9/2/2009	14:44:50	30	SP1_0207	40.9093	-124.6897	55.91	1907.9	25.2
9/2/2009	14:45:01	30	SP1_0208	40.9092	-124.6846	55.91	1907.9	0.0
9/2/2009	14:45:11	30	SP1_0209	40.9099	-124.6794	55.91	1912.5	10.1
9/2/2009	14:45:22	30	SP1_0210	40.9110	-124.6740	55.91	1917.0	10.5
9/2/2009	14:45:32	30	SP1_0211	40.9122	-124.6689	55.91	1917.0	9.3
9/2/2009	14:45:43	30	SP1_0212	40.9137	-124.6640	55.91	1918.4	18.3
9/2/2009	14:45:53	30	SP1_0213	40.9152	-124.6588	55.91	1917.0	56.9
9/2/2009	14:46:04	30	SP1_0214	40.9162	-124.6537	55.91	1913.8	20.0
9/2/2009	14:46:14	30	SP1_0215	40.9169	-124.6486	55.91	1911.1	21.1
9/2/2009	14:46:25	30	SP1_0216	40.9176	-124.6432	55.91	1911.1	0.0
9/2/2009	14:46:36	30	SP1_0217	40.9179	-124.6381	55.91	1909.7	0.0
9/2/2009	14:46:50	30	SP1_0218	40.9180	-124.6310	55.91	1902.0	0.0
9/2/2009	14:46:57	30	SP1_0219	40.9178	-124.6278	55.91	1905.2	13.3
9/2/2009	14:47:07	30	SP1_0220	40.9175	-124.6228	55.91	1899.2	0.0
9/2/2009	14:47:18	30	SP1_0221	40.9171	-124.6179	55.91	1902.0	0.0
9/2/2009	14:47:28	30	SP1_0222	40.9167	-124.6125	55.91	1885.5	0.0
9/2/2009	14:47:39	30	SP1_0223	40.9163	-124.6073	55.91	1878.2	0.0
9/2/2009	14:47:49	30	SP1_0224	40.9161	-124.6019	55.91	1865.8	0.0
9/2/2009	14:48:00	30	SP1_0225	40.9160	-124.5965	55.91	1878.2	0.0
9/2/2009	14:48:10	30	SP1_0226	40.9161	-124.5914	55.91	1876.3	0.0
9/2/2009	14:48:21	30	SP1_0227	40.9162	-124.5860	55.91	1876.3	0.0
9/2/2009	14:48:32	30	SP1_0228	40.9164	-124.5809	55.91	1876.3	0.0
9/2/2009	14:48:42	30	SP1_0229	40.9164	-124.5758	55.91	1876.3	0.0
9/2/2009	14:48:53	30	SP1_0230	40.9164	-124.5706	55.91	1878.2	0.0
9/2/2009	14:49:09	30	SP1_0231	40.9165	-124.5628	55.91	1869.0	0.0
9/2/2009	14:49:14	30	SP1_0232	40.9164	-124.5605	55.91	1867.7	0.0
9/2/2009	14:49:24	30	SP1_0233	40.9162	-124.5553	55.91	1865.8	0.0

9/2/2009	14:49:35	30	SP1_0234	40.9161	-124.5504	55.91	1863.1	0.0
9/2/2009	14:49:45	30	SP1_0235	40.9159	-124.5454	55.91	1863.1	0.0
9/2/2009	14:49:56	30	SP1_0236	40.9158	-124.5402	55.91	1863.1	0.0
9/2/2009	14:50:06	30	SP1_0237	40.9156	-124.5353	55.91	1863.1	0.0
9/2/2009	14:50:17	30	SP1_0238	40.9158	-124.5302	55.91	1861.7	0.0
9/2/2009	14:50:27	30	SP1_0239	40.9164	-124.5249	55.91	1857.1	0.0
9/2/2009	14:50:38	30	SP1_0240	40.9165	-124.5199	55.91	1858.5	0.0
9/2/2009	14:50:48	30	SP1_0241	40.9167	-124.5149	55.91	1857.1	0.0
9/2/2009	14:50:59	30	SP1_0242	40.9169	-124.5097	55.91	1858.5	0.0
9/2/2009	14:51:09	30	SP1_0243	40.9168	-124.5048	55.91	1857.1	0.0
9/2/2009	14:51:20	30	SP1_0244	40.9163	-124.5000	55.91	1857.1	0.0
9/2/2009	14:51:31	30	SP1_0245	40.9162	-124.4948	55.91	1851.2	0.0
9/2/2009	14:51:41	30	SP1_0246	40.9164	-124.4899	55.91	1858.5	0.0
9/2/2009	14:51:52	30	SP1_0247	40.9165	-124.4849	55.91	1852.6	0.0
9/2/2009	14:52:02	30	SP1_0248	40.9164	-124.4798	55.91	1852.6	0.0
9/2/2009	14:52:13	30	SP1_0249	40.9164	-124.4748	55.91	1853.9	0.0
9/2/2009	14:52:23	30	SP1_0250	40.9164	-124.4699	55.91	1848.0	0.0
9/2/2009	14:52:34	30	SP1_0251	40.9164	-124.4648	55.91	1843.4	0.0
9/2/2009	14:52:44	30	SP1_0252	40.9163	-124.4600	55.91	1843.4	0.0
9/2/2009	14:52:58	30	SP1_0253	40.9160	-124.4536	55.91	1842.1	0.0
9/2/2009	14:53:05	30	SP1_0254	40.9158	-124.4501	55.91	1844.8	0.0
9/2/2009	14:53:16	30	SP1_0255	40.9157	-124.4453	55.91	1842.1	0.0
9/2/2009	14:53:26	30	SP1_0256	40.9155	-124.4405	55.91	1840.7	0.0
9/2/2009	14:53:37	30	SP1_0257	40.9153	-124.4354	55.91	1840.7	0.0
9/2/2009	14:53:47	30	SP1_0258	40.9153	-124.4305	55.91	1836.1	0.0
9/2/2009	14:54:05	30	SP1_0259	40.9157	-124.4219	55.91	1831.5	0.0
9/2/2009	14:54:09	30	SP1_0260	40.9157	-124.4203	55.91	1830.2	0.0
9/2/2009	14:54:19	30	SP1_0261	40.9160	-124.4153	55.91	1825.6	0.0
9/2/2009	14:54:30	30	SP1_0262	40.9164	-124.4104	55.91	1830.2	0.0
9/2/2009	14:54:40	30	SP1_0263	40.9166	-124.4055	55.91	1830.2	0.0
9/2/2009	14:54:51	30	SP1_0264	40.9165	-124.4008	55.91	1830.2	0.0
9/2/2009	14:55:01	30	SP1_0265	40.9165	-124.3960	55.91	1831.5	0.0

9/2/2009	14:55:12	30	SP1_0266	40.9165	-124.3911	55.91	1832.9	0.0
9/2/2009	14:55:22	30	SP1_0267	40.9165	-124.3862	55.91	1830.2	0.0
9/2/2009	14:55:33	30	SP1_0268	40.9165	-124.3814	55.91	1828.3	0.0
9/2/2009	14:55:43	30	SP1_0269	40.9167	-124.3763	55.91	1827.0	0.0
9/2/2009	14:55:54	30	SP1_0270	40.9169	-124.3714	55.91	1827.0	0.0
9/2/2009	14:56:04	30	SP1_0271	40.9170	-124.3667	55.91	1831.5	0.0
9/2/2009	14:56:15	30	SP1_0272	40.9172	-124.3618	55.91	1830.2	0.0
9/2/2009	14:56:26	30	SP1_0273	40.9173	-124.3571	55.91	1827.0	0.0
9/2/2009	14:56:36	30	SP1_0274	40.9173	-124.3523	55.91	1828.3	0.0
9/2/2009	14:56:47	30	SP1_0275	40.9172	-124.3474	55.91	1825.6	0.0
9/2/2009	14:56:57	30	SP1_0276	40.9171	-124.3427	55.91	1828.3	0.0
9/2/2009	14:57:08	30	SP1_0277	40.9171	-124.3380	55.91	1828.3	0.0
9/2/2009	14:57:18	30	SP1_0278	40.9170	-124.3331	55.91	1827.0	0.0
9/2/2009	14:57:29	30	SP1_0279	40.9169	-124.3283	55.91	1825.6	0.0
9/2/2009	14:57:39	30	SP1_0280	40.9167	-124.3236	55.91	1825.6	0.0
9/2/2009	14:57:50	30	SP1_0281	40.9164	-124.3187	55.91	1836.1	0.0
9/2/2009	14:58:00	30	SP1_0282	40.9164	-124.3139	55.91	1831.5	0.0
9/2/2009	14:58:11	30	SP1_0283	40.9163	-124.3092	55.91	1831.5	0.0
9/2/2009	14:58:21	30	SP1_0284	40.9162	-124.3042	55.91	1831.5	0.0
9/2/2009	14:58:32	30	SP1_0285	40.9162	-124.2994	55.91	1831.5	0.0
9/2/2009	14:58:42	30	SP1_0286	40.9163	-124.2947	55.91	1837.5	0.0
9/2/2009	14:58:53	30	SP1_0287	40.9160	-124.2899	55.91	1831.5	0.0
9/2/2009	14:59:04	30	SP1_0288	40.9160	-124.2852	55.91	1836.1	0.0
9/2/2009	14:59:14	30	SP1_0289	40.9161	-124.2805	55.91	1834.3	0.0
9/2/2009	14:59:25	30	SP1_0290	40.9163	-124.2756	55.91	1830.2	0.0
9/2/2009	14:59:35	30	SP1_0291	40.9167	-124.2708	55.91	1832.9	0.0
9/2/2009	14:59:46	30	SP1_0292	40.9170	-124.2661	55.91	1830.2	0.0
9/2/2009	14:59:56	30	SP1_0293	40.9170	-124.2613	55.91	1828.3	0.0
9/2/2009	15:00:07	30	SP1_0294	40.9171	-124.2567	55.91	1827.0	0.0
9/2/2009	15:00:17	30	SP1_0295	40.9173	-124.2519	55.91	1819.7	0.0
9/2/2009	15:00:28	30	SP1_0296	40.9179	-124.2470	55.91	1824.2	0.0
9/2/2009	15:00:38	30	SP1_0297	40.9179	-124.2424	55.91	1824.2	0.0

9/2/2009	15:00:49	30	SP1_0298	40.9174	-124.2378	55.91	1825.6	0.0
9/2/2009	15:00:59	30	SP1_0299	40.9169	-124.2331	55.91	1831.5	0.0
9/2/2009	15:01:10	30	SP1_0300	40.9164	-124.2286	55.91	1834.3	0.0
9/2/2009	15:01:20	30	SP1_0301	40.9163	-124.2239	55.91	1827.0	0.0
9/2/2009	15:01:31	30	SP1_0302	40.9164	-124.2190	55.91	1821.0	0.0
9/2/2009	15:01:42	30	SP1_0303	40.9164	-124.2142	55.91	1816.5	0.0
9/2/2009	15:01:52	30	SP1_0304	40.9162	-124.2095	55.91	1816.5	0.0
9/2/2009	15:02:03	30	SP1_0305	40.9159	-124.2046	55.91	1810.5	0.0
9/2/2009	15:02:13	30	SP1_0306	40.9155	-124.2000	55.91	1817.8	0.0
9/2/2009	15:02:24	30	SP1_0307	40.9153	-124.1953	55.91	1810.5	0.0
9/2/2009	15:02:34	30	SP1_0308	40.9154	-124.1903	55.91	1805.9	0.0
9/2/2009	15:02:45	30	SP1_0309	40.9154	-124.1855	55.91	1804.6	0.0
9/2/2009	15:02:55	30	SP1_0310	40.9154	-124.1808	55.91	1803.2	0.0
9/2/2009	15:03:06	30	SP1_0311	40.9154	-124.1758	55.91	1803.2	0.0
9/2/2009	15:23:12	31	SP1_0327	40.6701	-124.3227	56.03	1828.3	0.0
9/2/2009	15:23:23	31	SP1_0328	40.6698	-124.3269	56.03	1828.3	0.0
9/2/2009	15:23:33	31	SP1_0329	40.6696	-124.3313	56.03	1822.4	0.0
9/2/2009	15:23:44	31	SP1_0330	40.6696	-124.3356	56.03	1821.0	0.0
9/2/2009	15:23:54	31	SP1_0331	40.6698	-124.3400	56.03	1816.5	0.0
9/2/2009	15:24:05	31	SP1_0332	40.6701	-124.3445	56.03	1810.5	0.0
9/2/2009	15:24:15	31	SP1_0333	40.6701	-124.3488	56.03	1807.3	0.0
9/2/2009	15:24:26	31	SP1_0334	40.6699	-124.3530	56.03	1800.0	0.0
9/2/2009	15:24:37	31	SP1_0335	40.6698	-124.3574	56.03	1796.8	0.0
9/2/2009	15:24:47	31	SP1_0336	40.6697	-124.3616	56.03	1792.7	0.0
9/2/2009	15:24:58	31	SP1_0337	40.6695	-124.3658	56.03	1786.3	0.0
9/2/2009	15:25:08	31	SP1_0338	40.6693	-124.3702	56.03	1789.5	0.0
9/2/2009	15:25:19	31	SP1_0339	40.6691	-124.3743	56.03	1786.3	0.0
9/2/2009	15:25:29	31	SP1_0340	40.6691	-124.3784	56.03	1795.4	0.0
9/2/2009	15:25:40	31	SP1_0341	40.6690	-124.3828	56.03	1794.1	0.0
9/2/2009	15:25:50	31	SP1_0342	40.6691	-124.3869	56.03	1800.0	0.0
9/2/2009	15:26:01	31	SP1_0343	40.6692	-124.3911	56.03	1800.0	0.0
9/2/2009	15:26:11	31	SP1_0344	40.6693	-124.3955	56.03	1807.3	0.0

9/2/2009	15:26:22	31	SP1_0345	40.6692	-124.3997	56.03	1811.9	0.0
9/2/2009	15:26:32	31	SP1_0346	40.6688	-124.4038	56.03	1819.7	0.0
9/2/2009	15:26:43	31	SP1_0347	40.6681	-124.4079	56.03	1819.7	0.0
9/2/2009	15:26:53	31	SP1_0348	40.6674	-124.4118	56.03	1822.4	0.0
9/2/2009	15:27:04	31	SP1_0349	40.6666	-124.4159	56.03	1824.2	0.0
9/2/2009	15:27:15	31	SP1_0350	40.6658	-124.4201	56.03	1821.0	0.0
9/2/2009	15:27:25	31	SP1_0351	40.6651	-124.4243	56.03	1822.4	0.0
9/2/2009	15:27:36	31	SP1_0352	40.6648	-124.4285	56.03	1824.2	0.0
9/2/2009	15:27:46	31	SP1_0353	40.6649	-124.4330	56.03	1827.0	0.0
9/2/2009	15:27:57	31	SP1_0354	40.6652	-124.4376	56.03	1836.1	0.0
9/2/2009	15:28:07	31	SP1_0355	40.6654	-124.4419	56.03	1840.7	0.0
9/2/2009	15:28:18	31	SP1_0356	40.6657	-124.4462	56.03	1848.0	0.0
9/2/2009	15:28:28	31	SP1_0357	40.6656	-124.4506	56.03	1853.9	0.0
9/2/2009	15:28:39	31	SP1_0358	40.6654	-124.4547	56.03	1863.1	0.0
9/2/2009	15:28:49	31	SP1_0359	40.6653	-124.4588	56.03	1859.9	0.0
9/2/2009	15:29:00	31	SP1_0360	40.6652	-124.4631	56.03	1861.7	0.0
9/2/2009	15:29:10	31	SP1_0361	40.6655	-124.4673	56.03	1859.9	0.0
9/2/2009	15:29:21	31	SP1_0362	40.6657	-124.4715	56.03	1867.7	0.0
9/2/2009	15:29:31	31	SP1_0363	40.6657	-124.4757	56.03	1865.8	0.0
9/2/2009	15:29:42	31	SP1_0364	40.6656	-124.4798	56.03	1867.7	0.0
9/2/2009	15:29:52	31	SP1_0365	40.6655	-124.4839	56.03	1865.8	0.0
9/2/2009	15:30:03	31	SP1_0366	40.6652	-124.4882	56.03	1861.7	0.0
9/2/2009	15:30:14	31	SP1_0367	40.6648	-124.4923	56.03	1861.7	0.0
9/2/2009	15:30:24	31	SP1_0368	40.6646	-124.4965	56.03	1858.5	0.0
9/2/2009	15:30:35	31	SP1_0369	40.6647	-124.5010	56.03	1859.9	0.0
9/2/2009	15:30:45	31	SP1_0370	40.6650	-124.5053	56.03	1855.3	0.0
9/2/2009	15:30:56	31	SP1_0371	40.6655	-124.5096	56.03	1857.1	0.0
9/2/2009	15:31:06	31	SP1_0372	40.6657	-124.5141	56.03	1855.3	0.0
9/2/2009	15:31:17	31	SP1_0373	40.6657	-124.5183	56.03	1851.2	0.0
9/2/2009	15:31:27	31	SP1_0374	40.6658	-124.5225	56.03	1855.3	0.0
9/2/2009	15:31:38	31	SP1_0375	40.6659	-124.5269	56.03	1857.1	0.0
9/2/2009	15:31:48	31	SP1_0376	40.6658	-124.5310	56.03	1857.1	0.0

9/2/2009	15:31:59	31	SP1_0377	40.6658	-124.5352	56.03	1857.1	0.0
9/2/2009	15:32:09	31	SP1_0378	40.6658	-124.5395	56.03	1857.1	0.0
9/2/2009	15:32:20	31	SP1_0379	40.6658	-124.5437	56.03	1853.9	0.0
9/2/2009	15:32:30	31	SP1_0380	40.6658	-124.5479	56.03	1857.1	0.0
9/2/2009	15:32:41	31	SP1_0381	40.6656	-124.5522	56.03	1857.1	0.0
9/2/2009	15:32:51	31	SP1_0382	40.6652	-124.5563	56.03	1859.9	0.0
9/2/2009	15:33:02	31	SP1_0383	40.6643	-124.5602	56.03	1849.4	0.0
9/2/2009	15:33:13	31	SP1_0384	40.6640	-124.5645	56.03	1857.1	0.0
9/2/2009	15:33:23	31	SP1_0385	40.6641	-124.5688	56.03	1853.9	0.0
9/2/2009	15:33:34	31	SP1_0386	40.6640	-124.5730	56.03	1858.5	0.0
9/2/2009	15:33:44	31	SP1_0387	40.6639	-124.5774	56.03	1855.3	0.0
9/2/2009	15:33:55	31	SP1_0388	40.6640	-124.5818	56.03	1852.6	0.0
9/2/2009	15:34:05	31	SP1_0389	40.6645	-124.5861	56.03	1853.9	0.0
9/2/2009	15:34:16	31	SP1_0390	40.6651	-124.5906	56.03	1852.6	0.0
9/2/2009	15:34:26	31	SP1_0391	40.6659	-124.5950	56.03	1852.6	0.0
9/2/2009	15:34:37	31	SP1_0392	40.6668	-124.5994	56.03	1849.4	0.0
9/2/2009	15:34:47	31	SP1_0393	40.6672	-124.6041	56.03	1851.2	0.0
9/2/2009	15:34:58	31	SP1_0394	40.6670	-124.6085	56.03	1849.4	0.0
9/2/2009	15:35:08	31	SP1_0395	40.6667	-124.6129	56.03	1848.0	0.0
9/2/2009	15:35:19	31	SP1_0396	40.6667	-124.6175	56.03	1848.0	0.0
9/2/2009	15:35:29	31	SP1_0397	40.6668	-124.6219	56.03	1849.4	0.0
9/2/2009	15:35:40	31	SP1_0398	40.6669	-124.6263	56.03	1851.2	0.0
9/2/2009	15:35:51	31	SP1_0399	40.6670	-124.6309	56.03	1853.9	0.0
9/2/2009	15:36:01	31	SP1_0400	40.6669	-124.6353	56.03	1848.0	0.0
9/2/2009	15:36:12	31	SP1_0401	40.6669	-124.6397	56.03	1851.2	0.0
9/2/2009	15:36:22	31	SP1_0402	40.6669	-124.6443	56.03	1848.0	0.0
9/2/2009	15:36:33	31	SP1_0403	40.6671	-124.6487	56.03	1846.6	0.0
9/2/2009	15:36:43	31	SP1_0404	40.6675	-124.6532	56.03	1844.8	0.0
9/2/2009	15:36:54	31	SP1_0405	40.6679	-124.6578	56.03	1843.4	0.0
9/2/2009	15:37:04	31	SP1_0406	40.6678	-124.6621	56.03	1844.8	0.0
9/2/2009	15:37:15	31	SP1_0407	40.6678	-124.6665	56.03	1849.4	0.0
9/2/2009	15:37:25	31	SP1_0408	40.6678	-124.6710	56.03	1849.4	0.0

9/2/2009	15:37:36	31	SP1_0409	40.6677	-124.6753	56.03	1849.4	0.0
9/2/2009	15:37:46	31	SP1_0410	40.6675	-124.6796	56.03	1844.8	0.0
9/2/2009	15:37:57	31	SP1_0411	40.6673	-124.6841	56.03	1838.9	0.0
9/2/2009	15:38:07	31	SP1_0412	40.6671	-124.6885	56.03	1831.5	0.0
9/2/2009	15:38:18	31	SP1_0413	40.6668	-124.6928	56.03	1827.0	0.0
9/2/2009	15:38:29	31	SP1_0414	40.6666	-124.6973	56.03	1827.0	0.0
9/2/2009	15:38:39	31	SP1_0415	40.6663	-124.7015	56.03	1832.9	0.0
9/2/2009	15:38:50	31	SP1_0416	40.6653	-124.7055	56.03	1828.3	0.0
9/2/2009	15:39:00	31	SP1_0417	40.6630	-124.7084	56.03	1825.6	0.0
9/2/2009	15:39:11	31	SP1_0418	40.6615	-124.7121	56.03	1813.7	0.0
9/2/2009	15:39:21	31	SP1_0419	40.6623	-124.7163	56.03	1817.8	0.0
9/2/2009	15:39:32	31	SP1_0420	40.6637	-124.7206	56.03	1810.5	0.0
9/2/2009	15:39:42	31	SP1_0421	40.6648	-124.7247	56.03	1815.1	0.0
9/2/2009	15:39:53	31	SP1_0422	40.6654	-124.7290	56.03	1809.1	0.0
9/2/2009	15:40:03	31	SP1_0423	40.6655	-124.7335	56.03	1817.8	0.0
9/2/2009	15:40:14	31	SP1_0424	40.6653	-124.7377	56.03	1816.5	0.0
9/2/2009	15:40:24	31	SP1_0425	40.6650	-124.7418	56.03	1819.7	0.0
9/2/2009	15:40:35	31	SP1_0426	40.6649	-124.7462	56.03	1822.4	0.0
9/2/2009	15:40:45	31	SP1_0427	40.6647	-124.7504	56.03	1828.3	0.0
9/2/2009	15:40:56	31	SP1_0428	40.6642	-124.7544	56.03	1827.0	0.0
9/2/2009	15:41:06	31	SP1_0429	40.6640	-124.7586	56.03	1827.0	0.0
9/2/2009	15:41:17	31	SP1_0430	40.6643	-124.7629	56.03	1827.0	0.0
9/2/2009	15:41:28	31	SP1_0431	40.6647	-124.7671	56.03	1831.5	0.0
9/2/2009	15:41:38	31	SP1_0432	40.6650	-124.7712	56.03	1830.2	0.0
9/2/2009	15:41:49	31	SP1_0433	40.6651	-124.7756	56.03	1831.5	0.0
9/2/2009	15:41:59	31	SP1_0434	40.6651	-124.7798	56.03	1832.9	0.0
9/2/2009	15:42:10	31	SP1_0435	40.6650	-124.7840	56.03	1837.5	0.0
9/2/2009	15:42:20	31	SP1_0436	40.6649	-124.7883	56.03	1843.4	0.0
9/2/2009	15:42:31	31	SP1_0437	40.6650	-124.7926	56.03	1843.4	0.0
9/2/2009	15:42:41	31	SP1_0438	40.6649	-124.7967	56.03	1846.6	0.0
9/2/2009	15:42:52	31	SP1_0439	40.6648	-124.8011	56.03	1844.8	0.0
9/2/2009	15:43:02	31	SP1_0440	40.6646	-124.8052	56.03	1852.6	0.0

9/2/2009	15:43:13	31	SP1_0441	40.6644	-124.8093	56.03	1857.1	0.0
9/2/2009	15:43:23	31	SP1_0442	40.6641	-124.8136	56.03	1859.9	0.0
9/2/2009	15:43:37	31	SP1_0443	40.6636	-124.8190	56.03	1858.5	0.0
9/2/2009	15:43:44	31	SP1_0444	40.6633	-124.8218	56.03	1863.1	0.0
9/2/2009	15:43:55	31	SP1_0445	40.6631	-124.8260	56.03	1863.1	0.0
9/2/2009	15:44:06	31	SP1_0446	40.6630	-124.8302	56.03	1857.1	0.0
9/2/2009	15:44:16	31	SP1_0447	40.6630	-124.8344	56.03	1853.9	0.0
9/2/2009	15:44:27	31	SP1_0448	40.6629	-124.8388	56.03	1849.4	0.0
9/2/2009	15:44:41	31	SP1_0449	40.6628	-124.8447	56.03	1849.4	0.0
9/2/2009	15:44:48	31	SP1_0450	40.6628	-124.8473	56.03	1851.2	0.0
9/2/2009	15:44:58	31	SP1_0451	40.6629	-124.8517	56.03	1848.0	0.0
9/2/2009	15:45:09	31	SP1_0452	40.6630	-124.8559	56.03	1849.4	0.0
9/2/2009	15:45:19	31	SP1_0453	40.6632	-124.8602	56.03	1848.0	0.0
9/2/2009	15:45:30	31	SP1_0454	40.6631	-124.8646	56.03	1849.4	0.0
9/2/2009	15:45:40	31	SP1_0455	40.6633	-124.8688	56.03	1848.0	0.0
9/2/2009	15:45:51	31	SP1_0456	40.6635	-124.8731	56.03	1848.0	0.0
9/2/2009	15:46:01	31	SP1_0457	40.6633	-124.8775	56.03	1848.0	0.0
9/2/2009	15:46:12	31	SP1_0458	40.6632	-124.8817	56.03	1848.0	0.0
9/2/2009	15:46:22	31	SP1_0459	40.6632	-124.8859	56.03	1848.0	0.0
9/2/2009	15:46:33	31	SP1_0460	40.6638	-124.8903	56.03	1846.6	0.0
9/2/2009	15:46:43	31	SP1_0461	40.6643	-124.8945	56.03	1842.1	0.0
9/2/2009	15:46:54	31	SP1_0462	40.6648	-124.8988	56.03	1840.7	0.0
9/2/2009	15:47:05	31	SP1_0463	40.6650	-124.9032	56.03	1831.5	0.0
9/2/2009	15:47:15	31	SP1_0464	40.6650	-124.9075	56.03	1838.9	0.0
9/2/2009	15:47:26	31	SP1_0465	40.6649	-124.9117	56.03	1834.3	0.0
9/2/2009	15:47:36	31	SP1_0466	40.6645	-124.9161	56.03	1837.5	0.0
9/2/2009	15:47:47	31	SP1_0467	40.6635	-124.9200	56.03	1840.7	0.0
9/2/2009	15:47:57	31	SP1_0468	40.6636	-124.9241	56.03	1844.8	0.0
9/2/2009	15:48:08	31	SP1_0469	40.6643	-124.9285	56.03	1838.9	0.0
9/2/2009	15:48:18	31	SP1_0470	40.6650	-124.9326	56.03	1838.9	0.0
9/2/2009	15:48:29	31	SP1_0471	40.6657	-124.9368	56.03	1838.9	0.0
9/2/2009	15:48:39	31	SP1_0472	40.6663	-124.9411	56.03	1842.1	0.0

9/2/2009	15:48:50	31	SP1_0473	40.6667	-124.9453	56.03	1849.4	0.0
9/2/2009	15:49:00	31	SP1_0474	40.6670	-124.9495	56.03	1848.0	0.0
9/2/2009	15:49:11	31	SP1_0475	40.6670	-124.9538	56.03	1855.3	0.0
9/2/2009	15:49:21	31	SP1_0476	40.6671	-124.9579	56.03	1857.1	0.0
9/2/2009	15:49:32	31	SP1_0477	40.6672	-124.9621	56.03	1858.5	0.0
9/2/2009	15:49:43	31	SP1_0478	40.6670	-124.9664	56.03	1859.9	0.0
9/2/2009	15:49:53	31	SP1_0479	40.6669	-124.9705	56.03	1859.9	0.0
9/2/2009	15:50:04	31	SP1_0480	40.6669	-124.9746	56.03	1861.7	0.0
9/2/2009	15:50:14	31	SP1_0481	40.6666	-124.9789	56.03	1861.7	0.0
9/2/2009	15:50:25	31	SP1_0482	40.6665	-124.9829	56.03	1865.8	0.0
9/2/2009	15:50:35	31	SP1_0483	40.6666	-124.9870	56.03	1865.8	0.0
9/2/2009	16:06:51	32	SP1_0487	40.4168	-125.0706	56.15	1903.3	0.0
9/2/2009	16:07:01	32	SP1_0488	40.4170	-125.0655	56.15	1906.5	0.0
9/2/2009	16:07:12	32	SP1_0489	40.4172	-125.0603	56.15	1906.5	0.0
9/2/2009	16:07:22	32	SP1_0490	40.4175	-125.0550	56.15	1891.4	0.0
9/2/2009	16:07:33	32	SP1_0491	40.4178	-125.0498	56.15	1890.1	0.0
9/2/2009	16:07:43	32	SP1_0492	40.4178	-125.0444	56.15	1886.9	0.0
9/2/2009	16:07:54	32	SP1_0493	40.4179	-125.0393	56.15	1888.7	0.0
9/2/2009	16:08:04	32	SP1_0494	40.4179	-125.0341	56.15	1882.3	0.0
9/2/2009	16:08:15	32	SP1_0495	40.4181	-125.0288	56.15	1878.2	0.0
9/2/2009	16:08:25	32	SP1_0496	40.4182	-125.0238	56.15	1873.6	0.0
9/2/2009	16:08:36	32	SP1_0497	40.4179	-125.0187	56.15	1867.7	0.0
9/2/2009	16:08:47	32	SP1_0498	40.4176	-125.0134	56.15	1861.7	0.0
9/2/2009	16:08:57	32	SP1_0499	40.4172	-125.0083	56.15	1853.9	0.0
9/2/2009	16:09:08	32	SP1_0500	40.4172	-125.0032	56.15	1849.4	0.0
9/2/2009	16:09:18	32	SP1_0501	40.4172	-124.9979	56.15	1844.8	0.0
9/2/2009	16:09:29	32	SP1_0502	40.4173	-124.9928	56.15	1838.9	0.0
9/2/2009	16:09:39	32	SP1_0503	40.4174	-124.9876	56.15	1840.7	0.0
9/2/2009	16:09:50	32	SP1_0504	40.4175	-124.9824	56.15	1842.1	0.0
9/2/2009	16:10:00	32	SP1_0505	40.4176	-124.9773	56.15	1837.5	0.0
9/2/2009	16:10:11	32	SP1_0506	40.4176	-124.9723	56.15	1836.1	0.0
9/2/2009	16:10:21	32	SP1_0507	40.4176	-124.9670	56.15	1837.5	0.0

9/2/2009	16:10:32	32	SP1_0508	40.4175	-124.9620	56.15	1838.9	0.0
9/2/2009	16:10:42	32	SP1_0509	40.4175	-124.9570	56.15	1838.9	0.0
9/2/2009	16:10:53	32	SP1_0510	40.4175	-124.9518	56.15	1840.7	0.0
9/2/2009	16:11:03	32	SP1_0511	40.4176	-124.9468	56.15	1840.7	0.0
9/2/2009	16:11:14	32	SP1_0512	40.4178	-124.9418	56.15	1838.9	0.0
9/2/2009	16:11:25	32	SP1_0513	40.4180	-124.9366	56.15	1837.5	0.0
9/2/2009	16:11:35	32	SP1_0514	40.4182	-124.9317	56.15	1837.5	0.0
9/2/2009	16:11:46	32	SP1_0515	40.4184	-124.9268	56.15	1843.4	0.0
9/2/2009	16:11:56	32	SP1_0516	40.4188	-124.9218	56.15	1840.7	0.0
9/2/2009	16:12:07	32	SP1_0517	40.4193	-124.9169	56.15	1837.5	0.0
9/2/2009	16:12:17	32	SP1_0518	40.4197	-124.9119	56.15	1830.2	0.0
9/2/2009	16:12:28	32	SP1_0519	40.4200	-124.9068	56.15	1837.5	0.0
9/2/2009	16:12:38	32	SP1_0520	40.4203	-124.9020	56.15	1832.9	0.0
9/2/2009	16:12:49	32	SP1_0521	40.4203	-124.8971	56.15	1831.5	0.0
9/2/2009	16:12:59	32	SP1_0522	40.4200	-124.8921	56.15	1831.5	0.0
9/2/2009	16:13:10	32	SP1_0523	40.4199	-124.8872	56.15	1830.2	0.0
9/2/2009	16:13:20	32	SP1_0524	40.4199	-124.8823	56.15	1828.3	0.0
9/2/2009	16:13:31	32	SP1_0525	40.4200	-124.8771	56.15	1827.0	0.0
9/2/2009	16:13:41	32	SP1_0526	40.4202	-124.8722	56.15	1822.4	0.0
9/2/2009	16:13:52	32	SP1_0527	40.4206	-124.8672	56.15	1822.4	0.0
9/2/2009	16:14:03	32	SP1_0528	40.4212	-124.8621	56.15	1822.4	0.0
9/2/2009	16:14:13	32	SP1_0529	40.4217	-124.8571	56.15	1822.4	0.0
9/2/2009	16:14:24	32	SP1_0530	40.4223	-124.8521	56.15	1821.0	0.0
9/2/2009	16:14:34	32	SP1_0531	40.4223	-124.8471	56.15	1822.4	0.0
9/2/2009	16:14:45	32	SP1_0532	40.4221	-124.8419	56.15	1822.4	0.0
9/2/2009	16:14:55	32	SP1_0533	40.4220	-124.8368	56.15	1817.8	0.0
9/2/2009	16:15:06	32	SP1_0534	40.4220	-124.8317	56.15	1822.4	0.0
9/2/2009	16:15:16	32	SP1_0535	40.4219	-124.8264	56.15	1819.7	0.0
9/2/2009	16:15:27	32	SP1_0536	40.4219	-124.8212	56.15	1822.4	0.0
9/2/2009	16:15:37	32	SP1_0537	40.4219	-124.8161	56.15	1825.6	0.0
9/2/2009	16:15:48	32	SP1_0538	40.4218	-124.8108	56.15	1827.0	0.0
9/2/2009	16:15:58	32	SP1_0539	40.4217	-124.8056	56.15	1827.0	0.0

9/2/2009	16:16:09	32	SP1_0540	40.4216	-124.8005	56.15	1831.5	0.0
9/2/2009	16:16:19	32	SP1_0541	40.4216	-124.7952	56.15	1834.3	0.0
9/2/2009	16:16:30	32	SP1_0542	40.4216	-124.7900	56.15	1837.5	0.0
9/2/2009	16:16:40	32	SP1_0543	40.4218	-124.7849	56.15	1838.9	0.0
9/2/2009	16:16:51	32	SP1_0544	40.4220	-124.7796	56.15	1846.6	0.0
9/2/2009	16:17:02	32	SP1_0545	40.4224	-124.7745	56.15	1851.2	0.0
9/2/2009	16:17:12	32	SP1_0546	40.4229	-124.7695	56.15	1857.1	0.0
9/2/2009	16:17:23	32	SP1_0547	40.4234	-124.7643	56.15	1863.1	0.0
9/2/2009	16:17:33	32	SP1_0548	40.4230	-124.7593	56.15	1861.7	0.0
9/2/2009	16:17:44	32	SP1_0549	40.4226	-124.7543	56.15	1861.7	0.0
9/2/2009	16:17:54	32	SP1_0550	40.4225	-124.7490	56.15	1865.8	0.0
9/2/2009	16:18:05	32	SP1_0551	40.4223	-124.7440	56.15	1870.4	0.0
9/2/2009	16:18:15	32	SP1_0552	40.4221	-124.7389	56.15	1875.0	0.0
9/2/2009	16:18:26	32	SP1_0553	40.4219	-124.7337	56.15	1878.2	0.0
9/2/2009	16:18:36	32	SP1_0554	40.4215	-124.7288	56.15	1882.3	0.0
9/2/2009	16:18:47	32	SP1_0555	40.4213	-124.7238	56.15	1885.5	0.0
9/2/2009	16:18:57	32	SP1_0556	40.4210	-124.7187	56.15	1890.1	0.0
9/2/2009	16:19:08	32	SP1_0557	40.4207	-124.7138	56.15	1892.8	0.0
9/2/2009	16:19:18	32	SP1_0558	40.4203	-124.7089	56.15	1899.2	0.0
9/2/2009	16:19:29	32	SP1_0559	40.4202	-124.7036	56.15	1897.4	0.0
9/2/2009	16:19:39	32	SP1_0560	40.4202	-124.6986	56.15	1899.2	0.0
9/2/2009	16:19:50	32	SP1_0561	40.4203	-124.6935	56.15	1903.3	0.0
9/2/2009	16:20:01	32	SP1_0562	40.4202	-124.6882	56.15	1906.5	0.0
9/2/2009	16:20:11	32	SP1_0563	40.4199	-124.6832	56.15	1915.7	0.0
9/2/2009	16:20:22	32	SP1_0564	40.4196	-124.6783	56.15	1923.0	0.0
9/2/2009	16:20:32	32	SP1_0565	40.4194	-124.6732	56.15	1926.2	0.0
9/2/2009	16:20:43	32	SP1_0566	40.4192	-124.6682	56.15	1928.9	0.0
9/2/2009	16:20:53	32	SP1_0567	40.4190	-124.6632	56.15	1934.9	0.0
9/2/2009	16:21:04	32	SP1_0568	40.4187	-124.6582	56.15	1942.6	0.0
9/2/2009	16:21:14	32	SP1_0569	40.4186	-124.6533	56.15	1948.6	0.0
9/2/2009	16:21:25	32	SP1_0570	40.4187	-124.6483	56.15	1945.4	0.0
9/2/2009	16:21:35	32	SP1_0571	40.4184	-124.6432	56.15	1947.2	0.0

9/2/2009	16:21:46	32	SP1_0572	40.4181	-124.6382	56.15	1932.1	0.0
9/2/2009	16:21:56	32	SP1_0573	40.4180	-124.6328	56.15	1918.4	0.0
9/2/2009	16:22:07	32	SP1_0574	40.4181	-124.6272	56.15	1913.8	0.0
9/2/2009	16:22:17	32	SP1_0575	40.4183	-124.6218	56.15	1905.2	0.0
9/2/2009	16:22:28	32	SP1_0576	40.4185	-124.6165	56.15	1900.6	0.0
9/2/2009	16:22:39	32	SP1_0577	40.4186	-124.6111	56.15	1896.0	0.0
9/2/2009	16:22:49	32	SP1_0578	40.4186	-124.6058	56.15	1891.4	0.0
9/2/2009	16:23:00	32	SP1_0579	40.4185	-124.6006	56.15	1890.1	0.0
9/2/2009	16:23:10	32	SP1_0580	40.4185	-124.5952	56.15	1885.5	0.0
9/2/2009	16:23:21	32	SP1_0581	40.4186	-124.5899	56.15	1875.0	0.0
9/2/2009	16:23:31	32	SP1_0582	40.4186	-124.5846	56.15	1865.8	0.0
9/2/2009	16:23:42	32	SP1_0583	40.4187	-124.5791	56.15	1859.9	0.0
9/2/2009	16:23:52	32	SP1_0584	40.4188	-124.5738	56.15	1855.3	0.0
9/2/2009	16:24:03	32	SP1_0585	40.4187	-124.5685	56.15	1844.8	0.0
9/2/2009	16:24:13	32	SP1_0586	40.4187	-124.5631	56.15	1843.4	0.0
9/2/2009	16:24:24	32	SP1_0587	40.4188	-124.5579	56.15	1840.7	0.0
9/2/2009	16:24:34	32	SP1_0588	40.4189	-124.5527	56.15	1831.5	0.0
9/2/2009	16:24:45	32	SP1_0589	40.4189	-124.5473	56.15	1827.0	0.0
9/2/2009	16:24:55	32	SP1_0590	40.4189	-124.5420	56.15	1824.2	0.0
9/2/2009	16:25:06	32	SP1_0591	40.4188	-124.5370	56.15	1830.2	0.0
9/2/2009	16:25:17	32	SP1_0592	40.4186	-124.5317	56.15	1819.7	0.0
9/2/2009	16:25:27	32	SP1_0593	40.4186	-124.5266	56.15	1822.4	0.0
9/2/2009	16:25:38	32	SP1_0594	40.4188	-124.5215	56.15	1819.7	0.0
9/2/2009	16:25:48	32	SP1_0595	40.4191	-124.5164	56.15	1816.5	0.0
9/2/2009	16:25:59	32	SP1_0596	40.4193	-124.5111	56.15	1821.0	0.0
9/2/2009	16:26:09	32	SP1_0597	40.4195	-124.5062	56.15	1827.0	0.0
9/2/2009	16:26:20	32	SP1_0598	40.4197	-124.5013	56.15	1837.5	0.0
9/2/2009	16:26:30	32	SP1_0599	40.4199	-124.4962	56.15	1838.9	0.0
9/2/2009	16:26:41	32	SP1_0600	40.4201	-124.4913	56.15	1843.4	0.0
9/2/2009	16:26:51	32	SP1_0601	40.4204	-124.4864	56.15	1843.4	0.0
9/2/2009	16:27:02	32	SP1_0602	40.4209	-124.4812	56.15	1849.4	0.0
9/2/2009	16:27:12	32	SP1_0603	40.4214	-124.4763	56.15	1851.2	0.0

9/2/2009	16:27:23	32	SP1_0604	40.4217	-124.4714	56.15	1855.3	0.0
9/2/2009	16:27:33	32	SP1_0605	40.4218	-124.4663	56.15	1857.1	0.0
9/2/2009	16:27:44	32	SP1_0606	40.4219	-124.4614	56.15	1861.7	0.0
9/2/2009	16:27:54	32	SP1_0607	40.4220	-124.4565	56.15	1861.7	0.0
9/2/2009	16:28:05	32	SP1_0608	40.4219	-124.4513	56.15	1863.1	0.0
9/2/2009	16:28:16	32	SP1_0609	40.4216	-124.4464	56.15	1864.5	0.0
9/2/2009	16:28:26	32	SP1_0610	40.4214	-124.4414	56.15	1861.7	0.0
9/2/2009	16:28:37	32	SP1_0611	40.4213	-124.4362	56.15	1859.9	0.0
9/2/2009	16:28:47	32	SP1_0612	40.4212	-124.4312	56.15	1865.8	0.0
9/2/2009	16:28:58	32	SP1_0613	40.4210	-124.4264	56.15	1873.6	0.0
9/2/2009	16:29:08	32	SP1_0614	40.4210	-124.4214	56.15	1879.5	0.0
9/2/2009	16:29:19	32	SP1_0615	40.4212	-124.4167	56.15	1886.9	0.0
9/2/2009	16:29:29	32	SP1_0616	40.4212	-124.4121	56.15	1896.0	0.0
9/2/2009	16:29:40	32	SP1_0617	40.4213	-124.4073	56.15	1900.6	0.0
9/3/2009	12:51:49	33	SP3_0015	40.1685	-124.4484	17.46	1842.1	0.0
9/3/2009	12:51:58	33	SP3_0016	40.1675	-124.4428	17.46	1846.6	0.0
9/3/2009	12:52:06	33	SP3_0017	40.1666	-124.4370	17.46	1844.8	0.0
9/3/2009	12:52:14	33	SP3_0018	40.1659	-124.4315	17.46	1842.1	0.0
9/3/2009	12:52:22	33	SP3_0019	40.1655	-124.4257	17.46	1838.9	0.0
9/3/2009	12:52:31	33	SP3_0020	40.1652	-124.4199	17.46	1836.1	0.0
9/3/2009	12:52:39	33	SP3_0021	40.1649	-124.4143	17.46	1840.7	0.0
9/3/2009	12:52:47	33	SP3_0022	40.1649	-124.4085	17.46	1842.1	0.0
9/3/2009	12:52:56	33	SP3_0023	40.1651	-124.4027	17.46	1838.9	0.0
9/3/2009	12:53:04	33	SP3_0024	40.1653	-124.3972	17.46	1840.7	0.0
9/3/2009	12:53:12	33	SP3_0025	40.1656	-124.3914	17.46	1840.7	0.0
9/3/2009	12:53:20	33	SP3_0026	40.1659	-124.3859	17.46	1846.6	0.0
9/3/2009	12:53:28	33	SP3_0027	40.1662	-124.3802	17.46	1852.6	0.0
9/3/2009	12:53:37	33	SP3_0028	40.1665	-124.3747	17.46	1851.2	0.0
9/3/2009	12:53:45	33	SP3_0029	40.1668	-124.3688	17.46	1838.9	0.0
9/3/2009	12:53:53	33	SP3_0030	40.1670	-124.3629	17.46	1837.5	0.0
9/3/2009	12:54:01	33	SP3_0031	40.1671	-124.3573	17.46	1840.7	0.0
9/3/2009	12:54:10	33	SP3_0032	40.1671	-124.3514	17.46	1840.7	0.0

9/3/2009	12:54:18	33	SP3_0033	40.1671	-124.3455	17.46	1842.1	0.0
9/3/2009	12:54:26	33	SP3_0034	40.1670	-124.3399	17.46	1849.4	0.0
9/3/2009	12:54:34	33	SP3_0035	40.1670	-124.3342	17.46	1855.3	0.0
9/3/2009	12:54:43	33	SP3_0036	40.1669	-124.3284	17.46	1855.3	0.0
9/3/2009	12:54:51	33	SP3_0037	40.1668	-124.3229	17.46	1855.3	0.0
9/3/2009	12:54:59	33	SP3_0038	40.1668	-124.3172	17.46	1859.9	0.0
9/3/2009	12:55:08	33	SP3_0039	40.1667	-124.3115	17.46	1864.5	0.0
9/3/2009	12:55:16	33	SP3_0040	40.1666	-124.3060	17.46	1864.5	0.0
9/3/2009	12:55:24	33	SP3_0041	40.1665	-124.3003	17.46	1859.9	0.0
9/3/2009	12:55:32	33	SP3_0042	40.1664	-124.2947	17.46	1848.0	0.0
9/3/2009	12:55:40	33	SP3_0043	40.1664	-124.2888	17.46	1843.4	0.0
9/3/2009	12:55:49	33	SP3_0044	40.1664	-124.2829	17.46	1836.1	0.0
9/3/2009	12:55:57	33	SP3_0045	40.1665	-124.2773	17.46	1834.3	0.0
9/3/2009	12:56:05	33	SP3_0046	40.1666	-124.2714	17.46	1832.9	0.0
9/3/2009	12:56:13	33	SP3_0047	40.1668	-124.2659	17.46	1831.5	0.0
9/3/2009	12:56:22	33	SP3_0048	40.1670	-124.2600	17.46	1825.6	0.0
9/3/2009	12:56:30	33	SP3_0049	40.1671	-124.2542	17.46	1824.2	0.0
9/3/2009	12:56:38	33	SP3_0050	40.1672	-124.2487	17.46	1819.7	0.0
9/3/2009	12:56:46	33	SP3_0051	40.1672	-124.2430	17.46	1817.8	0.0
9/3/2009	13:09:40	34	SP3_0062	39.9179	-123.9654	55.07	1842.1	161.6
9/3/2009	13:09:48	34	SP3_0063	39.9181	-123.9710	55.07	1843.4	0.0
9/3/2009	13:09:56	34	SP3_0064	39.9181	-123.9768	55.07	1848.0	0.0
9/3/2009	13:10:05	34	SP3_0065	39.9177	-123.9823	55.07	1849.4	0.0
9/3/2009	13:10:13	34	SP3_0066	39.9173	-123.9881	55.07	1849.4	0.0
9/3/2009	13:10:21	34	SP3_0067	39.9169	-123.9940	55.07	1844.8	0.0
9/3/2009	13:10:29	34	SP3_0068	39.9165	-123.9996	55.07	1844.8	0.0
9/3/2009	13:10:38	34	SP3_0069	39.9162	-124.0055	55.07	1851.2	0.0
9/3/2009	13:10:46	34	SP3_0070	39.9159	-124.0110	55.07	1852.6	0.0
9/3/2009	13:10:54	34	SP3_0071	39.9158	-124.0170	55.07	1851.2	0.0
9/3/2009	13:11:02	34	SP3_0072	39.9158	-124.0226	55.07	1855.3	0.0
9/3/2009	13:11:10	34	SP3_0073	39.9159	-124.0284	55.07	1861.7	0.0
9/3/2009	13:11:19	34	SP3_0074	39.9160	-124.0343	55.07	1857.1	0.0

9/3/2009	13:11:27	34	SP3_0075	39.9162	-124.0400	55.07	1852.6	0.0
9/3/2009	13:11:35	34	SP3_0076	39.9165	-124.0460	55.07	1852.6	0.0
9/3/2009	13:11:44	34	SP3_0077	39.9168	-124.0519	55.07	1853.9	0.0
9/3/2009	13:11:52	34	SP3_0078	39.9170	-124.0575	55.07	1851.2	0.0
9/3/2009	13:12:00	34	SP3_0079	39.9172	-124.0634	55.07	1848.0	0.0
9/3/2009	13:12:08	34	SP3_0080	39.9174	-124.0694	55.07	1857.1	0.0
9/3/2009	13:12:17	34	SP3_0081	39.9174	-124.0750	55.07	1861.7	0.0
9/3/2009	13:12:25	34	SP3_0082	39.9172	-124.0808	55.07	1864.5	0.0
9/3/2009	13:12:33	34	SP3_0083	39.9169	-124.0863	55.07	1864.5	0.0
9/3/2009	13:12:41	34	SP3_0084	39.9164	-124.0921	55.07	1858.5	0.0
9/3/2009	13:12:50	34	SP3_0085	39.9160	-124.0980	55.07	1857.1	0.0
9/3/2009	13:12:58	34	SP3_0086	39.9156	-124.1035	55.07	1863.1	0.0
9/3/2009	13:13:06	34	SP3_0087	39.9155	-124.1093	55.07	1865.8	0.0
9/3/2009	13:13:14	34	SP3_0088	39.9155	-124.1148	55.07	1864.5	0.0
9/3/2009	13:13:22	34	SP3_0089	39.9156	-124.1207	55.07	1861.7	0.0
9/3/2009	13:13:31	34	SP3_0090	39.9158	-124.1263	55.07	1859.9	0.0
9/3/2009	13:13:39	34	SP3_0091	39.9162	-124.1321	55.07	1858.5	0.0
9/3/2009	13:13:47	34	SP3_0092	39.9167	-124.1380	55.07	1863.1	0.0
9/3/2009	13:13:55	34	SP3_0093	39.9170	-124.1435	55.07	1867.7	0.0
9/3/2009	13:14:04	34	SP3_0094	39.9173	-124.1493	55.07	1863.1	0.0
9/3/2009	13:14:12	34	SP3_0095	39.9176	-124.1551	55.07	1863.1	0.0
9/3/2009	13:14:20	34	SP3_0096	39.9178	-124.1606	55.07	1869.0	0.0
9/3/2009	13:14:28	34	SP3_0097	39.9180	-124.1664	55.07	1859.9	0.0
9/3/2009	13:14:37	34	SP3_0098	39.9180	-124.1724	55.07	1846.6	0.0
9/3/2009	13:14:45	34	SP3_0099	39.9179	-124.1781	55.07	1844.8	0.0
9/3/2009	13:14:53	34	SP3_0100	39.9175	-124.1840	55.07	1842.1	0.0
9/3/2009	13:15:01	34	SP3_0101	39.9171	-124.1897	55.07	1832.9	0.0
9/3/2009	13:15:10	34	SP3_0102	39.9165	-124.1957	55.07	1832.9	0.0
9/3/2009	13:15:18	34	SP3_0103	39.9160	-124.2013	55.07	1832.9	0.0
9/3/2009	13:15:26	34	SP3_0104	39.9156	-124.2071	55.07	1838.9	0.0
9/3/2009	13:15:34	34	SP3_0105	39.9151	-124.2130	55.07	1838.9	0.0
9/3/2009	13:15:43	34	SP3_0106	39.9149	-124.2186	55.07	1836.1	0.0

9/3/2009	13:15:51	34	SP3_0107	39.9148	-124.2244	55.07	1831.5	0.0
9/3/2009	13:15:59	34	SP3_0108	39.9148	-124.2301	55.07	1827.0	0.0
9/3/2009	13:16:07	34	SP3_0109	39.9149	-124.2360	55.07	1832.9	0.0
9/3/2009	13:16:16	34	SP3_0110	39.9150	-124.2417	55.07	1842.1	0.0
9/3/2009	13:16:24	34	SP3_0111	39.9149	-124.2473	55.07	1840.7	0.0
9/3/2009	13:16:32	34	SP3_0112	39.9150	-124.2531	55.07	1838.9	0.0
9/3/2009	13:16:40	34	SP3_0113	39.9153	-124.2586	55.07	1840.7	0.0
9/3/2009	13:16:48	34	SP3_0114	39.9158	-124.2643	55.07	1844.8	0.0
9/3/2009	13:16:57	34	SP3_0115	39.9164	-124.2697	55.07	1843.4	0.0
9/3/2009	13:17:05	34	SP3_0116	39.9170	-124.2754	55.07	1843.4	0.0
9/3/2009	13:17:13	34	SP3_0117	39.9176	-124.2811	55.07	1846.6	0.0
9/3/2009	13:17:21	34	SP3_0118	39.9180	-124.2865	55.07	1844.8	0.0
9/3/2009	13:17:30	34	SP3_0119	39.9182	-124.2923	55.07	1843.4	0.0
9/3/2009	13:17:38	34	SP3_0120	39.9184	-124.2981	55.07	1843.4	0.0
9/3/2009	13:17:46	34	SP3_0121	39.9185	-124.3036	55.07	1843.4	0.0
9/3/2009	13:17:54	34	SP3_0122	39.9185	-124.3095	55.07	1848.0	0.0
9/3/2009	13:18:03	34	SP3_0123	39.9185	-124.3152	55.07	1852.6	0.0
9/3/2009	13:18:11	34	SP3_0124	39.9182	-124.3207	55.07	1851.2	0.0
9/3/2009	13:18:19	34	SP3_0125	39.9179	-124.3265	55.07	1852.6	0.0
9/3/2009	13:18:27	34	SP3_0126	39.9175	-124.3320	55.07	1855.3	0.0
9/3/2009	13:18:36	34	SP3_0127	39.9170	-124.3377	55.07	1857.1	0.0
9/3/2009	13:18:44	34	SP3_0128	39.9165	-124.3434	55.07	1852.6	0.0
9/3/2009	13:18:52	34	SP3_0129	39.9162	-124.3488	55.07	1851.2	0.0
9/3/2009	13:19:00	34	SP3_0130	39.9160	-124.3546	55.07	1851.2	0.0
9/3/2009	13:19:09	34	SP3_0131	39.9159	-124.3601	55.07	1851.2	0.0
9/3/2009	13:19:17	34	SP3_0132	39.9159	-124.3658	55.07	1852.6	0.0
9/3/2009	13:19:25	34	SP3_0133	39.9160	-124.3716	55.07	1855.3	0.0
9/3/2009	13:19:33	34	SP3_0134	39.9161	-124.3770	55.07	1853.9	0.0
9/3/2009	13:19:42	34	SP3_0135	39.9162	-124.3828	55.07	1852.6	0.0
9/3/2009	13:19:50	34	SP3_0136	39.9163	-124.3885	55.07	1855.3	0.0
9/3/2009	13:19:58	34	SP3_0137	39.9164	-124.3939	55.07	1867.7	0.0
9/3/2009	13:20:06	34	SP3_0138	39.9165	-124.3995	55.07	1867.7	0.0

9/3/2009	13:20:15	34	SP3_0139	39.9166	-124.4048	55.07	1867.7	0.0
9/3/2009	13:20:23	34	SP3_0140	39.9168	-124.4105	55.07	1869.0	0.0
9/3/2009	13:20:31	34	SP3_0141	39.9171	-124.4161	55.07	1873.6	0.0
9/3/2009	13:20:39	34	SP3_0142	39.9176	-124.4214	55.07	1882.3	0.0
9/3/2009	13:20:48	34	SP3_0143	39.9182	-124.4269	55.07	1879.5	0.0
9/3/2009	13:20:56	34	SP3_0144	39.9186	-124.4322	55.07	1873.6	0.0
9/3/2009	13:21:04	34	SP3_0145	39.9189	-124.4379	55.07	1871.8	0.0
9/3/2009	13:21:12	34	SP3_0146	39.9192	-124.4435	55.07	1870.4	0.0
9/3/2009	13:21:21	34	SP3_0147	39.9195	-124.4490	55.07	1861.7	0.0
9/3/2009	13:21:29	34	SP3_0148	39.9196	-124.4547	55.07	1857.1	0.0
9/3/2009	13:21:37	34	SP3_0149	39.9196	-124.4605	55.07	1849.4	0.0
9/3/2009	13:21:45	34	SP3_0150	39.9195	-124.4660	55.07	1848.0	0.0
9/3/2009	13:21:54	34	SP3_0151	39.9192	-124.4717	55.07	1848.0	0.0
9/3/2009	13:22:02	34	SP3_0152	39.9188	-124.4772	55.07	1843.4	0.0
9/3/2009	13:22:10	34	SP3_0153	39.9184	-124.4830	55.07	1842.1	0.0
9/3/2009	13:22:18	34	SP3_0154	39.9178	-124.4888	55.07	1840.7	0.0
9/3/2009	13:22:27	34	SP3_0155	39.9172	-124.4942	55.07	1844.8	0.0
9/3/2009	13:22:35	34	SP3_0156	39.9165	-124.4999	55.07	1848.0	0.0
9/3/2009	13:22:43	34	SP3_0157	39.9158	-124.5053	55.07	1848.0	0.0
9/3/2009	13:22:51	34	SP3_0158	39.9150	-124.5109	55.07	1846.6	0.0
9/3/2009	13:23:00	34	SP3_0159	39.9143	-124.5166	55.07	1842.1	0.0
9/3/2009	13:23:08	34	SP3_0160	39.9137	-124.5220	55.07	1842.1	0.0
9/3/2009	13:23:16	34	SP3_0161	39.9131	-124.5277	55.07	1848.0	0.0
9/3/2009	13:23:24	34	SP3_0162	39.9127	-124.5333	55.07	1853.9	0.0
9/3/2009	13:23:33	34	SP3_0163	39.9125	-124.5387	55.07	1857.1	0.0
9/3/2009	13:23:41	34	SP3_0164	39.9124	-124.5443	55.07	1855.3	0.0
9/3/2009	13:23:49	34	SP3_0165	39.9125	-124.5499	55.07	1858.5	0.0
9/3/2009	13:23:57	34	SP3_0166	39.9127	-124.5552	55.07	1861.7	0.0
9/3/2009	13:24:06	34	SP3_0167	39.9129	-124.5608	55.07	1865.8	0.0
9/3/2009	13:24:14	34	SP3_0168	39.9132	-124.5662	55.07	1858.5	0.0
9/3/2009	13:24:22	34	SP3_0169	39.9134	-124.5719	55.07	1855.3	0.0
9/3/2009	13:24:30	34	SP3_0170	39.9137	-124.5776	55.07	1858.5	0.0

9/3/2009	13:24:39	34	SP3_0171	39.9139	-124.5830	55.07	1855.3	0.0
9/3/2009	13:24:47	34	SP3_0172	39.9140	-124.5887	55.07	1853.9	0.0
9/3/2009	13:24:55	34	SP3_0173	39.9141	-124.5941	55.07	1851.2	0.0
9/3/2009	13:25:03	34	SP3_0174	39.9143	-124.5999	55.07	1849.4	0.0
9/3/2009	13:25:12	34	SP3_0175	39.9144	-124.6056	55.07	1852.6	0.0
9/3/2009	13:25:20	34	SP3_0176	39.9143	-124.6111	55.07	1855.3	0.0
9/3/2009	13:33:51	35	SP3_0178	39.6656	-124.4803	56.3	1882.3	0.0
9/3/2009	13:33:59	35	SP3_0179	39.6652	-124.4743	56.3	1888.7	0.0
9/3/2009	13:34:07	35	SP3_0180	39.6647	-124.4686	56.3	1896.0	0.0
9/3/2009	13:34:16	35	SP3_0181	39.6640	-124.4627	56.3	1903.3	0.0
9/3/2009	13:34:24	35	SP3_0182	39.6634	-124.4568	56.3	1907.9	0.0
9/3/2009	13:34:32	35	SP3_0183	39.6632	-124.4511	56.3	1915.7	0.0
9/3/2009	13:34:40	35	SP3_0184	39.6634	-124.4453	56.3	1919.8	0.0
9/3/2009	13:34:49	35	SP3_0185	39.6636	-124.4397	56.3	1918.4	0.0
9/3/2009	13:34:57	35	SP3_0186	39.6640	-124.4338	56.3	1918.4	0.0
9/3/2009	13:35:05	35	SP3_0187	39.6645	-124.4279	56.3	1912.5	0.0
9/3/2009	13:35:13	35	SP3_0188	39.6650	-124.4222	56.3	1900.6	0.0
9/3/2009	13:35:22	35	SP3_0189	39.6655	-124.4161	56.3	1899.2	0.0
9/3/2009	13:35:30	35	SP3_0190	39.6660	-124.4103	56.3	1879.5	0.0
9/3/2009	13:35:38	35	SP3_0191	39.6665	-124.4041	56.3	1875.0	0.0
9/3/2009	13:35:46	35	SP3_0192	39.6670	-124.3982	56.3	1864.5	0.0
9/3/2009	13:35:55	35	SP3_0193	39.6674	-124.3920	56.3	1855.3	0.0
9/3/2009	13:36:03	35	SP3_0194	39.6676	-124.3858	56.3	1852.6	0.0
9/3/2009	13:36:11	35	SP3_0195	39.6677	-124.3798	56.3	1848.0	0.0
9/3/2009	13:36:19	35	SP3_0196	39.6677	-124.3736	56.3	1844.8	0.0
9/3/2009	13:36:28	35	SP3_0197	39.6676	-124.3675	56.3	1848.0	0.0
9/3/2009	13:36:36	35	SP3_0198	39.6675	-124.3616	56.3	1843.4	0.0
9/3/2009	13:36:44	35	SP3_0199	39.6673	-124.3554	56.3	1837.5	0.0
9/3/2009	13:36:52	35	SP3_0200	39.6672	-124.3493	56.3	1834.3	0.0
9/3/2009	13:37:01	35	SP3_0201	39.6671	-124.3435	56.3	1836.1	0.0
9/3/2009	13:37:09	35	SP3_0202	39.6671	-124.3374	56.3	1834.3	0.0
9/3/2009	13:37:17	35	SP3_0203	39.6670	-124.3317	56.3	1840.7	0.0

9/3/2009	13:37:35	35	SP3_0204	39.6671	-124.3185	56.3	1834.3	0.0
9/3/2009	13:37:43	35	SP3_0205	39.6671	-124.3128	56.3	1843.4	0.0
9/3/2009	13:37:51	35	SP3_0206	39.6670	-124.3075	56.3	1842.1	0.0
9/3/2009	13:37:59	35	SP3_0207	39.6670	-124.3018	56.3	1834.3	0.0
9/3/2009	13:38:07	35	SP3_0208	39.6668	-124.2960	56.3	1836.1	0.0
9/3/2009	13:38:15	35	SP3_0209	39.6666	-124.2904	56.3	1846.6	0.0
9/3/2009	13:38:23	35	SP3_0210	39.6664	-124.2850	56.3	1848.0	0.0
9/3/2009	13:38:31	35	SP3_0211	39.6661	-124.2793	56.3	1844.8	0.0
9/3/2009	13:38:38	35	SP3_0212	39.6660	-124.2736	56.3	1843.4	0.0
9/3/2009	13:38:46	35	SP3_0213	39.6660	-124.2679	56.3	1844.8	0.0
9/3/2009	13:38:54	35	SP3_0214	39.6660	-124.2625	56.3	1844.8	0.0
9/3/2009	13:39:02	35	SP3_0215	39.6662	-124.2567	56.3	1840.7	0.0
9/3/2009	13:39:10	35	SP3_0216	39.6664	-124.2510	56.3	1837.5	0.0
9/3/2009	13:39:18	35	SP3_0217	39.6666	-124.2452	56.3	1840.7	0.0
9/3/2009	13:39:26	35	SP3_0218	39.6666	-124.2398	56.3	1842.1	0.0
9/3/2009	13:39:34	35	SP3_0219	39.6667	-124.2341	56.3	1844.8	0.0
9/3/2009	13:39:42	35	SP3_0220	39.6667	-124.2283	56.3	1844.8	0.0
9/3/2009	13:39:50	35	SP3_0221	39.6667	-124.2226	56.3	1842.1	0.0
9/3/2009	13:39:57	35	SP3_0222	39.6667	-124.2171	56.3	1840.7	0.0
9/3/2009	13:40:05	35	SP3_0223	39.6665	-124.2114	56.3	1843.4	0.0
9/3/2009	13:40:13	35	SP3_0224	39.6664	-124.2057	56.3	1842.1	0.0
9/3/2009	13:40:21	35	SP3_0225	39.6664	-124.1999	56.3	1840.7	0.0
9/3/2009	13:40:29	35	SP3_0226	39.6663	-124.1944	56.3	1844.8	0.0
9/3/2009	13:40:37	35	SP3_0227	39.6662	-124.1887	56.3	1846.6	0.0
9/3/2009	13:40:45	35	SP3_0228	39.6661	-124.1830	56.3	1853.9	0.0
9/3/2009	13:40:53	35	SP3_0229	39.6659	-124.1773	56.3	1863.1	0.0
9/3/2009	13:41:01	35	SP3_0230	39.6658	-124.1720	56.3	1869.0	0.0
9/3/2009	13:41:09	35	SP3_0231	39.6658	-124.1665	56.3	1869.0	0.0
9/3/2009	13:41:16	35	SP3_0232	39.6659	-124.1609	56.3	1867.7	0.0
9/3/2009	13:41:24	35	SP3_0233	39.6660	-124.1553	56.3	1870.4	0.0
9/3/2009	13:41:32	35	SP3_0234	39.6661	-124.1500	56.3	1870.4	0.0
9/3/2009	13:41:40	35	SP3_0235	39.6663	-124.1444	56.3	1871.8	0.0

9/3/2009	13:41:48	35	SP3_0236	39.6664	-124.1389	56.3	1867.7	0.0
9/3/2009	13:41:56	35	SP3_0237	39.6664	-124.1333	56.3	1861.7	0.0
9/3/2009	13:42:04	35	SP3_0238	39.6664	-124.1279	56.3	1857.1	0.0
9/3/2009	13:42:12	35	SP3_0239	39.6664	-124.1222	56.3	1853.9	0.0
9/3/2009	13:42:20	35	SP3_0240	39.6663	-124.1166	56.3	1855.3	0.0
9/3/2009	13:42:28	35	SP3_0241	39.6663	-124.1109	56.3	1855.3	0.0
9/3/2009	13:42:35	35	SP3_0242	39.6663	-124.1055	56.3	1852.6	0.0
9/3/2009	13:42:43	35	SP3_0243	39.6663	-124.0999	56.3	1849.4	0.0
9/3/2009	13:42:51	35	SP3_0244	39.6663	-124.0942	56.3	1846.6	0.0
9/3/2009	13:42:59	35	SP3_0245	39.6663	-124.0886	56.3	1843.4	0.0
9/3/2009	13:43:07	35	SP3_0246	39.6663	-124.0832	56.3	1842.1	0.0
9/3/2009	13:43:15	35	SP3_0247	39.6662	-124.0775	56.3	1840.7	0.0
9/3/2009	13:43:23	35	SP3_0248	39.6661	-124.0719	56.3	1838.9	0.0
9/3/2009	13:43:31	35	SP3_0249	39.6660	-124.0663	56.3	1848.0	0.0
9/3/2009	13:43:39	35	SP3_0250	39.6659	-124.0610	56.3	1844.8	0.0
9/3/2009	13:43:47	35	SP3_0251	39.6660	-124.0553	56.3	1838.9	0.0
9/3/2009	13:43:54	35	SP3_0252	39.6661	-124.0497	56.3	1838.9	0.0
9/3/2009	13:44:02	35	SP3_0253	39.6661	-124.0441	56.3	1840.7	0.0
9/3/2009	13:44:10	35	SP3_0254	39.6660	-124.0388	56.3	1838.9	0.0
9/3/2009	13:44:18	35	SP3_0255	39.6659	-124.0333	56.3	1843.4	0.0
9/3/2009	13:44:26	35	SP3_0256	39.6658	-124.0277	56.3	1843.4	0.0
9/3/2009	13:44:34	35	SP3_0257	39.6658	-124.0221	56.3	1844.8	0.0
9/3/2009	13:44:42	35	SP3_0258	39.6658	-124.0169	56.3	1848.0	0.0
9/3/2009	13:44:50	35	SP3_0259	39.6658	-124.0114	56.3	1846.6	0.0
9/3/2009	13:44:58	35	SP3_0260	39.6657	-124.0058	56.3	1848.0	0.0
9/3/2009	13:45:06	35	SP3_0261	39.6659	-124.0003	56.3	1842.1	0.0
9/3/2009	13:45:13	35	SP3_0262	39.6661	-123.9951	56.3	1840.7	0.0
9/3/2009	13:45:21	35	SP3_0263	39.6663	-123.9895	56.3	1838.9	0.0
9/3/2009	13:45:29	35	SP3_0264	39.6666	-123.9840	56.3	1836.1	0.0
9/3/2009	13:45:37	35	SP3_0265	39.6669	-123.9786	56.3	1844.8	0.0
9/3/2009	13:45:45	35	SP3_0266	39.6672	-123.9734	56.3	1846.6	0.0
9/3/2009	13:45:53	35	SP3_0267	39.6674	-123.9681	56.3	1846.6	0.0

9/3/2009	13:46:01	35	SP3_0268	39.6676	-123.9626	56.3	1844.8	0.0
9/3/2009	13:46:09	35	SP3_0269	39.6676	-123.9572	56.3	1843.4	0.0
9/3/2009	13:46:17	35	SP3_0270	39.6675	-123.9520	56.3	1842.1	0.0
9/3/2009	13:46:25	35	SP3_0271	39.6673	-123.9466	56.3	1846.6	0.0
9/3/2009	13:46:32	35	SP3_0272	39.6670	-123.9412	56.3	1848.0	0.0
9/3/2009	13:46:40	35	SP3_0273	39.6666	-123.9358	56.3	1851.2	0.0
9/3/2009	13:46:48	35	SP3_0274	39.6662	-123.9307	56.3	1846.6	306.6
9/3/2009	13:46:56	35	SP3_0275	39.6659	-123.9252	56.3	1842.1	293.1
9/3/2009	13:47:04	35	SP3_0276	39.6657	-123.9197	56.3	1842.1	0.0
9/3/2009	13:47:12	35	SP3_0277	39.6655	-123.9142	56.3	1840.7	0.0
9/3/2009	13:47:20	35	SP3_0278	39.6654	-123.9090	56.3	1838.9	0.0
9/3/2009	13:47:28	35	SP3_0279	39.6653	-123.9035	56.3	1838.9	0.0
9/3/2009	13:47:36	35	SP3_0280	39.6652	-123.8980	56.3	1843.4	0.0
9/3/2009	13:47:44	35	SP3_0281	39.6652	-123.8925	56.3	1846.6	199.3
9/3/2009	13:47:51	35	SP3_0282	39.6653	-123.8874	56.3	1838.9	0.0
9/3/2009	13:47:59	35	SP3_0283	39.6654	-123.8818	56.3	1838.9	0.0
9/3/2009	13:48:07	35	SP3_0284	39.6656	-123.8763	56.3	1844.8	0.0
9/3/2009	13:48:15	35	SP3_0285	39.6658	-123.8709	56.3	1846.6	0.0
9/3/2009	13:48:23	35	SP3_0286	39.6661	-123.8657	56.3	1846.6	0.0
9/3/2009	13:48:31	35	SP3_0287	39.6665	-123.8603	56.3	1849.4	0.0
9/3/2009	13:48:39	35	SP3_0288	39.6669	-123.8548	56.3	1849.4	0.0
9/3/2009	13:48:47	35	SP3_0289	39.6674	-123.8494	56.3	1846.6	0.0
9/3/2009	13:48:55	35	SP3_0290	39.6679	-123.8442	56.3	1842.1	0.0
9/3/2009	13:49:03	35	SP3_0291	39.6685	-123.8387	56.3	1843.4	0.0
9/3/2009	13:49:10	35	SP3_0292	39.6691	-123.8332	56.3	1843.4	0.0
9/3/2009	13:49:18	35	SP3_0293	39.6698	-123.8278	56.3	1842.1	0.0
9/3/2009	13:49:26	35	SP3_0294	39.6702	-123.8226	56.3	1838.9	0.0
9/3/2009	13:59:37	36	SP3_0307	39.4180	-123.8361	44.35	1827.0	0.0
9/3/2009	13:59:45	36	SP3_0308	39.4175	-123.8413	44.35	1827.0	0.0
9/3/2009	13:59:53	36	SP3_0309	39.4170	-123.8467	44.35	1838.9	0.0
9/3/2009	14:00:01	36	SP3_0310	39.4164	-123.8520	44.35	1848.0	0.0
9/3/2009	14:00:09	36	SP3_0311	39.4158	-123.8572	44.35	1848.0	0.0

9/3/2009	14:00:17	36	SP3_0312	39.4155	-123.8622	44.35	1851.2	0.0
9/3/2009	14:00:25	36	SP3_0313	39.4153	-123.8675	44.35	1857.1	0.0
9/3/2009	14:00:32	36	SP3_0314	39.4153	-123.8728	44.35	1864.5	0.0
9/3/2009	14:00:40	36	SP3_0315	39.4155	-123.8781	44.35	1871.8	0.0
9/3/2009	14:00:48	36	SP3_0316	39.4157	-123.8831	44.35	1873.6	0.0
9/3/2009	14:00:56	36	SP3_0317	39.4161	-123.8884	44.35	1861.7	0.0
9/3/2009	14:01:04	36	SP3_0318	39.4166	-123.8938	44.35	1865.8	0.0
9/3/2009	14:01:12	36	SP3_0319	39.4171	-123.8992	44.35	1869.0	0.0
9/3/2009	14:01:20	36	SP3_0320	39.4175	-123.9043	44.35	1870.4	0.0
9/3/2009	14:01:28	36	SP3_0321	39.4179	-123.9098	44.35	1865.8	0.0
9/3/2009	14:01:36	36	SP3_0322	39.4183	-123.9152	44.35	1861.7	0.0
9/3/2009	14:01:44	36	SP3_0323	39.4185	-123.9208	44.35	1849.4	0.0
9/3/2009	14:01:51	36	SP3_0324	39.4186	-123.9262	44.35	1837.5	0.0
9/3/2009	14:01:59	36	SP3_0325	39.4186	-123.9319	44.35	1836.1	0.0
9/3/2009	14:02:07	36	SP3_0326	39.4184	-123.9376	44.35	1840.7	0.0
9/3/2009	14:02:15	36	SP3_0327	39.4181	-123.9432	44.35	1837.5	0.0
9/3/2009	14:02:23	36	SP3_0328	39.4178	-123.9486	44.35	1832.9	0.0
9/3/2009	14:02:31	36	SP3_0329	39.4175	-123.9542	44.35	1834.3	0.0
9/3/2009	14:02:39	36	SP3_0330	39.4170	-123.9598	44.35	1836.1	0.0
9/3/2009	14:02:47	36	SP3_0331	39.4165	-123.9654	44.35	1837.5	0.0
9/3/2009	14:03:04	36	SP3_0332	39.4156	-123.9771	44.35	1842.1	0.0
9/3/2009	14:03:12	36	SP3_0333	39.4154	-123.9826	44.35	1848.0	0.0
9/3/2009	14:03:20	36	SP3_0334	39.4151	-123.9882	44.35	1843.4	0.0
9/3/2009	14:03:28	36	SP3_0335	39.4147	-123.9937	44.35	1843.4	0.0
9/3/2009	14:03:36	36	SP3_0336	39.4146	-123.9995	44.35	1846.6	0.0
9/3/2009	14:03:44	36	SP3_0337	39.4146	-124.0051	44.35	1846.6	0.0
9/3/2009	14:03:52	36	SP3_0338	39.4149	-124.0106	44.35	1846.6	0.0
9/3/2009	14:04:00	36	SP3_0339	39.4153	-124.0162	44.35	1846.6	0.0
9/3/2009	14:04:08	36	SP3_0340	39.4158	-124.0217	44.35	1848.0	0.0
9/3/2009	14:04:16	36	SP3_0341	39.4163	-124.0272	44.35	1849.4	0.0
9/3/2009	14:04:24	36	SP3_0342	39.4168	-124.0327	44.35	1849.4	0.0
9/3/2009	14:04:32	36	SP3_0343	39.4174	-124.0381	44.35	1851.2	0.0

9/3/2009	14:04:40	36	SP3_0344	39.4179	-124.0436	44.35	1851.2	0.0
9/3/2009	14:04:48	36	SP3_0345	39.4183	-124.0491	44.35	1851.2	0.0
9/3/2009	14:04:56	36	SP3_0346	39.4186	-124.0548	44.35	1864.5	0.0
9/3/2009	14:05:04	36	SP3_0347	39.4188	-124.0603	44.35	1855.3	0.0
9/3/2009	14:05:12	36	SP3_0348	39.4188	-124.0659	44.35	1846.6	0.0
9/3/2009	14:05:20	36	SP3_0349	39.4186	-124.0715	44.35	1846.6	0.0
9/3/2009	14:05:28	36	SP3_0350	39.4183	-124.0771	44.35	1843.4	0.0
9/3/2009	14:05:36	36	SP3_0351	39.4181	-124.0827	44.35	1844.8	0.0
9/3/2009	14:05:44	36	SP3_0352	39.4177	-124.0881	44.35	1857.1	0.0
9/3/2009	14:05:53	36	SP3_0353	39.4173	-124.0936	44.35	1842.1	0.0
9/3/2009	14:06:01	36	SP3_0354	39.4167	-124.0992	44.35	1837.5	0.0
9/3/2009	14:06:09	36	SP3_0355	39.4161	-124.1047	44.35	1846.6	0.0
9/3/2009	14:06:17	36	SP3_0356	39.4158	-124.1101	44.35	1844.8	0.0
9/3/2009	14:06:25	36	SP3_0357	39.4156	-124.1156	44.35	1844.8	0.0
9/3/2009	14:06:33	36	SP3_0358	39.4156	-124.1214	44.35	1846.6	0.0
9/3/2009	14:06:41	36	SP3_0359	39.4159	-124.1268	44.35	1843.4	0.0
9/3/2009	14:06:49	36	SP3_0360	39.4163	-124.1324	44.35	1836.1	0.0
9/3/2009	14:06:57	36	SP3_0361	39.4168	-124.1378	44.35	1843.4	0.0
9/3/2009	14:07:05	36	SP3_0362	39.4172	-124.1431	44.35	1858.5	0.0
9/3/2009	14:07:13	36	SP3_0363	39.4176	-124.1485	44.35	1849.4	0.0
9/3/2009	14:07:21	36	SP3_0364	39.4179	-124.1539	44.35	1846.6	0.0
9/3/2009	14:07:29	36	SP3_0365	39.4181	-124.1594	44.35	1842.1	0.0
9/3/2009	14:07:37	36	SP3_0366	39.4182	-124.1648	44.35	1851.2	0.0
9/3/2009	14:07:45	36	SP3_0367	39.4181	-124.1705	44.35	1853.9	0.0
9/3/2009	14:07:53	36	SP3_0368	39.4179	-124.1758	44.35	1852.6	0.0
9/3/2009	14:08:01	36	SP3_0369	39.4177	-124.1812	44.35	1855.3	0.0
9/3/2009	14:08:09	36	SP3_0370	39.4173	-124.1866	44.35	1858.5	0.0
9/3/2009	14:08:17	36	SP3_0371	39.4168	-124.1919	44.35	1858.5	0.0
9/3/2009	14:08:25	36	SP3_0372	39.4164	-124.1972	44.35	1851.2	0.0
9/3/2009	14:08:33	36	SP3_0373	39.4160	-124.2026	44.35	1851.2	0.0
9/3/2009	14:08:41	36	SP3_0374	39.4157	-124.2080	44.35	1849.4	0.0
9/3/2009	14:08:49	36	SP3_0375	39.4155	-124.2134	44.35	1838.9	0.0

9/3/2009	14:08:57	36	SP3_0376	39.4154	-124.2188	44.35	1838.9	0.0
9/3/2009	14:09:05	36	SP3_0377	39.4154	-124.2242	44.35	1848.0	0.0
9/3/2009	14:09:14	36	SP3_0378	39.4156	-124.2297	44.35	1848.0	0.0
9/3/2009	14:09:22	36	SP3_0379	39.4159	-124.2351	44.35	1840.7	0.0
9/3/2009	14:09:30	36	SP3_0380	39.4165	-124.2404	44.35	1840.7	0.0
9/3/2009	14:09:38	36	SP3_0381	39.4171	-124.2457	44.35	1836.1	0.0
9/3/2009	14:09:46	36	SP3_0382	39.4176	-124.2510	44.35	1832.9	0.0
9/3/2009	14:09:54	36	SP3_0383	39.4182	-124.2563	44.35	1831.5	0.0
9/3/2009	14:10:02	36	SP3_0384	39.4188	-124.2616	44.35	1831.5	0.0
9/3/2009	14:10:10	36	SP3_0385	39.4195	-124.2668	44.35	1831.5	0.0
9/3/2009	14:10:18	36	SP3_0386	39.4202	-124.2721	44.35	1834.3	0.0
9/3/2009	14:10:26	36	SP3_0387	39.4209	-124.2773	44.35	1837.5	0.0
9/3/2009	14:10:34	36	SP3_0388	39.4215	-124.2825	44.35	1834.3	0.0
9/3/2009	14:10:42	36	SP3_0389	39.4221	-124.2881	44.35	1831.5	0.0
9/3/2009	14:10:50	36	SP3_0390	39.4225	-124.2933	44.35	1837.5	0.0
9/3/2009	14:10:58	36	SP3_0391	39.4226	-124.2986	44.35	1842.1	0.0
9/3/2009	14:11:06	36	SP3_0392	39.4226	-124.3039	44.35	1836.1	0.0
9/3/2009	14:11:14	36	SP3_0393	39.4225	-124.3094	44.35	1831.5	0.0
9/3/2009	14:11:22	36	SP3_0394	39.4221	-124.3148	44.35	1831.5	0.0
9/3/2009	14:11:30	36	SP3_0395	39.4216	-124.3202	44.35	1831.5	0.0
9/3/2009	14:11:38	36	SP3_0396	39.4210	-124.3256	44.35	1831.5	0.0
9/3/2009	14:11:46	36	SP3_0397	39.4203	-124.3309	44.35	1838.9	0.0
9/3/2009	14:11:54	36	SP3_0398	39.4192	-124.3362	44.35	1843.4	0.0
9/3/2009	14:12:02	36	SP3_0399	39.4182	-124.3414	44.35	1834.3	0.0
9/3/2009	14:12:10	36	SP3_0400	39.4170	-124.3471	44.35	1832.9	0.0
9/3/2009	14:12:18	36	SP3_0401	39.4159	-124.3524	44.35	1840.7	0.0
9/3/2009	14:22:03	37	SP3_0402	39.1661	-124.1937	37.86	1830.2	0.0
9/3/2009	14:22:11	37	SP3_0403	39.1662	-124.1880	37.86	1831.5	0.0
9/3/2009	14:22:19	37	SP3_0404	39.1664	-124.1823	37.86	1831.5	0.0
9/3/2009	14:22:27	37	SP3_0405	39.1666	-124.1765	37.86	1838.9	0.0
9/3/2009	14:22:35	37	SP3_0406	39.1668	-124.1709	37.86	1851.2	0.0
9/3/2009	14:22:43	37	SP3_0407	39.1670	-124.1653	37.86	1846.6	0.0

9/3/2009	14:22:51	37	SP3_0408	39.1672	-124.1596	37.86	1840.7	0.0
9/3/2009	14:22:59	37	SP3_0409	39.1673	-124.1538	37.86	1844.8	0.0
9/3/2009	14:23:07	37	SP3_0410	39.1672	-124.1479	37.86	1853.9	0.0
9/3/2009	14:23:15	37	SP3_0411	39.1671	-124.1422	37.86	1852.6	0.0
9/3/2009	14:23:23	37	SP3_0412	39.1669	-124.1365	37.86	1844.8	0.0
9/3/2009	14:23:31	37	SP3_0413	39.1667	-124.1307	37.86	1838.9	0.0
9/3/2009	14:23:39	37	SP3_0414	39.1665	-124.1249	37.86	1834.3	0.0
9/3/2009	14:23:47	37	SP3_0415	39.1663	-124.1191	37.86	1830.2	0.0
9/3/2009	14:23:55	37	SP3_0416	39.1660	-124.1133	37.86	1822.4	0.0
9/3/2009	14:24:03	37	SP3_0417	39.1656	-124.1074	37.86	1816.5	0.0
9/3/2009	14:24:11	37	SP3_0418	39.1653	-124.1016	37.86	1809.1	0.0
9/3/2009	14:24:19	37	SP3_0419	39.1651	-124.0958	37.86	1801.4	0.0
9/3/2009	14:24:27	37	SP3_0420	39.1650	-124.0899	37.86	1804.6	0.0
9/3/2009	14:24:35	37	SP3_0421	39.1650	-124.0843	37.86	1817.8	0.0
9/3/2009	14:24:44	37	SP3_0422	39.1650	-124.0784	37.86	1825.6	0.0
9/3/2009	14:24:52	37	SP3_0423	39.1652	-124.0730	37.86	1834.3	0.0
9/3/2009	14:25:00	37	SP3_0424	39.1655	-124.0675	37.86	1837.5	0.0
9/3/2009	14:25:08	37	SP3_0425	39.1658	-124.0621	37.86	1838.9	0.0
9/3/2009	14:25:16	37	SP3_0426	39.1662	-124.0567	37.86	1842.1	0.0
9/3/2009	14:25:24	37	SP3_0427	39.1665	-124.0512	37.86	1836.1	0.0
9/3/2009	14:25:32	37	SP3_0428	39.1669	-124.0457	37.86	1844.8	0.0
9/3/2009	14:25:40	37	SP3_0429	39.1673	-124.0403	37.86	1853.9	0.0
9/3/2009	14:25:48	37	SP3_0430	39.1677	-124.0349	37.86	1852.6	0.0
9/3/2009	14:25:56	37	SP3_0431	39.1681	-124.0295	37.86	1852.6	0.0
9/3/2009	14:26:04	37	SP3_0432	39.1687	-124.0238	37.86	1858.5	0.0
9/3/2009	14:26:12	37	SP3_0433	39.1694	-124.0184	37.86	1853.9	0.0
9/3/2009	14:26:20	37	SP3_0434	39.1701	-124.0130	37.86	1848.0	0.0
9/3/2009	14:26:28	37	SP3_0435	39.1707	-124.0075	37.86	1852.6	0.0
9/3/2009	14:26:36	37	SP3_0436	39.1713	-124.0021	37.86	1851.2	0.0
9/3/2009	14:26:44	37	SP3_0437	39.1718	-123.9967	37.86	1855.3	0.0
9/3/2009	14:26:52	37	SP3_0438	39.1723	-123.9912	37.86	1853.9	0.0
9/3/2009	14:27:00	37	SP3_0439	39.1728	-123.9857	37.86	1848.0	0.0

9/3/2009	14:27:08	37	SP3_0440	39.1731	-123.9801	37.86	1848.0	0.0
9/3/2009	14:27:16	37	SP3_0441	39.1734	-123.9746	37.86	1855.3	0.0
9/3/2009	14:27:24	37	SP3_0442	39.1736	-123.9692	37.86	1852.6	0.0
9/3/2009	14:27:32	37	SP3_0443	39.1737	-123.9633	37.86	1846.6	0.0
9/3/2009	14:27:40	37	SP3_0444	39.1736	-123.9577	37.86	1837.5	0.0
9/3/2009	14:27:48	37	SP3_0445	39.1732	-123.9520	37.86	1831.5	0.0
9/3/2009	14:27:56	37	SP3_0446	39.1728	-123.9463	37.86	1828.3	0.0
9/3/2009	14:28:04	37	SP3_0447	39.1721	-123.9407	37.86	1828.3	0.0
9/3/2009	14:28:12	37	SP3_0448	39.1714	-123.9350	37.86	1825.6	0.0
9/3/2009	14:28:21	37	SP3_0449	39.1706	-123.9294	37.86	1821.0	0.0
9/3/2009	14:28:29	37	SP3_0450	39.1699	-123.9237	37.86	1815.1	0.0
9/3/2009	14:28:37	37	SP3_0451	39.1690	-123.9180	37.86	1810.5	0.0
9/3/2009	14:28:45	37	SP3_0452	39.1681	-123.9124	37.86	1815.1	0.0
9/3/2009	14:28:53	37	SP3_0453	39.1672	-123.9069	37.86	1819.7	0.0
9/3/2009	14:29:01	37	SP3_0454	39.1664	-123.9013	37.86	1822.4	0.0
9/3/2009	14:29:09	37	SP3_0455	39.1656	-123.8955	37.86	1827.0	0.0
9/3/2009	14:29:17	37	SP3_0456	39.1650	-123.8900	37.86	1836.1	0.0
9/3/2009	14:29:25	37	SP3_0457	39.1646	-123.8845	37.86	1842.1	0.0
9/3/2009	14:29:33	37	SP3_0458	39.1643	-123.8790	37.86	1844.8	0.0
9/3/2009	14:29:41	37	SP3_0459	39.1644	-123.8735	37.86	1846.6	0.0
9/3/2009	14:29:49	37	SP3_0460	39.1646	-123.8679	37.86	1843.4	0.0
9/3/2009	14:29:57	37	SP3_0461	39.1649	-123.8624	37.86	1840.7	0.0
9/3/2009	14:30:05	37	SP3_0462	39.1652	-123.8567	37.86	1832.9	0.0
9/3/2009	14:30:13	37	SP3_0463	39.1656	-123.8511	37.86	1832.9	0.0
9/3/2009	14:30:21	37	SP3_0464	39.1659	-123.8454	37.86	1837.5	0.0
9/3/2009	14:30:29	37	SP3_0465	39.1661	-123.8399	37.86	1836.1	0.0
9/3/2009	14:30:37	37	SP3_0466	39.1664	-123.8340	37.86	1830.2	0.0
9/3/2009	14:30:45	37	SP3_0467	39.1668	-123.8284	37.86	1827.0	0.0
9/3/2009	14:30:53	37	SP3_0468	39.1671	-123.8227	37.86	1827.0	0.0
9/3/2009	14:31:01	37	SP3_0469	39.1674	-123.8171	37.86	1828.3	0.0
9/3/2009	14:31:09	37	SP3_0470	39.1676	-123.8115	37.86	1827.0	0.0
9/3/2009	14:31:17	37	SP3_0471	39.1677	-123.8058	37.86	1828.3	0.0

9/3/2009	14:31:25	37	SP3_0472	39.1678	-123.8001	37.86	1822.4	0.0
9/3/2009	14:31:33	37	SP3_0473	39.1680	-123.7944	37.86	1819.7	0.0
9/3/2009	14:31:41	37	SP3_0474	39.1681	-123.7886	37.86	1817.8	0.0
9/3/2009	14:31:49	37	SP3_0475	39.1681	-123.7829	37.86	1813.7	0.0
9/3/2009	14:31:57	37	SP3_0476	39.1680	-123.7772	37.86	1817.8	0.0
9/3/2009	14:32:06	37	SP3_0477	39.1679	-123.7713	37.86	1830.2	0.0
9/3/2009	14:32:14	37	SP3_0478	39.1679	-123.7658	37.86	1831.5	0.0
9/3/2009	14:32:22	37	SP3_0479	39.1680	-123.7601	37.86	1836.1	0.0
9/3/2009	14:32:30	37	SP3_0480	39.1681	-123.7545	37.86	1846.6	0.0
9/3/2009	15:11:20	38	SP3_0491	38.9172	-123.7412	9.573	1827.0	0.0
9/3/2009	15:11:28	38	SP3_0492	38.9175	-123.7467	9.573	1827.0	0.0
9/3/2009	15:11:36	38	SP3_0493	38.9177	-123.7519	9.573	1824.2	0.0
9/3/2009	15:11:44	38	SP3_0494	38.9178	-123.7571	9.573	1825.6	0.0
9/3/2009	15:11:52	38	SP3_0495	38.9178	-123.7623	9.573	1824.2	0.0
9/3/2009	15:12:00	38	SP3_0496	38.9178	-123.7675	9.573	1830.2	0.0
9/3/2009	15:12:08	38	SP3_0497	38.9178	-123.7725	9.573	1836.1	0.0
9/3/2009	15:12:16	38	SP3_0498	38.9177	-123.7775	9.573	1832.9	0.0
9/3/2009	15:12:25	38	SP3_0499	38.9176	-123.7826	9.573	1827.0	0.0
9/3/2009	15:12:33	38	SP3_0500	38.9174	-123.7876	9.573	1828.3	0.0
9/3/2009	15:12:41	38	SP3_0501	38.9172	-123.7926	9.573	1832.9	0.0
9/3/2009	15:12:49	38	SP3_0502	38.9169	-123.7978	9.573	1832.9	0.0
9/3/2009	15:12:57	38	SP3_0503	38.9166	-123.8027	9.573	1827.0	0.0
9/3/2009	15:13:05	38	SP3_0504	38.9163	-123.8076	9.573	1825.6	0.0
9/3/2009	15:13:13	38	SP3_0505	38.9158	-123.8125	9.573	1828.3	0.0
9/3/2009	15:13:21	38	SP3_0506	38.9154	-123.8175	9.573	1825.6	0.0
9/3/2009	15:13:29	38	SP3_0507	38.9150	-123.8224	9.573	1824.2	0.0
9/3/2009	15:13:37	38	SP3_0508	38.9145	-123.8273	9.573	1827.0	0.0
9/3/2009	15:13:45	38	SP3_0509	38.9141	-123.8322	9.573	1824.2	0.0
9/3/2009	15:13:53	38	SP3_0510	38.9138	-123.8371	9.573	1821.0	0.0
9/3/2009	15:14:01	38	SP3_0511	38.9135	-123.8420	9.573	1831.5	0.0
9/3/2009	15:14:09	38	SP3_0512	38.9132	-123.8469	9.573	1827.0	0.0
9/3/2009	15:14:17	38	SP3_0513	-465.5000	-123.8517	9.573	1824.2	0.0

9/3/2009	15:24:02	39	SP3_0514	38.6662	-123.7560	24.93	1798.6	0.0
9/3/2009	15:24:09	39	SP3_0515	38.6667	-123.7505	24.93	1794.1	0.0
9/3/2009	15:24:17	39	SP3_0516	38.6673	-123.7453	24.93	1789.5	0.0
9/3/2009	15:24:24	39	SP3_0517	38.6678	-123.7398	24.93	1796.8	0.0
9/3/2009	15:24:32	39	SP3_0518	38.6681	-123.7343	24.93	1803.2	0.0
9/3/2009	15:24:39	39	SP3_0519	38.6683	-123.7293	24.93	1822.4	0.0
9/3/2009	15:24:46	39	SP3_0520	38.6683	-123.7240	24.93	1832.9	0.0
9/3/2009	15:24:56	39	SP3_0521	38.6682	-123.7177	24.93	1837.5	0.0
9/3/2009	15:25:04	39	SP3_0522	38.6680	-123.7122	24.93	1843.4	0.0
9/3/2009	15:25:12	39	SP3_0523	38.6679	-123.7066	24.93	1844.8	0.0
9/3/2009	15:25:20	39	SP3_0524	38.6679	-123.7007	24.93	1843.4	0.0
9/3/2009	15:25:28	39	SP3_0525	38.6679	-123.6951	24.93	1849.4	0.0
9/3/2009	15:25:36	39	SP3_0526	38.6678	-123.6895	24.93	1852.6	0.0
9/3/2009	15:25:44	39	SP3_0527	38.6677	-123.6839	24.93	1848.0	0.0
9/3/2009	15:25:52	39	SP3_0528	38.6676	-123.6778	24.93	1840.7	0.0
9/3/2009	15:26:00	39	SP3_0529	38.6674	-123.6720	24.93	1837.5	0.0
9/3/2009	15:26:09	39	SP3_0530	38.6673	-123.6663	24.93	1849.4	0.0
9/3/2009	15:26:17	39	SP3_0531	38.6671	-123.6606	24.93	1848.0	0.0
9/3/2009	15:26:25	39	SP3_0532	38.6669	-123.6545	24.93	1837.5	0.0
9/3/2009	15:26:33	39	SP3_0533	38.6667	-123.6487	24.93	1836.1	0.0
9/3/2009	15:26:41	39	SP3_0534	38.6665	-123.6429	24.93	1834.3	0.0
9/3/2009	15:26:49	39	SP3_0535	38.6663	-123.6368	24.93	1831.5	0.0
9/3/2009	15:26:57	39	SP3_0536	38.6661	-123.6310	24.93	1827.0	0.0
9/3/2009	15:27:05	39	SP3_0537	38.6659	-123.6252	24.93	1827.0	0.0
9/3/2009	15:27:13	39	SP3_0538	38.6658	-123.6194	24.93	1825.6	0.0
9/3/2009	15:27:22	39	SP3_0539	38.6656	-123.6133	24.93	1822.4	0.0
9/3/2009	15:27:30	39	SP3_0540	38.6655	-123.6074	24.93	1824.2	0.0
9/3/2009	15:27:38	39	SP3_0541	38.6656	-123.6016	24.93	1827.0	0.0
9/3/2009	15:27:46	39	SP3_0542	38.6658	-123.5958	24.93	1828.3	0.0
9/3/2009	15:27:54	39	SP3_0543	38.6661	-123.5898	24.93	1822.4	0.0
9/3/2009	15:28:02	39	SP3_0544	38.6666	-123.5840	24.93	1817.8	0.0
9/3/2009	15:28:10	39	SP3_0545	38.6671	-123.5782	24.93	1821.0	0.0

9/3/2009	15:28:18	39	SP3_0546	38.6676	-123.5722	24.93	1825.6	0.0
9/3/2009	15:28:26	39	SP3_0547	38.6682	-123.5666	24.93	1830.2	0.0
9/3/2009	15:28:34	39	SP3_0548	38.6687	-123.5609	24.93	1831.5	0.0
9/3/2009	15:28:43	39	SP3_0549	38.6693	-123.5553	24.93	1828.3	0.0
9/3/2009	15:28:51	39	SP3_0550	38.6699	-123.5496	24.93	1809.1	0.0
9/3/2009	15:28:59	39	SP3_0551	38.6706	-123.5435	24.93	1803.2	0.0
9/3/2009	15:29:07	39	SP3_0552	38.6711	-123.5378	24.93	1811.9	0.0
9/3/2009	15:29:15	39	SP3_0553	38.6716	-123.5321	24.93	1816.5	0.0
9/3/2009	15:29:23	39	SP3_0554	38.6719	-123.5263	24.93	1809.1	0.0
9/3/2009	15:29:31	39	SP3_0555	38.6721	-123.5203	24.93	1813.7	0.0
9/3/2009	15:29:39	39	SP3_0556	38.6721	-123.5146	24.93	1821.0	0.0
9/3/2009	15:29:47	39	SP3_0557	38.6719	-123.5089	24.93	1816.5	0.0
9/3/2009	15:29:55	39	SP3_0558	38.6716	-123.5031	24.93	1816.5	0.0
9/3/2009	15:30:04	39	SP3_0559	38.6711	-123.4972	24.93	1815.1	0.0
9/3/2009	15:30:12	39	SP3_0560	38.6706	-123.4915	24.93	1810.5	0.0
9/3/2009	15:30:20	39	SP3_0561	38.6698	-123.4858	24.93	1810.5	0.0
9/3/2009	15:30:28	39	SP3_0562	38.6688	-123.4803	24.93	1813.7	0.0
9/3/2009	15:30:36	39	SP3_0563	38.6677	-123.4745	24.93	1815.1	0.0
9/3/2009	15:30:44	39	SP3_0564	38.6668	-123.4689	24.93	1810.5	0.0
9/3/2009	15:45:17	40	SP3_0582	38.4162	-123.1301	33.03	1803.2	0.0
9/3/2009	15:45:25	40	SP3_0583	38.4165	-123.1351	33.03	1801.4	0.0
9/3/2009	15:45:33	40	SP3_0584	38.4169	-123.1400	33.03	1801.4	0.0
9/3/2009	15:45:41	40	SP3_0585	38.4173	-123.1448	33.03	1794.1	0.0
9/3/2009	15:45:49	40	SP3_0586	38.4177	-123.1498	33.03	1796.8	0.0
9/3/2009	15:45:58	40	SP3_0587	38.4181	-123.1549	33.03	1801.4	0.0
9/3/2009	15:46:06	40	SP3_0588	38.4183	-123.1598	33.03	1801.4	0.0
9/3/2009	15:46:14	40	SP3_0589	38.4183	-123.1646	33.03	1815.1	0.0
9/3/2009	15:46:22	40	SP3_0590	38.4183	-123.1696	33.03	1828.3	0.0
9/3/2009	15:46:30	40	SP3_0591	38.4181	-123.1744	33.03	1824.2	0.0
9/3/2009	15:46:38	40	SP3_0592	38.4178	-123.1793	33.03	1810.5	0.0
9/3/2009	15:46:46	40	SP3_0593	38.4174	-123.1842	33.03	1813.7	0.0
9/3/2009	15:46:54	40	SP3_0594	38.4170	-123.1891	33.03	1817.8	0.0

9/3/2009	15:47:02	40	SP3_0595	38.4166	-123.1942	33.03	1817.8	0.0
9/3/2009	15:47:10	40	SP3_0596	38.4161	-123.1991	33.03	1817.8	0.0
9/3/2009	15:47:19	40	SP3_0597	38.4158	-123.2040	33.03	1819.7	0.0
9/3/2009	15:47:27	40	SP3_0598	38.4155	-123.2089	33.03	1822.4	0.0
9/3/2009	15:47:35	40	SP3_0599	38.4154	-123.2140	33.03	1824.2	0.0
9/3/2009	15:47:43	40	SP3_0600	38.4154	-123.2189	33.03	1825.6	0.0
9/3/2009	15:47:51	40	SP3_0601	38.4153	-123.2237	33.03	1832.9	0.0
9/3/2009	15:47:59	40	SP3_0602	38.4153	-123.2286	33.03	1834.3	0.0
9/3/2009	15:48:07	40	SP3_0603	38.4153	-123.2337	33.03	1831.5	0.0
9/3/2009	15:48:15	40	SP3_0604	38.4153	-123.2386	33.03	1832.9	0.0
9/3/2009	15:48:23	40	SP3_0605	38.4154	-123.2434	33.03	1838.9	0.0
9/3/2009	15:48:31	40	SP3_0606	38.4156	-123.2483	33.03	1838.9	0.0
9/3/2009	15:48:40	40	SP3_0607	38.4160	-123.2534	33.03	1834.3	0.0
9/3/2009	15:48:48	40	SP3_0608	38.4166	-123.2582	33.03	1828.3	0.0
9/3/2009	15:48:56	40	SP3_0609	38.4172	-123.2631	33.03	1831.5	0.0
9/3/2009	15:49:04	40	SP3_0610	38.4178	-123.2679	33.03	1824.2	0.0
9/3/2009	15:49:12	40	SP3_0611	38.4186	-123.2730	33.03	1811.9	0.0
9/3/2009	15:49:20	40	SP3_0612	38.4192	-123.2779	33.03	1815.1	0.0
9/3/2009	15:49:28	40	SP3_0613	38.4198	-123.2828	33.03	1813.7	0.0
9/3/2009	15:49:36	40	SP3_0614	38.4204	-123.2879	33.03	1809.1	0.0
9/3/2009	15:49:44	40	SP3_0615	38.4210	-123.2927	33.03	1804.6	0.0
9/3/2009	15:49:52	40	SP3_0616	38.4213	-123.2977	33.03	1801.4	0.0
9/3/2009	15:50:01	40	SP3_0617	38.4213	-123.3026	33.03	1809.1	0.0
9/3/2009	15:50:11	40	SP3_0618	38.4209	-123.3090	33.03	1816.5	0.0
9/3/2009	15:50:24	40	SP3_0619	38.4200	-123.3167	33.03	1811.9	0.0
9/3/2009	15:50:33	40	SP3_0620	38.4191	-123.3222	33.03	1809.1	0.0
9/3/2009	15:50:42	40	SP3_0621	38.4179	-123.3276	33.03	1815.1	0.0
9/3/2009	15:50:51	40	SP3_0622	38.4169	-123.3328	33.03	1822.4	0.0
9/3/2009	15:51:01	40	SP3_0623	38.4159	-123.3382	33.03	1827.0	0.0
9/3/2009	15:51:10	40	SP3_0624	38.4153	-123.3439	33.03	1825.6	0.0
9/3/2009	15:51:19	40	SP3_0625	38.4150	-123.3491	33.03	1824.2	0.0
9/3/2009	15:51:28	40	SP3_0626	38.4151	-123.3549	33.03	1819.7	0.0

9/3/2009	15:51:37	40	SP3_0627	38.4154	-123.3602	33.03	1816.5	0.0
9/3/2009	15:51:46	40	SP3_0628	38.4158	-123.3658	33.03	1816.5	0.0
9/3/2009	15:51:56	40	SP3_0629	38.4165	-123.3714	33.03	1810.5	0.0
9/3/2009	15:52:05	40	SP3_0630	38.4173	-123.3769	33.03	1810.5	0.0
9/3/2009	15:52:14	40	SP3_0631	38.4181	-123.3824	33.03	1815.1	0.0
9/3/2009	15:52:23	40	SP3_0632	38.4187	-123.3876	33.03	1819.7	0.0
9/3/2009	15:52:32	40	SP3_0633	38.4189	-123.3931	33.03	1809.1	0.0
9/3/2009	15:52:41	40	SP3_0634	38.4188	-123.3987	33.03	1807.3	0.0
9/3/2009	15:52:50	40	SP3_0635	38.4186	-123.4042	33.03	1805.9	0.0
9/3/2009	15:52:59	40	SP3_0636	38.4183	-123.4095	33.03	1803.2	0.0
9/3/2009	15:53:09	40	SP3_0637	38.4179	-123.4151	33.03	1798.6	0.0
9/3/2009	15:53:18	40	SP3_0638	38.4174	-123.4206	33.03	1803.2	0.0
9/3/2009	15:53:27	40	SP3_0639	38.4166	-123.4263	33.03	1804.6	0.0
9/3/2009	15:53:36	40	SP3_0640	38.4157	-123.4315	33.03	1801.4	0.0
9/3/2009	15:53:45	40	SP3_0641	38.4148	-123.4370	33.03	1798.6	0.0
9/3/2009	15:53:54	40	SP3_0642	38.4140	-123.4425	33.03	1798.6	0.0
9/3/2009	15:54:04	40	SP3_0643	38.4132	-123.4481	33.03	1794.1	0.0
9/3/2009	15:54:13	40	SP3_0644	38.4128	-123.4534	33.03	1792.7	0.0
9/3/2009	15:54:22	40	SP3_0645	38.4126	-123.4590	33.03	1798.6	0.0
9/3/2009	15:54:31	40	SP3_0646	38.4128	-123.4646	33.03	1804.6	0.0
9/3/2009	15:54:40	40	SP3_0647	38.4129	-123.4702	33.03	1803.2	0.0
9/3/2009	15:54:49	40	SP3_0648	38.4129	-123.4758	33.03	1801.4	0.0
9/3/2009	15:54:58	40	SP3_0649	38.4130	-123.4812	33.03	1810.5	0.0
9/3/2009	15:55:08	40	SP3_0650	38.4132	-123.4870	33.03	1807.3	0.0
9/3/2009	15:55:17	40	SP3_0651	38.4135	-123.4924	33.03	1807.3	0.0
9/3/2009	15:55:26	40	SP3_0652	38.4135	-123.4980	33.03	1817.8	0.0
9/3/2009	15:55:35	40	SP3_0653	38.4135	-123.5036	33.03	1819.7	0.0
9/3/2009	15:55:44	40	SP3_0654	38.4137	-123.5092	33.03	1815.1	0.0
9/3/2009	16:04:58	41	SP3_0655	38.1709	-123.6167	55.05	1805.9	0.0
9/3/2009	16:05:07	41	SP3_0656	38.1711	-123.6103	55.05	1801.4	0.0
9/3/2009	16:05:27	41	SP3_0657	38.1706	-123.5959	55.05	1803.2	0.0
9/3/2009	16:05:34	41	SP3_0658	38.1703	-123.5903	55.05	1804.6	0.0

9/3/2009	16:05:42	41	SP3_0659	38.1698	-123.5847	55.05	1807.3	0.0
9/3/2009	16:05:49	41	SP3_0660	38.1693	-123.5790	55.05	1810.5	0.0
9/3/2009	16:05:57	41	SP3_0661	38.1687	-123.5734	55.05	1811.9	0.0
9/3/2009	16:06:04	41	SP3_0662	38.1683	-123.5678	55.05	1813.7	0.0
9/3/2009	16:06:12	41	SP3_0663	38.1679	-123.5621	55.05	1821.0	0.0
9/3/2009	16:06:20	41	SP3_0664	38.1675	-123.5564	55.05	1817.8	0.0
9/3/2009	16:06:27	41	SP3_0665	38.1673	-123.5507	55.05	1816.5	0.0
9/3/2009	16:06:35	41	SP3_0666	38.1672	-123.5450	55.05	1817.8	0.0
9/3/2009	16:06:42	41	SP3_0667	38.1671	-123.5392	55.05	1821.0	0.0
9/3/2009	16:06:50	41	SP3_0668	38.1671	-123.5335	55.05	1819.7	0.0
9/3/2009	16:06:58	41	SP3_0669	38.1670	-123.5278	55.05	1822.4	0.0
9/3/2009	16:07:05	41	SP3_0670	38.1672	-123.5220	55.05	1819.7	0.0
9/3/2009	16:07:13	41	SP3_0671	38.1674	-123.5165	55.05	1819.7	0.0
9/3/2009	16:07:20	41	SP3_0672	38.1676	-123.5105	55.05	1825.6	0.0
9/3/2009	16:07:28	41	SP3_0673	38.1678	-123.5048	55.05	1830.2	0.0
9/3/2009	16:07:35	41	SP3_0674	38.1680	-123.4993	55.05	1832.9	0.0
9/3/2009	16:07:43	41	SP3_0675	38.1681	-123.4935	55.05	1828.3	0.0
9/3/2009	16:07:51	41	SP3_0676	38.1680	-123.4877	55.05	1827.0	0.0
9/3/2009	16:07:58	41	SP3_0677	38.1679	-123.4819	55.05	1828.3	0.0
9/3/2009	16:08:06	41	SP3_0678	38.1678	-123.4762	55.05	1831.5	0.0
9/3/2009	16:08:13	41	SP3_0679	38.1676	-123.4704	55.05	1831.5	0.0
9/3/2009	16:08:21	41	SP3_0680	38.1676	-123.4647	55.05	1822.4	0.0
9/3/2009	16:08:29	41	SP3_0681	38.1675	-123.4588	55.05	1815.1	0.0
9/3/2009	16:08:36	41	SP3_0682	38.1674	-123.4529	55.05	1813.7	0.0
9/3/2009	16:08:44	41	SP3_0683	38.1674	-123.4470	55.05	1810.5	0.0
9/3/2009	16:08:51	41	SP3_0684	38.1674	-123.4412	55.05	1810.5	0.0
9/3/2009	16:08:59	41	SP3_0685	38.1675	-123.4353	55.05	1811.9	0.0
9/3/2009	16:09:06	41	SP3_0686	38.1675	-123.4295	55.05	1816.5	0.0
9/3/2009	16:09:25	41	SP3_0687	38.1680	-123.4152	55.05	1810.5	0.0
9/3/2009	16:09:32	41	SP3_0688	38.1682	-123.4097	55.05	1811.9	0.0
9/3/2009	16:09:40	41	SP3_0689	38.1684	-123.4042	55.05	1817.8	0.0
9/3/2009	16:09:47	41	SP3_0690	38.1685	-123.3984	55.05	1817.8	0.0

9/3/2009	16:09:54	41	SP3_0691	38.1685	-123.3929	55.05	1815.1	0.0
9/3/2009	16:10:02	41	SP3_0692	38.1686	-123.3874	55.05	1816.5	0.0
9/3/2009	16:10:09	41	SP3_0693	38.1685	-123.3819	55.05	1813.7	0.0
9/3/2009	16:10:16	41	SP3_0694	38.1684	-123.3760	55.05	1807.3	0.0
9/3/2009	16:10:24	41	SP3_0695	38.1682	-123.3704	55.05	1804.6	0.0
9/3/2009	16:10:31	41	SP3_0696	38.1681	-123.3648	55.05	1803.2	0.0
9/3/2009	16:10:38	41	SP3_0697	38.1681	-123.3592	55.05	1807.3	0.0
9/3/2009	16:10:46	41	SP3_0698	38.1682	-123.3534	55.05	1813.7	0.0
9/3/2009	16:10:53	41	SP3_0699	38.1683	-123.3479	55.05	1811.9	0.0
9/3/2009	16:11:00	41	SP3_0700	38.1683	-123.3423	55.05	1809.1	0.0
9/3/2009	16:11:07	41	SP3_0701	38.1683	-123.3368	55.05	1805.9	0.0
9/3/2009	16:11:15	41	SP3_0702	38.1682	-123.3309	55.05	1801.4	0.0
9/3/2009	16:11:22	41	SP3_0703	38.1679	-123.3253	55.05	1801.4	0.0
9/3/2009	16:11:29	41	SP3_0704	38.1675	-123.3197	55.05	1796.8	0.0
9/3/2009	16:11:37	41	SP3_0705	38.1671	-123.3138	55.05	1792.7	0.0
9/3/2009	16:11:44	41	SP3_0706	38.1667	-123.3083	55.05	1800.0	0.0
9/3/2009	16:11:51	41	SP3_0707	38.1664	-123.3028	55.05	1801.4	0.0
9/3/2009	16:11:59	41	SP3_0708	38.1662	-123.2973	55.05	1805.9	0.0
9/3/2009	16:12:06	41	SP3_0709	38.1660	-123.2915	55.05	1804.6	0.0
9/3/2009	16:12:13	41	SP3_0710	38.1659	-123.2860	55.05	1809.1	0.0
9/3/2009	16:12:21	41	SP3_0711	38.1659	-123.2805	55.05	1810.5	0.0
9/3/2009	16:12:28	41	SP3_0712	38.1659	-123.2750	55.05	1815.1	0.0
9/3/2009	16:12:35	41	SP3_0713	38.1658	-123.2692	55.05	1813.7	0.0
9/3/2009	16:12:42	41	SP3_0714	38.1658	-123.2638	55.05	1810.5	0.0
9/3/2009	16:12:50	41	SP3_0715	38.1656	-123.2583	55.05	1810.5	0.0
9/3/2009	16:12:57	41	SP3_0716	38.1655	-123.2528	55.05	1807.3	0.0
9/3/2009	16:13:04	41	SP3_0717	38.1654	-123.2472	55.05	1800.0	0.0
9/3/2009	16:13:12	41	SP3_0718	38.1653	-123.2414	55.05	1801.4	0.0
9/3/2009	16:13:19	41	SP3_0719	38.1654	-123.2359	55.05	1801.4	0.0
9/3/2009	16:13:26	41	SP3_0720	38.1656	-123.2304	55.05	1801.4	0.0
9/3/2009	16:13:33	41	SP3_0721	38.1660	-123.2249	55.05	1801.4	0.0
9/3/2009	16:13:41	41	SP3_0722	38.1665	-123.2191	55.05	1798.6	0.0

9/3/2009	16:13:48	41	SP3_0723	38.1671	-123.2136	55.05	1800.0	0.0
9/3/2009	16:13:55	41	SP3_0724	38.1676	-123.2082	55.05	1801.4	0.0
9/3/2009	16:14:03	41	SP3_0725	38.1680	-123.2024	55.05	1804.6	0.0
9/3/2009	16:14:10	41	SP3_0726	38.1682	-123.1970	55.05	1809.1	0.0
9/3/2009	16:14:17	41	SP3_0727	38.1683	-123.1915	55.05	1805.9	0.0
9/3/2009	16:14:25	41	SP3_0728	38.1683	-123.1861	55.05	1804.6	0.0
9/3/2009	16:14:32	41	SP3_0729	38.1683	-123.1803	55.05	1807.3	0.0
9/3/2009	16:14:39	41	SP3_0730	38.1683	-123.1749	55.05	1803.2	0.0
9/3/2009	16:14:46	41	SP3_0731	38.1683	-123.1694	55.05	1794.1	0.0
9/3/2009	16:14:54	41	SP3_0732	38.1683	-123.1638	55.05	1792.7	0.0
9/3/2009	16:15:01	41	SP3_0733	38.1683	-123.1583	55.05	1794.1	0.0
9/3/2009	16:15:08	41	SP3_0734	38.1684	-123.1525	55.05	1789.5	0.0
9/3/2009	16:15:16	41	SP3_0735	38.1684	-123.1470	55.05	1789.5	0.0
9/3/2009	16:15:23	41	SP3_0736	38.1682	-123.1416	55.05	1794.1	0.0
9/3/2009	16:15:30	41	SP3_0737	38.1678	-123.1358	55.05	1796.8	0.0
9/3/2009	16:15:38	41	SP3_0738	38.1673	-123.1305	55.05	1809.1	0.0
9/3/2009	16:15:45	41	SP3_0739	38.1669	-123.1252	55.05	1815.1	0.0
9/3/2009	16:15:52	41	SP3_0740	38.1664	-123.1199	55.05	1815.1	0.0
9/3/2009	16:16:00	41	SP3_0741	38.1660	-123.1142	55.05	1813.7	0.0
9/3/2009	16:16:07	41	SP3_0742	38.1657	-123.1088	55.05	1813.7	0.0
9/3/2009	16:16:14	41	SP3_0743	38.1653	-123.1034	55.05	1816.5	0.0
9/3/2009	16:16:21	41	SP3_0744	38.1649	-123.0980	55.05	1809.1	0.0
9/3/2009	16:16:29	41	SP3_0745	38.1646	-123.0923	55.05	1811.9	0.0
9/3/2009	16:16:36	41	SP3_0746	38.1644	-123.0869	55.05	1809.1	0.0
9/3/2009	16:16:43	41	SP3_0747	38.1642	-123.0814	55.05	1805.9	0.0
9/3/2009	16:16:51	41	SP3_0748	38.1642	-123.0758	55.05	1800.0	0.0
9/3/2009	16:16:58	41	SP3_0749	38.1642	-123.0702	55.05	1794.1	0.0
9/3/2009	16:17:05	41	SP3_0750	38.1644	-123.0643	55.05	1794.1	0.0
9/3/2009	16:17:13	41	SP3_0751	38.1645	-123.0588	55.05	1801.4	0.0
9/3/2009	16:17:20	41	SP3_0752	38.1648	-123.0533	55.05	1805.9	0.0
9/3/2009	16:17:27	41	SP3_0753	38.1651	-123.0476	55.05	1807.3	0.0
9/3/2009	16:17:34	41	SP3_0754	38.1655	-123.0421	55.05	1809.1	0.0

9/3/2009	16:17:42	41	SP3_0755	38.1661	-123.0367	55.05	1805.9	0.0
9/3/2009	16:17:49	41	SP3_0756	38.1669	-123.0312	55.05	1805.9	0.0
9/3/2009	16:17:56	41	SP3_0757	38.1677	-123.0255	55.05	1807.3	0.0
9/3/2009	16:18:04	41	SP3_0758	38.1685	-123.0201	55.05	1807.3	0.0
9/3/2009	16:18:11	41	SP3_0759	38.1693	-123.0147	55.05	1804.6	0.0
9/3/2009	16:18:18	41	SP3_0760	38.1701	-123.0092	55.05	1800.0	0.0
9/3/2009	16:18:26	41	SP3_0761	38.1710	-123.0034	55.05	1789.5	0.0
9/3/2009	16:18:33	41	SP3_0762	38.1720	-122.9980	55.05	1790.9	0.0
9/3/2009	16:18:40	41	SP3_0763	38.1729	-122.9925	55.05	1800.0	0.0
9/3/2009	16:18:47	41	SP3_0764	38.1737	-122.9870	55.05	1796.8	0.0

Sample ID (Set No., Set Date, Vessel)	Fish #	Weight (g)	Std Length (mm)	Sex	Maturity	Point Set Wt (mt)
1 07/28/2009 Pacific Pursuit	1	155.0	206	F	2	29.42
1 07/28/2009 Pacific Pursuit	2	176.5	213	F	1	29.42
1 07/28/2009 Pacific Pursuit	3	168.5	216	M	2	29.42
1 07/28/2009 Pacific Pursuit	4	149.5	200	M	2	29.42
1 07/28/2009 Pacific Pursuit	5	133.0	192	M	2	29.42
1 07/28/2009 Pacific Pursuit	6	171.0	213	M	2	29.42
1 07/28/2009 Pacific Pursuit	7	145.5	201	M	2	29.42
1 07/28/2009 Pacific Pursuit	8	118.5	187	F	1	29.42
1 07/28/2009 Pacific Pursuit	9	146.0	190	F	1	29.42
1 07/28/2009 Pacific Pursuit	10	179.0	211	M	2	29.42
1 07/28/2009 Pacific Pursuit	11	146.0	195	F	2	29.42
1 07/28/2009 Pacific Pursuit	12	167.0	206	F	1	29.42
1 07/28/2009 Pacific Pursuit	13	136.5	192	M	2	29.42
1 07/28/2009 Pacific Pursuit	14	114.0	188	M	2	29.42
1 07/28/2009 Pacific Pursuit	15	138.0	195	F	1	29.42
1 07/28/2009 Pacific Pursuit	16	139.0	196	M	2	29.42
1 07/28/2009 Pacific Pursuit	17	135.5	188	M	2	29.42
1 07/28/2009 Pacific Pursuit	18	163.0	212	M	2	29.42
1 07/28/2009 Pacific Pursuit	19	151.5	201	M	2	29.42
1 07/28/2009 Pacific Pursuit	20	137.5	195	M	2	29.42
1 07/28/2009 Pacific Pursuit	21	154.0	200	M	2	29.42
1 07/28/2009 Pacific Pursuit	22	174.5	211	F	2	29.42
1 07/28/2009 Pacific Pursuit	23	144.0	201	F	1	29.42
1 07/28/2009 Pacific Pursuit	24	151.5	199	F	1	29.42
1 07/28/2009 Pacific Pursuit	25	137.5	196	F	1	29.42
1 07/28/2009 Pacific Pursuit	26	127.5	182	M	2	29.42
1 07/28/2009 Pacific Pursuit	27	140.0	194	F	2	29.42
1 07/28/2009 Pacific Pursuit	28	153.0	204	M	2	29.42
1 07/28/2009 Pacific Pursuit	29	133.5	200	M	1	29.42
1 07/28/2009 Pacific Pursuit	30	163.5	206	M	2	29.42
1 07/28/2009 Pacific Pursuit	31	163.5	203	F	1	29.42
1 07/28/2009 Pacific Pursuit	32	150.0	195	F	1	29.42
1 07/28/2009 Pacific Pursuit	33	162.5	203	M	2	29.42
1 07/28/2009 Pacific Pursuit	34	150.0	186	M	2	29.42
1 07/28/2009 Pacific Pursuit	35	159.5	206	M	2	29.42
1 07/28/2009 Pacific Pursuit	36	169.0	208	F	1	29.42
1 07/28/2009 Pacific Pursuit	37	171.5	211	F	1	29.42
1 07/28/2009 Pacific Pursuit	38	166.5	205	F	2	29.42
1 07/28/2009 Pacific Pursuit	39	187.5	213	F	2	29.42
1 07/28/2009 Pacific Pursuit	40	175.5	210	F	1	29.42
1 07/28/2009 Pacific Pursuit	41	174.0	208	F	2	29.42
1 07/28/2009 Pacific Pursuit	42	183.5	212	F	1	29.42
1 07/28/2009 Pacific Pursuit	43	166.0	206	F	1	29.42
1 07/28/2009 Pacific Pursuit	44	158.0	204	F	1	29.42

1 07/28/2009 Pacific Pursuit	45	154.5	205	F	1	29.42
1 07/28/2009 Pacific Pursuit	46	166.5	202	M	2	29.42
1 07/28/2009 Pacific Pursuit	47	186.0	222	M	2	29.42
1 07/28/2009 Pacific Pursuit	48	148.5	200	M	1	29.42
1 07/28/2009 Pacific Pursuit	49	163.5	200	M	2	29.42
1 07/28/2009 Pacific Pursuit	50	141.5	194	M	2	29.42
3 07/28/2009 Pacific Pursuit	1	159.0	204	M	2	19.36
3 07/28/2009 Pacific Pursuit	2	144.0	200	M	2	19.36
3 07/28/2009 Pacific Pursuit	3	149.5	194	M	2	19.36
3 07/28/2009 Pacific Pursuit	4	152.5	195	F	2	19.36
3 07/28/2009 Pacific Pursuit	5	148.0	199	M	2	19.36
3 07/28/2009 Pacific Pursuit	6	152.0	208	F	1	19.36
3 07/28/2009 Pacific Pursuit	7	128.5	188	M	1	19.36
3 07/28/2009 Pacific Pursuit	8	163.0	208	F	2	19.36
3 07/28/2009 Pacific Pursuit	9	152.5	201	F	1	19.36
3 07/28/2009 Pacific Pursuit	10	162.5	208	F	2	19.36
3 07/28/2009 Pacific Pursuit	11	139.5	195	M	2	19.36
3 07/28/2009 Pacific Pursuit	12	157.5	203	F	1	19.36
3 07/28/2009 Pacific Pursuit	13	126.5	192	M	1	19.36
3 07/28/2009 Pacific Pursuit	14	151.0	206	M	2	19.36
3 07/28/2009 Pacific Pursuit	15	166.5	206	M	2	19.36
3 07/28/2009 Pacific Pursuit	16	165.0	207	M	1	19.36
3 07/28/2009 Pacific Pursuit	17	163.0	206	F	1	19.36
3 07/28/2009 Pacific Pursuit	18	134.0	198	F	1	19.36
3 07/28/2009 Pacific Pursuit	19	148.0	202	F	1	19.36
3 07/28/2009 Pacific Pursuit	20	156.5	208	F	2	19.36
3 07/28/2009 Pacific Pursuit	21	155.5	200	M	2	19.36
3 07/28/2009 Pacific Pursuit	22	131.0	190	M	1	19.36
3 07/28/2009 Pacific Pursuit	23	120.5	183	M	1	19.36
3 07/28/2009 Pacific Pursuit	24	149.0	203	F	2	19.36
3 07/28/2009 Pacific Pursuit	25	137.0	196	M	1	19.36
3 07/28/2009 Pacific Pursuit	26	148.0	198	M	2	19.36
3 07/28/2009 Pacific Pursuit	27	132.0	198	M	2	19.36
3 07/28/2009 Pacific Pursuit	28	130.5	196	F	1	19.36
3 07/28/2009 Pacific Pursuit	29	125.5	188	M	2	19.36
3 07/28/2009 Pacific Pursuit	30	116.0	187	M	2	19.36
3 07/28/2009 Pacific Pursuit	31	163.5	201	M	2	19.36
3 07/28/2009 Pacific Pursuit	32	159.0	203	M	2	19.36
3 07/28/2009 Pacific Pursuit	33	163.5	206	F	1	19.36
3 07/28/2009 Pacific Pursuit	34	159.5	204	M	2	19.36
3 07/28/2009 Pacific Pursuit	35	155.0	204	F	1	19.36
3 07/28/2009 Pacific Pursuit	36	132.0	190	M	2	19.36
3 07/28/2009 Pacific Pursuit	37	157.5	206	M	2	19.36
3 07/28/2009 Pacific Pursuit	38	176.5	211	M	2	19.36
3 07/28/2009 Pacific Pursuit	39	144.0	195	F	1	19.36

3 07/28/2009 Pacific Pursuit	40	123.5	190	F	1	19.36
3 07/28/2009 Pacific Pursuit	41	134.5	193	M	2	19.36
3 07/28/2009 Pacific Pursuit	42	171.5	207	F	2	19.36
3 07/28/2009 Pacific Pursuit	43	145.0	197	F	2	19.36
3 07/28/2009 Pacific Pursuit	44	139.0	192	F	1	19.36
3 07/28/2009 Pacific Pursuit	45	175.5	210	F	1	19.36
3 07/28/2009 Pacific Pursuit	46	137.5	202	F	2	19.36
3 07/28/2009 Pacific Pursuit	47	187.0	210	F	2	19.36
3 07/28/2009 Pacific Pursuit	48	134.0	189	F	1	19.36
3 07/28/2009 Pacific Pursuit	49	153.5	204	M	2	19.36
3 07/28/2009 Pacific Pursuit	50	142.0	195	M	2	19.36
2 07/28/2009 Lauren L Kapp	1	150.0	196	M	1	22.41
2 07/28/2009 Lauren L Kapp	2	136.5	192	M	1	22.41
2 07/28/2009 Lauren L Kapp	3	143.5	196	M	1	22.41
2 07/28/2009 Lauren L Kapp	4	176.0	212	F	1	22.41
2 07/28/2009 Lauren L Kapp	5	164.5	205	F	2	22.41
2 07/28/2009 Lauren L Kapp	6	158.0	204	F	1	22.41
2 07/28/2009 Lauren L Kapp	7	180.0	212	F	1	22.41
2 07/28/2009 Lauren L Kapp	8	180.5	215	F	1	22.41
2 07/28/2009 Lauren L Kapp	9	163.5	200	F	1	22.41
2 07/28/2009 Lauren L Kapp	10	140.5	197	F	1	22.41
2 07/28/2009 Lauren L Kapp	11	138.5	199	M	1	22.41
2 07/28/2009 Lauren L Kapp	12	152.5	202	M	2	22.41
2 07/28/2009 Lauren L Kapp	13	163.5	205	F	2	22.41
2 07/28/2009 Lauren L Kapp	14	149.0	195	F	1	22.41
2 07/28/2009 Lauren L Kapp	15	144.5	200	F	1	22.41
2 07/28/2009 Lauren L Kapp	16	149.0	198	M	2	22.41
2 07/28/2009 Lauren L Kapp	17	162.0	210	M	2	22.41
2 07/28/2009 Lauren L Kapp	18	144.0	197	F	1	22.41
2 07/28/2009 Lauren L Kapp	19	168.0	218	M	2	22.41
2 07/28/2009 Lauren L Kapp	20	128.0	194	F	1	22.41
2 07/28/2009 Lauren L Kapp	21	168.5	208	F	1	22.41
2 07/28/2009 Lauren L Kapp	22	168.5	213	F	1	22.41
2 07/28/2009 Lauren L Kapp	23	162.5	202	F	1	22.41
2 07/28/2009 Lauren L Kapp	24	145.5	195	M	2	22.41
2 07/28/2009 Lauren L Kapp	25	176.5	213	M	2	22.41
2 07/28/2009 Lauren L Kapp	26	141.0	197	F	1	22.41
2 07/28/2009 Lauren L Kapp	27	128.5	188	M	2	22.41
2 07/28/2009 Lauren L Kapp	28	130.0	195	M	1	22.41
2 07/28/2009 Lauren L Kapp	29	170.0	206	M	2	22.41
2 07/28/2009 Lauren L Kapp	30	152.0	202	M	2	22.41
2 07/28/2009 Lauren L Kapp	31	162.5	208	F	2	22.41
2 07/28/2009 Lauren L Kapp	32	136.0	193	M	2	22.41
2 07/28/2009 Lauren L Kapp	33	157.5	199	M	2	22.41
2 07/28/2009 Lauren L Kapp	34	144.0	195	M	2	22.41

2 07/28/2009 Lauren L Kapp	35	140.0	192	M	2	22.41
2 07/28/2009 Lauren L Kapp	36	115.5	185	M	2	22.41
2 07/28/2009 Lauren L Kapp	37	163.5	200	F	1	22.41
2 07/28/2009 Lauren L Kapp	38	136.5	196	M	2	22.41
2 07/28/2009 Lauren L Kapp	39	131.5	196	F	1	22.41
2 07/28/2009 Lauren L Kapp	40	162.5	208	M	2	22.41
2 07/28/2009 Lauren L Kapp	41	235.5	244	F	2	22.41
2 07/28/2009 Lauren L Kapp	42	151.5	199	M	2	22.41
2 07/28/2009 Lauren L Kapp	43	148.5	202	F	1	22.41
2 07/28/2009 Lauren L Kapp	44	137.0	200	F	1	22.41
2 07/28/2009 Lauren L Kapp	45	174.0	212	F	1	22.41
2 07/28/2009 Lauren L Kapp	46	167.0	212	M	2	22.41
2 07/28/2009 Lauren L Kapp	47	161.5	211	F	2	22.41
2 07/28/2009 Lauren L Kapp	48	123.5	187	M	1	22.41
2 07/28/2009 Lauren L Kapp	49	151.5	202	M	2	22.41
2 07/28/2009 Lauren L Kapp	50	136.0	191	M	2	22.41
4 07/28/2009 Lauren L Kapp	1	156.5	210	F	1	34.98
4 07/28/2009 Lauren L Kapp	2	132.0	191	M	2	34.98
4 07/28/2009 Lauren L Kapp	3	161.0	206	F	1	34.98
4 07/28/2009 Lauren L Kapp	4	170.5	204	M	2	34.98
4 07/28/2009 Lauren L Kapp	5	176.5	206	F	2	34.98
4 07/28/2009 Lauren L Kapp	6	176.5	213	F	1	34.98
4 07/28/2009 Lauren L Kapp	7	149.5	204	M	2	34.98
4 07/28/2009 Lauren L Kapp	8	133.5	199	M	1	34.98
4 07/28/2009 Lauren L Kapp	9	154.0	197	M	2	34.98
4 07/28/2009 Lauren L Kapp	10	124.5	186	M	2	34.98
4 07/28/2009 Lauren L Kapp	11	136.5	194	M	2	34.98
4 07/28/2009 Lauren L Kapp	12	141.0	198	M	2	34.98
4 07/28/2009 Lauren L Kapp	13	143.0	192	F	1	34.98
4 07/28/2009 Lauren L Kapp	14	174.0	215	F	1	34.98
4 07/28/2009 Lauren L Kapp	15	172.5	210	F	1	34.98
4 07/28/2009 Lauren L Kapp	16	131.0	194	F	2	34.98
4 07/28/2009 Lauren L Kapp	17	167.5	213	F	1	34.98
4 07/28/2009 Lauren L Kapp	18	153.0	200	F	1	34.98
4 07/28/2009 Lauren L Kapp	19	127.0	187	M	1	34.98
4 07/28/2009 Lauren L Kapp	20	161.0	206	F	2	34.98
4 07/28/2009 Lauren L Kapp	21	152.0	203	M	2	34.98
4 07/28/2009 Lauren L Kapp	22	145.0	207	M	2	34.98
4 07/28/2009 Lauren L Kapp	23	134.5	197	F	1	34.98
4 07/28/2009 Lauren L Kapp	24	161.0	209	F	1	34.98
4 07/28/2009 Lauren L Kapp	25	159.0	208	F	1	34.98
4 07/28/2009 Lauren L Kapp	26	175.0	215	F	1	34.98
4 07/28/2009 Lauren L Kapp	27	133.5	203	M	1	34.98
4 07/28/2009 Lauren L Kapp	28	143.0	200	M	1	34.98
4 07/28/2009 Lauren L Kapp	29	135.0	192	M	2	34.98

4 07/28/2009 Lauren L Kapp	30	141.5	197	F	1	34.98
4 07/28/2009 Lauren L Kapp	31	129.5	197	M	1	34.98
4 07/28/2009 Lauren L Kapp	32	130.0	195	M	2	34.98
4 07/28/2009 Lauren L Kapp	33	129.5	191	M	2	34.98
4 07/28/2009 Lauren L Kapp	34	132.0	193	M	1	34.98
4 07/28/2009 Lauren L Kapp	35	152.0	202	F	1	34.98
4 07/28/2009 Lauren L Kapp	36	169.0	215	F	2	34.98
4 07/28/2009 Lauren L Kapp	37	121.5	191	F	1	34.98
4 07/28/2009 Lauren L Kapp	38	136.0	198	M	1	34.98
4 07/28/2009 Lauren L Kapp	39	137.5	194	M	2	34.98
4 07/28/2009 Lauren L Kapp	40	149.0	200	M	1	34.98
4 07/28/2009 Lauren L Kapp	41	146.5	193	F	1	34.98
4 07/28/2009 Lauren L Kapp	42	138.0	197	M	1	34.98
4 07/28/2009 Lauren L Kapp	43	151.5	204	M	2	34.98
4 07/28/2009 Lauren L Kapp	44	111.0	183	F	1	34.98
4 07/28/2009 Lauren L Kapp	45	145.0	201	M	2	34.98
4 07/28/2009 Lauren L Kapp	46	134.5	192	M	2	34.98
4 07/28/2009 Lauren L Kapp	47	124.5	188	M	2	34.98
4 07/28/2009 Lauren L Kapp	48	169.0	209	F	2	34.98
4 07/28/2009 Lauren L Kapp	49	141.5	202	M	2	34.98
4 07/28/2009 Lauren L Kapp	50	124.0	199	M	2	34.98
5 08/13/2009 Pacific Pursuit	1	137.0	201	M	2	128.15
5 08/13/2009 Pacific Pursuit	2	120.0	189	M	2	128.15
5 08/13/2009 Pacific Pursuit	3	122.5	197	F	2	128.15
5 08/13/2009 Pacific Pursuit	4	154.5	212	F	2	128.15
5 08/13/2009 Pacific Pursuit	5	131.0	197	M	2	128.15
5 08/13/2009 Pacific Pursuit	6	143.0	201	F	2	128.15
5 08/13/2009 Pacific Pursuit	7	119.5	191	M	2	128.15
5 08/13/2009 Pacific Pursuit	8	166.5	215	F	2	128.15
5 08/13/2009 Pacific Pursuit	9	121.0	187	F	2	128.15
5 08/13/2009 Pacific Pursuit	10	127.0	200	F	2	128.15
5 08/13/2009 Pacific Pursuit	11	196.0	234	F	2	128.15
5 08/13/2009 Pacific Pursuit	12	112.0	187	F	1	128.15
5 08/13/2009 Pacific Pursuit	13	131.0	201	M	2	128.15
5 08/13/2009 Pacific Pursuit	14	118.5	197	F	1	128.15
5 08/13/2009 Pacific Pursuit	15	116.0	193	F	1	128.15
5 08/13/2009 Pacific Pursuit	16	117.5	189	F	1	128.15
5 08/13/2009 Pacific Pursuit	17	130.0	195	F	1	128.15
5 08/13/2009 Pacific Pursuit	18	127.5	197	F	2	128.15
5 08/13/2009 Pacific Pursuit	19	152.5	207	M	2	128.15
5 08/13/2009 Pacific Pursuit	20	133.0	194	F	1	128.15
5 08/13/2009 Pacific Pursuit	21	106.5	185	M	2	128.15
5 08/13/2009 Pacific Pursuit	22	148.0	204	M	2	128.15
5 08/13/2009 Pacific Pursuit	23	157.5	211	F	2	128.15
5 08/13/2009 Pacific Pursuit	24	100.5	177	M	1	128.15

5 08/13/2009 Pacific Pursuit	25	124.0	191	F	1	128.15
5 08/13/2009 Pacific Pursuit	26	121.0	185	F	1	128.15
5 08/13/2009 Pacific Pursuit	27	115.0	186	F	1	128.15
5 08/13/2009 Pacific Pursuit	28	132.0	205	F	2	128.15
5 08/13/2009 Pacific Pursuit	29	162.0	214	F	2	128.15
5 08/13/2009 Pacific Pursuit	30	143.0	206	M	2	128.15
5 08/13/2009 Pacific Pursuit	31	136.0	200	M	2	128.15
5 08/13/2009 Pacific Pursuit	32	133.5	198	F	2	128.15
5 08/13/2009 Pacific Pursuit	33	133.5	197	M	2	128.15
5 08/13/2009 Pacific Pursuit	34	125.0	195	F	2	128.15
5 08/13/2009 Pacific Pursuit	35	128.0	200	F	2	128.15
5 08/13/2009 Pacific Pursuit	36	138.0	197	F	2	128.15
5 08/13/2009 Pacific Pursuit	37	116.0	189	M	1	128.15
5 08/13/2009 Pacific Pursuit	38	118.5	194	F	2	128.15
5 08/13/2009 Pacific Pursuit	39	122.0	191	F	1	128.15
5 08/13/2009 Pacific Pursuit	40	134.0	203	M	2	128.15
5 08/13/2009 Pacific Pursuit	41	143.0	207	M	2	128.15
5 08/13/2009 Pacific Pursuit	42	122.0	193	M	2	128.15
5 08/13/2009 Pacific Pursuit	43	123.5	187	M	2	128.15
5 08/13/2009 Pacific Pursuit	44	120.0	191	M	2	128.15
5 08/13/2009 Pacific Pursuit	45	122.0	186	F	2	128.15
5 08/13/2009 Pacific Pursuit	46	120.0	193	M	2	128.15
5 08/13/2009 Pacific Pursuit	47	116.5	195	M	1	128.15
5 08/13/2009 Pacific Pursuit	48	129.0	197	M	2	128.15
5 08/13/2009 Pacific Pursuit	49	125.0	193	M	2	128.15
5 08/13/2009 Pacific Pursuit	50	107.0	182	M	2	128.15
5 08/13/2009 Pacific Pursuit	51	111.5	189	M	1	128.15
5 08/13/2009 Pacific Pursuit	52	116.0	187	M	2	128.15
5 08/13/2009 Pacific Pursuit	53	104.5	185	M	1	128.15
5 08/13/2009 Pacific Pursuit	54	126.5	200	F	2	128.15
5 08/13/2009 Pacific Pursuit	55	120.5	189	F	1	128.15
5 08/13/2009 Pacific Pursuit	56	128.5	203	M	2	128.15
5 08/13/2009 Pacific Pursuit	57	122.0	195	F	1	128.15
5 08/13/2009 Pacific Pursuit	58	115.0	193	F	1	128.15
5 08/13/2009 Pacific Pursuit	59	128.5	193	M	2	128.15
5 08/13/2009 Pacific Pursuit	60	105.5	185	F	1	128.15
6 08/13/2009 Lauren L Kapp	1	133.5	193	F	1	2.68
6 08/13/2009 Lauren L Kapp	2	144.5	206	F	2	2.68
6 08/13/2009 Lauren L Kapp	3	103.0	179	M	2	2.68
6 08/13/2009 Lauren L Kapp	4	137.5	201	F	2	2.68
6 08/13/2009 Lauren L Kapp	5	120.5	196	F	2	2.68
6 08/13/2009 Lauren L Kapp	6	113.5	188	M	1	2.68
6 08/13/2009 Lauren L Kapp	7	132.5	198	F	2	2.68
6 08/13/2009 Lauren L Kapp	8	97.5	182	M	1	2.68
6 08/13/2009 Lauren L Kapp	9	126.5	197	F	2	2.68

6 08/13/2009 Lauren L Kapp	10	158.0	212	F	2	2.68
6 08/13/2009 Lauren L Kapp	11	111.0	187	M	2	2.68
6 08/13/2009 Lauren L Kapp	12	109.0	186	M	2	2.68
6 08/13/2009 Lauren L Kapp	13	100.0	181	F	1	2.68
6 08/13/2009 Lauren L Kapp	14	117.5	189	M	2	2.68
6 08/13/2009 Lauren L Kapp	15	124.0	200	F	2	2.68
6 08/13/2009 Lauren L Kapp	16	126.0	197	M	2	2.68
6 08/13/2009 Lauren L Kapp	17	127.5	200	F	2	2.68
6 08/13/2009 Lauren L Kapp	18	124.5	193	F	2	2.68
6 08/13/2009 Lauren L Kapp	19	141.5	211	F	2	2.68
6 08/13/2009 Lauren L Kapp	20	143.5	202	M	2	2.68
6 08/13/2009 Lauren L Kapp	21	139.0	201	F	2	2.68
6 08/13/2009 Lauren L Kapp	22	114.5	190	M	2	2.68
6 08/13/2009 Lauren L Kapp	23	132.5	193	F	2	2.68
6 08/13/2009 Lauren L Kapp	24	137.0	200	F	2	2.68
6 08/13/2009 Lauren L Kapp	25	113.5	190	F	2	2.68
6 08/13/2009 Lauren L Kapp	26	109.0	182	M	2	2.68
6 08/13/2009 Lauren L Kapp	27	129.5	200	F	2	2.68
6 08/13/2009 Lauren L Kapp	28	131.5	196	F	2	2.68
6 08/13/2009 Lauren L Kapp	29	133.0	204	F	2	2.68
6 08/13/2009 Lauren L Kapp	30	135.5	201	F	2	2.68
6 08/13/2009 Lauren L Kapp	31	98.5	182	M	2	2.68
6 08/13/2009 Lauren L Kapp	32	130.0	203	F	1	2.68
6 08/13/2009 Lauren L Kapp	33	151.5	208	M	2	2.68
6 08/13/2009 Lauren L Kapp	34	142.5	210	M	2	2.68
6 08/13/2009 Lauren L Kapp	35	107.5	188	M	2	2.68
6 08/13/2009 Lauren L Kapp	36	137.5	209	F	2	2.68
6 08/13/2009 Lauren L Kapp	37	130.0	198	F	2	2.68
6 08/13/2009 Lauren L Kapp	38	111.5	188	F	2	2.68
6 08/13/2009 Lauren L Kapp	39	151.0	213	F	2	2.68
6 08/13/2009 Lauren L Kapp	40	99.0	182	M	2	2.68
6 08/13/2009 Lauren L Kapp	41	124.5	191	M	2	2.68
6 08/13/2009 Lauren L Kapp	42	138.5	200	F	2	2.68
6 08/13/2009 Lauren L Kapp	43	125.5	195	F	2	2.68
6 08/13/2009 Lauren L Kapp	44	120.5	198	M	2	2.68
6 08/13/2009 Lauren L Kapp	45	125.0	195	M	2	2.68
6 08/13/2009 Lauren L Kapp	46	122.0	191	M	2	2.68
6 08/13/2009 Lauren L Kapp	47	112.0	191	F	2	2.68
6 08/13/2009 Lauren L Kapp	48	131.0	204	M	2	2.68
6 08/13/2009 Lauren L Kapp	49	137.0	205	M	2	2.68
6 08/13/2009 Lauren L Kapp	50	106.0	185	F	2	2.68
7 08/14/2009 Pacific Pursuit	1	122.0	193	M	2	42
7 08/14/2009 Pacific Pursuit	2	116.5	187	F	2	42
7 08/14/2009 Pacific Pursuit	3	133.5	200	F	2	42
7 08/14/2009 Pacific Pursuit	4	114.0	191	F	2	42

7 08/14/2009 Pacific Pursuit	5	155.5	211	M	2	42
7 08/14/2009 Pacific Pursuit	6	151.0	202	F	2	42
7 08/14/2009 Pacific Pursuit	7	125.5	199	F	2	42
7 08/14/2009 Pacific Pursuit	8	128.0	194	M	2	42
7 08/14/2009 Pacific Pursuit	9	127.5	192	F	2	42
7 08/14/2009 Pacific Pursuit	10	136.0	200	F	2	42
7 08/14/2009 Pacific Pursuit	11	124.5	185	M	2	42
7 08/14/2009 Pacific Pursuit	12	141.5	200	F	2	42
7 08/14/2009 Pacific Pursuit	13	108.0	184	M	2	42
7 08/14/2009 Pacific Pursuit	14	160.0	212	F	2	42
7 08/14/2009 Pacific Pursuit	15	107.5	190	M	2	42
7 08/14/2009 Pacific Pursuit	16	108.5	184	F	2	42
7 08/14/2009 Pacific Pursuit	17	113.5	185	M	2	42
7 08/14/2009 Pacific Pursuit	18	130.0	200	F	2	42
7 08/14/2009 Pacific Pursuit	19	120.5	191	F	2	42
7 08/14/2009 Pacific Pursuit	20	132.5	206	F	2	42
7 08/14/2009 Pacific Pursuit	21	137.0	204	M	2	42
7 08/14/2009 Pacific Pursuit	22	123.5	190	M	2	42
7 08/14/2009 Pacific Pursuit	23	107.5	186	M	2	42
7 08/14/2009 Pacific Pursuit	24	114.0	191	M	2	42
7 08/14/2009 Pacific Pursuit	25	117.0	193	F	2	42
7 08/14/2009 Pacific Pursuit	26	132.5	200	F	2	42
7 08/14/2009 Pacific Pursuit	27	122.0	194	F	1	42
7 08/14/2009 Pacific Pursuit	28	113.0	193	F	2	42
7 08/14/2009 Pacific Pursuit	29	139.0	205	M	2	42
7 08/14/2009 Pacific Pursuit	30	127.5	197	M	2	42
7 08/14/2009 Pacific Pursuit	31	130.0	195	F	2	42
7 08/14/2009 Pacific Pursuit	32	131.0	189	F	2	42
7 08/14/2009 Pacific Pursuit	33	95.5	179	M	1	42
7 08/14/2009 Pacific Pursuit	34	99.0	184	M	2	42
7 08/14/2009 Pacific Pursuit	35	113.0	191	M	2	42
7 08/14/2009 Pacific Pursuit	36	99.0	182	M	2	42
7 08/14/2009 Pacific Pursuit	37	142.5	205	F	2	42
7 08/14/2009 Pacific Pursuit	38	124.0	189	M	2	42
7 08/14/2009 Pacific Pursuit	39	127.0	198	M	2	42
7 08/14/2009 Pacific Pursuit	40	121.0	190	M	2	42
7 08/14/2009 Pacific Pursuit	41	126.0	198	M	2	42
7 08/14/2009 Pacific Pursuit	42	111.0	188	M	2	42
7 08/14/2009 Pacific Pursuit	43	105.5	182	F	2	42
7 08/14/2009 Pacific Pursuit	44	126.5	192	M	2	42
7 08/14/2009 Pacific Pursuit	45	109.0	184	M	2	42
7 08/14/2009 Pacific Pursuit	46	108.0	185	M	2	42
7 08/14/2009 Pacific Pursuit	47	125.0	193	F	2	42
7 08/14/2009 Pacific Pursuit	48	112.5	205	M	2	42
7 08/14/2009 Pacific Pursuit	49	124.0	189	F	2	42

7 08/14/2009 Pacific Pursuit	50	122.0	192	M	2	42
8 08/14/2009 Lauren L Kapp	1	128.5	201	M	2	50.1
8 08/14/2009 Lauren L Kapp	2	121.0	196	M	2	50.1
8 08/14/2009 Lauren L Kapp	3	118.5	194	F	2	50.1
8 08/14/2009 Lauren L Kapp	4	99.0	184	F	1	50.1
8 08/14/2009 Lauren L Kapp	5	105.5	185	M	2	50.1
8 08/14/2009 Lauren L Kapp	6	124.5	197	F	2	50.1
8 08/14/2009 Lauren L Kapp	7	154.0	207	M	2	50.1
8 08/14/2009 Lauren L Kapp	8	126.0	192	F	2	50.1
8 08/14/2009 Lauren L Kapp	9	142.0	198	F	2	50.1
8 08/14/2009 Lauren L Kapp	10	134.5	203	F	2	50.1
8 08/14/2009 Lauren L Kapp	11	104.0	183	M	2	50.1
8 08/14/2009 Lauren L Kapp	12	120.0	187	F	2	50.1
8 08/14/2009 Lauren L Kapp	13	103.0	187	F	2	50.1
8 08/14/2009 Lauren L Kapp	14	143.0	202	F	2	50.1
8 08/14/2009 Lauren L Kapp	15	109.5	181	F	2	50.1
8 08/14/2009 Lauren L Kapp	16	137.5	201	M	2	50.1
8 08/14/2009 Lauren L Kapp	17	97.0	177	M	2	50.1
8 08/14/2009 Lauren L Kapp	18	135.5	203	F	2	50.1
8 08/14/2009 Lauren L Kapp	19	98.0	180	F	1	50.1
8 08/14/2009 Lauren L Kapp	20	142.5	202	F	2	50.1
8 08/14/2009 Lauren L Kapp	21	130.0	199	F	2	50.1
8 08/14/2009 Lauren L Kapp	22	114.5	191	M	2	50.1
8 08/14/2009 Lauren L Kapp	23	124.0	200	M	2	50.1
8 08/14/2009 Lauren L Kapp	24	125.5	197	F	2	50.1
8 08/14/2009 Lauren L Kapp	25	117.0	190	F	2	50.1
8 08/14/2009 Lauren L Kapp	26	134.5	203	F	2	50.1
8 08/14/2009 Lauren L Kapp	27	112.0	192	F	2	50.1
8 08/14/2009 Lauren L Kapp	28	135.5	198	M	2	50.1
8 08/14/2009 Lauren L Kapp	29	123.5	195	M	2	50.1
8 08/14/2009 Lauren L Kapp	30	132.0	192	F	2	50.1
8 08/14/2009 Lauren L Kapp	31	118.5	195	F	2	50.1
8 08/14/2009 Lauren L Kapp	32	136.5	203	F	2	50.1
8 08/14/2009 Lauren L Kapp	33	125.5	190	F	2	50.1
8 08/14/2009 Lauren L Kapp	34	107.5	193	M	2	50.1
8 08/14/2009 Lauren L Kapp	35	116.0	194	M	2	50.1
8 08/14/2009 Lauren L Kapp	36	113.5	186	M	2	50.1
8 08/14/2009 Lauren L Kapp	37	126.0	193	F	2	50.1
8 08/14/2009 Lauren L Kapp	38	115.5	192	F	2	50.1
8 08/14/2009 Lauren L Kapp	39	118.5	192	F	2	50.1
8 08/14/2009 Lauren L Kapp	40	143.5	205	M	2	50.1
8 08/14/2009 Lauren L Kapp	41	137.5	197	M	2	50.1
8 08/14/2009 Lauren L Kapp	42	141.5	202	M	2	50.1
8 08/14/2009 Lauren L Kapp	43	113.5	191	M	2	50.1
8 08/14/2009 Lauren L Kapp	44	121.0	193	M	2	50.1

8 08/14/2009 Lauren L Kapp	45	125.0	198	F	2	50.1
8 08/14/2009 Lauren L Kapp	46	112.0	184	M	2	50.1
8 08/14/2009 Lauren L Kapp	47	155.5	215	F	2	50.1
8 08/14/2009 Lauren L Kapp	48	115.5	192	M	2	50.1
8 08/14/2009 Lauren L Kapp	49	127.5	193	F	2	50.1
8 08/14/2009 Lauren L Kapp	50	134.5	200	F	2	50.1
9 08/14/2009 Pacific Pursuit	1	124.5	193	M	2	32.57
9 08/14/2009 Pacific Pursuit	2	100.0	178	M	2	32.57
9 08/14/2009 Pacific Pursuit	3	118.0	193	F	2	32.57
9 08/14/2009 Pacific Pursuit	4	126.5	198	F	2	32.57
9 08/14/2009 Pacific Pursuit	5	94.5	179	M	2	32.57
9 08/14/2009 Pacific Pursuit	6	113.0	190	F	2	32.57
9 08/14/2009 Pacific Pursuit	7	123.0	192	M	2	32.57
9 08/14/2009 Pacific Pursuit	8	106.0	185	M	2	32.57
9 08/14/2009 Pacific Pursuit	9	133.5	202	M	2	32.57
9 08/14/2009 Pacific Pursuit	10	140.5	193	M	2	32.57
9 08/14/2009 Pacific Pursuit	11	119.0	190	F	2	32.57
9 08/14/2009 Pacific Pursuit	12	98.0	180	F	2	32.57
9 08/14/2009 Pacific Pursuit	13	111.5	193	F	2	32.57
9 08/14/2009 Pacific Pursuit	14	90.5	172	F	2	32.57
9 08/14/2009 Pacific Pursuit	15	114.0	187	F	2	32.57
9 08/14/2009 Pacific Pursuit	16	110.5	190	F	2	32.57
9 08/14/2009 Pacific Pursuit	17	110.5	180	F	2	32.57
9 08/14/2009 Pacific Pursuit	18	95.5	183	F	2	32.57
9 08/14/2009 Pacific Pursuit	19	108.0	188	F	2	32.57
9 08/14/2009 Pacific Pursuit	20	119.0	189	M	2	32.57
9 08/14/2009 Pacific Pursuit	21	114.0	190	F	2	32.57
9 08/14/2009 Pacific Pursuit	22	117.0	185	M	2	32.57
9 08/14/2009 Pacific Pursuit	23	109.5	186	F	2	32.57
9 08/14/2009 Pacific Pursuit	24	109.5	188	F	2	32.57
9 08/14/2009 Pacific Pursuit	25	88.5	184	F	2	32.57
9 08/14/2009 Pacific Pursuit	26	146.0	209	F	2	32.57
9 08/14/2009 Pacific Pursuit	27	106.0	185	M	2	32.57
9 08/14/2009 Pacific Pursuit	28	120.5	194	M	2	32.57
9 08/14/2009 Pacific Pursuit	29	140.5	196	F	2	32.57
9 08/14/2009 Pacific Pursuit	30	101.0	181	F	2	32.57
9 08/14/2009 Pacific Pursuit	31	115.0	191	F	2	32.57
9 08/14/2009 Pacific Pursuit	32	107.5	185	F	2	32.57
9 08/14/2009 Pacific Pursuit	33	107.5	185	M	2	32.57
9 08/14/2009 Pacific Pursuit	34	102.0	185	M	2	32.57
9 08/14/2009 Pacific Pursuit	35	106.0	200	M	2	32.57
9 08/14/2009 Pacific Pursuit	36	106.0	182	F	2	32.57
9 08/14/2009 Pacific Pursuit	37	109.0	183	F	2	32.57
9 08/14/2009 Pacific Pursuit	38	114.0	188	F	2	32.57
9 08/14/2009 Pacific Pursuit	39	138.5	204	F	2	32.57

9 08/14/2009 Pacific Pursuit	40	94.5	181	F	2	32.57
9 08/14/2009 Pacific Pursuit	41	147.5	204	M	2	32.57
9 08/14/2009 Pacific Pursuit	42	158.5	210	F	2	32.57
9 08/14/2009 Pacific Pursuit	43	118.0	190	M	2	32.57
9 08/14/2009 Pacific Pursuit	44	105.0	183	F	2	32.57
9 08/14/2009 Pacific Pursuit	45	109.5	187	F	2	32.57
9 08/14/2009 Pacific Pursuit	46	140.5	205	F	2	32.57
9 08/14/2009 Pacific Pursuit	47	103.5	183	M	2	32.57
9 08/14/2009 Pacific Pursuit	48	110.5	192	F	2	32.57
9 08/14/2009 Pacific Pursuit	49	148.5	207	M	2	32.57
9 08/14/2009 Pacific Pursuit	50	110.0	189	M	2	32.57
10 08/16/2009 Lauren L Kapp	1	165.5	212	F	2	56.43
10 08/16/2009 Lauren L Kapp	2	112.5	187	F	2	56.43
10 08/16/2009 Lauren L Kapp	3	141.5	205	M	2	56.43
10 08/16/2009 Lauren L Kapp	4	141.0	202	M	2	56.43
10 08/16/2009 Lauren L Kapp	5	114.5	195	M	2	56.43
10 08/16/2009 Lauren L Kapp	6	145.0	210	M	2	56.43
10 08/16/2009 Lauren L Kapp	7	140.0	207	F	2	56.43
10 08/16/2009 Lauren L Kapp	8	132.5	202	M	2	56.43
10 08/16/2009 Lauren L Kapp	9	137.5	207	F	2	56.43
10 08/16/2009 Lauren L Kapp	10	110.5	192	F	2	56.43
10 08/16/2009 Lauren L Kapp	11	109.0	185	M	2	56.43
10 08/16/2009 Lauren L Kapp	12	106.5	187	M	2	56.43
10 08/16/2009 Lauren L Kapp	13	108.0	183	M	2	56.43
10 08/16/2009 Lauren L Kapp	14	108.0	187	M	1	56.43
10 08/16/2009 Lauren L Kapp	15	105.5	183	F	2	56.43
10 08/16/2009 Lauren L Kapp	16	137.0	203	F	2	56.43
10 08/16/2009 Lauren L Kapp	17	104.5	185	M	1	56.43
10 08/16/2009 Lauren L Kapp	18	134.5	196	M	2	56.43
10 08/16/2009 Lauren L Kapp	19	147.0	208	M	2	56.43
10 08/16/2009 Lauren L Kapp	20	142.0	207	F	2	56.43
10 08/16/2009 Lauren L Kapp	21	123.5	193	F	2	56.43
10 08/16/2009 Lauren L Kapp	22	120.0	192	M	2	56.43
10 08/16/2009 Lauren L Kapp	23	116.0	184	M	2	56.43
10 08/16/2009 Lauren L Kapp	24	122.0	194	M	2	56.43
10 08/16/2009 Lauren L Kapp	25	117.0	192	F	2	56.43
10 08/16/2009 Lauren L Kapp	26	97.0	180	F	2	56.43
10 08/16/2009 Lauren L Kapp	27	111.5	186	M	2	56.43
10 08/16/2009 Lauren L Kapp	28	107.5	190	M	2	56.43
10 08/16/2009 Lauren L Kapp	29	107.5	186	M	2	56.43
10 08/16/2009 Lauren L Kapp	30	127.5	197	M	2	56.43
10 08/16/2009 Lauren L Kapp	31	104.5	185	M	2	56.43
10 08/16/2009 Lauren L Kapp	32	119.0	198	F	2	56.43
10 08/16/2009 Lauren L Kapp	33	129.5	196	F	2	56.43
10 08/16/2009 Lauren L Kapp	34	129.5	198	M	2	56.43

10 08/16/2009 Lauren L Kapp	35	106.0	189	F	2	56.43
10 08/16/2009 Lauren L Kapp	36	117.0	187	F	2	56.43
10 08/16/2009 Lauren L Kapp	37	155.0	196	M	2	56.43
10 08/16/2009 Lauren L Kapp	38	120.0	193	F	2	56.43
10 08/16/2009 Lauren L Kapp	39	138.5	196	F	2	56.43
10 08/16/2009 Lauren L Kapp	40	147.0	203	M	2	56.43
10 08/16/2009 Lauren L Kapp	41	108.0	184	F	2	56.43
10 08/16/2009 Lauren L Kapp	42	139.0	201	M	2	56.43
10 08/16/2009 Lauren L Kapp	43	147.0	205	F	2	56.43
10 08/16/2009 Lauren L Kapp	44	122.0	195	M	2	56.43
10 08/16/2009 Lauren L Kapp	45	104.0	187	M	2	56.43
10 08/16/2009 Lauren L Kapp	46	133.0	203	M	2	56.43
10 08/16/2009 Lauren L Kapp	47	111.0	195	M	2	56.43
10 08/16/2009 Lauren L Kapp	48	105.5	183	M	1	56.43
10 08/16/2009 Lauren L Kapp	49	111.0	187	M	2	56.43
10 08/16/2009 Lauren L Kapp	50	109.5	190	F	2	56.43
11 08/16/2009 Pacific Pursuit	1	163.5	209	F	2	27.25
11 08/16/2009 Pacific Pursuit	2	129.0	197	M	2	27.25
11 08/16/2009 Pacific Pursuit	3	146.0	206	M	2	27.25
11 08/16/2009 Pacific Pursuit	4	116.5	194	F	2	27.25
11 08/16/2009 Pacific Pursuit	5	137.0	197	F	2	27.25
11 08/16/2009 Pacific Pursuit	6	149.0	207	M	2	27.25
11 08/16/2009 Pacific Pursuit	7	133.5	202	F	2	27.25
11 08/16/2009 Pacific Pursuit	8	138.0	207	F	2	27.25
11 08/16/2009 Pacific Pursuit	9	113.0	191	F	2	27.25
11 08/16/2009 Pacific Pursuit	10	144.0	206	F	2	27.25
11 08/16/2009 Pacific Pursuit	11	120.5	195	M	2	27.25
11 08/16/2009 Pacific Pursuit	12	126.5	198	M	2	27.25
11 08/16/2009 Pacific Pursuit	13	108.0	184	F	2	27.25
11 08/16/2009 Pacific Pursuit	14	106.0	188	M	2	27.25
11 08/16/2009 Pacific Pursuit	15	136.0	205	F	2	27.25
11 08/16/2009 Pacific Pursuit	16	141.0	198	F	2	27.25
11 08/16/2009 Pacific Pursuit	17	114.5	193	M	2	27.25
11 08/16/2009 Pacific Pursuit	18	120.5	191	M	2	27.25
11 08/16/2009 Pacific Pursuit	19	140.5	200	F	2	27.25
11 08/16/2009 Pacific Pursuit	20	131.5	194	F	2	27.25
11 08/16/2009 Pacific Pursuit	21	117.5	188	F	2	27.25
11 08/16/2009 Pacific Pursuit	22	148.0	202	F	2	27.25
11 08/16/2009 Pacific Pursuit	23	107.0	186	F	2	27.25
11 08/16/2009 Pacific Pursuit	24	137.5	205	F	2	27.25
11 08/16/2009 Pacific Pursuit	25	117.0	192	F	2	27.25
11 08/16/2009 Pacific Pursuit	26	108.0	193	M	2	27.25
11 08/16/2009 Pacific Pursuit	27	114.5	196	F	2	27.25
11 08/16/2009 Pacific Pursuit	28	100.5	184	M	2	27.25
11 08/16/2009 Pacific Pursuit	29	114.0	193	M	2	27.25

11 08/16/2009 Pacific Pursuit	30	141.5	198	M	2	27.25
11 08/16/2009 Pacific Pursuit	31	118.5	188	F	2	27.25
11 08/16/2009 Pacific Pursuit	32	143.5	203	M	2	27.25
11 08/16/2009 Pacific Pursuit	33	116.5	193	M	2	27.25
11 08/16/2009 Pacific Pursuit	34	124.5	193	F	2	27.25
11 08/16/2009 Pacific Pursuit	35	115.5	190	F	2	27.25
11 08/16/2009 Pacific Pursuit	36	125.0	200	F	2	27.25
11 08/16/2009 Pacific Pursuit	37	104.0	181	M	2	27.25
11 08/16/2009 Pacific Pursuit	38	136.5	198	F	2	27.25
11 08/16/2009 Pacific Pursuit	39	129.5	196	F	2	27.25
11 08/16/2009 Pacific Pursuit	40	114.0	188	M	2	27.25
11 08/16/2009 Pacific Pursuit	41	113.5	190	F	2	27.25
11 08/16/2009 Pacific Pursuit	42	119.5	194	F	2	27.25
11 08/16/2009 Pacific Pursuit	43	131.0	197	F	2	27.25
11 08/16/2009 Pacific Pursuit	44	117.5	192	M	2	27.25
11 08/16/2009 Pacific Pursuit	45	123.0	190	M	2	27.25
11 08/16/2009 Pacific Pursuit	46	106.0	183	F	2	27.25
11 08/16/2009 Pacific Pursuit	47	136.0	202	F	2	27.25
11 08/16/2009 Pacific Pursuit	48	123.5	193	M	2	27.25
11 08/16/2009 Pacific Pursuit	49	109.0	183	M	2	27.25
11 08/16/2009 Pacific Pursuit	50	125.0	190	F	2	27.25
12 08/22/2009 Pacific Pursuit	1	161.5	213	M	2	7.15
12 08/22/2009 Pacific Pursuit	2	123.0	195	F	2	7.15
12 08/22/2009 Pacific Pursuit	3	140.0	199	F	2	7.15
12 08/22/2009 Pacific Pursuit	4	143.5	201	M	2	7.15
12 08/22/2009 Pacific Pursuit	5	144.0	200	F	2	7.15
12 08/22/2009 Pacific Pursuit	6	144.0	203	M	2	7.15
12 08/22/2009 Pacific Pursuit	7	142.0	204	F	2	7.15
12 08/22/2009 Pacific Pursuit	8	157.5	209	F	2	7.15
12 08/22/2009 Pacific Pursuit	9	152.0	209	F	2	7.15
12 08/22/2009 Pacific Pursuit	10	149.5	207	F	2	7.15
12 08/22/2009 Pacific Pursuit	11	155.5	214	M	2	7.15
12 08/22/2009 Pacific Pursuit	12	159.5	217	F	2	7.15
12 08/22/2009 Pacific Pursuit	13	151.0	206	F	2	7.15
12 08/22/2009 Pacific Pursuit	14	138.0	202	F	2	7.15
12 08/22/2009 Pacific Pursuit	15	133.5	200	F	2	7.15
12 08/22/2009 Pacific Pursuit	16	155.0	205	M	2	7.15
12 08/22/2009 Pacific Pursuit	17	126.5	204	M	2	7.15
12 08/22/2009 Pacific Pursuit	18	134.0	206	M	2	7.15
12 08/22/2009 Pacific Pursuit	19	162.0	210	F	2	7.15
12 08/22/2009 Pacific Pursuit	20	131.5	198	M	2	7.15
12 08/22/2009 Pacific Pursuit	21	133.0	195	F	2	7.15
12 08/22/2009 Pacific Pursuit	22	119.0	195	M	2	7.15
12 08/22/2009 Pacific Pursuit	23	132.5	207	F	2	7.15
12 08/22/2009 Pacific Pursuit	24	157.5	209	F	2	7.15

12 08/22/2009 Pacific Pursuit	25	125.5	198	F	2	7.15
12 08/22/2009 Pacific Pursuit	26	162.0	210	F	2	7.15
12 08/22/2009 Pacific Pursuit	27	144.0	203	M	2	7.15
12 08/22/2009 Pacific Pursuit	28	126.0	200	F	2	7.15
12 08/22/2009 Pacific Pursuit	29	156.5	208	M	2	7.15
12 08/22/2009 Pacific Pursuit	30	133.0	197	M	2	7.15
12 08/22/2009 Pacific Pursuit	31	166.0	214	F	2	7.15
12 08/22/2009 Pacific Pursuit	32	136.0	198	F	2	7.15
12 08/22/2009 Pacific Pursuit	33	134.0	206	F	2	7.15
12 08/22/2009 Pacific Pursuit	34	125.0	200	F	2	7.15
12 08/22/2009 Pacific Pursuit	35	115.0	192	M	2	7.15
12 08/22/2009 Pacific Pursuit	36	137.5	206	M	2	7.15
12 08/22/2009 Pacific Pursuit	37	143.5	203	M	2	7.15
12 08/22/2009 Pacific Pursuit	38	183.0	219	F	2	7.15
12 08/22/2009 Pacific Pursuit	39	157.5	207	F	2	7.15
12 08/22/2009 Pacific Pursuit	40	144.0	206	F	2	7.15
12 08/22/2009 Pacific Pursuit	41	130.0	201	M	2	7.15
12 08/22/2009 Pacific Pursuit	42	155.0	212	M	2	7.15
12 08/22/2009 Pacific Pursuit	43	127.5	196	M	2	7.15
12 08/22/2009 Pacific Pursuit	44	139.0	203	M	2	7.15
12 08/22/2009 Pacific Pursuit	45	135.0	204	F	2	7.15
12 08/22/2009 Pacific Pursuit	46	126.5	196	F	2	7.15
12 08/22/2009 Pacific Pursuit	47	151.5	208	F	2	7.15
12 08/22/2009 Pacific Pursuit	48	134.0	198	F	2	7.15
12 08/22/2009 Pacific Pursuit	49	141.5	206	M	2	7.15
12 08/22/2009 Pacific Pursuit	50	133.5	204	M	2	7.15
13 08/22/2009 Pacific Pursuit	1	132.5	200	F	2	26.56
13 08/22/2009 Pacific Pursuit	2	154.0	213	F	2	26.56
13 08/22/2009 Pacific Pursuit	3	135.0	198	F	2	26.56
13 08/22/2009 Pacific Pursuit	4	150.0	210	M	2	26.56
13 08/22/2009 Pacific Pursuit	5	127.0	197	F	2	26.56
13 08/22/2009 Pacific Pursuit	6	142.5	198	M	2	26.56
13 08/22/2009 Pacific Pursuit	7	136.0	203	F	2	26.56
13 08/22/2009 Pacific Pursuit	8	123.5	196	F	2	26.56
13 08/22/2009 Pacific Pursuit	9	134.5	200	M	2	26.56
13 08/22/2009 Pacific Pursuit	10	139.0	202	M	2	26.56
13 08/22/2009 Pacific Pursuit	11	120.5	190	F	2	26.56
13 08/22/2009 Pacific Pursuit	12	138.5	202	F	2	26.56
13 08/22/2009 Pacific Pursuit	13	155.5	206	M	2	26.56
13 08/22/2009 Pacific Pursuit	14	127.5	201	F	2	26.56
13 08/22/2009 Pacific Pursuit	15	159.0	214	F	2	26.56
13 08/22/2009 Pacific Pursuit	16	137.5	203	F	2	26.56
13 08/22/2009 Pacific Pursuit	17	150.5	210	F	2	26.56
13 08/22/2009 Pacific Pursuit	18	145.5	203	F	2	26.56
13 08/22/2009 Pacific Pursuit	19	125.0	196	F	2	26.56

13 08/22/2009 Pacific Pursuit	20	169.5	218	F	2	26.56
13 08/22/2009 Pacific Pursuit	21	135.0	202	F	2	26.56
13 08/22/2009 Pacific Pursuit	22	137.0	205	F	2	26.56
13 08/22/2009 Pacific Pursuit	23	152.0	211	F	2	26.56
13 08/22/2009 Pacific Pursuit	24	130.5	197	M	2	26.56
13 08/22/2009 Pacific Pursuit	25	151.5	208	F	2	26.56
13 08/22/2009 Pacific Pursuit	26	162.5	207	F	2	26.56
13 08/22/2009 Pacific Pursuit	27	122.5	198	M	2	26.56
13 08/22/2009 Pacific Pursuit	28	133.0	200	F	2	26.56
13 08/22/2009 Pacific Pursuit	29	137.5	202	F	2	26.56
13 08/22/2009 Pacific Pursuit	30	126.0	195	F	2	26.56
13 08/22/2009 Pacific Pursuit	31	115.5	196	F	2	26.56
13 08/22/2009 Pacific Pursuit	32	141.5	205	F	2	26.56
13 08/22/2009 Pacific Pursuit	33	150.0	204	F	2	26.56
13 08/22/2009 Pacific Pursuit	34	142.0	204	F	2	26.56
13 08/22/2009 Pacific Pursuit	35	146.0	203	M	2	26.56
13 08/22/2009 Pacific Pursuit	36	128.0	199	M	2	26.56
13 08/22/2009 Pacific Pursuit	37	125.0	199	M	2	26.56
13 08/22/2009 Pacific Pursuit	38	134.5	198	M	2	26.56
13 08/22/2009 Pacific Pursuit	39	132.5	198	F	2	26.56
13 08/22/2009 Pacific Pursuit	40	148.5	212	M	2	26.56
13 08/22/2009 Pacific Pursuit	41	109.0	187	M	2	26.56
13 08/22/2009 Pacific Pursuit	42	138.0	206	M	2	26.56
13 08/22/2009 Pacific Pursuit	43	168.5	217	F	2	26.56
13 08/22/2009 Pacific Pursuit	44	112.0	190	M	2	26.56
13 08/22/2009 Pacific Pursuit	45	139.5	203	F	2	26.56
13 08/22/2009 Pacific Pursuit	46	121.5	192	M	2	26.56
13 08/22/2009 Pacific Pursuit	47	118.5	194	M	2	26.56
13 08/22/2009 Pacific Pursuit	48	137.0	200	M	2	26.56
13 08/22/2009 Pacific Pursuit	49	130.0	205	M	2	26.56
13 08/22/2009 Pacific Pursuit	50	122.0	195	M	2	26.56
14 08/22/2009 Pacific Pursuit	1	159.0	208	F	2	#N/A
15 08/22/2009 Pacific Pursuit	2	170.5	210	F	2	15.87
15 08/22/2009 Pacific Pursuit	3	137.5	202	F	2	15.87
15 08/22/2009 Pacific Pursuit	4	122.5	192	M	2	15.87
15 08/22/2009 Pacific Pursuit	5	137.5	196	M	2	15.87
15 08/22/2009 Pacific Pursuit	6	129.0	196	M	2	15.87
15 08/22/2009 Pacific Pursuit	7	121.5	193	F	1	15.87
15 08/22/2009 Pacific Pursuit	8	107.0	188	F	2	15.87
15 08/22/2009 Pacific Pursuit	9	120.5	194	F	2	15.87
15 08/22/2009 Pacific Pursuit	10	114.5	195	M	2	15.87
15 08/22/2009 Pacific Pursuit	11	158.0	205	M	2	15.87
15 08/22/2009 Pacific Pursuit	12	119.5	192	F	2	15.87
15 08/22/2009 Pacific Pursuit	13	135.0	198	F	2	15.87
15 08/22/2009 Pacific Pursuit	14	133.0	202	M	2	15.87

15 08/22/2009 Pacific Pursuit	15	152.0	205	M	2	15.87
15 08/22/2009 Pacific Pursuit	16	137.0	206	M	2	15.87
15 08/22/2009 Pacific Pursuit	17	127.0	195	F	2	15.87
15 08/22/2009 Pacific Pursuit	18	127.0	194	M	2	15.87
15 08/22/2009 Pacific Pursuit	19	143.0	202	F	2	15.87
15 08/22/2009 Pacific Pursuit	20	101.0	183	F	2	15.87
15 08/22/2009 Pacific Pursuit	21	122.5	194	M	2	15.87
15 08/22/2009 Pacific Pursuit	22	117.5	193	M	2	15.87
15 08/22/2009 Pacific Pursuit	23	120.5	196	M	2	15.87
15 08/22/2009 Pacific Pursuit	24	111.5	189	F	2	15.87
15 08/22/2009 Pacific Pursuit	25	115.0	191	F	2	15.87
15 08/22/2009 Pacific Pursuit	26	118.0	187	M	2	15.87
15 08/22/2009 Pacific Pursuit	27	137.0	202	F	2	15.87
15 08/22/2009 Pacific Pursuit	28	119.5	192	F	2	15.87
15 08/22/2009 Pacific Pursuit	29	125.0	189	F	2	15.87
15 08/22/2009 Pacific Pursuit	30	128.5	199	F	2	15.87
15 08/22/2009 Pacific Pursuit	31	137.0	196	M	2	15.87
15 08/22/2009 Pacific Pursuit	32	131.0	195	F	2	15.87
15 08/22/2009 Pacific Pursuit	33	130.5	194	F	2	15.87
15 08/22/2009 Pacific Pursuit	34	116.0	183	M	2	15.87
15 08/22/2009 Pacific Pursuit	35	119.5	192	F	2	15.87
15 08/22/2009 Pacific Pursuit	36	110.5	195	F	2	15.87
15 08/22/2009 Pacific Pursuit	37	118.5	193	F	2	15.87
15 08/22/2009 Pacific Pursuit	38	140.0	203	F	2	15.87
15 08/22/2009 Pacific Pursuit	39	112.5	187	F	2	15.87
15 08/22/2009 Pacific Pursuit	40	139.0	211	F	2	15.87
15 08/22/2009 Pacific Pursuit	41	141.0	208	F	2	15.87
15 08/22/2009 Pacific Pursuit	42	113.0	187	F	2	15.87
15 08/22/2009 Pacific Pursuit	43	121.5	192	F	2	15.87
15 08/22/2009 Pacific Pursuit	44	125.5	197	F	2	15.87
15 08/22/2009 Pacific Pursuit	45	131.0	201	F	2	15.87
15 08/22/2009 Pacific Pursuit	46	138.5	200	M	2	15.87
15 08/22/2009 Pacific Pursuit	47	139.0	201	F	2	15.87
15 08/22/2009 Pacific Pursuit	48	113.5	189	F	2	15.87
15 08/22/2009 Pacific Pursuit	49	163.5	206	F	2	15.87
15 08/22/2009 Pacific Pursuit	50	107.5	189	M	2	15.87
14 08/22/2009 Lauren L Kapp	1	137.0	210	M	2	10.17
14 08/22/2009 Lauren L Kapp	2	141.5	214	M	2	10.17
14 08/22/2009 Lauren L Kapp	3	118.5	195	F	2	10.17
14 08/22/2009 Lauren L Kapp	4	147.5	205	F	2	10.17
14 08/22/2009 Lauren L Kapp	5	134.0	208	F	2	10.17
14 08/22/2009 Lauren L Kapp	6	102.5	188	F	2	10.17
14 08/22/2009 Lauren L Kapp	7	107.5	187	M	2	10.17
14 08/22/2009 Lauren L Kapp	8	144.5	206	F	2	10.17
14 08/22/2009 Lauren L Kapp	9	128.5	200	M	2	10.17

14 08/22/2009 Lauren L Kapp	10	119.5	192	M	2	10.17
14 08/22/2009 Lauren L Kapp	11	138.5	200	M	2	10.17
14 08/22/2009 Lauren L Kapp	12	136.5	205	F	2	10.17
14 08/22/2009 Lauren L Kapp	13	130.0	202	F	2	10.17
14 08/22/2009 Lauren L Kapp	14	124.5	196	F	2	10.17
14 08/22/2009 Lauren L Kapp	15	139.0	200	F	2	10.17
14 08/22/2009 Lauren L Kapp	16	115.0	194	M	2	10.17
14 08/22/2009 Lauren L Kapp	17	136.0	198	F	2	10.17
14 08/22/2009 Lauren L Kapp	18	149.5	216	M	2	10.17
14 08/22/2009 Lauren L Kapp	19	113.5	191	F	2	10.17
14 08/22/2009 Lauren L Kapp	20	125.5	200	M	2	10.17
14 08/22/2009 Lauren L Kapp	21	137.5	197	F	2	10.17
14 08/22/2009 Lauren L Kapp	22	124.0	195	M	2	10.17
14 08/22/2009 Lauren L Kapp	23	142.5	208	F	2	10.17
14 08/22/2009 Lauren L Kapp	24	132.5	203	F	2	10.17
14 08/22/2009 Lauren L Kapp	25	137.5	201	F	2	10.17
14 08/22/2009 Lauren L Kapp	26	141.0	202	M	2	10.17
14 08/22/2009 Lauren L Kapp	27	125.0	197	F	2	10.17
14 08/22/2009 Lauren L Kapp	28	124.0	193	M	2	10.17
14 08/22/2009 Lauren L Kapp	29	113.0	190	M	2	10.17
14 08/22/2009 Lauren L Kapp	30	118.0	195	M	2	10.17
14 08/22/2009 Lauren L Kapp	31	127.0	201	F	2	10.17
14 08/22/2009 Lauren L Kapp	32	121.0	197	F	2	10.17
14 08/22/2009 Lauren L Kapp	33	118.5	196	F	2	10.17
14 08/22/2009 Lauren L Kapp	34	128.5	199	F	2	10.17
14 08/22/2009 Lauren L Kapp	35	135.5	199	M	2	10.17
14 08/22/2009 Lauren L Kapp	36	131.0	203	M	2	10.17
14 08/22/2009 Lauren L Kapp	37	100.0	185	F	2	10.17
14 08/22/2009 Lauren L Kapp	38	110.5	188	F	2	10.17
14 08/22/2009 Lauren L Kapp	39	107.5	187	F	2	10.17
14 08/22/2009 Lauren L Kapp	40	123.0	197	M	2	10.17
14 08/22/2009 Lauren L Kapp	41	154.0	210	M	2	10.17
14 08/22/2009 Lauren L Kapp	42	151.0	212	M	2	10.17
14 08/22/2009 Lauren L Kapp	43	145.0	209	F	2	10.17
14 08/22/2009 Lauren L Kapp	44	146.5	211	M	2	10.17
14 08/22/2009 Lauren L Kapp	45	124.0	192	M	2	10.17
14 08/22/2009 Lauren L Kapp	46	130.5	203	F	2	10.17
14 08/22/2009 Lauren L Kapp	47	158.0	215	F	2	10.17
14 08/22/2009 Lauren L Kapp	48	143.5	203	F	2	10.17
14 08/22/2009 Lauren L Kapp	49	123.0	197	M	2	10.17
14 08/22/2009 Lauren L Kapp	50	155.5	214	F	2	10.17
16 08/22/2009 Lauren L Kapp	1	142.0	210	M	2	39.14
16 08/22/2009 Lauren L Kapp	2	130.0	200	F	2	39.14
16 08/22/2009 Lauren L Kapp	3	132.5	199	M	2	39.14
16 08/22/2009 Lauren L Kapp	4	129.0	202	F	2	39.14

16 08/22/2009 Lauren L Kapp	5	110.0	194	F	2	39.14
16 08/22/2009 Lauren L Kapp	6	132.0	206	M	2	39.14
16 08/22/2009 Lauren L Kapp	7	133.0	202	F	2	39.14
16 08/22/2009 Lauren L Kapp	8	126.5	200	M	2	39.14
16 08/22/2009 Lauren L Kapp	9	128.0	198	F	2	39.14
16 08/22/2009 Lauren L Kapp	10	135.5	204	M	2	39.14
16 08/22/2009 Lauren L Kapp	11	102.5	187	M	2	39.14
16 08/22/2009 Lauren L Kapp	12	144.5	212	F	2	39.14
16 08/22/2009 Lauren L Kapp	13	126.0	203	F	2	39.14
16 08/22/2009 Lauren L Kapp	14	124.0	197	F	2	39.14
16 08/22/2009 Lauren L Kapp	15	157.5	205	F	2	39.14
16 08/22/2009 Lauren L Kapp	16	125.5	198	F	2	39.14
16 08/22/2009 Lauren L Kapp	17	109.5	190	F	2	39.14
16 08/22/2009 Lauren L Kapp	18	132.0	203	F	2	39.14
16 08/22/2009 Lauren L Kapp	19	144.0	211	F	2	39.14
16 08/22/2009 Lauren L Kapp	20	130.0	195	M	2	39.14
16 08/22/2009 Lauren L Kapp	21	121.0	192	M	2	39.14
16 08/22/2009 Lauren L Kapp	22	143.0	203	F	2	39.14
16 08/22/2009 Lauren L Kapp	23	136.0	198	F	2	39.14
16 08/22/2009 Lauren L Kapp	24	109.5	188	F	2	39.14
16 08/22/2009 Lauren L Kapp	25	101.0	190	M	1	39.14
16 08/22/2009 Lauren L Kapp	26	134.0	207	F	2	39.14
16 08/22/2009 Lauren L Kapp	27	117.5	198	F	2	39.14
16 08/22/2009 Lauren L Kapp	28	147.0	207	M	2	39.14
16 08/22/2009 Lauren L Kapp	29	109.0	192	F	2	39.14
16 08/22/2009 Lauren L Kapp	30	126.0	197	F	2	39.14
16 08/22/2009 Lauren L Kapp	31	127.0	200	F	2	39.14
16 08/22/2009 Lauren L Kapp	32	114.0	192	M	1	39.14
16 08/22/2009 Lauren L Kapp	33	130.5	203	M	2	39.14
16 08/22/2009 Lauren L Kapp	34	117.5	192	F	2	39.14
16 08/22/2009 Lauren L Kapp	35	147.5	212	F	2	39.14
16 08/22/2009 Lauren L Kapp	36	125.5	197	F	2	39.14
16 08/22/2009 Lauren L Kapp	37	136.0	198	F	2	39.14
16 08/22/2009 Lauren L Kapp	38	123.5	199	F	2	39.14
16 08/22/2009 Lauren L Kapp	39	119.0	198	M	2	39.14
16 08/22/2009 Lauren L Kapp	40	137.5	207	M	2	39.14
16 08/22/2009 Lauren L Kapp	41	149.5	201	F	2	39.14
16 08/22/2009 Lauren L Kapp	42	132.0	204	F	2	39.14
16 08/22/2009 Lauren L Kapp	43	119.0	198	F	2	39.14
16 08/22/2009 Lauren L Kapp	44	130.5	204	F	2	39.14
16 08/22/2009 Lauren L Kapp	45	118.0	193	M	1	39.14
16 08/22/2009 Lauren L Kapp	46	127.5	192	M	2	39.14
16 08/22/2009 Lauren L Kapp	47	121.5	196	M	2	39.14
16 08/22/2009 Lauren L Kapp	48	117.0	187	F	2	39.14
16 08/22/2009 Lauren L Kapp	49	125.0	200	M	2	39.14

16 08/22/2009 Lauren L Kapp	50	100.0	183	M	1	39.14
17 08/23/2009 Pacific Pursuit	1	152.0	211	F	2	18.6
17 08/23/2009 Pacific Pursuit	2	128.5	205	M	2	18.6
17 08/23/2009 Pacific Pursuit	3	125.5	197	M	2	18.6
17 08/23/2009 Pacific Pursuit	4	156.5	207	F	2	18.6
17 08/23/2009 Pacific Pursuit	5	159.5	212	F	2	18.6
17 08/23/2009 Pacific Pursuit	6	123.5	201	F	2	18.6
17 08/23/2009 Pacific Pursuit	7	137.0	202	F	2	18.6
17 08/23/2009 Pacific Pursuit	8	156.5	209	F	2	18.6
17 08/23/2009 Pacific Pursuit	9	145.0	202	M	2	18.6
17 08/23/2009 Pacific Pursuit	10	158.0	213	F	2	18.6
17 08/23/2009 Pacific Pursuit	11	117.5	194	F	2	18.6
17 08/23/2009 Pacific Pursuit	12	131.0	201	M	2	18.6
17 08/23/2009 Pacific Pursuit	13	125.0	195	F	2	18.6
17 08/23/2009 Pacific Pursuit	14	151.0	203	M	2	18.6
17 08/23/2009 Pacific Pursuit	15	125.0	198	M	2	18.6
17 08/23/2009 Pacific Pursuit	16	129.5	195	M	2	18.6
17 08/23/2009 Pacific Pursuit	17	132.0	198	F	2	18.6
17 08/23/2009 Pacific Pursuit	18	99.0	184	M	2	18.6
17 08/23/2009 Pacific Pursuit	19	125.0	195	M	2	18.6
17 08/23/2009 Pacific Pursuit	20	119.0	193	F	2	18.6
17 08/23/2009 Pacific Pursuit	21	118.5	193	M	2	18.6
17 08/23/2009 Pacific Pursuit	22	168.5	222	M	2	18.6
17 08/23/2009 Pacific Pursuit	23	132.0	205	M	2	18.6
17 08/23/2009 Pacific Pursuit	24	132.5	201	F	2	18.6
17 08/23/2009 Pacific Pursuit	25	143.0	207	M	2	18.6
17 08/23/2009 Pacific Pursuit	26	141.5	208	F	2	18.6
17 08/23/2009 Pacific Pursuit	27	147.0	204	F	2	18.6
17 08/23/2009 Pacific Pursuit	28	99.0	186	F	2	18.6
17 08/23/2009 Pacific Pursuit	29	133.0	199	F	1	18.6
17 08/23/2009 Pacific Pursuit	30	136.5	200	M	2	18.6
17 08/23/2009 Pacific Pursuit	31	136.5	197	F	2	18.6
17 08/23/2009 Pacific Pursuit	32	138.5	202	M	2	18.6
17 08/23/2009 Pacific Pursuit	33	167.5	221	F	2	18.6
17 08/23/2009 Pacific Pursuit	34	167.0	214	F	2	18.6
17 08/23/2009 Pacific Pursuit	35	117.0	191	M	2	18.6
17 08/23/2009 Pacific Pursuit	36	130.0	201	F	2	18.6
17 08/23/2009 Pacific Pursuit	37	137.0	200	F	2	18.6
17 08/23/2009 Pacific Pursuit	38	133.0	203	F	2	18.6
17 08/23/2009 Pacific Pursuit	39	149.5	213	F	2	18.6
17 08/23/2009 Pacific Pursuit	40	135.5	212	F	2	18.6
17 08/23/2009 Pacific Pursuit	41	132.0	197	F	2	18.6
17 08/23/2009 Pacific Pursuit	42	144.0	201	M	2	18.6
17 08/23/2009 Pacific Pursuit	43	136.0	199	F	2	18.6
17 08/23/2009 Pacific Pursuit	44	124.5	197	M	2	18.6

17 08/23/2009 Pacific Pursuit	45	121.0	197	M	2	18.6
17 08/23/2009 Pacific Pursuit	46	124.0	197	F	2	18.6
17 08/23/2009 Pacific Pursuit	47	121.0	197	F	2	18.6
17 08/23/2009 Pacific Pursuit	48	124.5	195	F	2	18.6
17 08/23/2009 Pacific Pursuit	49	136.0	202	M	2	18.6
17 08/23/2009 Pacific Pursuit	50	128.0	196	F	2	18.6
18 08/23/2009 Lauren L Kapp	1	145.5	212	F	2	13.55
18 08/23/2009 Lauren L Kapp	2	129.5	203	M	1	13.55
18 08/23/2009 Lauren L Kapp	3	158.5	208	F	2	13.55
18 08/23/2009 Lauren L Kapp	4	168.5	222	F	2	13.55
18 08/23/2009 Lauren L Kapp	5	159.0	213	F	2	13.55
18 08/23/2009 Lauren L Kapp	6	141.0	205	M	2	13.55
18 08/23/2009 Lauren L Kapp	7	120.5	202	F	2	13.55
18 08/23/2009 Lauren L Kapp	8	127.0	195	F	2	13.55
18 08/23/2009 Lauren L Kapp	9	132.5	203	M	2	13.55
18 08/23/2009 Lauren L Kapp	10	127.5	198	M	2	13.55
18 08/23/2009 Lauren L Kapp	11	132.5	202	M	2	13.55
18 08/23/2009 Lauren L Kapp	12	138.5	205	M	2	13.55
18 08/23/2009 Lauren L Kapp	13	122.5	197	F	2	13.55
18 08/23/2009 Lauren L Kapp	14	97.0	179	M	1	13.55
18 08/23/2009 Lauren L Kapp	15	121.0	193	F	2	13.55
18 08/23/2009 Lauren L Kapp	16	128.0	194	M	2	13.55
18 08/23/2009 Lauren L Kapp	17	132.5	202	F	2	13.55
18 08/23/2009 Lauren L Kapp	18	128.0	197	F	2	13.55
18 08/23/2009 Lauren L Kapp	19	144.5	203	M	2	13.55
18 08/23/2009 Lauren L Kapp	20	124.0	199	M	2	13.55
18 08/23/2009 Lauren L Kapp	21	119.0	190	F	2	13.55
18 08/23/2009 Lauren L Kapp	22	151.0	208	M	2	13.55
18 08/23/2009 Lauren L Kapp	23	150.0	207	F	2	13.55
18 08/23/2009 Lauren L Kapp	24	130.5	195	F	2	13.55
18 08/23/2009 Lauren L Kapp	25	127.0	196	F	2	13.55
18 08/23/2009 Lauren L Kapp	26	123.0	199	M	2	13.55
18 08/23/2009 Lauren L Kapp	27	131.0	203	M	2	13.55
18 08/23/2009 Lauren L Kapp	28	118.0	192	M	2	13.55
18 08/23/2009 Lauren L Kapp	29	141.0	206	M	2	13.55
18 08/23/2009 Lauren L Kapp	30	128.0	195	F	2	13.55
18 08/23/2009 Lauren L Kapp	31	143.0	204	F	2	13.55
18 08/23/2009 Lauren L Kapp	32	98.0	188	F	2	13.55
18 08/23/2009 Lauren L Kapp	33	132.5	199	F	2	13.55
18 08/23/2009 Lauren L Kapp	34	150.0	213	M	2	13.55
18 08/23/2009 Lauren L Kapp	35	146.5	213	F	2	13.55
18 08/23/2009 Lauren L Kapp	36	126.5	190	F	2	13.55
18 08/23/2009 Lauren L Kapp	37	132.0	194	F	2	13.55
18 08/23/2009 Lauren L Kapp	38	151.5	209	M	2	13.55
18 08/23/2009 Lauren L Kapp	39	137.5	204	M	2	13.55

18 08/23/2009 Lauren L Kapp	40	154.0	212	F	2	13.55
18 08/23/2009 Lauren L Kapp	41	131.5	196	F	2	13.55
18 08/23/2009 Lauren L Kapp	42	145.5	205	M	2	13.55
18 08/23/2009 Lauren L Kapp	43	135.0	203	F	2	13.55
18 08/23/2009 Lauren L Kapp	44	125.5	195	F	2	13.55
18 08/23/2009 Lauren L Kapp	45	144.5	207	F	2	13.55
18 08/23/2009 Lauren L Kapp	46	119.0	193	M	2	13.55
18 08/23/2009 Lauren L Kapp	47	123.5	202	M	2	13.55
18 08/23/2009 Lauren L Kapp	48	123.0	194	F	2	13.55
18 08/23/2009 Lauren L Kapp	49	154.5	204	F	2	13.55
18 08/23/2009 Lauren L Kapp	50	120.0	197	M	2	13.55
19 08/23/2009 Lauren L Kapp	1	143.5	205	F	2	48.89
19 08/23/2009 Lauren L Kapp	2	128.5	196	M	2	48.89
19 08/23/2009 Lauren L Kapp	3	126.0	203	F	2	48.89
19 08/23/2009 Lauren L Kapp	4	120.0	193	M	2	48.89
19 08/23/2009 Lauren L Kapp	5	127.5	197	M	2	48.89
19 08/23/2009 Lauren L Kapp	6	135.0	205	M	1	48.89
19 08/23/2009 Lauren L Kapp	7	128.5	201	F	2	48.89
19 08/23/2009 Lauren L Kapp	8	124.5	193	F	2	48.89
19 08/23/2009 Lauren L Kapp	9	123.5	201	M	2	48.89
19 08/23/2009 Lauren L Kapp	10	132.0	196	F	2	48.89
19 08/23/2009 Lauren L Kapp	11	128.0	198	M	2	48.89
19 08/23/2009 Lauren L Kapp	12	133.0	197	M	2	48.89
19 08/23/2009 Lauren L Kapp	13	132.0	199	F	2	48.89
19 08/23/2009 Lauren L Kapp	14	113.0	191	F	1	48.89
19 08/23/2009 Lauren L Kapp	15	133.5	202	M	2	48.89
19 08/23/2009 Lauren L Kapp	16	135.5	206	F	2	48.89
19 08/23/2009 Lauren L Kapp	17	128.5	201	M	2	48.89
19 08/23/2009 Lauren L Kapp	18	138.5	204	F	2	48.89
19 08/23/2009 Lauren L Kapp	19	139.0	211	F	2	48.89
19 08/23/2009 Lauren L Kapp	20	141.5	203	F	2	48.89
19 08/23/2009 Lauren L Kapp	21	123.5	197	F	2	48.89
19 08/23/2009 Lauren L Kapp	22	147.0	198	M	2	48.89
19 08/23/2009 Lauren L Kapp	23	124.0	194	M	2	48.89
19 08/23/2009 Lauren L Kapp	24	147.0	210	F	2	48.89
19 08/23/2009 Lauren L Kapp	25	114.5	186	M	2	48.89
19 08/23/2009 Lauren L Kapp	26	168.5	217	M	2	48.89
19 08/23/2009 Lauren L Kapp	27	145.5	206	M	2	48.89
19 08/23/2009 Lauren L Kapp	28	133.0	210	F	2	48.89
19 08/23/2009 Lauren L Kapp	29	123.5	194	M	2	48.89
19 08/23/2009 Lauren L Kapp	30	133.0	200	M	2	48.89
19 08/23/2009 Lauren L Kapp	31	129.5	196	F	2	48.89
19 08/23/2009 Lauren L Kapp	32	150.5	210	F	2	48.89
19 08/23/2009 Lauren L Kapp	33	120.0	197	F	1	48.89
19 08/23/2009 Lauren L Kapp	34	116.5	188	F	2	48.89

19 08/23/2009 Lauren L Kapp	35	135.5	204	M	2	48.89
19 08/23/2009 Lauren L Kapp	36	127.0	200	F	2	48.89
19 08/23/2009 Lauren L Kapp	37	123.0	201	M	2	48.89
19 08/23/2009 Lauren L Kapp	38	127.0	204	M	2	48.89
19 08/23/2009 Lauren L Kapp	39	130.5	201	F	2	48.89
19 08/23/2009 Lauren L Kapp	40	168.5	225	F	2	48.89
19 08/23/2009 Lauren L Kapp	41	109.5	184	M	2	48.89
19 08/23/2009 Lauren L Kapp	42	166.0	218	F	2	48.89
19 08/23/2009 Lauren L Kapp	43	130.0	201	F	2	48.89
19 08/23/2009 Lauren L Kapp	44	115.5	195	F	2	48.89
19 08/23/2009 Lauren L Kapp	45	127.0	197	M	2	48.89
19 08/23/2009 Lauren L Kapp	46	150.5	205	M	2	48.89
19 08/23/2009 Lauren L Kapp	47	146.5	210	F	2	48.89
19 08/23/2009 Lauren L Kapp	48	149.5	208	M	2	48.89
19 08/23/2009 Lauren L Kapp	49	137.5	201	M	2	48.89
19 08/23/2009 Lauren L Kapp	50	160.5	210	F	2	48.89
20 08/23/2009 Pacific Pursuit	1	132.5	203	F	2	15.08
20 08/23/2009 Pacific Pursuit	2	148.0	213	F	2	15.08
20 08/23/2009 Pacific Pursuit	3	130.0	202	M	2	15.08
20 08/23/2009 Pacific Pursuit	4	158.5	213	F	2	15.08
20 08/23/2009 Pacific Pursuit	5	123.0	197	F	2	15.08
20 08/23/2009 Pacific Pursuit	6	159.5	214	F	2	15.08
20 08/23/2009 Pacific Pursuit	7	135.5	200	M	2	15.08
20 08/23/2009 Pacific Pursuit	8	150.0	205	F	2	15.08
20 08/23/2009 Pacific Pursuit	9	103.0	185	M	2	15.08
20 08/23/2009 Pacific Pursuit	10	135.5	205	F	2	15.08
20 08/23/2009 Pacific Pursuit	11	134.0	200	F	2	15.08
20 08/23/2009 Pacific Pursuit	12	111.5	192	M	2	15.08
20 08/23/2009 Pacific Pursuit	13	131.0	208	F	2	15.08
20 08/23/2009 Pacific Pursuit	14	143.0	201	M	2	15.08
20 08/23/2009 Pacific Pursuit	15	123.5	189	F	2	15.08
20 08/23/2009 Pacific Pursuit	16	130.5	196	F	2	15.08
20 08/23/2009 Pacific Pursuit	17	110.0	185	F	2	15.08
20 08/23/2009 Pacific Pursuit	18	131.0	199	F	2	15.08
20 08/23/2009 Pacific Pursuit	19	126.0	195	M	2	15.08
20 08/23/2009 Pacific Pursuit	20	121.5	191	F	2	15.08
20 08/23/2009 Pacific Pursuit	21	109.5	193	M	2	15.08
20 08/23/2009 Pacific Pursuit	22	115.5	192	F	2	15.08
20 08/23/2009 Pacific Pursuit	23	143.5	202	F	2	15.08
20 08/23/2009 Pacific Pursuit	24	151.0	207	M	2	15.08
20 08/23/2009 Pacific Pursuit	25	153.5	210	M	2	15.08
20 08/23/2009 Pacific Pursuit	26	116.0	193	F	2	15.08
20 08/23/2009 Pacific Pursuit	27	148.0	202	M	2	15.08
20 08/23/2009 Pacific Pursuit	28	138.0	200	M	2	15.08
20 08/23/2009 Pacific Pursuit	29	142.5	206	F	2	15.08

20 08/23/2009 Pacific Pursuit	30	152.5	219	F	2	15.08
20 08/23/2009 Pacific Pursuit	31	101.0	193	M	2	15.08
20 08/23/2009 Pacific Pursuit	32	129.5	191	F	2	15.08
20 08/23/2009 Pacific Pursuit	33	138.5	202	F	2	15.08
20 08/23/2009 Pacific Pursuit	34	128.0	195	F	2	15.08
20 08/23/2009 Pacific Pursuit	35	141.5	209	F	2	15.08
20 08/23/2009 Pacific Pursuit	36	152.0	212	M	2	15.08
20 08/23/2009 Pacific Pursuit	37	142.0	210	M	2	15.08
20 08/23/2009 Pacific Pursuit	38	149.0	203	M	2	15.08
20 08/23/2009 Pacific Pursuit	39	143.0	207	F	2	15.08
20 08/23/2009 Pacific Pursuit	40	126.5	202	F	2	15.08
20 08/23/2009 Pacific Pursuit	41	129.5	195	M	2	15.08
20 08/23/2009 Pacific Pursuit	42	132.0	197	M	2	15.08
20 08/23/2009 Pacific Pursuit	43	124.5	192	M	2	15.08
20 08/23/2009 Pacific Pursuit	44	127.5	201	F	2	15.08
20 08/23/2009 Pacific Pursuit	45	145.0	206	F	2	15.08
20 08/23/2009 Pacific Pursuit	46	117.5	193	M	2	15.08
20 08/23/2009 Pacific Pursuit	47	122.5	197	M	2	15.08
20 08/23/2009 Pacific Pursuit	48	130.0	197	M	2	15.08
20 08/23/2009 Pacific Pursuit	49	117.5	195	F	2	15.08
20 08/23/2009 Pacific Pursuit	50	119.0	192	F	2	15.08
21 08/24/2009 Pacific Pursuit	1	139.0	208	F	2	26.4
21 08/24/2009 Pacific Pursuit	2	133.5	212	M	2	26.4
21 08/24/2009 Pacific Pursuit	3	142.5	203	F	2	26.4
21 08/24/2009 Pacific Pursuit	4	128.0	198	M	2	26.4
21 08/24/2009 Pacific Pursuit	5	146.5	207	F	2	26.4
21 08/24/2009 Pacific Pursuit	6	138.0	203	M	2	26.4
21 08/24/2009 Pacific Pursuit	7	153.0	210	M	2	26.4
21 08/24/2009 Pacific Pursuit	8	130.5	196	F	2	26.4
21 08/24/2009 Pacific Pursuit	9	134.0	202	F	2	26.4
21 08/24/2009 Pacific Pursuit	10	133.5	196	F	2	26.4
21 08/24/2009 Pacific Pursuit	11	109.5	192	M	2	26.4
21 08/24/2009 Pacific Pursuit	12	161.5	208	M	2	26.4
21 08/24/2009 Pacific Pursuit	13	133.0	203	M	2	26.4
21 08/24/2009 Pacific Pursuit	14	115.0	187	M	2	26.4
21 08/24/2009 Pacific Pursuit	15	116.5	198	F	2	26.4
21 08/24/2009 Pacific Pursuit	16	139.5	201	F	2	26.4
21 08/24/2009 Pacific Pursuit	17	128.5	198	F	2	26.4
21 08/24/2009 Pacific Pursuit	18	118.0	195	F	1	26.4
21 08/24/2009 Pacific Pursuit	19	123.0	198	F	2	26.4
21 08/24/2009 Pacific Pursuit	20	131.5	197	M	2	26.4
21 08/24/2009 Pacific Pursuit	21	114.0	193	F	2	26.4
21 08/24/2009 Pacific Pursuit	22	129.0	199	M	2	26.4
21 08/24/2009 Pacific Pursuit	23	131.5	200	M	2	26.4
21 08/24/2009 Pacific Pursuit	24	135.0	205	M	2	26.4

21 08/24/2009 Pacific Pursuit	25	111.0	192	F	2	26.4
21 08/24/2009 Pacific Pursuit	26	136.0	198	M	2	26.4
21 08/24/2009 Pacific Pursuit	27	110.5	193	F	2	26.4
21 08/24/2009 Pacific Pursuit	28	105.0	187	F	2	26.4
21 08/24/2009 Pacific Pursuit	29	131.0	202	M	2	26.4
21 08/24/2009 Pacific Pursuit	30	145.5	205	F	2	26.4
21 08/24/2009 Pacific Pursuit	31	148.0	207	M	2	26.4
21 08/24/2009 Pacific Pursuit	32	119.0	194	M	2	26.4
21 08/24/2009 Pacific Pursuit	33	133.5	202	M	2	26.4
21 08/24/2009 Pacific Pursuit	34	137.0	202	F	2	26.4
21 08/24/2009 Pacific Pursuit	35	132.5	198	M	2	26.4
21 08/24/2009 Pacific Pursuit	36	133.0	200	M	2	26.4
21 08/24/2009 Pacific Pursuit	37	108.0	190	F	1	26.4
21 08/24/2009 Pacific Pursuit	38	146.0	209	M	1	26.4
21 08/24/2009 Pacific Pursuit	39	119.0	198	F	2	26.4
21 08/24/2009 Pacific Pursuit	40	118.5	197	F	2	26.4
21 08/24/2009 Pacific Pursuit	41	161.0	214	F	2	26.4
21 08/24/2009 Pacific Pursuit	42	163.0	217	F	2	26.4
21 08/24/2009 Pacific Pursuit	43	142.0	203	M	2	26.4
21 08/24/2009 Pacific Pursuit	44	124.0	200	F	2	26.4
21 08/24/2009 Pacific Pursuit	45	146.5	208	F	2	26.4
21 08/24/2009 Pacific Pursuit	46	153.0	205	F	2	26.4
21 08/24/2009 Pacific Pursuit	47	142.0	207	M	2	26.4
21 08/24/2009 Pacific Pursuit	48	149.0	205	M	2	26.4
21 08/24/2009 Pacific Pursuit	49	132.5	198	M	2	26.4
21 08/24/2009 Pacific Pursuit	50	154.0	210	M	2	26.4
22 08/24/2009 Lauren L Kapp	1	153.5	210	F	2	28.55
22 08/24/2009 Lauren L Kapp	2	131.5	196	F	2	28.55
22 08/24/2009 Lauren L Kapp	3	131.5	205	F	2	28.55
22 08/24/2009 Lauren L Kapp	4	131.5	207	F	2	28.55
22 08/24/2009 Lauren L Kapp	5	134.5	201	M	2	28.55
22 08/24/2009 Lauren L Kapp	6	148.5	207	F	2	28.55
22 08/24/2009 Lauren L Kapp	7	107.5	187	M	2	28.55
22 08/24/2009 Lauren L Kapp	8	134.0	203	M	2	28.55
22 08/24/2009 Lauren L Kapp	9	118.0	195	F	2	28.55
22 08/24/2009 Lauren L Kapp	10	148.5	200	F	2	28.55
22 08/24/2009 Lauren L Kapp	11	115.0	190	M	2	28.55
22 08/24/2009 Lauren L Kapp	12	121.0	197	M	2	28.55
22 08/24/2009 Lauren L Kapp	13	135.0	203	F	2	28.55
22 08/24/2009 Lauren L Kapp	14	148.5	208	F	2	28.55
22 08/24/2009 Lauren L Kapp	15	117.0	188	M	2	28.55
22 08/24/2009 Lauren L Kapp	16	138.0	208	F	2	28.55
22 08/24/2009 Lauren L Kapp	17	140.5	206	M	2	28.55
22 08/24/2009 Lauren L Kapp	18	138.5	202	F	2	28.55
22 08/24/2009 Lauren L Kapp	19	131.5	203	M	2	28.55

22 08/24/2009 Lauren L Kapp	20	141.5	205	M	2	28.55
22 08/24/2009 Lauren L Kapp	21	131.5	197	M	2	28.55
22 08/24/2009 Lauren L Kapp	22	144.5	202	F	2	28.55
22 08/24/2009 Lauren L Kapp	23	139.5	200	M	2	28.55
22 08/24/2009 Lauren L Kapp	24	159.5	212	F	2	28.55
22 08/24/2009 Lauren L Kapp	25	137.0	202	M	2	28.55
22 08/24/2009 Lauren L Kapp	26	145.0	206	M	2	28.55
22 08/24/2009 Lauren L Kapp	27	132.0	198	M	2	28.55
22 08/24/2009 Lauren L Kapp	28	119.0	202	F	2	28.55
22 08/24/2009 Lauren L Kapp	29	135.5	205	F	2	28.55
22 08/24/2009 Lauren L Kapp	30	129.5	197	M	2	28.55
22 08/24/2009 Lauren L Kapp	31	120.5	203	F	2	28.55
22 08/24/2009 Lauren L Kapp	32	138.5	200	M	2	28.55
22 08/24/2009 Lauren L Kapp	33	121.0	196	F	2	28.55
22 08/24/2009 Lauren L Kapp	34	147.0	209	M	2	28.55
22 08/24/2009 Lauren L Kapp	35	127.0	203	M	2	28.55
22 08/24/2009 Lauren L Kapp	36	114.5	193	M	2	28.55
22 08/24/2009 Lauren L Kapp	37	143.5	202	M	2	28.55
22 08/24/2009 Lauren L Kapp	38	127.5	197	F	2	28.55
22 08/24/2009 Lauren L Kapp	39	139.5	205	M	2	28.55
22 08/24/2009 Lauren L Kapp	40	155.0	213	F	2	28.55
22 08/24/2009 Lauren L Kapp	41	114.0	197	F	2	28.55
22 08/24/2009 Lauren L Kapp	42	125.0	196	M	2	28.55
22 08/24/2009 Lauren L Kapp	43	153.0	209	F	2	28.55
22 08/24/2009 Lauren L Kapp	44	121.5	198	F	2	28.55
22 08/24/2009 Lauren L Kapp	45	115.5	188	M	2	28.55
22 08/24/2009 Lauren L Kapp	46	120.5	193	M	2	28.55
22 08/24/2009 Lauren L Kapp	47	149.5	211	F	2	28.55
22 08/24/2009 Lauren L Kapp	48	152.5	209	F	2	28.55
22 08/24/2009 Lauren L Kapp	49	172.0	218	M	2	28.55
22 08/24/2009 Lauren L Kapp	50	131.5	200	M	2	28.55
23 08/25/2009 Pacific Pursuit	1	141.0	203	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	2	130.0	200	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	3	119.5	198	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	4	167.0	205	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	5	140.5	211	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	6	142.0	198	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	7	155.5	210	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	8	148.0	203	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	9	125.0	198	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	10	146.0	211	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	11	145.5	202	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	12	133.0	198	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	13	147.5	202	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	14	141.0	201	M	2	34.25642857

23 08/25/2009 Pacific Pursuit	15	132.5	191	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	16	143.5	210	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	17	159.5	210	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	18	153.5	210	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	19	136.0	197	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	20	156.5	208	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	21	126.5	197	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	22	144.5	203	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	23	152.0	211	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	24	131.5	201	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	25	131.0	200	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	26	144.0	201	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	27	119.5	196	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	28	147.0	205	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	29	124.0	199	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	30	154.5	211	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	31	147.0	204	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	32	150.5	202	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	33	159.0	212	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	34	139.0	200	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	35	125.5	200	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	36	131.5	196	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	37	139.5	198	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	38	145.5	197	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	39	141.5	211	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	40	140.0	200	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	41	146.5	204	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	42	150.5	206	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	43	143.5	196	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	44	138.5	200	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	45	161.0	208	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	46	120.0	194	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	47	124.5	192	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	48	147.5	207	M	2	34.25642857
23 08/25/2009 Pacific Pursuit	49	143.5	201	F	2	34.25642857
23 08/25/2009 Pacific Pursuit	50	138.5	201	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	1	154.0	206	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	2	154.5	214	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	3	122.5	191	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	4	122.5	199	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	5	148.0	206	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	6	118.0	192	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	7	139.5	210	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	8	121.5	199	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	9	143.5	208	M	2	34.25642857

24 08/25/2009 Lauren L Kapp	10	135.5	200	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	11	120.0	200	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	12	141.0	205	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	13	143.0	205	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	14	142.5	205	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	15	145.5	212	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	16	139.0	206	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	17	135.5	206	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	18	123.0	200	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	19	131.0	199	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	20	129.5	200	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	21	150.0	210	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	22	123.0	198	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	23	121.0	196	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	24	146.0	196	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	25	117.0	193	M	1	34.25642857
24 08/25/2009 Lauren L Kapp	26	111.5	197	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	27	119.0	192	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	28	134.5	202	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	29	148.5	205	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	30	137.0	203	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	31	152.5	209	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	32	123.0	197	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	33	136.0	205	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	34	126.5	200	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	35	141.0	206	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	36	118.5	190	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	37	120.5	192	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	38	148.0	210	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	39	129.5	198	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	40	139.5	201	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	41	135.0	209	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	42	119.0	193	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	43	125.5	198	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	44	137.5	202	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	45	135.5	197	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	46	126.0	201	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	47	147.0	207	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	48	122.0	195	M	2	34.25642857
24 08/25/2009 Lauren L Kapp	49	135.5	205	F	2	34.25642857
24 08/25/2009 Lauren L Kapp	50	137.5	208	M	2	34.25642857
25 09/01/2009 Pacific Pursuit	1	133.0	204	M	2	29.85
25 09/01/2009 Pacific Pursuit	2	127.5	193	M	2	29.85
25 09/01/2009 Pacific Pursuit	3	162.5	116	M	2	29.85
25 09/01/2009 Pacific Pursuit	4	157.5	223	F	2	29.85

25 09/01/2009 Pacific Pursuit	5	149.5	213	F	2	29.85
25 09/01/2009 Pacific Pursuit	6	140.5	210	M	2	29.85
25 09/01/2009 Pacific Pursuit	7	118.0	194	F	2	29.85
25 09/01/2009 Pacific Pursuit	8	118.5	195	F	2	29.85
25 09/01/2009 Pacific Pursuit	9	114.0	194	M	2	29.85
25 09/01/2009 Pacific Pursuit	10	153.5	216	M	2	29.85
25 09/01/2009 Pacific Pursuit	11	124.5	207	M	2	29.85
25 09/01/2009 Pacific Pursuit	12	154.5	216	F	2	29.85
25 09/01/2009 Pacific Pursuit	13	135.5	199	M	2	29.85
25 09/01/2009 Pacific Pursuit	14	134.0	203	M	2	29.85
25 09/01/2009 Pacific Pursuit	15	137.5	211	M	2	29.85
25 09/01/2009 Pacific Pursuit	16	146.0	211	F	2	29.85
25 09/01/2009 Pacific Pursuit	17	147.0	205	F	2	29.85
25 09/01/2009 Pacific Pursuit	18	150.5	207	F	2	29.85
25 09/01/2009 Pacific Pursuit	19	154.5	208	M	2	29.85
25 09/01/2009 Pacific Pursuit	20	152.5	214	F	2	29.85
25 09/01/2009 Pacific Pursuit	21	123.5	197	M	2	29.85
25 09/01/2009 Pacific Pursuit	22	137.5	207	M	2	29.85
25 09/01/2009 Pacific Pursuit	23	110.5	199	M	2	29.85
25 09/01/2009 Pacific Pursuit	24	116.5	195	F	2	29.85
25 09/01/2009 Pacific Pursuit	25	138.5	210	M	2	29.85
25 09/01/2009 Pacific Pursuit	26	145.0	203	M	2	29.85
25 09/01/2009 Pacific Pursuit	27	148.0	209	M	2	29.85
25 09/01/2009 Pacific Pursuit	28	136.5	205	F	2	29.85
25 09/01/2009 Pacific Pursuit	29	141.0	206	M	2	29.85
25 09/01/2009 Pacific Pursuit	30	117.5	196	F	2	29.85
25 09/01/2009 Pacific Pursuit	31	124.0	196	M	2	29.85
25 09/01/2009 Pacific Pursuit	32	164.5	218	F	2	29.85
25 09/01/2009 Pacific Pursuit	33	131.5	197	F	2	29.85
25 09/01/2009 Pacific Pursuit	34	131.0	201	M	2	29.85
25 09/01/2009 Pacific Pursuit	35	144.5	205	F	2	29.85
25 09/01/2009 Pacific Pursuit	36	103.0	189	M	2	29.85
25 09/01/2009 Pacific Pursuit	37	116.5	192	M	2	29.85
25 09/01/2009 Pacific Pursuit	38	115.0	192	F	2	29.85
25 09/01/2009 Pacific Pursuit	39	147.0	213	F	2	29.85
25 09/01/2009 Pacific Pursuit	40	128.5	197	M	2	29.85
25 09/01/2009 Pacific Pursuit	41	110.5	195	M	2	29.85
25 09/01/2009 Pacific Pursuit	42	114.5	194	F	2	29.85
25 09/01/2009 Pacific Pursuit	43	128.0	207	M	2	29.85
25 09/01/2009 Pacific Pursuit	44	136.0	203	M	2	29.85
25 09/01/2009 Pacific Pursuit	45	112.5	190	M	2	29.85
25 09/01/2009 Pacific Pursuit	46	133.0	202	M	2	29.85
25 09/01/2009 Pacific Pursuit	47	137.5	200	F	2	29.85
25 09/01/2009 Pacific Pursuit	48	103.0	190	F	2	29.85
25 09/01/2009 Pacific Pursuit	49	160.0	211	F	2	29.85

25 09/01/2009 Pacific Pursuit	50	108.0	188	M	2	29.85
26 09/01/2009 Lauren L Kapp	1	147.0	209	F	2	39.4
26 09/01/2009 Lauren L Kapp	2	124.5	197	M	2	39.4
26 09/01/2009 Lauren L Kapp	3	130.0	202	F	2	39.4
26 09/01/2009 Lauren L Kapp	4	188.0	230	F	2	39.4
26 09/01/2009 Lauren L Kapp	5	128.0	203	M	2	39.4
26 09/01/2009 Lauren L Kapp	6	122.5	202	M	2	39.4
26 09/01/2009 Lauren L Kapp	7	151.0	220	F	2	39.4
26 09/01/2009 Lauren L Kapp	8	150.0	214	F	2	39.4
26 09/01/2009 Lauren L Kapp	9	152.0	212	M	2	39.4
26 09/01/2009 Lauren L Kapp	10	151.0	204	M	2	39.4
26 09/01/2009 Lauren L Kapp	11	128.0	199	M	2	39.4
26 09/01/2009 Lauren L Kapp	12	131.5	198	F	2	39.4
26 09/01/2009 Lauren L Kapp	13	133.5	208	F	2	39.4
26 09/01/2009 Lauren L Kapp	14	143.5	210	M	2	39.4
26 09/01/2009 Lauren L Kapp	15	129.0	202	F	2	39.4
26 09/01/2009 Lauren L Kapp	16	114.5	187	F	2	39.4
26 09/01/2009 Lauren L Kapp	17	114.5	194	M	2	39.4
26 09/01/2009 Lauren L Kapp	18	125.0	200	M	2	39.4
26 09/01/2009 Lauren L Kapp	19	144.0	206	M	2	39.4
26 09/01/2009 Lauren L Kapp	20	109.5	192	M	2	39.4
26 09/01/2009 Lauren L Kapp	21	125.5	203	F	2	39.4
26 09/01/2009 Lauren L Kapp	22	140.0	213	M	2	39.4
26 09/01/2009 Lauren L Kapp	23	133.5	205	F	2	39.4
26 09/01/2009 Lauren L Kapp	24	123.0	200	M	2	39.4
26 09/01/2009 Lauren L Kapp	25	145.5	210	M	2	39.4
26 09/01/2009 Lauren L Kapp	26	123.5	203	F	2	39.4
26 09/01/2009 Lauren L Kapp	27	139.0	207	F	2	39.4
26 09/01/2009 Lauren L Kapp	28	124.5	207	F	2	39.4
26 09/01/2009 Lauren L Kapp	29	111.0	190	F	2	39.4
26 09/01/2009 Lauren L Kapp	30	148.0	210	F	2	39.4
26 09/01/2009 Lauren L Kapp	31	115.5	196	F	2	39.4
26 09/01/2009 Lauren L Kapp	32	122.0	201	F	2	39.4
26 09/01/2009 Lauren L Kapp	33	168.5	223	F	2	39.4
26 09/01/2009 Lauren L Kapp	34	143.5	211	F	2	39.4
26 09/01/2009 Lauren L Kapp	35	113.0	190	F	2	39.4
26 09/01/2009 Lauren L Kapp	36	125.0	193	F	2	39.4
26 09/01/2009 Lauren L Kapp	37	135.5	206	M	2	39.4
26 09/01/2009 Lauren L Kapp	38	132.5	208	F	2	39.4
26 09/01/2009 Lauren L Kapp	39	116.0	197	M	2	39.4
26 09/01/2009 Lauren L Kapp	40	117.5	201	M	2	39.4
26 09/01/2009 Lauren L Kapp	41	123.0	197	M	2	39.4
26 09/01/2009 Lauren L Kapp	42	140.5	207	F	2	39.4
26 09/01/2009 Lauren L Kapp	43	118.0	200	F	2	39.4
26 09/01/2009 Lauren L Kapp	44	117.5	200	F	2	39.4

26 09/01/2009 Lauren L Kapp	45	142.0	203	F	2	39.4
26 09/01/2009 Lauren L Kapp	46	124.0	206	F	2	39.4
26 09/01/2009 Lauren L Kapp	47	91.0	181	M	2	39.4
26 09/01/2009 Lauren L Kapp	48	146.5	208	F	2	39.4
26 09/01/2009 Lauren L Kapp	49	116.5	200	M	2	39.4
26 09/01/2009 Lauren L Kapp	50	127.0	196	M	2	39.4
27 09/01/2009 Lauren L Kapp	1	141.0	201	M	2	39.85
27 09/01/2009 Lauren L Kapp	2	125.0	195	F	2	39.85
27 09/01/2009 Lauren L Kapp	3	152.0	213	F	2	39.85
27 09/01/2009 Lauren L Kapp	4	165.0	222	F	2	39.85
27 09/01/2009 Lauren L Kapp	5	113.5	195	M	2	39.85
27 09/01/2009 Lauren L Kapp	6	122.0	206	F	2	39.85
27 09/01/2009 Lauren L Kapp	7	121.0	200	F	2	39.85
27 09/01/2009 Lauren L Kapp	8	150.5	210	F	2	39.85
27 09/01/2009 Lauren L Kapp	9	110.0	190	M	2	39.85
27 09/01/2009 Lauren L Kapp	10	171.0	220	F	2	39.85
27 09/01/2009 Lauren L Kapp	11	143.5	203	F	2	39.85
27 09/01/2009 Lauren L Kapp	12	138.5	202	M	2	39.85
27 09/01/2009 Lauren L Kapp	13	140.0	209	F	2	39.85
27 09/01/2009 Lauren L Kapp	14	122.5	196	F	2	39.85
27 09/01/2009 Lauren L Kapp	15	144.5	208	F	2	39.85
27 09/01/2009 Lauren L Kapp	16	129.0	202	F	2	39.85
27 09/01/2009 Lauren L Kapp	17	133.5	198	M	2	39.85
27 09/01/2009 Lauren L Kapp	18	155.0	213	F	2	39.85
27 09/01/2009 Lauren L Kapp	19	146.5	212	M	2	39.85
27 09/01/2009 Lauren L Kapp	20	155.5	209	F	2	39.85
27 09/01/2009 Lauren L Kapp	21	140.0	206	F	2	39.85
27 09/01/2009 Lauren L Kapp	22	138.5	210	F	2	39.85
27 09/01/2009 Lauren L Kapp	23	98.5	185	M	2	39.85
27 09/01/2009 Lauren L Kapp	24	127.5	203	M	2	39.85
27 09/01/2009 Lauren L Kapp	25	113.5	191	M	2	39.85
27 09/01/2009 Lauren L Kapp	26	101.5	187	F	2	39.85
27 09/01/2009 Lauren L Kapp	27	122.5	198	F	2	39.85
27 09/01/2009 Lauren L Kapp	28	135.0	199	M	2	39.85
27 09/01/2009 Lauren L Kapp	29	125.5	198	F	2	39.85
27 09/01/2009 Lauren L Kapp	30	130.5	200	F	2	39.85
27 09/01/2009 Lauren L Kapp	31	119.0	198	M	2	39.85
27 09/01/2009 Lauren L Kapp	32	124.5	200	F	2	39.85
27 09/01/2009 Lauren L Kapp	33	124.5	205	M	2	39.85
27 09/01/2009 Lauren L Kapp	34	106.5	187	M	2	39.85
27 09/01/2009 Lauren L Kapp	35	146.5	207	M	2	39.85
27 09/01/2009 Lauren L Kapp	36	134.0	202	F	2	39.85
27 09/01/2009 Lauren L Kapp	37	119.5	203	F	2	39.85
27 09/01/2009 Lauren L Kapp	38	128.0	198	F	2	39.85
27 09/01/2009 Lauren L Kapp	39	136.5	201	F	2	39.85

27 09/01/2009 Lauren L Kapp	40	130.5	202	F	2	39.85
27 09/01/2009 Lauren L Kapp	41	104.5	188	F	2	39.85
27 09/01/2009 Lauren L Kapp	42	130.0	199	F	2	39.85
27 09/01/2009 Lauren L Kapp	43	135.5	204	F	2	39.85
27 09/01/2009 Lauren L Kapp	44	140.5	203	M	2	39.85
27 09/01/2009 Lauren L Kapp	45	103.0	190	F	2	39.85
27 09/01/2009 Lauren L Kapp	46	141.0	206	F	2	39.85
27 09/01/2009 Lauren L Kapp	47	114.0	191	M	2	39.85
27 09/01/2009 Lauren L Kapp	48	122.0	200	F	2	39.85
27 09/01/2009 Lauren L Kapp	49	123.0	196	F	2	39.85
27 09/01/2009 Lauren L Kapp	50	109.5	189	F	2	39.85
28 09/01/2009 Pacific Pursuit	1	143.0	208	F	2	45.03
28 09/01/2009 Pacific Pursuit	2	132.5	196	M	2	45.03
28 09/01/2009 Pacific Pursuit	3	162.0	215	F	2	45.03
28 09/01/2009 Pacific Pursuit	4	145.0	202	M	2	45.03
28 09/01/2009 Pacific Pursuit	5	148.0	200	F	2	45.03
28 09/01/2009 Pacific Pursuit	6	124.0	197	F	2	45.03
28 09/01/2009 Pacific Pursuit	7	104.0	190	F	2	45.03
28 09/01/2009 Pacific Pursuit	8	108.5	192	M	2	45.03
28 09/01/2009 Pacific Pursuit	9	114.0	185	M	2	45.03
28 09/01/2009 Pacific Pursuit	10	130.0	203	M	2	45.03
28 09/01/2009 Pacific Pursuit	11	97.0	187	F	2	45.03
28 09/01/2009 Pacific Pursuit	12	122.5	200	M	2	45.03
28 09/01/2009 Pacific Pursuit	13	136.5	203	F	2	45.03
28 09/01/2009 Pacific Pursuit	14	160.5	217	F	2	45.03
28 09/01/2009 Pacific Pursuit	15	138.5	206	M	2	45.03
28 09/01/2009 Pacific Pursuit	16	132.0	202	F	2	45.03
28 09/01/2009 Pacific Pursuit	17	117.0	193	F	2	45.03
28 09/01/2009 Pacific Pursuit	18	126.0	202	M	2	45.03
28 09/01/2009 Pacific Pursuit	19	115.5	192	M	2	45.03
28 09/01/2009 Pacific Pursuit	20	153.5	212	F	2	45.03
28 09/01/2009 Pacific Pursuit	21	142.0	201	F	2	45.03
28 09/01/2009 Pacific Pursuit	22	138.0	208	M	2	45.03
28 09/01/2009 Pacific Pursuit	23	125.5	200	F	2	45.03
28 09/01/2009 Pacific Pursuit	24	123.5	202	M	2	45.03
28 09/01/2009 Pacific Pursuit	25	127.5	201	F	2	45.03
28 09/01/2009 Pacific Pursuit	26	150.0	204	F	2	45.03
28 09/01/2009 Pacific Pursuit	27	128.0	206	F	2	45.03
28 09/01/2009 Pacific Pursuit	28	127.5	195	F	2	45.03
28 09/01/2009 Pacific Pursuit	29	133.0	197	M	2	45.03
28 09/01/2009 Pacific Pursuit	30	122.0	201	F	2	45.03
28 09/01/2009 Pacific Pursuit	31	149.5	208	F	2	45.03
28 09/01/2009 Pacific Pursuit	32	147.0	206	F	2	45.03
28 09/01/2009 Pacific Pursuit	33	168.5	222	F	2	45.03
28 09/01/2009 Pacific Pursuit	34	140.5	204	M	2	45.03

28 09/01/2009 Pacific Pursuit	35	145.0	207	F	2	45.03
28 09/01/2009 Pacific Pursuit	36	143.0	213	M	2	45.03
28 09/01/2009 Pacific Pursuit	37	133.0	204	M	2	45.03
28 09/01/2009 Pacific Pursuit	38	141.5	205	M	2	45.03
28 09/01/2009 Pacific Pursuit	39	123.5	196	M	2	45.03
28 09/01/2009 Pacific Pursuit	40	150.5	206	F	2	45.03
28 09/01/2009 Pacific Pursuit	41	127.0	199	F	2	45.03
28 09/01/2009 Pacific Pursuit	42	118.0	195	M	2	45.03
28 09/01/2009 Pacific Pursuit	43	126.5	200	M	2	45.03
28 09/01/2009 Pacific Pursuit	44	141.0	208	F	2	45.03
28 09/01/2009 Pacific Pursuit	45	118.0	198	F	2	45.03
28 09/01/2009 Pacific Pursuit	46	149.0	207	F	2	45.03
28 09/01/2009 Pacific Pursuit	47	132.0	203	M	2	45.03
28 09/01/2009 Pacific Pursuit	48	144.0	210	F	2	45.03
28 09/01/2009 Pacific Pursuit	49	148.0	205	F	2	45.03
28 09/01/2009 Pacific Pursuit	50	127.5	196	M	2	45.03
29 09/02/2009 Lauren L Kapp	1	159.0	212	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	2	156.5	215	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	3	126.0	193	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	4	160.0	217	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	5	138.5	203	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	6	125.5	198	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	7	155.5	213	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	8	112.5	185	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	9	128.0	203	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	10	103.0	186	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	11	127.0	196	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	12	142.5	208	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	13	103.0	190	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	14	122.5	197	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	15	118.5	193	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	16	161.5	211	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	17	111.0	192	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	18	140.0	204	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	19	112.0	193	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	20	141.0	203	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	21	125.5	199	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	22	116.5	193	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	23	133.5	200	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	24	115.0	199	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	25	143.0	211	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	26	137.5	209	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	27	129.5	203	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	28	139.0	202	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	29	134.5	200	M	2	34.25642857

29 09/02/2009 Lauren L Kapp	30	116.0	196	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	31	131.5	202	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	32	107.5	195	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	33	128.5	205	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	34	155.0	220	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	35	144.5	206	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	36	137.0	209	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	37	127.5	199	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	38	150.0	208	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	39	118.5	193	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	40	132.0	199	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	41	145.5	204	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	42	139.5	200	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	43	143.5	202	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	44	116.5	193	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	45	152.0	215	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	46	123.5	200	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	47	130.5	197	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	48	137.5	205	F	2	34.25642857
29 09/02/2009 Lauren L Kapp	49	123.0	195	M	2	34.25642857
29 09/02/2009 Lauren L Kapp	50	136.0	201	F	2	34.25642857
30 09/02/2009 Pacific Pursuit	1	144.0	215	M	2	80.43
30 09/02/2009 Pacific Pursuit	2	146.0	208	M	2	80.43
30 09/02/2009 Pacific Pursuit	3	142.0	210	M	2	80.43
30 09/02/2009 Pacific Pursuit	4	146.5	213	F	2	80.43
30 09/02/2009 Pacific Pursuit	5	128.0	206	M	2	80.43
30 09/02/2009 Pacific Pursuit	6	106.0	188	F	2	80.43
30 09/02/2009 Pacific Pursuit	7	133.0	196	M	2	80.43
30 09/02/2009 Pacific Pursuit	8	128.0	203	F	2	80.43
30 09/02/2009 Pacific Pursuit	9	147.0	207	F	2	80.43
30 09/02/2009 Pacific Pursuit	10	138.5	202	F	2	80.43
30 09/02/2009 Pacific Pursuit	11	139.5	205	F	2	80.43
30 09/02/2009 Pacific Pursuit	12	109.0	193	M	2	80.43
30 09/02/2009 Pacific Pursuit	13	125.0	200	F	2	80.43
30 09/02/2009 Pacific Pursuit	14	138.0	211	F	2	80.43
30 09/02/2009 Pacific Pursuit	15	119.0	196	M	2	80.43
30 09/02/2009 Pacific Pursuit	16	141.0	205	M	2	80.43
30 09/02/2009 Pacific Pursuit	17	129.5	197	M	2	80.43
30 09/02/2009 Pacific Pursuit	18	144.0	206	M	2	80.43
30 09/02/2009 Pacific Pursuit	19	126.5	199	F	2	80.43
30 09/02/2009 Pacific Pursuit	20	131.5	203	F	2	80.43
30 09/02/2009 Pacific Pursuit	21	124.0	198	M	2	80.43
30 09/02/2009 Pacific Pursuit	22	147.5	205	M	2	80.43
30 09/02/2009 Pacific Pursuit	23	125.5	205	M	2	80.43
30 09/02/2009 Pacific Pursuit	24	124.5	201	F	2	80.43

30 09/02/2009 Pacific Pursuit	25	145.5	205	F	2	80.43
30 09/02/2009 Pacific Pursuit	26	121.0	200	M	2	80.43
30 09/02/2009 Pacific Pursuit	27	142.5	203	F	2	80.43
30 09/02/2009 Pacific Pursuit	28	129.0	201	M	2	80.43
30 09/02/2009 Pacific Pursuit	29	129.5	200	F	2	80.43
30 09/02/2009 Pacific Pursuit	30	135.5	207	F	2	80.43
30 09/02/2009 Pacific Pursuit	31	131.5	202	M	2	80.43
30 09/02/2009 Pacific Pursuit	32	115.0	194	M	2	80.43
30 09/02/2009 Pacific Pursuit	33	128.0	200	F	2	80.43
30 09/02/2009 Pacific Pursuit	34	144.5	204	M	2	80.43
30 09/02/2009 Pacific Pursuit	35	134.0	210	F	2	80.43
30 09/02/2009 Pacific Pursuit	36	129.0	207	F	2	80.43
30 09/02/2009 Pacific Pursuit	37	108.0	186	M	2	80.43
30 09/02/2009 Pacific Pursuit	38	122.0	197	F	2	80.43
30 09/02/2009 Pacific Pursuit	39	110.0	192	F	2	80.43
30 09/02/2009 Pacific Pursuit	40	126.5	207	F	2	80.43
30 09/02/2009 Pacific Pursuit	41	128.5	200	M	2	80.43
30 09/02/2009 Pacific Pursuit	42	133.0	206	M	2	80.43
30 09/02/2009 Pacific Pursuit	43	104.5	190	M	2	80.43
30 09/02/2009 Pacific Pursuit	44	117.0	195	M	2	80.43
30 09/02/2009 Pacific Pursuit	45	134.0	208	F	2	80.43
30 09/02/2009 Pacific Pursuit	46	112.0	194	F	2	80.43
30 09/02/2009 Pacific Pursuit	47	136.5	206	M	2	80.43
30 09/02/2009 Pacific Pursuit	48	139.5	205	F	2	80.43
30 09/02/2009 Pacific Pursuit	49	110.5	198	M	2	80.43
30 09/02/2009 Pacific Pursuit	50	124.5	196	F	2	80.43
31 09/02/2009 Lauren L Kapp	1	128.5	201	F	2	29.31
31 09/02/2009 Lauren L Kapp	2	139.0	209	F	2	29.31
31 09/02/2009 Lauren L Kapp	3	132.0	202	M	2	29.31
31 09/02/2009 Lauren L Kapp	4	143.5	207	M	2	29.31
31 09/02/2009 Lauren L Kapp	5	161.0	215	M	2	29.31
31 09/02/2009 Lauren L Kapp	6	116.0	194	F	2	29.31
31 09/02/2009 Lauren L Kapp	7	120.5	194	M	2	29.31
31 09/02/2009 Lauren L Kapp	8	133.5	204	F	2	29.31
31 09/02/2009 Lauren L Kapp	9	161.0	210	F	2	29.31
31 09/02/2009 Lauren L Kapp	10	112.5	192	M	2	29.31
31 09/02/2009 Lauren L Kapp	11	146.5	203	F	2	29.31
31 09/02/2009 Lauren L Kapp	12	101.0	187	M	2	29.31
31 09/02/2009 Lauren L Kapp	13	131.5	205	F	2	29.31
31 09/02/2009 Lauren L Kapp	14	111.5	200	M	2	29.31
31 09/02/2009 Lauren L Kapp	15	141.5	207	M	2	29.31
31 09/02/2009 Lauren L Kapp	16	145.0	210	F	2	29.31
31 09/02/2009 Lauren L Kapp	17	135.5	205	M	2	29.31
31 09/02/2009 Lauren L Kapp	18	147.0	206	M	2	29.31
31 09/02/2009 Lauren L Kapp	19	132.5	202	M	2	29.31

31 09/02/2009 Lauren L Kapp	20	142.0	201	M	2	29.31
31 09/02/2009 Lauren L Kapp	21	122.5	205	M	2	29.31
31 09/02/2009 Lauren L Kapp	22	129.0	196	F	2	29.31
31 09/02/2009 Lauren L Kapp	23	147.5	208	M	2	29.31
31 09/02/2009 Lauren L Kapp	24	131.0	199	M	2	29.31
31 09/02/2009 Lauren L Kapp	25	150.0	207	F	2	29.31
31 09/02/2009 Lauren L Kapp	26	128.0	197	M	2	29.31
31 09/02/2009 Lauren L Kapp	27	136.5	208	M	2	29.31
31 09/02/2009 Lauren L Kapp	28	135.0	207	M	2	29.31
31 09/02/2009 Lauren L Kapp	29	147.0	206	F	2	29.31
31 09/02/2009 Lauren L Kapp	30	123.0	196	M	2	29.31
31 09/02/2009 Lauren L Kapp	31	158.0	215	M	2	29.31
31 09/02/2009 Lauren L Kapp	32	152.0	210	F	2	29.31
31 09/02/2009 Lauren L Kapp	33	123.0	200	F	2	29.31
31 09/02/2009 Lauren L Kapp	34	108.5	187	M	2	29.31
31 09/02/2009 Lauren L Kapp	35	145.0	207	F	2	29.31
31 09/02/2009 Lauren L Kapp	36	147.0	208	M	2	29.31
31 09/02/2009 Lauren L Kapp	37	133.5	200	F	2	29.31
31 09/02/2009 Lauren L Kapp	38	120.0	195	M	2	29.31
31 09/02/2009 Lauren L Kapp	39	137.0	206	M	2	29.31
31 09/02/2009 Lauren L Kapp	40	135.5	202	M	2	29.31
31 09/02/2009 Lauren L Kapp	41	115.0	200	M	2	29.31
31 09/02/2009 Lauren L Kapp	42	104.0	193	F	2	29.31
31 09/02/2009 Lauren L Kapp	43	131.0	200	M	2	29.31
31 09/02/2009 Lauren L Kapp	44	118.5	199	F	2	29.31
31 09/02/2009 Lauren L Kapp	45	150.5	212	M	2	29.31
31 09/02/2009 Lauren L Kapp	46	151.5	210	M	2	29.31
31 09/02/2009 Lauren L Kapp	47	136.5	202	M	2	29.31
31 09/02/2009 Lauren L Kapp	48	140.5	209	F	2	29.31
31 09/02/2009 Lauren L Kapp	49	144.5	207	M	2	29.31
31 09/02/2009 Lauren L Kapp	50	125.5	200	M	2	29.31
32 09/03/2009 Lauren L Kapp	1	135.0	202	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	2	136.0	203	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	3	102.0	186	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	4	130.5	199	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	5	104.5	188	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	6	140.0	202	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	7	108.0	193	F	1	34.25642857
32 09/03/2009 Lauren L Kapp	8	136.0	215	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	9	134.0	205	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	10	104.0	184	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	11	109.5	192	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	12	120.5	202	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	13	147.0	209	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	14	129.0	210	M	2	34.25642857

32 09/03/2009 Lauren L Kapp	15	145.0	208	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	16	127.0	197	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	17	114.0	188	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	18	120.0	204	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	19	114.5	188	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	20	153.5	218	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	21	136.5	201	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	22	111.0	192	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	23	108.0	190	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	24	107.0	191	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	25	107.5	186	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	26	127.0	201	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	27	136.0	215	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	28	146.5	208	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	29	117.5	193	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	30	130.0	202	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	31	148.0	208	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	32	124.0	193	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	33	132.5	197	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	34	114.5	193	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	35	109.5	191	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	36	115.0	198	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	37	123.0	205	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	38	108.5	187	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	39	112.5	190	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	40	125.5	193	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	41	116.0	197	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	42	98.0	188	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	43	129.0	194	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	44	123.5	198	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	45	122.0	197	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	46	114.0	192	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	47	129.0	207	F	2	34.25642857
32 09/03/2009 Lauren L Kapp	48	113.0	192	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	49	101.5	184	M	2	34.25642857
32 09/03/2009 Lauren L Kapp	50	120.0	198	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	1	116.5	196	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	2	122.0	193	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	3	105.0	186	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	4	111.5	190	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	5	163.5	217	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	6	118.5	196	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	7	143.5	204	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	8	99.5	189	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	9	110.0	192	M	2	34.25642857

33 09/03/2009 Pacific Pursuit	10	112.0	194	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	11	132.0	202	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	12	122.5	191	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	13	104.0	193	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	14	125.5	198	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	15	99.0	186	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	16	127.5	200	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	17	118.0	195	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	18	108.0	192	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	19	144.5	206	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	20	154.0	210	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	21	108.0	196	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	22	122.5	198	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	23	122.5	198	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	24	126.5	205	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	25	102.0	187	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	26	114.5	187	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	27	129.0	200	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	28	107.0	194	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	29	132.0	202	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	30	118.0	197	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	31	145.0	206	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	32	146.0	215	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	33	103.0	188	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	34	140.0	208	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	35	129.0	199	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	36	111.0	191	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	37	109.5	192	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	38	122.0	198	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	39	136.5	208	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	40	111.0	190	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	41	138.5	203	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	42	125.0	198	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	43	133.0	200	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	44	152.5	208	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	45	104.0	186	M	2	34.25642857
33 09/03/2009 Pacific Pursuit	46	131.0	202	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	47	116.5	195	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	48	112.0	190	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	49	138.0	205	F	2	34.25642857
33 09/03/2009 Pacific Pursuit	50	110.5	201	F	2	34.25642857

Sample ID (Set No., Set Date, Vessel)	Fish #	Weight (g)	Std Length (mm)	Sex	Maturity
1 08/24/2009 King Phillip	1	56.0	169	F	1
1 08/24/2009 King Phillip	2	56.0	164	M	1
1 08/24/2009 King Phillip	3	58.0	165	M	1
1 08/24/2009 King Phillip	4	80.0	183	M	2
1 08/24/2009 King Phillip	5	70.0	170	F	1
1 08/24/2009 King Phillip	6	70.0	166	F	1
1 08/24/2009 King Phillip	7	68.0	173	M	1
1 08/24/2009 King Phillip	8	70.0	176	M	1
1 08/24/2009 King Phillip	9	80.0	177	F	2
1 08/24/2009 King Phillip	10	70.0	166	F	2
1 08/24/2009 King Phillip	11	56.0	162	M	1
1 08/24/2009 King Phillip	12	66.0	172	M	1
1 08/24/2009 King Phillip	13	90.0	191	M	2
1 08/24/2009 King Phillip	14	40.0	153	F	1
1 08/24/2009 King Phillip	15	52.0	149	M	2
1 08/24/2009 King Phillip	16	34.0	146	F	1
1 08/24/2009 King Phillip	17	82.0	176	F	1
1 08/24/2009 King Phillip	18	90.0	192	F	2
1 08/24/2009 King Phillip	19	74.0	169	F	2
1 08/24/2009 King Phillip	20	96.0	193	M	2
1 08/24/2009 King Phillip	21	94.0	197	F	2
1 08/24/2009 King Phillip	22	72.0	174	M	1
1 08/24/2009 King Phillip	23	48.0	150	F	1
1 08/24/2009 King Phillip	24	68.0	168	M	2
1 08/24/2009 King Phillip	25	80.0	171	M	1
1 08/24/2009 King Phillip	26	46.0	147	F	1
1 08/24/2009 King Phillip	27	66.0	171	M	1
1 08/24/2009 King Phillip	28	60.0	161	M	1
1 08/24/2009 King Phillip	29	84.0	180	M	1
1 08/24/2009 King Phillip	30	60.0	162	M	1
1 08/24/2009 King Phillip	31	70.0	173	M	1
1 08/24/2009 King Phillip	32	82.0	178	M	1
1 08/24/2009 King Phillip	33	88.0	184	M	1
1 08/24/2009 King Phillip	34	76.0	176	F	2
1 08/24/2009 King Phillip	35	52.0	155	F	1
1 08/24/2009 King Phillip	36	82.0	176	M	1
1 08/24/2009 King Phillip	37	62.0	167	M	1
1 08/24/2009 King Phillip	38	68.0	166	M	1
1 08/24/2009 King Phillip	39	70.0	170	F	2
1 08/24/2009 King Phillip	40	74.0	170	M	1
1 08/24/2009 King Phillip	41	84.0	177	M	1
1 08/24/2009 King Phillip	42	64.0	166	M	1
1 08/24/2009 King Phillip	43	78.0	173	F	2
1 08/24/2009 King Phillip	44	84.0	181	M	1

1 08/24/2009 King Phillip	45	74.0	177	F	2
1 08/24/2009 King Phillip	46	78.0	173	F	2
1 08/24/2009 King Phillip	47	68.0	170	F	2
1 08/24/2009 King Phillip	48	40.0	146	F	1
1 08/24/2009 King Phillip	49	n/a	n/a		
1 08/24/2009 King Phillip	50	n/a	n/a		
3 08/24/2009 King Phillip	1	86.0	190	M	1
3 08/24/2009 King Phillip	2	100.0	197	F	2
3 08/24/2009 King Phillip	3	50.0	151	M	1
3 08/24/2009 King Phillip	4	74.0	170	M	1
3 08/24/2009 King Phillip	5	84.0	183	M	1
3 08/24/2009 King Phillip	6	60.0	164	F	1
3 08/24/2009 King Phillip	7	78.0	172	M	1
3 08/24/2009 King Phillip	8	90.0	189	M	1
3 08/24/2009 King Phillip	9	84.0	179	F	2
3 08/24/2009 King Phillip	10	74.0	169	M	1
3 08/24/2009 King Phillip	11	48.0	144	M	1
3 08/24/2009 King Phillip	12	50.0	150	F	2
3 08/24/2009 King Phillip	13	70.0	171	F	2
3 08/24/2009 King Phillip	14	38.0	142	F	1
3 08/24/2009 King Phillip	15	60.0	162	F	2
3 08/24/2009 King Phillip	16	64.0	167	M	1
3 08/24/2009 King Phillip	17	46.0	151	M	1
3 08/24/2009 King Phillip	18	50.0	154	M	1
3 08/24/2009 King Phillip	19	98.0	193	F	2
3 08/24/2009 King Phillip	20	84.0	182	M	1
3 08/24/2009 King Phillip	21	48.0	151	F	1
3 08/24/2009 King Phillip	22	70.0	167	M	1
3 08/24/2009 King Phillip	23	90.0	184	M	1
3 08/24/2009 King Phillip	24	72.0	170	F	1
3 08/24/2009 King Phillip	25	70.0	166	M	2
3 08/24/2009 King Phillip	26	98.0	196	F	2
3 08/24/2009 King Phillip	27	58.0	161	F	2
3 08/24/2009 King Phillip	28	88.0	186	M	1
3 08/24/2009 King Phillip	29	66.0	171	M	1
3 08/24/2009 King Phillip	30	50.0	162	F	1
3 08/24/2009 King Phillip	31	114.0	202	M	1
3 08/24/2009 King Phillip	32	72.0	168	F	2
3 08/24/2009 King Phillip	33	70.0	173	F	2
3 08/24/2009 King Phillip	34	50.0	153	F	1
3 08/24/2009 King Phillip	35	46.0	147	F	1
3 08/24/2009 King Phillip	36	56.0	157	M	1
3 08/24/2009 King Phillip	37	62.0	168	F	2
3 08/24/2009 King Phillip	38	74.0	173	M	1
3 08/24/2009 King Phillip	39	44.0	149	M	1

3 08/24/2009 King Phillip	40	64.0	167	M	1
3 08/24/2009 King Phillip	41	64.0	166	M	1
3 08/24/2009 King Phillip	42	60.0	158	M	1
3 08/24/2009 King Phillip	43	74.0	179	F	2
3 08/24/2009 King Phillip	44	76.0	178	M	1
3 08/24/2009 King Phillip	45	76.0	176	F	2
3 08/24/2009 King Phillip	46	70.0	166	F	2
3 08/24/2009 King Phillip	47	74.0	171	F	2
3 08/24/2009 King Phillip	48	80.0	173	F	2
3 08/24/2009 King Phillip	49	76.0	176	F	2
3 08/24/2009 King Phillip	50	64.0	168	F	2
4 08/25/2009 King Phillip	1	66.0	168	M	1
4 08/25/2009 King Phillip	2	60.0	164	M	1
4 08/25/2009 King Phillip	3	70.0	170	F	1
4 08/25/2009 King Phillip	4	76.0	184	F	2
4 08/25/2009 King Phillip	5	68.0	172	M	1
4 08/25/2009 King Phillip	6	74.0	174	F	2
4 08/25/2009 King Phillip	7	48.0	155	M	1
4 08/25/2009 King Phillip	8	64.0	169	F	1
4 08/25/2009 King Phillip	9	94.0	185	M	1
4 08/25/2009 King Phillip	10	78.0	184	F	2
4 08/25/2009 King Phillip	11	80.0	180	M	1
4 08/25/2009 King Phillip	12	82.0	183	F	2
4 08/25/2009 King Phillip	13	90.0	193	F	2
4 08/25/2009 King Phillip	14	48.0	151	F	1
4 08/25/2009 King Phillip	15	60.0	162	M	1
4 08/25/2009 King Phillip	16	44.0	149	F	1
4 08/25/2009 King Phillip	17	82.0	185	M	1
4 08/25/2009 King Phillip	18	64.0	168	M	1
4 08/25/2009 King Phillip	19	84.0	183	M	1
4 08/25/2009 King Phillip	20	52.0	148	F	1
4 08/25/2009 King Phillip	21	56.0	164	M	1
4 08/25/2009 King Phillip	22	54.0	154	F	1
4 08/25/2009 King Phillip	23	50.0	151	M	1
4 08/25/2009 King Phillip	24	70.0	173	M	1
4 08/25/2009 King Phillip	25	80.0	179	F	2
4 08/25/2009 King Phillip	26	76.0	174	M	1
4 08/25/2009 King Phillip	27	94.0	190	F	2
4 08/25/2009 King Phillip	28	68.0	173	M	1
4 08/25/2009 King Phillip	29	82.0	187	F	1
4 08/25/2009 King Phillip	30	52.0	154	F	1
4 08/25/2009 King Phillip	31	74.0	176	M	1
4 08/25/2009 King Phillip	32	48.0	154	F	1
4 08/25/2009 King Phillip	33	78.0	178	F	2
4 08/25/2009 King Phillip	34	74.0	177	F	2

4 08/25/2009 King Phillip	35	70.0	172	F	1
4 08/25/2009 King Phillip	36	84.0	183	M	1
4 08/25/2009 King Phillip	37	84.0	184	M	1
4 08/25/2009 King Phillip	38	64.0	163	M	1
4 08/25/2009 King Phillip	39	78.0	178	M	1
4 08/25/2009 King Phillip	40	36.0	137	M	1
4 08/25/2009 King Phillip	41	34.0	136	F	1
4 08/25/2009 King Phillip	42	76.0	178	F	2
4 08/25/2009 King Phillip	43	88.0	182	M	1
4 08/25/2009 King Phillip	44	66.0	167	M	1
4 08/25/2009 King Phillip	45	68.0	177	F	1
4 08/25/2009 King Phillip	46	66.0	173	M	1
4 08/25/2009 King Phillip	47	90.0	208	F	2
4 08/25/2009 King Phillip	48	76.0	169	F	2
4 08/25/2009 King Phillip	49	66.0	173	M	1
4 08/25/2009 King Phillip	50	66.0	171	M	1
5 08/25/2009 Ocean Angel IV	1	60.0	164	M	1
5 08/25/2009 Ocean Angel IV	2	70.0	173	F	2
5 08/25/2009 Ocean Angel IV	3	64.0	170	M	1
5 08/25/2009 Ocean Angel IV	4	80.0	175	M	1
5 08/25/2009 Ocean Angel IV	5	84.0	185	F	2
5 08/25/2009 Ocean Angel IV	6	84.0	175	M	1
5 08/25/2009 Ocean Angel IV	7	64.0	170	M	1
5 08/25/2009 Ocean Angel IV	8	68.0	169	M	1
5 08/25/2009 Ocean Angel IV	9	84.0	188	F	2
5 08/25/2009 Ocean Angel IV	10	52.0	152	F	1
5 08/25/2009 Ocean Angel IV	11	48.0	154	F	1
5 08/25/2009 Ocean Angel IV	12	50.0	144	F	1
5 08/25/2009 Ocean Angel IV	13	88.0	183	F	2
5 08/25/2009 Ocean Angel IV	14	50.0	149	M	1
5 08/25/2009 Ocean Angel IV	15	60.0	165	F	1
5 08/25/2009 Ocean Angel IV	16	48.0	149	F	1
5 08/25/2009 Ocean Angel IV	17	48.0	151	M	1
5 08/25/2009 Ocean Angel IV	18	70.0	172	F	2
5 08/25/2009 Ocean Angel IV	19	64.0	166	M	1
5 08/25/2009 Ocean Angel IV	20	40.0	144	F	1
5 08/25/2009 Ocean Angel IV	21	56.0	158	M	1
5 08/25/2009 Ocean Angel IV	22	76.0	176	M	1
5 08/25/2009 Ocean Angel IV	23	50.0	154	M	1
5 08/25/2009 Ocean Angel IV	24	56.0	154	F	1
5 08/25/2009 Ocean Angel IV	25	48.0	156	F	1
5 08/25/2009 Ocean Angel IV	26	56.0	159	F	1
5 08/25/2009 Ocean Angel IV	27	64.0	172	M	1
5 08/25/2009 Ocean Angel IV	28	58.0	169	F	1
5 08/25/2009 Ocean Angel IV	29	50.0	154	F	2

5 08/25/2009 Ocean Angel IV	30	54.0	157	F	1
5 08/25/2009 Ocean Angel IV	31	50.0	158	M	1
5 08/25/2009 Ocean Angel IV	32	88.0	188	M	1
5 08/25/2009 Ocean Angel IV	33	46.0	144	F	1
5 08/25/2009 Ocean Angel IV	34	50.0	152	F	2
5 08/25/2009 Ocean Angel IV	35	42.0	138	N/A	N/A
5 08/25/2009 Ocean Angel IV	36	50.0	155	M	1
5 08/25/2009 Ocean Angel IV	37	60.0	164	M	1
5 08/25/2009 Ocean Angel IV	38	60.0	157	M	1
5 08/25/2009 Ocean Angel IV	39	88.0	192	F	2
5 08/25/2009 Ocean Angel IV	40	36.0	142	M	1
5 08/25/2009 Ocean Angel IV	41	30.0	132	M	1
5 08/25/2009 Ocean Angel IV	42	66.0	172	M	1
5 08/25/2009 Ocean Angel IV	43	46.0	147	F	1
5 08/25/2009 Ocean Angel IV	44	52.0	156	F	1
5 08/25/2009 Ocean Angel IV	45	36.0	135	F	1
5 08/25/2009 Ocean Angel IV	46	52.0	158	M	1
5 08/25/2009 Ocean Angel IV	47	36.0	138	M	1
5 08/25/2009 Ocean Angel IV	48	44.0	150	F	1
5 08/25/2009 Ocean Angel IV	49	76.0	169	M	1
5 08/25/2009 Ocean Angel IV	50	60.0	162	M	1
6 08/26/2009 King Phillip	1	80.0	174	F	2
6 08/26/2009 King Phillip	2	74.0	173	F	2
6 08/26/2009 King Phillip	3	78.0	175	F	2
6 08/26/2009 King Phillip	4	64.0	167	M	1
6 08/26/2009 King Phillip	5	86.0	181	F	2
6 08/26/2009 King Phillip	6	80.0	184	F	2
6 08/26/2009 King Phillip	7	86.0	179	F	2
6 08/26/2009 King Phillip	8	60.0	164	F	2
6 08/26/2009 King Phillip	9	84.0	195	M	1
6 08/26/2009 King Phillip	10	66.0	169	M	1
6 08/26/2009 King Phillip	11	54.0	163	M	1
6 08/26/2009 King Phillip	12	86.0	180	M	1
6 08/26/2009 King Phillip	13	94.0	189	M	1
6 08/26/2009 King Phillip	14	66.0	175	M	1
6 08/26/2009 King Phillip	15	74.0	169	F	2
6 08/26/2009 King Phillip	16	70.0	178	F	2
6 08/26/2009 King Phillip	17	64.0	162	M	1
6 08/26/2009 King Phillip	18	68.0	168	M	1
6 08/26/2009 King Phillip	19	68.0	173	F	2
6 08/26/2009 King Phillip	20	84.0	179	M	1
6 08/26/2009 King Phillip	21	74.0	171	M	1
6 08/26/2009 King Phillip	22	72.0	175	F	2
6 08/26/2009 King Phillip	23	68.0	174	M	1
6 08/26/2009 King Phillip	24	74.0	178	F	2

6 08/26/2009 King Phillip	25	82.0	176	F	2
6 08/26/2009 King Phillip	26	76.0	175	F	2
6 08/26/2009 King Phillip	27	76.0	178	M	1
6 08/26/2009 King Phillip	28	56.0	158	M	1
6 08/26/2009 King Phillip	29	76.0	171	M	1
6 08/26/2009 King Phillip	30	82.0	182	F	2
6 08/26/2009 King Phillip	31	64.0	175	M	1
6 08/26/2009 King Phillip	32	76.0	179	F	2
6 08/26/2009 King Phillip	33	74.0	173	F	2
6 08/26/2009 King Phillip	34	90.0	185	M	1
6 08/26/2009 King Phillip	35	64.0	173	F	2
6 08/26/2009 King Phillip	36	80.0	176	M	1
6 08/26/2009 King Phillip	37	84.0	194	M	2
6 08/26/2009 King Phillip	38	74.0	176	M	1
6 08/26/2009 King Phillip	39	82.0	179	M	1
6 08/26/2009 King Phillip	40	90.0	184	M	1
6 08/26/2009 King Phillip	41	42.0	156	F	1
6 08/26/2009 King Phillip	42	84.0	182	F	2
6 08/26/2009 King Phillip	43	82.0	181	F	2
6 08/26/2009 King Phillip	44	54.0	158	M	1
6 08/26/2009 King Phillip	45	68.0	174	M	1
6 08/26/2009 King Phillip	46	84.0	186	F	2
6 08/26/2009 King Phillip	47	74.0	182	M	1
6 08/26/2009 King Phillip	48	82.0	173	M	1
6 08/26/2009 King Phillip	49	68.0	181	F	2
6 08/26/2009 King Phillip	50	74.0	171	F	2
7 08/26/2009 Ocean Angel IV	1	74.0	177	F	2
7 08/26/2009 Ocean Angel IV	2	70.0	168	F	2
7 08/26/2009 Ocean Angel IV	3	80.0	175	M	1
7 08/26/2009 Ocean Angel IV	4	72.0	192	F	2
7 08/26/2009 Ocean Angel IV	5	72.0	171	M	1
7 08/26/2009 Ocean Angel IV	6	80.0	184	F	2
7 08/26/2009 Ocean Angel IV	7	86.0	179	F	2
7 08/26/2009 Ocean Angel IV	8	86.0	171	F	2
7 08/26/2009 Ocean Angel IV	9	68.0	166	M	1
7 08/26/2009 Ocean Angel IV	10	100.0	189	M	2
7 08/26/2009 Ocean Angel IV	11	42.0	145	M	1
7 08/26/2009 Ocean Angel IV	12	80.0	180	F	2
7 08/26/2009 Ocean Angel IV	13	78.0	166	F	1
7 08/26/2009 Ocean Angel IV	14	82.0	170	F	1
7 08/26/2009 Ocean Angel IV	15	82.0	175	F	2
7 08/26/2009 Ocean Angel IV	16	78.0	171	F	2
7 08/26/2009 Ocean Angel IV	17	72.0	172	F	2
7 08/26/2009 Ocean Angel IV	18	84.0	179	F	2
7 08/26/2009 Ocean Angel IV	19	92.0	182	F	2

7 08/26/2009 Ocean Angel IV	20	42.0	149	M	1
7 08/26/2009 Ocean Angel IV	21	68.0	165	M	1
7 08/26/2009 Ocean Angel IV	22	68.0	161	F	2
7 08/26/2009 Ocean Angel IV	23	81.0	170	M	1
7 08/26/2009 Ocean Angel IV	24	94.0	184	F	2
7 08/26/2009 Ocean Angel IV	25	60.0	166	M	1
7 08/26/2009 Ocean Angel IV	26	82.0	176	F	2
7 08/26/2009 Ocean Angel IV	27	68.0	185	F	2
7 08/26/2009 Ocean Angel IV	28	76.0	174	M	1
7 08/26/2009 Ocean Angel IV	29	84.0	176	M	1
7 08/26/2009 Ocean Angel IV	30	70.0	175	F	1
7 08/26/2009 Ocean Angel IV	31	80.0	174	M	1
7 08/26/2009 Ocean Angel IV	32	84.0	175	M	1
7 08/26/2009 Ocean Angel IV	33	86.0	179	F	2
7 08/26/2009 Ocean Angel IV	34	82.0	189	M	2
7 08/26/2009 Ocean Angel IV	35	90.0	195	M	2
7 08/26/2009 Ocean Angel IV	36	76.0	181	F	2
7 08/26/2009 Ocean Angel IV	37	82.0	170	M	1
7 08/26/2009 Ocean Angel IV	38	64.0	164	M	1
7 08/26/2009 Ocean Angel IV	39	60.0	175	M	1
7 08/26/2009 Ocean Angel IV	40	90.0	188	F	2
7 08/26/2009 Ocean Angel IV	41	76.0	168	F	2
7 08/26/2009 Ocean Angel IV	42	68.0	170	M	1
7 08/26/2009 Ocean Angel IV	43	84.0	179	F	2
7 08/26/2009 Ocean Angel IV	44	72.0	181	M	1
7 08/26/2009 Ocean Angel IV	45	74.0	174	M	1
7 08/26/2009 Ocean Angel IV	46	74.0	182	M	1
7 08/26/2009 Ocean Angel IV	47	86.0	189	F	2
7 08/26/2009 Ocean Angel IV	48	90.0	194	M	1
7 08/26/2009 Ocean Angel IV	49	44.0	152	M	1
7 08/26/2009 Ocean Angel IV	50	64.0	167	M	1
8 08/26/2009 King Phillip	1	74.0	178	F	2
8 08/26/2009 King Phillip	2	80.0	179	M	1
8 08/26/2009 King Phillip	3	70.0	184	F	2
8 08/26/2009 King Phillip	4	78.0	177	F	2
8 08/26/2009 King Phillip	5	80.0	174	F	2
8 08/26/2009 King Phillip	6	76.0	175	F	2
8 08/26/2009 King Phillip	7	70.0	168	M	1
8 08/26/2009 King Phillip	8	74.0	173	M	1
8 08/26/2009 King Phillip	9	82.0	176	F	2
8 08/26/2009 King Phillip	10	80.0	178	F	2
8 08/26/2009 King Phillip	11	88.0	181	M	1
8 08/26/2009 King Phillip	12	64.0	175	F	2
8 08/26/2009 King Phillip	13	72.0	183	M	1
8 08/26/2009 King Phillip	14	74.0	173	F	2

8 08/26/2009 King Phillip	15	74.0	178	M	2
8 08/26/2009 King Phillip	16	72.0	173	F	2
8 08/26/2009 King Phillip	17	82.0	179	F	2
8 08/26/2009 King Phillip	18	76.0	176	F	2
8 08/26/2009 King Phillip	19	58.0	151	F	2
8 08/26/2009 King Phillip	20	76.0	176	M	2
8 08/26/2009 King Phillip	21	62.0	170	M	1
8 08/26/2009 King Phillip	22	70.0	171	M	1
8 08/26/2009 King Phillip	23	74.0	169	M	1
8 08/26/2009 King Phillip	24	74.0	170	F	2
8 08/26/2009 King Phillip	25	76.0	174	M	1
8 08/26/2009 King Phillip	26	80.0	180	M	1
8 08/26/2009 King Phillip	27	72.0	165	M	1
8 08/26/2009 King Phillip	28	70.0	165	M	1
8 08/26/2009 King Phillip	29	46.0	152	M	1
8 08/26/2009 King Phillip	30	74.0	172	F	2
8 08/26/2009 King Phillip	31	70.0	164	M	2
8 08/26/2009 King Phillip	32	68.0	164	M	1
8 08/26/2009 King Phillip	33	74.0	168	M	1
8 08/26/2009 King Phillip	34	70.0	160	M	1
8 08/26/2009 King Phillip	35	70.0	150	F	2
8 08/26/2009 King Phillip	36	46.0	141	F	1
8 08/26/2009 King Phillip	37	46.0	146	F	2
8 08/26/2009 King Phillip	38	90.0	180	M	1
8 08/26/2009 King Phillip	39	56.0	164	F	2
8 08/26/2009 King Phillip	40	86.0	179	F	2
8 08/26/2009 King Phillip	41	84.0	175	F	2
8 08/26/2009 King Phillip	42	74.0	165	F	2
8 08/26/2009 King Phillip	43	76.0	170	F	2
8 08/26/2009 King Phillip	44	68.0	166	M	1
8 08/26/2009 King Phillip	45	80.0	186	M	1
8 08/26/2009 King Phillip	46	72.0	171	F	2
8 08/26/2009 King Phillip	47	80.0	176	M	1
8 08/26/2009 King Phillip	48	80.0	181	M	1
8 08/26/2009 King Phillip	49	50.0	154	M	1
8 08/26/2009 King Phillip	50	56.0	155	M	1
9 08/27/2009 King Phillip	1	74.0	170	M	1
9 08/27/2009 King Phillip	2	74.0	172	F	2
9 08/27/2009 King Phillip	3	84.0	188	F	2
9 08/27/2009 King Phillip	4	68.0	172	F	2
9 08/27/2009 King Phillip	5	60.0	163	F	2
9 08/27/2009 King Phillip	6	90.0	179	M	1
9 08/27/2009 King Phillip	7	68.0	178	M	1
9 08/27/2009 King Phillip	8	74.0	174	M	1
9 08/27/2009 King Phillip	9	64.0	169	M	1

9 08/27/2009 King Phillip	10	82.0	177	M	1
9 08/27/2009 King Phillip	11	56.0	160	F	2
9 08/27/2009 King Phillip	12	62.0	171	F	1
9 08/27/2009 King Phillip	13	80.0	184	F	2
9 08/27/2009 King Phillip	14	74.0	182	F	2
9 08/27/2009 King Phillip	15	70.0	172	M	1
9 08/27/2009 King Phillip	16	80.0	183	M	2
9 08/27/2009 King Phillip	17	80.0	179	F	1
9 08/27/2009 King Phillip	18	72.0	175	F	2
9 08/27/2009 King Phillip	19	74.0	170	F	2
9 08/27/2009 King Phillip	20	76.0	190	M	2
9 08/27/2009 King Phillip	21	74.0	172	M	1
9 08/27/2009 King Phillip	22	82.0	181	F	2
9 08/27/2009 King Phillip	23	70.0	176	F	2
9 08/27/2009 King Phillip	24	78.0	176	F	2
9 08/27/2009 King Phillip	25	70.0	171	F	1
9 08/27/2009 King Phillip	26	76.0	174	M	1
9 08/27/2009 King Phillip	27	76.0	186	F	1
9 08/27/2009 King Phillip	28	56.0	157	F	1
9 08/27/2009 King Phillip	29	76.0	176	M	1
9 08/27/2009 King Phillip	30	68.0	176	M	1
9 08/27/2009 King Phillip	31	84.0	184	F	2
9 08/27/2009 King Phillip	32	76.0	175	M	1
9 08/27/2009 King Phillip	33	68.0	174	F	2
9 08/27/2009 King Phillip	34	74.0	176	M	1
9 08/27/2009 King Phillip	35	78.0	184	F	2
9 08/27/2009 King Phillip	36	72.0	173	M	1
9 08/27/2009 King Phillip	37	74.0	172	F	2
9 08/27/2009 King Phillip	38	66.0	182	M	1
9 08/27/2009 King Phillip	39	52.0	160	F	1
9 08/27/2009 King Phillip	40	64.0	167	F	2
9 08/27/2009 King Phillip	41	72.0	176	M	1
9 08/27/2009 King Phillip	42	80.0	178	F	2
9 08/27/2009 King Phillip	43	88.0	174	F	2
9 08/27/2009 King Phillip	44	66.0	167	M	1
9 08/27/2009 King Phillip	45	90.0	183	F	2
9 08/27/2009 King Phillip	46	84.0	176	M	1
9 08/27/2009 King Phillip	47	72.0	176	F	2
9 08/27/2009 King Phillip	48	84.0	184	F	2
9 08/27/2009 King Phillip	49	76.0	186	M	1
9 08/27/2009 King Phillip	50	86.0	182	M	1
10 08/27/2009 King Phillip	1	76.0	178	M	1
10 08/27/2009 King Phillip	2	44.0	145	F	1
10 08/27/2009 King Phillip	3	86.0	184	F	2
10 08/27/2009 King Phillip	4	80.0	186	F	2

10 08/27/2009 King Phillip	5	76.0	174	M	1
10 08/27/2009 King Phillip	6	82.0	175	F	2
10 08/27/2009 King Phillip	7	70.0	179	F	2
10 08/27/2009 King Phillip	8	62.0	164	M	1
10 08/27/2009 King Phillip	9	84.0	189	F	2
10 08/27/2009 King Phillip	10	70.0	172	M	1
10 08/27/2009 King Phillip	11	84.0	180	F	2
10 08/27/2009 King Phillip	12	76.0	174	F	2
10 08/27/2009 King Phillip	13	64.0	168	M	1
10 08/27/2009 King Phillip	14	84.0	184	M	1
10 08/27/2009 King Phillip	15	78.0	180	M	1
10 08/27/2009 King Phillip	16	86.0	178	M	1
10 08/27/2009 King Phillip	17	64.0	173	M	1
10 08/27/2009 King Phillip	18	56.0	161	M	1
10 08/27/2009 King Phillip	19	82.0	179	M	1
10 08/27/2009 King Phillip	20	84.0	181	M	1
10 08/27/2009 King Phillip	21	72.0	180	M	1
10 08/27/2009 King Phillip	22	60.0	167	M	1
10 08/27/2009 King Phillip	23	90.0	184	F	2
10 08/27/2009 King Phillip	24	48.0	155	F	1
10 08/27/2009 King Phillip	25	50.0	154	F	1
10 08/27/2009 King Phillip	26	92.0	186	M	1
10 08/27/2009 King Phillip	27	80.0	184	F	2
10 08/27/2009 King Phillip	28	70.0	172	M	1
10 08/27/2009 King Phillip	29	68.0	171	M	1
10 08/27/2009 King Phillip	30	92.0	187	M	1
10 08/27/2009 King Phillip	31	64.0	167	M	1
10 08/27/2009 King Phillip	32	78.0	186	F	1
10 08/27/2009 King Phillip	33	68.0	172	F	2
10 08/27/2009 King Phillip	34	84.0	179	M	1
10 08/27/2009 King Phillip	35	70.0	170	M	1
10 08/27/2009 King Phillip	36	76.0	180	F	2
10 08/27/2009 King Phillip	37	72.0	170	M	1
10 08/27/2009 King Phillip	38	84.0	184	M	1
10 08/27/2009 King Phillip	39	70.0	171	M	1
10 08/27/2009 King Phillip	40	82.0	178	M	1
10 08/27/2009 King Phillip	41	72.0	169	M	1
10 08/27/2009 King Phillip	42	60.0	169	F	1
10 08/27/2009 King Phillip	43	75.0	178	F	2
10 08/27/2009 King Phillip	44	86.0	182	M	1
10 08/27/2009 King Phillip	45	70.0	170	M	1
10 08/27/2009 King Phillip	46	74.0	174	F	2
10 08/27/2009 King Phillip	47	90.0	181	F	2
10 08/27/2009 King Phillip	48	36.0	148	F	1
10 08/27/2009 King Phillip	49	70.0	170	F	2

10 08/27/2009 King Phillip	50	80.0	176	M	1
11 08/26/2009 Ocean Angel IV	1	80.0	175	M	1
11 08/26/2009 Ocean Angel IV	2	88.0	185	M	2
11 08/26/2009 Ocean Angel IV	3	78.0	175	F	2
11 08/26/2009 Ocean Angel IV	4	78.0	176	F	2
11 08/26/2009 Ocean Angel IV	5	80.0	181	F	2
11 08/26/2009 Ocean Angel IV	6	76.0	170	M	1
11 08/26/2009 Ocean Angel IV	7	70.0	172	M	1
11 08/26/2009 Ocean Angel IV	8	72.0	181	F	1
11 08/26/2009 Ocean Angel IV	9	80.0	186	F	2
11 08/26/2009 Ocean Angel IV	10	70.0	176	F	2
11 08/26/2009 Ocean Angel IV	11	86.0	174	F	2
11 08/26/2009 Ocean Angel IV	12	80.0	176	M	1
11 08/26/2009 Ocean Angel IV	13	74.0	176	M	1
11 08/26/2009 Ocean Angel IV	14	74.0	177	M	1
11 08/26/2009 Ocean Angel IV	15	80.0	181	F	1
11 08/26/2009 Ocean Angel IV	16	84.0	185	F	2
11 08/26/2009 Ocean Angel IV	17	84.0	184	F	2
11 08/26/2009 Ocean Angel IV	18	74.0	184	F	2
11 08/26/2009 Ocean Angel IV	19	88.0	181	F	2
11 08/26/2009 Ocean Angel IV	20	72.0	171	F	2
11 08/26/2009 Ocean Angel IV	21	80.0	180	F	2
11 08/26/2009 Ocean Angel IV	22	64.0	161	M	1
11 08/26/2009 Ocean Angel IV	23	82.0	179	F	2
11 08/26/2009 Ocean Angel IV	24	82.0	180	F	1
11 08/26/2009 Ocean Angel IV	25	88.0	178	M	1
11 08/26/2009 Ocean Angel IV	26	80.0	184	M	1
11 08/26/2009 Ocean Angel IV	27	84.0	179	M	1
11 08/26/2009 Ocean Angel IV	28	68.0	173	M	1
11 08/26/2009 Ocean Angel IV	29	76.0	189	F	1
11 08/26/2009 Ocean Angel IV	30	78.0	173	F	2
11 08/26/2009 Ocean Angel IV	31	78.0	175	M	1
11 08/26/2009 Ocean Angel IV	32	90.0	185	M	1
11 08/26/2009 Ocean Angel IV	33	68.0	170	F	3
11 08/26/2009 Ocean Angel IV	34	70.0	172	M	1
11 08/26/2009 Ocean Angel IV	35	86.0	179	M	1
11 08/26/2009 Ocean Angel IV	36	74.0	167	M	1
11 08/26/2009 Ocean Angel IV	37	76.0	181	F	2
11 08/26/2009 Ocean Angel IV	38	88.0	180	F	2
11 08/26/2009 Ocean Angel IV	39	74.0	175	M	2
11 08/26/2009 Ocean Angel IV	40	76.0	181	F	2
11 08/26/2009 Ocean Angel IV	41	70.0	177	M	2
11 08/26/2009 Ocean Angel IV	42	80.0	182	F	2
11 08/26/2009 Ocean Angel IV	43	72.0	171	F	1
11 08/26/2009 Ocean Angel IV	44	79.0	174	F	2

11 08/26/2009 Ocean Angel IV	45	66.0	166	F	2
11 08/26/2009 Ocean Angel IV	46	80.0	170	F	2
11 08/26/2009 Ocean Angel IV	47	82.0	179	F	2
11 08/26/2009 Ocean Angel IV	48	79.0	169	F	1
11 08/26/2009 Ocean Angel IV	49	80.0	179	M	1
11 08/26/2009 Ocean Angel IV	50	84.0	185	F	2
12 08/28/2009 King Phillip	1	82.0	181	F	2
12 08/28/2009 King Phillip	2	70.0	173	M	1
12 08/28/2009 King Phillip	3	70.0	174	F	2
12 08/28/2009 King Phillip	4	90.0	197	F	2
12 08/28/2009 King Phillip	5	70.0	178	M	1
12 08/28/2009 King Phillip	6	76.0	197	F	1
12 08/28/2009 King Phillip	7	74.0	171	F	2
12 08/28/2009 King Phillip	8	80.0	181	M	1
12 08/28/2009 King Phillip	9	64.0	169	M	1
12 08/28/2009 King Phillip	10	84.0	179	M	1
12 08/28/2009 King Phillip	11	80.0	177	M	1
12 08/28/2009 King Phillip	12	78.0	180	M	1
12 08/28/2009 King Phillip	13	46.0	152	M	1
12 08/28/2009 King Phillip	14	60.0	164	F	1
12 08/28/2009 King Phillip	15	72.0	173	M	1
12 08/28/2009 King Phillip	16	80.0	176	M	1
12 08/28/2009 King Phillip	17	82.0	183	F	2
12 08/28/2009 King Phillip	18	46.0	164	F	1
12 08/28/2009 King Phillip	19	74.0	170	F	1
12 08/28/2009 King Phillip	20	80.0	178	F	2
12 08/28/2009 King Phillip	21	82.0	174	F	2
12 08/28/2009 King Phillip	22	82.0	187	M	1
12 08/28/2009 King Phillip	23	80.0	183	F	2
12 08/28/2009 King Phillip	24	78.0	179	F	2
12 08/28/2009 King Phillip	25	70.0	175	M	1
12 08/28/2009 King Phillip	26	68.0	187	F	2
12 08/28/2009 King Phillip	27	90.0	180	F	2
12 08/28/2009 King Phillip	28	82.0	179	M	1
12 08/28/2009 King Phillip	29	78.0	176	F	2
12 08/28/2009 King Phillip	30	80.0	186	M	1
12 08/28/2009 King Phillip	31	80.0	181	M	1
12 08/28/2009 King Phillip	32	70.0	176	F	2
12 08/28/2009 King Phillip	33	82.0	182	M	1
12 08/28/2009 King Phillip	34	78.0	177	M	1
12 08/28/2009 King Phillip	35	76.0	182	F	2
12 08/28/2009 King Phillip	36	80.0	178	F	2
12 08/28/2009 King Phillip	37	84.0	181	M	1
12 08/28/2009 King Phillip	38	74.0	181	M	1
12 08/28/2009 King Phillip	39	80.0	180	M	1

12 08/28/2009 King Phillip	40	80.0	179	F	2
12 08/28/2009 King Phillip	41	88.0	176	M	1
12 08/28/2009 King Phillip	42	72.0	169	M	1
12 08/28/2009 King Phillip	43	76.0	189	M	1
12 08/28/2009 King Phillip	44	74.0	177	F	2
12 08/28/2009 King Phillip	45	40.0	142	M	1
12 08/28/2009 King Phillip	46	66.0	172	M	2
12 08/28/2009 King Phillip	47	70.0	174	M	1
12 08/28/2009 King Phillip	48	80.0	176	F	1
12 08/28/2009 King Phillip	49	76.0	176	F	2
12 08/28/2009 King Phillip	50	68.0	166	M	1
13 08/28/2009 King Phillip	1	64.0	171	M	1
13 08/28/2009 King Phillip	2	82.0	181	F	1
13 08/28/2009 King Phillip	3	84.0	174	M	1
13 08/28/2009 King Phillip	4	78.0	175	F	2
13 08/28/2009 King Phillip	5	64.0	171	F	1
13 08/28/2009 King Phillip	6	74.0	175	F	2
13 08/28/2009 King Phillip	7	60.0	159	M	1
13 08/28/2009 King Phillip	8	78.0	179	M	2
13 08/28/2009 King Phillip	9	44.0	148	M	1
13 08/28/2009 King Phillip	10	78.0	180	M	1
13 08/28/2009 King Phillip	11	60.0	166	F	2
13 08/28/2009 King Phillip	12	82.0	187	F	2
13 08/28/2009 King Phillip	13	80.0	184	F	2
13 08/28/2009 King Phillip	14	76.0	176	F	2
13 08/28/2009 King Phillip	15	78.0	180	F	2
13 08/28/2009 King Phillip	16	48.0	150	F	1
13 08/28/2009 King Phillip	17	80.0	189	M	2
13 08/28/2009 King Phillip	18	74.0	176	M	1
13 08/28/2009 King Phillip	19	70.0	175	M	1
13 08/28/2009 King Phillip	20	70.0	178	M	1
13 08/28/2009 King Phillip	21	40.0	147	M	1
13 08/28/2009 King Phillip	22	80.0	176	F	2
13 08/28/2009 King Phillip	23	76.0	174	M	1
13 08/28/2009 King Phillip	24	90.0	186	M	1
13 08/28/2009 King Phillip	25	84.0	182	M	1
13 08/28/2009 King Phillip	26	80.0	179	F	2
13 08/28/2009 King Phillip	27	38.0	142	M	1
13 08/28/2009 King Phillip	28	84.0	176	M	1
13 08/28/2009 King Phillip	29	46.0	149	F	1
13 08/28/2009 King Phillip	30	58.0	164	M	1
13 08/28/2009 King Phillip	31	80.0	180	M	1
13 08/28/2009 King Phillip	32	72.0	172	M	1
13 08/28/2009 King Phillip	33	50.0	156	M	1
13 08/28/2009 King Phillip	34	80.0	191	F	1

13 08/28/2009 King Phillip	35	90.0	192	M	1
13 08/28/2009 King Phillip	36	40.0	145	F	2
13 08/28/2009 King Phillip	37	58.0	163	M	1
13 08/28/2009 King Phillip	38	78.0	178	M	1
13 08/28/2009 King Phillip	39	66.0	175	M	1
13 08/28/2009 King Phillip	40	80.0	183	F	2
13 08/28/2009 King Phillip	41	38.0	156	M	1
13 08/28/2009 King Phillip	42	80.0	174	F	2
13 08/28/2009 King Phillip	43	84.0	183	F	1
13 08/28/2009 King Phillip	44	74.0	176	F	2
13 08/28/2009 King Phillip	45	80.0	179	M	1
13 08/28/2009 King Phillip	46	82.0	181	M	1
13 08/28/2009 King Phillip	47	98.0	192	M	1
13 08/28/2009 King Phillip	48	84.0	183	F	2
13 08/28/2009 King Phillip	49	76.0	174	M	1
13 08/28/2009 King Phillip	50	74.0	174	M	1
14 08/28/2009 King Phillip	1	80.0	182	M	1
14 08/28/2009 King Phillip	2	82.0	182	M	2
14 08/28/2009 King Phillip	3	68.0	170	M	1
14 08/28/2009 King Phillip	4	78.0	178	M	1
14 08/28/2009 King Phillip	5	80.0	176	F	2
14 08/28/2009 King Phillip	6	80.0	181	M	1
14 08/28/2009 King Phillip	7	78.0	176	F	1
14 08/28/2009 King Phillip	8	70.0	171	M	1
14 08/28/2009 King Phillip	9	80.0	179	M	1
14 08/28/2009 King Phillip	10	70.0	177	M	1
14 08/28/2009 King Phillip	11	44.0	151	M	1
14 08/28/2009 King Phillip	12	74.0	176	M	1
14 08/28/2009 King Phillip	13	72.0	172	F	2
14 08/28/2009 King Phillip	14	82.0	181	F	1
14 08/28/2009 King Phillip	15	78.0	179	M	1
14 08/28/2009 King Phillip	16	82.0	180	F	1
14 08/28/2009 King Phillip	17	90.0	185	F	1
14 08/28/2009 King Phillip	18	72.0	174	F	1
14 08/28/2009 King Phillip	19	48.0	156	F	1
14 08/28/2009 King Phillip	20	80.0	176	M	1
14 08/28/2009 King Phillip	21	102.0	186	M	1
14 08/28/2009 King Phillip	22	46.0	154	M	1
14 08/28/2009 King Phillip	23	86.0	185	F	2
14 08/28/2009 King Phillip	24	72.0	188	F	1
14 08/28/2009 King Phillip	25	36.0	141	M	1
14 08/28/2009 King Phillip	26	74.0	174	M	1
14 08/28/2009 King Phillip	27	70.0	165	M	1
14 08/28/2009 King Phillip	28	86.0	177	M	1
14 08/28/2009 King Phillip	29	80.0	177	F	2

14 08/28/2009 King Phillip	30	74.0	181	M	1
14 08/28/2009 King Phillip	31	88.0	182	M	1
14 08/28/2009 King Phillip	32	58.0	164	M	1
14 08/28/2009 King Phillip	33	74.0	180	F	2
14 08/28/2009 King Phillip	34	68.0	166	M	1
14 08/28/2009 King Phillip	35	80.0	175	M	1
14 08/28/2009 King Phillip	36	84.0	181	M	2
14 08/28/2009 King Phillip	37	60.0	164	F	2
14 08/28/2009 King Phillip	38	70.0	172	F	1
14 08/28/2009 King Phillip	39	74.0	178	F	1
14 08/28/2009 King Phillip	40	46.0	146	M	1
14 08/28/2009 King Phillip	41	76.0	177	M	1
14 08/28/2009 King Phillip	42	78.0	182	M	2
14 08/28/2009 King Phillip	43	88.0	186	M	1
14 08/28/2009 King Phillip	44	80.0	185	M	1
14 08/28/2009 King Phillip	45	72.0	171	M	1
14 08/28/2009 King Phillip	46	58.0	160	F	1
14 08/28/2009 King Phillip	47	76.0	177	M	1
14 08/28/2009 King Phillip	48	92.0	185	F	3
14 08/28/2009 King Phillip	49	90.0	187	F	2
14 08/28/2009 King Phillip	50	88.0	182	M	1
15 08/28/2009 Ocean Angel IV	1	80.0	175	M	1
15 08/28/2009 Ocean Angel IV	2	94.0	180	M	1
15 08/28/2009 Ocean Angel IV	3	80.0	181	F	1
15 08/28/2009 Ocean Angel IV	4	70.0	171	F	2
15 08/28/2009 Ocean Angel IV	5	96.0	181	F	2
15 08/28/2009 Ocean Angel IV	6	70.0	172	F	2
15 08/28/2009 Ocean Angel IV	7	74.0	168	F	2
15 08/28/2009 Ocean Angel IV	8	74.0	176	F	2
15 08/28/2009 Ocean Angel IV	9	84.0	176	M	1
15 08/28/2009 Ocean Angel IV	10	84.0	182	F	2
15 08/28/2009 Ocean Angel IV	11	80.0	181	M	1
15 08/28/2009 Ocean Angel IV	12	84.0	176	M	1
15 08/28/2009 Ocean Angel IV	13	80.0	185	F	2
15 08/28/2009 Ocean Angel IV	14	74.0	177	M	1
15 08/28/2009 Ocean Angel IV	15	84.0	177	M	1
15 08/28/2009 Ocean Angel IV	16	84.0	176	M	1
15 08/28/2009 Ocean Angel IV	17	82.0	180	M	1
15 08/28/2009 Ocean Angel IV	18	76.0	177	M	1
15 08/28/2009 Ocean Angel IV	19	70.0	170	M	1
15 08/28/2009 Ocean Angel IV	20	76.0	177	M	1
15 08/28/2009 Ocean Angel IV	21	72.0	173	M	1
15 08/28/2009 Ocean Angel IV	22	64.0	168	M	1
15 08/28/2009 Ocean Angel IV	23	78.0	175	M	1
15 08/28/2009 Ocean Angel IV	24	80.0	184	M	1

15 08/28/2009 Ocean Angel IV	25	82.0	187	M	1
15 08/28/2009 Ocean Angel IV	26	98.0	194	F	3
15 08/28/2009 Ocean Angel IV	27	74.0	170	M	1
15 08/28/2009 Ocean Angel IV	28	84.0	183	F	2
15 08/28/2009 Ocean Angel IV	29	86.0	182	F	3
15 08/28/2009 Ocean Angel IV	30	62.0	170	M	1
15 08/28/2009 Ocean Angel IV	31	90.0	186	F	2
15 08/28/2009 Ocean Angel IV	32	82.0	186	M	1
15 08/28/2009 Ocean Angel IV	33	78.0	176	F	1
15 08/28/2009 Ocean Angel IV	34	86.0	185	M	1
15 08/28/2009 Ocean Angel IV	35	78.0	177	M	1
15 08/28/2009 Ocean Angel IV	36	80.0	178	M	1
15 08/28/2009 Ocean Angel IV	37	80.0	178	M	1
15 08/28/2009 Ocean Angel IV	38	40.0	145	F	1
15 08/28/2009 Ocean Angel IV	39	80.0	182	F	1
15 08/28/2009 Ocean Angel IV	40	82.0	184	F	2
15 08/28/2009 Ocean Angel IV	41	50.0	162	M	1
15 08/28/2009 Ocean Angel IV	42	80.0	168	F	2
15 08/28/2009 Ocean Angel IV	43	84.0	187	M	1
15 08/28/2009 Ocean Angel IV	44	76.0	175	F	2
15 08/28/2009 Ocean Angel IV	45	98.0	191	F	3
15 08/28/2009 Ocean Angel IV	46	80.0	180	F	2
15 08/28/2009 Ocean Angel IV	47	72.0	172	F	1
15 08/28/2009 Ocean Angel IV	48	64.0	162	F	1
15 08/28/2009 Ocean Angel IV	49	74.0	168		
15 08/28/2009 Ocean Angel IV	50	80.0	173	M	1
16 08/28/2009 Ocean Angel IV	1	72.0	186	M	1
16 08/28/2009 Ocean Angel IV	2	80.0	174	F	2
16 08/28/2009 Ocean Angel IV	3	92.0	198	M	1
16 08/28/2009 Ocean Angel IV	4	84.0	180	M	1
16 08/28/2009 Ocean Angel IV	5	76.0	171	M	1
16 08/28/2009 Ocean Angel IV	6	86.0	181	F	2
16 08/28/2009 Ocean Angel IV	7	92.0	178	F	2
16 08/28/2009 Ocean Angel IV	8	84.0	171	M	1
16 08/28/2009 Ocean Angel IV	9	84.0	174	F	2
16 08/28/2009 Ocean Angel IV	10	64.0	160	M	1
16 08/28/2009 Ocean Angel IV	11	84.0	173	M	1
16 08/28/2009 Ocean Angel IV	12	80.0	170	F	2
16 08/28/2009 Ocean Angel IV	13	90.0	179	M	1
16 08/28/2009 Ocean Angel IV	14	78.0	175	F	2
16 08/28/2009 Ocean Angel IV	15	86.0	173	M	1
16 08/28/2009 Ocean Angel IV	16	104.0	182	F	2
16 08/28/2009 Ocean Angel IV	17	82.0	170	F	1
16 08/28/2009 Ocean Angel IV	18	92.0	180	M	1
16 08/28/2009 Ocean Angel IV	19	80.0	176	M	1

16 08/28/2009 Ocean Angel IV	20	62.0	159	F	1
16 08/28/2009 Ocean Angel IV	21	82.0	171	F	2
16 08/28/2009 Ocean Angel IV	22	80.0	178	F	2
16 08/28/2009 Ocean Angel IV	23	75.5	166	M	1
16 08/28/2009 Ocean Angel IV	24	73.5	168	M	1
16 08/28/2009 Ocean Angel IV	25	85.5	179	F	2
16 08/28/2009 Ocean Angel IV	26	99.0	184	F	2
16 08/28/2009 Ocean Angel IV	27	48.5	146	M	1
16 08/28/2009 Ocean Angel IV	28	80.0	177	F	1
16 08/28/2009 Ocean Angel IV	29	99.5	184	M	2
16 08/28/2009 Ocean Angel IV	30	75.0	177	F	2
16 08/28/2009 Ocean Angel IV	31	93.0	192	F	2
16 08/28/2009 Ocean Angel IV	32	91.0	185	F	2
16 08/28/2009 Ocean Angel IV	33	77.5	177	F	2
16 08/28/2009 Ocean Angel IV	34	68.5	159	M	1
16 08/28/2009 Ocean Angel IV	35	77.0	175	F	2
16 08/28/2009 Ocean Angel IV	36	91.5	180	F	2
16 08/28/2009 Ocean Angel IV	37	64.5	161	M	1
16 08/28/2009 Ocean Angel IV	38	77.0	177	F	2
16 08/28/2009 Ocean Angel IV	39	65.5	162	M	1
16 08/28/2009 Ocean Angel IV	40	86.5	187	M	2
16 08/28/2009 Ocean Angel IV	41	79.5	174	M	1
16 08/28/2009 Ocean Angel IV	42	78.5	166	M	1
16 08/28/2009 Ocean Angel IV	43	86.5	172	M	1
16 08/28/2009 Ocean Angel IV	44	87.5	178	M	1
16 08/28/2009 Ocean Angel IV	45	78.5	171	F	1
16 08/28/2009 Ocean Angel IV	46	65.5	165	M	2
16 08/28/2009 Ocean Angel IV	47	86.5	180	F	2
16 08/28/2009 Ocean Angel IV	48	91.5	181	F	2
16 08/28/2009 Ocean Angel IV	49	79.0	163	M	1
16 08/28/2009 Ocean Angel IV	50	74.5	168	F	1
17 09/02/2009 Ocean Angel IV	1	82.5	165	F	2
17 09/02/2009 Ocean Angel IV	2	71.5	165	M	1
17 09/02/2009 Ocean Angel IV	3	76.0	164	M	1
17 09/02/2009 Ocean Angel IV	4	76.0	169	F	2
17 09/02/2009 Ocean Angel IV	5	72.0	169	F	2
17 09/02/2009 Ocean Angel IV	6	67.5	157	M	1
17 09/02/2009 Ocean Angel IV	7	76.0	165	F	2
17 09/02/2009 Ocean Angel IV	8	75.0	174	M	1
17 09/02/2009 Ocean Angel IV	9	91.0	168	F	2
17 09/02/2009 Ocean Angel IV	10	91.0	182	F	2
17 09/02/2009 Ocean Angel IV	11	71.5	168	F	2
17 09/02/2009 Ocean Angel IV	12	76.0	172	M	1
17 09/02/2009 Ocean Angel IV	13	89.5	175	M	1
17 09/02/2009 Ocean Angel IV	14	86.5	171	F	2

17 09/02/2009 Ocean Angel IV	15	76.0	164	F	2
17 09/02/2009 Ocean Angel IV	16	87.0	174	F	2
17 09/02/2009 Ocean Angel IV	17	79.0	172	F	2
17 09/02/2009 Ocean Angel IV	18	37.5	131	M	1
17 09/02/2009 Ocean Angel IV	19	86.0	169	F	2
17 09/02/2009 Ocean Angel IV	20	61.0	165	F	2
17 09/02/2009 Ocean Angel IV	21	91.5	180	F	2
17 09/02/2009 Ocean Angel IV	22	80.5	170	M	1
17 09/02/2009 Ocean Angel IV	23	73.5	173	F	2
17 09/02/2009 Ocean Angel IV	24	84.5	169	F	2
17 09/02/2009 Ocean Angel IV	25	73.5	160	M	1
17 09/02/2009 Ocean Angel IV	26	74.5	176	M	1
17 09/02/2009 Ocean Angel IV	27	78.0	175	F	2
17 09/02/2009 Ocean Angel IV	28	76.0	169	M	1
17 09/02/2009 Ocean Angel IV	29	83.5	166	F	2
17 09/02/2009 Ocean Angel IV	30	83.5	177	F	2
17 09/02/2009 Ocean Angel IV	31	69.5	160	M	1
17 09/02/2009 Ocean Angel IV	32	61.5	157	F	2
17 09/02/2009 Ocean Angel IV	33	83.5	179	M	1
17 09/02/2009 Ocean Angel IV	34	67.0	170	M	1
17 09/02/2009 Ocean Angel IV	35	75.5	177	F	2
17 09/02/2009 Ocean Angel IV	36	65.0	156	M	1
17 09/02/2009 Ocean Angel IV	37	85.5	184	M	1
17 09/02/2009 Ocean Angel IV	38	69.0	157	M	1
17 09/02/2009 Ocean Angel IV	39	79.5	185	M	1
17 09/02/2009 Ocean Angel IV	40	83.5	181	M	1
17 09/02/2009 Ocean Angel IV	41	72.0	175	F	2
17 09/02/2009 Ocean Angel IV	42	73.5	160	M	1
17 09/02/2009 Ocean Angel IV	43	77.0	180	F	2
17 09/02/2009 Ocean Angel IV	44	71.0	162	M	1
17 09/02/2009 Ocean Angel IV	45	70.0	169	F	2
17 09/02/2009 Ocean Angel IV	46	83.0	175	F	2
17 09/02/2009 Ocean Angel IV	47	69.0	156	F	2
17 09/02/2009 Ocean Angel IV	48	88.0	184	M	1
17 09/02/2009 Ocean Angel IV	49	81.5	161	M	1
17 09/02/2009 Ocean Angel IV	50	68.5	171	F	2
18 09/02/2009 King Phillip	1	73.0	164	M	1
18 09/02/2009 King Phillip	2	98.5	178	F	2
18 09/02/2009 King Phillip	3	88.0	172	F	2
18 09/02/2009 King Phillip	4	81.0	179	M	1
18 09/02/2009 King Phillip	5	80.5	174	M	1
18 09/02/2009 King Phillip	6	77.5	175	F	2
18 09/02/2009 King Phillip	7	74.0	159	F	2
18 09/02/2009 King Phillip	8	88.5	177	F	2
18 09/02/2009 King Phillip	9	89.0	180	M	1

18 09/02/2009 King Phillip	10	80.5	180	F	2
18 09/02/2009 King Phillip	11	91.5	171	M	1
18 09/02/2009 King Phillip	12	72.5	170	M	1
18 09/02/2009 King Phillip	13	92.0	172	F	2
18 09/02/2009 King Phillip	14	100.5	186	F	2
18 09/02/2009 King Phillip	15	88.0	184	F	1
18 09/02/2009 King Phillip	16	75.0	173	M	1
18 09/02/2009 King Phillip	17	79.5	172	F	2
18 09/02/2009 King Phillip	18	76.0	173	F	2
18 09/02/2009 King Phillip	19	95.5	172	F	2
18 09/02/2009 King Phillip	20	99.5	190	F	2
18 09/02/2009 King Phillip	21	89.5	189	F	2
18 09/02/2009 King Phillip	22	86.0	187	M	1
18 09/02/2009 King Phillip	23	78.0	162	F	2
18 09/02/2009 King Phillip	24	75.0	164	F	2
18 09/02/2009 King Phillip	25	70.0	173	F	2
18 09/02/2009 King Phillip	26	79.0	167	M	1
18 09/02/2009 King Phillip	27	79.0	171	F	1
18 09/02/2009 King Phillip	28	80.5	173	M	1
18 09/02/2009 King Phillip	29	76.0	173	M	1
18 09/02/2009 King Phillip	30	97.0	190	F	2
18 09/02/2009 King Phillip	31	78.0	180	M	1
18 09/02/2009 King Phillip	32	68.0	158	M	1
18 09/02/2009 King Phillip	33	84.5	179	M	1
18 09/02/2009 King Phillip	34	67.0	164	F	2
18 09/02/2009 King Phillip	35	75.5	166	F	2
18 09/02/2009 King Phillip	36	81.5	173	F	2
18 09/02/2009 King Phillip	37	88.5	174	M	1
18 09/02/2009 King Phillip	38	91.5	181	M	2
18 09/02/2009 King Phillip	39	66.0	166	F	1
18 09/02/2009 King Phillip	40	77.0	174	F	2
18 09/02/2009 King Phillip	41	83.0	174	M	1
18 09/02/2009 King Phillip	42	74.0	170	F	2
18 09/02/2009 King Phillip	43	75.5	175	M	1
18 09/02/2009 King Phillip	44	83.5	180	M	1
18 09/02/2009 King Phillip	45	79.5	179	F	2
18 09/02/2009 King Phillip	46	81.5	179	M	1
18 09/02/2009 King Phillip	47	87.5	181		
18 09/02/2009 King Phillip	48	82.0	176	F	2
18 09/02/2009 King Phillip	49	67.5	164	F	2
18 09/02/2009 King Phillip	50	74.0	172	M	1
19 09/02/2009 King Phillip	1	84.0	188	M	1
19 09/02/2009 King Phillip	2	81.0	178	M	1
19 09/02/2009 King Phillip	3	71.5	166	F	2
19 09/02/2009 King Phillip	4	83.5	177	F	2

19 09/02/2009 King Phillip	5	73.0	174	F	2
19 09/02/2009 King Phillip	6	76.0	175	F	2
19 09/02/2009 King Phillip	7	88.0	186	M	1
19 09/02/2009 King Phillip	8	79.0	173	F	2
19 09/02/2009 King Phillip	9	63.0	173	M	1
19 09/02/2009 King Phillip	10	77.0	179	F	2
19 09/02/2009 King Phillip	11	68.0	167	M	1
19 09/02/2009 King Phillip	12	71.5	176	F	2
19 09/02/2009 King Phillip	13	87.5	177	F	2
19 09/02/2009 King Phillip	14	81.5	178	F	2
19 09/02/2009 King Phillip	15	73.5	175	M	1
19 09/02/2009 King Phillip	16	72.0	167	F	1
19 09/02/2009 King Phillip	17	75.0	174	F	2
19 09/02/2009 King Phillip	18	70.5	172	F	2
19 09/02/2009 King Phillip	19	84.0	173	M	1
19 09/02/2009 King Phillip	20	77.5	171	M	1
19 09/02/2009 King Phillip	21	91.0	185	F	2
19 09/02/2009 King Phillip	22	75.5	187	F	2
19 09/02/2009 King Phillip	23	75.0	173	M	1
19 09/02/2009 King Phillip	24	87.0	186	F	2
19 09/02/2009 King Phillip	25	76.5	169	M	1
19 09/02/2009 King Phillip	26	93.0	176	F	2
19 09/02/2009 King Phillip	27	93.0	185	F	2
19 09/02/2009 King Phillip	28	89.5	193	F	2
19 09/02/2009 King Phillip	29	90.5	172	F	1
19 09/02/2009 King Phillip	30	92.5	190	F	2
19 09/02/2009 King Phillip	31	82.0	174	F	2
19 09/02/2009 King Phillip	32	89.5	182	M	1
19 09/02/2009 King Phillip	33	68.5	170	F	2
19 09/02/2009 King Phillip	34	82.5	172	F	2
19 09/02/2009 King Phillip	35	88.5	183	F	2
19 09/02/2009 King Phillip	36	69.0	165	M	1
19 09/02/2009 King Phillip	37	62.0	159	F	1
19 09/02/2009 King Phillip	38	80.0	174	M	1
19 09/02/2009 King Phillip	39	73.0	176	F	1
19 09/02/2009 King Phillip	40	83.5	178	F	2
19 09/02/2009 King Phillip	41	81.0	180	F	2
19 09/02/2009 King Phillip	42	92.0	196	F	2
19 09/02/2009 King Phillip	43	81.5	179	M	1
19 09/02/2009 King Phillip	44	68.5	169	M	1
19 09/02/2009 King Phillip	45	80.0	179	F	2
19 09/02/2009 King Phillip	46	85.0	179	F	2
19 09/02/2009 King Phillip	47	71.0	173	M	1
19 09/02/2009 King Phillip	48	76.0	176	F	2
19 09/02/2009 King Phillip	49	82.5	180	F	2

19 09/02/2009 King Phillip	50	77.0	178	M	1
20 09/02/2009 King Phillip	1	80.0	165	M	1
20 09/02/2009 King Phillip	2	91.5	185	M	2
20 09/02/2009 King Phillip	3	89.0	184	F	2
20 09/02/2009 King Phillip	4	60.0	160	M	1
20 09/02/2009 King Phillip	5	66.5	163	M	1
20 09/02/2009 King Phillip	6	77.5	175	F	2
20 09/02/2009 King Phillip	7	82.0	166	M	1
20 09/02/2009 King Phillip	8	52.0	154	F	2
20 09/02/2009 King Phillip	9	96.0	169	F	2
20 09/02/2009 King Phillip	10	75.0	162	M	1
20 09/02/2009 King Phillip	11	36.0	144	M	1
20 09/02/2009 King Phillip	12	86.0	170	M	1
20 09/02/2009 King Phillip	13	63.0	165	M	1
20 09/02/2009 King Phillip	14	79.5	165	M	1
20 09/02/2009 King Phillip	15	83.0	164	F	2
20 09/02/2009 King Phillip	16	70.5	168	M	1
20 09/02/2009 King Phillip	17	82.5	179	M	1
20 09/02/2009 King Phillip	18	83.5	184	M	1
20 09/02/2009 King Phillip	19	83.5	173	M	1
20 09/02/2009 King Phillip	20	70.0	178	M	1
20 09/02/2009 King Phillip	21	66.0	160	M	1
20 09/02/2009 King Phillip	22	76.5	170	M	1
20 09/02/2009 King Phillip	23	85.0	176	M	1
20 09/02/2009 King Phillip	24	62.5	167	F	2
20 09/02/2009 King Phillip	25	68.5	171	M	1
20 09/02/2009 King Phillip	26	70.5	170	F	1
20 09/02/2009 King Phillip	27	54.0	148	M	1
20 09/02/2009 King Phillip	28	69.0	172	M	1
20 09/02/2009 King Phillip	29	48.5	145	F	1
20 09/02/2009 King Phillip	30	68.0	174	M	1
20 09/02/2009 King Phillip	31	74.0	178	M	1
20 09/02/2009 King Phillip	32	76.5	161	M	1
20 09/02/2009 King Phillip	33	75.5	172	M	1
20 09/02/2009 King Phillip	34	84.0	169	M	1
20 09/02/2009 King Phillip	35	61.0	166	M	1
20 09/02/2009 King Phillip	36	79.0	169	M	1
20 09/02/2009 King Phillip	37	61.5	165	F	1
20 09/02/2009 King Phillip	38	92.5	178	M	1
20 09/02/2009 King Phillip	39	72.5	173	M	1
20 09/02/2009 King Phillip	40	81.0	166	M	1
20 09/02/2009 King Phillip	41	57.0	160	M	1
20 09/02/2009 King Phillip	42	81.0	172	M	1
20 09/02/2009 King Phillip	43	48.0	149	M	1
20 09/02/2009 King Phillip	44	63.5	163	F	1

20 09/02/2009 King Phillip	45	70.0	160	F	2
20 09/02/2009 King Phillip	46	81.0	169	M	1
20 09/02/2009 King Phillip	47	76.0	163	F	2
20 09/02/2009 King Phillip	48	72.5	165	F	1
20 09/02/2009 King Phillip	49	66.0	159	F	1
20 09/02/2009 King Phillip	50	72.0	160	M	1
21 08/31/2009 Ocean Angel IV	1	89.0	184	F	2
21 08/31/2009 Ocean Angel IV	2	78.5	176	M	1
21 08/31/2009 Ocean Angel IV	3	78.0	170	F	2
21 08/31/2009 Ocean Angel IV	4	84.5	175	M	1
21 08/31/2009 Ocean Angel IV	5	86.5	182	F	2
21 08/31/2009 Ocean Angel IV	6	77.0	174	M	1
21 08/31/2009 Ocean Angel IV	7	79.5	175	M	1
21 08/31/2009 Ocean Angel IV	8	75.0	173	M	1
21 08/31/2009 Ocean Angel IV	9	84.0	180	F	2
21 08/31/2009 Ocean Angel IV	10	83.5	179	M	1
21 08/31/2009 Ocean Angel IV	11	75.5	165	M	1
21 08/31/2009 Ocean Angel IV	12	80.5	174	M	1
21 08/31/2009 Ocean Angel IV	13	83.5	177	M	1
21 08/31/2009 Ocean Angel IV	14	86.0	188	M	1
21 08/31/2009 Ocean Angel IV	15	86.0	175	F	2
21 08/31/2009 Ocean Angel IV	16	81.5	175	F	1
21 08/31/2009 Ocean Angel IV	17	73.5	174	F	2
21 08/31/2009 Ocean Angel IV	18	83.5	179	M	1
21 08/31/2009 Ocean Angel IV	19	78.0	172	M	1
21 08/31/2009 Ocean Angel IV	20	88.0	178	F	2
21 08/31/2009 Ocean Angel IV	21	80.0	170	M	1
21 08/31/2009 Ocean Angel IV	22	83.5	177	M	1
21 08/31/2009 Ocean Angel IV	23	91.5	185	M	1
21 08/31/2009 Ocean Angel IV	24	76.5	177	M	1
21 08/31/2009 Ocean Angel IV	25	83.5	180	F	2
21 08/31/2009 Ocean Angel IV	26	77.5	172	M	1
21 08/31/2009 Ocean Angel IV	27	94.0	178	F	1
21 08/31/2009 Ocean Angel IV	28	86.0	180	M	1
21 08/31/2009 Ocean Angel IV	29	90.0	184	M	1
21 08/31/2009 Ocean Angel IV	30	90.5	194	F	2
21 08/31/2009 Ocean Angel IV	31	56.0	160	F	1
21 08/31/2009 Ocean Angel IV	32	68.0	165	F	1
21 08/31/2009 Ocean Angel IV	33	77.5	170	F	2
21 08/31/2009 Ocean Angel IV	34	77.5	177	F	2
21 08/31/2009 Ocean Angel IV	35	80.0	170	F	2
21 08/31/2009 Ocean Angel IV	36	82.5	175	F	2
21 08/31/2009 Ocean Angel IV	37	94.0	184	M	1
21 08/31/2009 Ocean Angel IV	38	86.0	180	F	2
21 08/31/2009 Ocean Angel IV	39	82.5	176	F	2

21 08/31/2009 Ocean Angel IV	40	69.0	168	M	1
21 08/31/2009 Ocean Angel IV	41	82.0	170	F	2
21 08/31/2009 Ocean Angel IV	42	88.5	179	F	2
21 08/31/2009 Ocean Angel IV	43	84.5	174	F	2
21 08/31/2009 Ocean Angel IV	44	80.5	170	F	1
21 08/31/2009 Ocean Angel IV	45	69.0	167	M	1
21 08/31/2009 Ocean Angel IV	46	91.0	175	F	2
21 08/31/2009 Ocean Angel IV	47	80.0	165	F	1
21 08/31/2009 Ocean Angel IV	48	73.5	174	M	1
21 08/31/2009 Ocean Angel IV	49	76.0	172	M	1
21 08/31/2009 Ocean Angel IV	50	78.5	175	F	2
22 08/31/2009 Ocean Angel IV	1	94.0	180	F	2
22 08/31/2009 Ocean Angel IV	2	84.0	177	M	1
22 08/31/2009 Ocean Angel IV	3	88.0	180	M	1
22 08/31/2009 Ocean Angel IV	4	91.0	185	F	1
22 08/31/2009 Ocean Angel IV	5	83.5	179	M	1
22 08/31/2009 Ocean Angel IV	6	86.5	185	M	1
22 08/31/2009 Ocean Angel IV	7	78.5	182	F	2
22 08/31/2009 Ocean Angel IV	8	78.5	185	F	1
22 08/31/2009 Ocean Angel IV	9	81.5	170	F	1
22 08/31/2009 Ocean Angel IV	10	88.0	191	F	2
22 08/31/2009 Ocean Angel IV	11	88.0	175	M	2
22 08/31/2009 Ocean Angel IV	12	94.5	185	M	2
22 08/31/2009 Ocean Angel IV	13	83.5	165	F	2
22 08/31/2009 Ocean Angel IV	14	83.5	188	F	2
22 08/31/2009 Ocean Angel IV	15	97.0	184	F	2
22 08/31/2009 Ocean Angel IV	16	93.0	181	F	2
22 08/31/2009 Ocean Angel IV	17	82.0	165	F	2
22 08/31/2009 Ocean Angel IV	18	68.5	168	F	2
22 08/31/2009 Ocean Angel IV	19	84.5	165	F	2
22 08/31/2009 Ocean Angel IV	20	82.0	171	F	1
22 08/31/2009 Ocean Angel IV	21	88.0	167	F	2
22 08/31/2009 Ocean Angel IV	22	92.0	185	F	2
22 08/31/2009 Ocean Angel IV	23	88.5	179	F	1
22 08/31/2009 Ocean Angel IV	24	78.5	177	M	1
22 08/31/2009 Ocean Angel IV	25	80.0	165	F	2
22 08/31/2009 Ocean Angel IV	26	94.0	171	M	1
22 08/31/2009 Ocean Angel IV	27	89.0	184	M	1
22 08/31/2009 Ocean Angel IV	28	90.5	170	F	1
22 08/31/2009 Ocean Angel IV	29	88.0	167	F	2
22 08/31/2009 Ocean Angel IV	30	88.5	167	F	2
22 08/31/2009 Ocean Angel IV	31	76.5	174	F	1
22 08/31/2009 Ocean Angel IV	32	85.5	175	F	2
22 08/31/2009 Ocean Angel IV	33	78.5	173	M	1
22 08/31/2009 Ocean Angel IV	34	85.5	170	F	1

22 08/31/2009 Ocean Angel IV	35	84.0	170	F	2
22 08/31/2009 Ocean Angel IV	36	85.5	179	M	1
22 08/31/2009 Ocean Angel IV	37	73.5	163	F	1
22 08/31/2009 Ocean Angel IV	38	98.0	193	M	1
22 08/31/2009 Ocean Angel IV	39	82.5	167	F	2
22 08/31/2009 Ocean Angel IV	40	79.0	173	F	2
22 08/31/2009 Ocean Angel IV	41	78.0	173	M	1
22 08/31/2009 Ocean Angel IV	42	79.0	166	F	1
22 08/31/2009 Ocean Angel IV	43	82.5	172	F	2
22 08/31/2009 Ocean Angel IV	44	74.5	173	F	1
22 08/31/2009 Ocean Angel IV	45	85.5	167	F	2
22 08/31/2009 Ocean Angel IV	46	84.0	180	M	1
22 08/31/2009 Ocean Angel IV	47	80.0	179	M	1
22 08/31/2009 Ocean Angel IV	48	80.0	170	F	1
22 08/31/2009 Ocean Angel IV	49	93.5	173	F	2
22 08/31/2009 Ocean Angel IV	50	78.0	168	M	1
23 08/31/2009 King Phillip	1	78.0	163	M	1
23 08/31/2009 King Phillip	2	90.0	184	M	1
23 08/31/2009 King Phillip	3	71.0	160	F	2
23 08/31/2009 King Phillip	4	83.0	172	M	2
23 08/31/2009 King Phillip	5	102.5	202	F	2
23 08/31/2009 King Phillip	6	73.0	167	M	1
23 08/31/2009 King Phillip	7	78.0	177	M	1
23 08/31/2009 King Phillip	8	84.0	172	M	1
23 08/31/2009 King Phillip	9	103.0	194	F	1
23 08/31/2009 King Phillip	10	81.5	175	F	2
23 08/31/2009 King Phillip	11	90.5	180	M	1
23 08/31/2009 King Phillip	12	85.0	177	F	2
23 08/31/2009 King Phillip	13	83.5	178	M	1
23 08/31/2009 King Phillip	14	74.5	173	F	2
23 08/31/2009 King Phillip	15	84.0	172	F	2
23 08/31/2009 King Phillip	16	74.0	179	M	1
23 08/31/2009 King Phillip	17	55.5	162	F	1
23 08/31/2009 King Phillip	18	78.0	174	F	2
23 08/31/2009 King Phillip	19	88.5	181	F	2
23 08/31/2009 King Phillip	20	83.0	179	M	1
23 08/31/2009 King Phillip	21	95.0	190	M	2
23 08/31/2009 King Phillip	22	82.0	179	F	2
23 08/31/2009 King Phillip	23	93.0	184	F	2
23 08/31/2009 King Phillip	24	86.5	188	F	2
23 08/31/2009 King Phillip	25	79.5	174	F	1
23 08/31/2009 King Phillip	26	76.5	174	M	1
23 08/31/2009 King Phillip	27	75.0	176	M	1
23 08/31/2009 King Phillip	28	80.0	177	M	1
23 08/31/2009 King Phillip	29	64.5	163	F	2

23 08/31/2009 King Phillip	30	57.0	157	F	1
23 08/31/2009 King Phillip	31	88.0	184	F	2
23 08/31/2009 King Phillip	32	78.5	177	M	1
23 08/31/2009 King Phillip	33	90.5	180	M	1
23 08/31/2009 King Phillip	34	78.5	176	F	1
23 08/31/2009 King Phillip	35	105.0	193	F	2
23 08/31/2009 King Phillip	36	88.0	184	M	1
23 08/31/2009 King Phillip	37	94.0	180	M	1
23 08/31/2009 King Phillip	38	86.0	188	F	2
23 08/31/2009 King Phillip	39	77.0	181	M	1
23 08/31/2009 King Phillip	40	89.5	185	F	2
23 08/31/2009 King Phillip	41	88.5	184	M	1
23 08/31/2009 King Phillip	42	75.0	174	M	1
23 08/31/2009 King Phillip	43	89.0	177	F	2
23 08/31/2009 King Phillip	44	78.5	176	M	1
23 08/31/2009 King Phillip	45	77.0	175	F	2
23 08/31/2009 King Phillip	46	82.5	178	M	1
23 08/31/2009 King Phillip	47	86.5	181	F	2
23 08/31/2009 King Phillip	48	84.0	181	M	1
23 08/31/2009 King Phillip	49	72.5	171	F	1
23 08/31/2009 King Phillip	50	70.0	167	M	1
24 08/31/2009 King Phillip	1	92.0	197	M	1
24 08/31/2009 King Phillip	2	88.0	179	M	1
24 08/31/2009 King Phillip	3	75.5	182	F	2
24 08/31/2009 King Phillip	4	87.5	178	M	1
24 08/31/2009 King Phillip	5	85.5	179	F	2
24 08/31/2009 King Phillip	6	80.5	178	F	2
24 08/31/2009 King Phillip	7	76.0	175	F	2
24 08/31/2009 King Phillip	8	87.5	182	M	2
24 08/31/2009 King Phillip	9	79.0	184	F	2
24 08/31/2009 King Phillip	10	77.5	174	F	2
24 08/31/2009 King Phillip	11	81.0	171	M	1
24 08/31/2009 King Phillip	12	58.0	160	F	1
24 08/31/2009 King Phillip	13	82.0	178	F	1
24 08/31/2009 King Phillip	14	78.0	171	F	2
24 08/31/2009 King Phillip	15	86.5	177	F	2
24 08/31/2009 King Phillip	16	80.5	179	F	2
24 08/31/2009 King Phillip	17	78.5	184	M	1
24 08/31/2009 King Phillip	18	75.0	176	M	1
24 08/31/2009 King Phillip	19	84.0	185	F	2
24 08/31/2009 King Phillip	20	82.5	179	F	2
24 08/31/2009 King Phillip	21	73.5	177	M	1
24 08/31/2009 King Phillip	22	73.5	169	F	2
24 08/31/2009 King Phillip	23	69.5	165	F	2
24 08/31/2009 King Phillip	24	75.5	176	M	1

24 08/31/2009 King Phillip	25	85.5	179	F	2
24 08/31/2009 King Phillip	26	88.0	185	F	2
24 08/31/2009 King Phillip	27	96.0	192	F	2
24 08/31/2009 King Phillip	28	79.0	174	M	1
24 08/31/2009 King Phillip	29	85.5	189	F	2
24 08/31/2009 King Phillip	30	83.0	185	F	2
24 08/31/2009 King Phillip	31	87.0	187	M	1
24 08/31/2009 King Phillip	32	80.5	172	M	1
24 08/31/2009 King Phillip	33	101.5	192	F	2
24 08/31/2009 King Phillip	34	89.0	181	M	2
24 08/31/2009 King Phillip	35	72.0	170	M	1
24 08/31/2009 King Phillip	36	98.5	192	F	2
24 08/31/2009 King Phillip	37	82.5	178	F	2
24 08/31/2009 King Phillip	38	82.0	177	F	2
24 08/31/2009 King Phillip	39	70.0	168	F	2
24 08/31/2009 King Phillip	40	79.5	172	F	1
24 08/31/2009 King Phillip	41	92.0	185	M	1
24 08/31/2009 King Phillip	42	73.0	177	F	2
24 08/31/2009 King Phillip	43	91.0	192	F	2
24 08/31/2009 King Phillip	44	81.0	182	F	2
24 08/31/2009 King Phillip	45	84.5	181	F	2
24 08/31/2009 King Phillip	46	79.0	168	F	2
24 08/31/2009 King Phillip	47	76.5	173	M	1
24 08/31/2009 King Phillip	48	80.0	179	F	2
24 08/31/2009 King Phillip	49	99.0	190	F	2
24 08/31/2009 King Phillip	50	80.5	178	M	1
25 08/31/2009 King Phillip	1	82.5	108	M	1
25 08/31/2009 King Phillip	2	78.0	172	F	2
25 08/31/2009 King Phillip	3	77.0	172	F	2
25 08/31/2009 King Phillip	4	81.0	180	M	1
25 08/31/2009 King Phillip	5	82.5	179	M	1
25 08/31/2009 King Phillip	6	57.0	156	F	2
25 08/31/2009 King Phillip	7	79.0	175	F	2
25 08/31/2009 King Phillip	8	84.0	169	F	2
25 08/31/2009 King Phillip	9	72.5	167	F	2
25 08/31/2009 King Phillip	10	75.0	178	M	1
25 08/31/2009 King Phillip	11	67.0	168	M	1
25 08/31/2009 King Phillip	12	74.5	164	M	1
25 08/31/2009 King Phillip	13	77.0	176	F	2
25 08/31/2009 King Phillip	14	93.5	189	M	1
25 08/31/2009 King Phillip	15	63.0	165	M	1
25 08/31/2009 King Phillip	16	89.0	166	F	1
25 08/31/2009 King Phillip	17	79.5	176	M	1
25 08/31/2009 King Phillip	18	80.5	174	F	2
25 08/31/2009 King Phillip	19	92.0	184	F	2

25 08/31/2009 King Phillip	20	72.5	170	M	1
25 08/31/2009 King Phillip	21	85.5	166	M	1
25 08/31/2009 King Phillip	22	63.0	164	M	1
25 08/31/2009 King Phillip	23	71.0	172	F	2
25 08/31/2009 King Phillip	24	70.5	169	M	2
25 08/31/2009 King Phillip	25	87.5	180	F	2
25 08/31/2009 King Phillip	26	94.5	180	F	2
25 08/31/2009 King Phillip	27	59.5	160	M	1
25 08/31/2009 King Phillip	28	87.5	167	M	1
25 08/31/2009 King Phillip	29	94.0	172	F	1
25 08/31/2009 King Phillip	30	88.0	175	F	2
25 08/31/2009 King Phillip	31	65.0	170	F	2
25 08/31/2009 King Phillip	32	61.0	160	M	1
25 08/31/2009 King Phillip	33	96.5	166	F	1
25 08/31/2009 King Phillip	34	77.5	175	F	2
25 08/31/2009 King Phillip	35	57.5	189	M	1
25 08/31/2009 King Phillip	36	82.5	181	M	1
25 08/31/2009 King Phillip	37	84.5	179	F	1
25 08/31/2009 King Phillip	38	72.0	174	F	2
25 08/31/2009 King Phillip	39	86.5	180	F	2
25 08/31/2009 King Phillip	40	77.5	162	M	1
25 08/31/2009 King Phillip	41	64.5	169	M	1
25 08/31/2009 King Phillip	42	68.5	164	F	2
25 08/31/2009 King Phillip	43	86.0	179	F	2
25 08/31/2009 King Phillip	44	69.0	175	F	2
25 08/31/2009 King Phillip	45	80.0	177	F	2
25 08/31/2009 King Phillip	46	79.5	163	F	1
25 08/31/2009 King Phillip	47	82.0	177	F	2
25 08/31/2009 King Phillip	48	66.5	156	M	1
25 08/31/2009 King Phillip	49	76.0	161	F	1
25 08/31/2009 King Phillip	50	42.0	138	N/A	N/A
26 09/01/2009 King Phillip	1	80.0	176	M	1
26 09/01/2009 King Phillip	2	82.0	180	F	2
26 09/01/2009 King Phillip	3	45.0	135	F	1
26 09/01/2009 King Phillip	4	78.5	170	F	1
26 09/01/2009 King Phillip	5	81.5	179	F	2
26 09/01/2009 King Phillip	6	59.0	165	F	1
26 09/01/2009 King Phillip	7	51.5	145	F	1
26 09/01/2009 King Phillip	8	63.0	165	M	1
26 09/01/2009 King Phillip	9	65.5	158	F	1
26 09/01/2009 King Phillip	10	53.0	158	M	1
26 09/01/2009 King Phillip	11	51.0	155	F	1
26 09/01/2009 King Phillip	12	76.0	176	F	2
26 09/01/2009 King Phillip	13	68.0	168	M	1
26 09/01/2009 King Phillip	14	94.5	189	F	2

26 09/01/2009 King Phillip	15	70.5	160	F	1
26 09/01/2009 King Phillip	16	74.0	165	M	1
26 09/01/2009 King Phillip	17	85.5	185	F	2
26 09/01/2009 King Phillip	18	56.5	159	F	1
26 09/01/2009 King Phillip	19	82.0	178	F	2
26 09/01/2009 King Phillip	20	73.0	167	F	2
26 09/01/2009 King Phillip	21	63.5	155	M	1
26 09/01/2009 King Phillip	22	73.0	177	F	2
26 09/01/2009 King Phillip	23	76.5	175	M	1
26 09/01/2009 King Phillip	24	73.5	160	F	2
26 09/01/2009 King Phillip	25	75.5	169	M	1
26 09/01/2009 King Phillip	26	68.5	170	M	1
26 09/01/2009 King Phillip	27	52.5	160	M	1
26 09/01/2009 King Phillip	28	78.0	176	F	2
26 09/01/2009 King Phillip	29	77.0	175	M	1
26 09/01/2009 King Phillip	30	72.0	165	M	1
26 09/01/2009 King Phillip	31	51.0	160	M	1
26 09/01/2009 King Phillip	32	38.0	141	M	1
26 09/01/2009 King Phillip	33	56.5	147	M	1
26 09/01/2009 King Phillip	34	46.0	147	F	1
26 09/01/2009 King Phillip	35	47.5	150	M	1
26 09/01/2009 King Phillip	36	43.5	145	M	1
26 09/01/2009 King Phillip	37	74.5	176	M	1
26 09/01/2009 King Phillip	38	78.5	175	M	1
26 09/01/2009 King Phillip	39	63.5	157	F	2
26 09/01/2009 King Phillip	40	69.5	168	F	2
26 09/01/2009 King Phillip	41	79.0	157	F	2
26 09/01/2009 King Phillip	42	61.5	163	F	2
26 09/01/2009 King Phillip	43	63.5	167	M	1
26 09/01/2009 King Phillip	44	40.5	144	F	1
26 09/01/2009 King Phillip	45	86.0	182	F	2
26 09/01/2009 King Phillip	46	47.5	140	M	1
26 09/01/2009 King Phillip	47	81.0	172	M	1
26 09/01/2009 King Phillip	48	87.5	184	F	2
26 09/01/2009 King Phillip	49	64.0	172	F	2
26 09/01/2009 King Phillip	50	69.0	170	F	2
27 09/01/2009 Ocean Angel IV	1	85.5	180	F	2
27 09/01/2009 Ocean Angel IV	2	88.5	189	M	1
27 09/01/2009 Ocean Angel IV	3	77.5	178	M	1
27 09/01/2009 Ocean Angel IV	4	77.0	167	M	1
27 09/01/2009 Ocean Angel IV	5	71.0	174	F	2
27 09/01/2009 Ocean Angel IV	6	79.5	167	M	1
27 09/01/2009 Ocean Angel IV	7	93.5	189	F	2
27 09/01/2009 Ocean Angel IV	8	86.5	185	M	1
27 09/01/2009 Ocean Angel IV	9	81.5	172	M	1

27 09/01/2009 Ocean Angel IV	10	84.5	167	M	1
27 09/01/2009 Ocean Angel IV	11	74.0	174	M	1
27 09/01/2009 Ocean Angel IV	12	82.0	164	M	1
27 09/01/2009 Ocean Angel IV	13	70.5	176	M	1
27 09/01/2009 Ocean Angel IV	14	94.0	172	M	1
27 09/01/2009 Ocean Angel IV	15	78.0	161	F	2
27 09/01/2009 Ocean Angel IV	16	83.0	186	F	2
27 09/01/2009 Ocean Angel IV	17	73.5	173	M	1
27 09/01/2009 Ocean Angel IV	18	51.5	151	F	1
27 09/01/2009 Ocean Angel IV	19	85.5	170	M	1
27 09/01/2009 Ocean Angel IV	20	84.5	183	F	2
27 09/01/2009 Ocean Angel IV	21	89.5	182	F	2
27 09/01/2009 Ocean Angel IV	22	91.5	189	M	1
27 09/01/2009 Ocean Angel IV	23	100.0	196	F	2
27 09/01/2009 Ocean Angel IV	24	77.0	175	F	2
27 09/01/2009 Ocean Angel IV	25	80.5	175	M	1
27 09/01/2009 Ocean Angel IV	26	78.5	168	M	1
27 09/01/2009 Ocean Angel IV	27	77.5	183	M	1
27 09/01/2009 Ocean Angel IV	28	77.5	175	M	1
27 09/01/2009 Ocean Angel IV	29	85.5	179	M	1
27 09/01/2009 Ocean Angel IV	30	84.0	183	M	1
27 09/01/2009 Ocean Angel IV	31	91.5	183	F	2
27 09/01/2009 Ocean Angel IV	32	73.5	165	M	1
27 09/01/2009 Ocean Angel IV	33	83.5	185	M	1
27 09/01/2009 Ocean Angel IV	34	63.5	163	M	1
27 09/01/2009 Ocean Angel IV	35	74.0	162	M	1
27 09/01/2009 Ocean Angel IV	36	83.5	182	M	1
27 09/01/2009 Ocean Angel IV	37	74.5	176	M	1
27 09/01/2009 Ocean Angel IV	38	79.0	180	F	2
27 09/01/2009 Ocean Angel IV	39	82.0	168	M	1
27 09/01/2009 Ocean Angel IV	40	80.0	171	F	2
27 09/01/2009 Ocean Angel IV	41	84.5	185	F	2
27 09/01/2009 Ocean Angel IV	42	81.0	174	M	1
27 09/01/2009 Ocean Angel IV	43	79.5	174	M	1
27 09/01/2009 Ocean Angel IV	44	74.5	164	M	1
27 09/01/2009 Ocean Angel IV	45	77.0	174	M	1
27 09/01/2009 Ocean Angel IV	46	83.0	180	M	1
27 09/01/2009 Ocean Angel IV	47	81.5	182	M	2
27 09/01/2009 Ocean Angel IV	48	80.5	182	F	2
27 09/01/2009 Ocean Angel IV	49	95.5	174	M	1
27 09/01/2009 Ocean Angel IV	50	67.0	170	M	1
28 09/08/2009 Ocean Angel IV	1	90.0	176	M	1
28 09/08/2009 Ocean Angel IV	2	85.0	168	M	1
28 09/08/2009 Ocean Angel IV	3	83.0	175	F	2
28 09/08/2009 Ocean Angel IV	4	81.0	173	F	2

28 09/08/2009 Ocean Angel IV	5	99.0	192	F	2
28 09/08/2009 Ocean Angel IV	6	87.5	179	F	2
28 09/08/2009 Ocean Angel IV	7	77.0	165	M	1
28 09/08/2009 Ocean Angel IV	8	84.5	172	M	1
28 09/08/2009 Ocean Angel IV	9	84.5	182	M	1
28 09/08/2009 Ocean Angel IV	10	82.5	182	M	1
28 09/08/2009 Ocean Angel IV	11	74.0	164	F	2
28 09/08/2009 Ocean Angel IV	12	92.5	190	F	2
28 09/08/2009 Ocean Angel IV	13	92.0	178	M	1
28 09/08/2009 Ocean Angel IV	14	82.0	180	F	2
28 09/08/2009 Ocean Angel IV	15	76.5	172	M	1
28 09/08/2009 Ocean Angel IV	16	87.5	194	M	1
28 09/08/2009 Ocean Angel IV	17	79.5	163	M	1
28 09/08/2009 Ocean Angel IV	18	77.5	178	M	1
28 09/08/2009 Ocean Angel IV	19	86.0	171	F	2
28 09/08/2009 Ocean Angel IV	20	80.0	175	M	1
28 09/08/2009 Ocean Angel IV	21	75.5	173	F	2
28 09/08/2009 Ocean Angel IV	22	86.5	171	F	2
28 09/08/2009 Ocean Angel IV	23	86.0	177	M	1
28 09/08/2009 Ocean Angel IV	24	88.0	167	M	1
28 09/08/2009 Ocean Angel IV	25	89.5	188	F	2
28 09/08/2009 Ocean Angel IV	26	84.0	179	F	2
28 09/08/2009 Ocean Angel IV	27	71.5	167	F	2
28 09/08/2009 Ocean Angel IV	28	90.5	175	M	1
28 09/08/2009 Ocean Angel IV	29	64.5	169	M	1
28 09/08/2009 Ocean Angel IV	30	82.5	172	M	1
28 09/08/2009 Ocean Angel IV	31	90.0	171	M	1
28 09/08/2009 Ocean Angel IV	32	93.0	184	F	2
28 09/08/2009 Ocean Angel IV	33	90.0	175	M	1
28 09/08/2009 Ocean Angel IV	34	98.5	182	F	2
28 09/08/2009 Ocean Angel IV	35	79.0	175	F	2
28 09/08/2009 Ocean Angel IV	36	93.0	176	M	1
28 09/08/2009 Ocean Angel IV	37	84.0	180	M	1
28 09/08/2009 Ocean Angel IV	38	77.5	162	F	2
28 09/08/2009 Ocean Angel IV	39	81.0	178	F	2
28 09/08/2009 Ocean Angel IV	40	68.5	175	M	1
28 09/08/2009 Ocean Angel IV	41	86.5	191	F	2
28 09/08/2009 Ocean Angel IV	42	86.5	175	M	1
28 09/08/2009 Ocean Angel IV	43	76.5	171	M	1
28 09/08/2009 Ocean Angel IV	44	82.0	169	F	2
28 09/08/2009 Ocean Angel IV	45	76.5	179	F	2
28 09/08/2009 Ocean Angel IV	46	77.5	176	M	1
28 09/08/2009 Ocean Angel IV	47	82.5	187	M	1
28 09/08/2009 Ocean Angel IV	48	78.5	176	F	2
28 09/08/2009 Ocean Angel IV	49	84.5	174	F	2

28 09/08/2009 Ocean Angel IV	50	95.5	189	F	2
29 09/08/2009 Ocean Angel IV	1	83.0	174	M	1
29 09/08/2009 Ocean Angel IV	2	81.5	168	F	2
29 09/08/2009 Ocean Angel IV	3	93.5	172	F	2
29 09/08/2009 Ocean Angel IV	4	52.5	147	F	1
29 09/08/2009 Ocean Angel IV	5	79.0	171	M	1
29 09/08/2009 Ocean Angel IV	6	78.5	178	M	1
29 09/08/2009 Ocean Angel IV	7	68.5	166	F	1
29 09/08/2009 Ocean Angel IV	8	89.5	184	M	1
29 09/08/2009 Ocean Angel IV	9	104.0	193	F	2
29 09/08/2009 Ocean Angel IV	10	80.5	175	M	1
29 09/08/2009 Ocean Angel IV	11	83.5	171	F	2
29 09/08/2009 Ocean Angel IV	12	80.5	179	F	2
29 09/08/2009 Ocean Angel IV	13	77.5	166	F	2
29 09/08/2009 Ocean Angel IV	14	72.0	172	F	2
29 09/08/2009 Ocean Angel IV	15	78.0	176	F	2
29 09/08/2009 Ocean Angel IV	16	86.0	176	F	2
29 09/08/2009 Ocean Angel IV	17	80.0	170	M	1
29 09/08/2009 Ocean Angel IV	18	89.0	191	F	2
29 09/08/2009 Ocean Angel IV	19	75.5	171	M	1
29 09/08/2009 Ocean Angel IV	20	77.0	170	M	1
29 09/08/2009 Ocean Angel IV	21	82.0	179	M	1
29 09/08/2009 Ocean Angel IV	22	85.5	185	F	2
29 09/08/2009 Ocean Angel IV	23	43.5	146	F	1
29 09/08/2009 Ocean Angel IV	24	81.5	166	F	2
29 09/08/2009 Ocean Angel IV	25	72.0	172	F	2
29 09/08/2009 Ocean Angel IV	26	85.5	183	F	2
29 09/08/2009 Ocean Angel IV	27	76.0	170	F	2
29 09/08/2009 Ocean Angel IV	28	81.0	163	M	1
29 09/08/2009 Ocean Angel IV	29	83.0	179	M	1
29 09/08/2009 Ocean Angel IV	30	99.5	189	M	2
29 09/08/2009 Ocean Angel IV	31	76.5	167	M	1
29 09/08/2009 Ocean Angel IV	32	74.5	169	M	1
29 09/08/2009 Ocean Angel IV	33	91.5	188	M	1
29 09/08/2009 Ocean Angel IV	34	57.0	154	M	1
29 09/08/2009 Ocean Angel IV	35	84.5	181	M	1
29 09/08/2009 Ocean Angel IV	36	77.0	178	M	1
29 09/08/2009 Ocean Angel IV	37	79.0	164	M	1
29 09/08/2009 Ocean Angel IV	38	91.0	177	F	2
29 09/08/2009 Ocean Angel IV	39	80.5	177	F	2
29 09/08/2009 Ocean Angel IV	40	76.0	177	F	2
29 09/08/2009 Ocean Angel IV	41	87.5	182	F	2
29 09/08/2009 Ocean Angel IV	42	67.0	169	M	1
29 09/08/2009 Ocean Angel IV	43	93.5	183	M	1
29 09/08/2009 Ocean Angel IV	44	86.0	181	M	1

29 09/08/2009 Ocean Angel IV	45	75.5	168	F	2
29 09/08/2009 Ocean Angel IV	46	78.0	166	M	1
29 09/08/2009 Ocean Angel IV	47	86.0	182	M	1
29 09/08/2009 Ocean Angel IV	48	105.0	197	F	2
29 09/08/2009 Ocean Angel IV	49	81.5	180	M	1
29 09/08/2009 Ocean Angel IV	50	84.0	179	F	2
30 09/08/2009 King Phillip	1	77.0	173	M	1
30 09/08/2009 King Phillip	2	92.0	176	M	1
30 09/08/2009 King Phillip	3	89.0	189	M	1
30 09/08/2009 King Phillip	4	87.5	177	M	1
30 09/08/2009 King Phillip	5	48.5	148	M	1
30 09/08/2009 King Phillip	6	80.5	180	M	1
30 09/08/2009 King Phillip	7	90.5	175	F	2
30 09/08/2009 King Phillip	8	87.0	183	F	2
30 09/08/2009 King Phillip	9	84.5	184	F	2
30 09/08/2009 King Phillip	10	94.5	183	M	1
30 09/08/2009 King Phillip	11	80.0	176	M	1
30 09/08/2009 King Phillip	12	81.5	180	M	1
30 09/08/2009 King Phillip	13	70.0	166	M	1
30 09/08/2009 King Phillip	14	89.5	190	F	2
30 09/08/2009 King Phillip	15	70.5	179	F	1
30 09/08/2009 King Phillip	16	77.0	175	F	1
30 09/08/2009 King Phillip	17	81.5	177	F	2
30 09/08/2009 King Phillip	18	95.5	172	F	2
30 09/08/2009 King Phillip	19	85.0	178	M	1
30 09/08/2009 King Phillip	20	87.0	183	F	2
30 09/08/2009 King Phillip	21	83.0	179	F	2
30 09/08/2009 King Phillip	22	74.0	166	M	1
30 09/08/2009 King Phillip	23	73.0	172	M	1
30 09/08/2009 King Phillip	24	77.0	171	F	2
30 09/08/2009 King Phillip	25	69.5	159	F	2
30 09/08/2009 King Phillip	26	99.0	185	F	2
30 09/08/2009 King Phillip	27	84.5	181	M	1
30 09/08/2009 King Phillip	28	76.0	166	M	1
30 09/08/2009 King Phillip	29	80.5	178	F	2
30 09/08/2009 King Phillip	30	72.0	179	M	1
30 09/08/2009 King Phillip	31	87.5	184	F	2
30 09/08/2009 King Phillip	32	80.5	165	M	1
30 09/08/2009 King Phillip	33	81.0	179	M	1
30 09/08/2009 King Phillip	34	78.0	175	F	2
30 09/08/2009 King Phillip	35	73.5	165	M	1
30 09/08/2009 King Phillip	36	83.0	178	M	1
30 09/08/2009 King Phillip	37	85.0	176	F	2
30 09/08/2009 King Phillip	38	86.5	180	M	1
30 09/08/2009 King Phillip	39	78.5	177	F	2

30 09/08/2009 King Phillip	40	70.5	167	M	1
30 09/08/2009 King Phillip	41	84.0	177	F	2
30 09/08/2009 King Phillip	42	86.0	177	F	2
30 09/08/2009 King Phillip	43	76.5	175	M	1
30 09/08/2009 King Phillip	44	78.0	166	F	2
30 09/08/2009 King Phillip	45	78.0	179	M	1
30 09/08/2009 King Phillip	46	69.5	173	F	2
30 09/08/2009 King Phillip	47	52.5	155	F	1
30 09/08/2009 King Phillip	48	74.0	169	M	1
30 09/08/2009 King Phillip	49	77.0	180	M	1
30 09/08/2009 King Phillip	50	76.5	171	F	2
31 09/08/2009 King Phillip	1	84.0	182	M	1
31 09/08/2009 King Phillip	2	86.0	182	M	1
31 09/08/2009 King Phillip	3	90.0	180	F	2
31 09/08/2009 King Phillip	4	80.5	176	F	2
31 09/08/2009 King Phillip	5	87.0	184	M	1
31 09/08/2009 King Phillip	6	80.5	180	F	2
31 09/08/2009 King Phillip	7	85.0	189	M	1
31 09/08/2009 King Phillip	8	81.0	168	M	1
31 09/08/2009 King Phillip	9	91.5	179	F	2
31 09/08/2009 King Phillip	10	86.5	187	M	1
31 09/08/2009 King Phillip	11	76.0	174	M	1
31 09/08/2009 King Phillip	12	83.0	179	M	1
31 09/08/2009 King Phillip	13	80.5	177	F	2
31 09/08/2009 King Phillip	14	88.0	171	F	2
31 09/08/2009 King Phillip	15	70.0	163	F	2
31 09/08/2009 King Phillip	16	72.0	170	M	1
31 09/08/2009 King Phillip	17	80.0	185	F	2
31 09/08/2009 King Phillip	18	84.5	175	M	1
31 09/08/2009 King Phillip	19	79.5	179	M	1
31 09/08/2009 King Phillip	20	76.5	178	F	2
31 09/08/2009 King Phillip	21	91.5	175	F	2
31 09/08/2009 King Phillip	22	77.5	165	M	1
31 09/08/2009 King Phillip	23	74.5	164	M	1
31 09/08/2009 King Phillip	24	64.0	167	M	1
31 09/08/2009 King Phillip	25	91.0	186	F	2
31 09/08/2009 King Phillip	26	80.5	182	M	1
31 09/08/2009 King Phillip	27	69.0	161	M	1
31 09/08/2009 King Phillip	28	79.0	166	M	1
31 09/08/2009 King Phillip	29	85.5	173	M	1
31 09/08/2009 King Phillip	30	93.5	186	M	1
31 09/08/2009 King Phillip	31	91.0	184	F	2
31 09/08/2009 King Phillip	32	86.0	177	M	1
31 09/08/2009 King Phillip	33	82.5	173	M	1
31 09/08/2009 King Phillip	34	81.0	193	M	1

31 09/08/2009 King Phillip	35	75.5	175	F	2
31 09/08/2009 King Phillip	36	77.0	166	M	1
31 09/08/2009 King Phillip	37	88.5	183	M	1
31 09/08/2009 King Phillip	38	96.5	187	M	1
31 09/08/2009 King Phillip	39	79.5	178	M	1
31 09/08/2009 King Phillip	40	83.5	179	F	1
31 09/08/2009 King Phillip	41	73.0	165	F	2
31 09/08/2009 King Phillip	42	73.0	166	M	1
31 09/08/2009 King Phillip	43	85.5	171	F	2
31 09/08/2009 King Phillip	44	78.5	171	M	1
31 09/08/2009 King Phillip	45	81.5	174	M	1
31 09/08/2009 King Phillip	46	84.0	173	F	2
31 09/08/2009 King Phillip	47	79.0	184	M	1
31 09/08/2009 King Phillip	48	74.5	170	F	2
31 09/08/2009 King Phillip	49	82.0	175	M	1
31 09/08/2009 King Phillip	50	47.0	153	M	1
32 09/09/2009 King Phillip	1	86.5	180	M	1
32 09/09/2009 King Phillip	2	70.5	167	M	1
32 09/09/2009 King Phillip	3	87.5	180	M	1
32 09/09/2009 King Phillip	4	85.5	178	F	2
32 09/09/2009 King Phillip	5	57.0	155	F	2
32 09/09/2009 King Phillip	6	71.5	166	M	1
32 09/09/2009 King Phillip	7	92.0	179	F	2
32 09/09/2009 King Phillip	8	75.5	171	F	2
32 09/09/2009 King Phillip	9	81.0	179	M	1
32 09/09/2009 King Phillip	10	66.5	159		
32 09/09/2009 King Phillip	11	86.0	175	M	1
32 09/09/2009 King Phillip	12	78.0	179	F	2
32 09/09/2009 King Phillip	13	89.5	185	F	2
32 09/09/2009 King Phillip	14	65.5	157	F	1
32 09/09/2009 King Phillip	15	65.5	169	F	2
32 09/09/2009 King Phillip	16	78.5	175	F	2
32 09/09/2009 King Phillip	17	60.5	151	M	1
32 09/09/2009 King Phillip	18	82.5	177	M	1
32 09/09/2009 King Phillip	19	86.0	187	F	2
32 09/09/2009 King Phillip	20	80.0	176	F	2
32 09/09/2009 King Phillip	21	71.0	172	F	2
32 09/09/2009 King Phillip	22	69.5	169	M	1
32 09/09/2009 King Phillip	23	80.0	169	F	2
32 09/09/2009 King Phillip	24	70.5	172	F	2
32 09/09/2009 King Phillip	25	77.5	183	M	1
32 09/09/2009 King Phillip	26	80.0	175	F	2
32 09/09/2009 King Phillip	27	95.5	186	M	1
32 09/09/2009 King Phillip	28	89.0	185	M	1
32 09/09/2009 King Phillip	29	77.5	167	M	1

32 09/09/2009 King Phillip	30	83.0	180	F	2
32 09/09/2009 King Phillip	31	75.0	168	F	2
32 09/09/2009 King Phillip	32	77.5	176	F	2
32 09/09/2009 King Phillip	33	93.0	173	M	1
32 09/09/2009 King Phillip	34	91.5	182	F	2
32 09/09/2009 King Phillip	35	70.0	171	F	2
32 09/09/2009 King Phillip	36	73.0	163	M	1
32 09/09/2009 King Phillip	37	79.5	172	M	1
32 09/09/2009 King Phillip	38	67.5	148	M	1
32 09/09/2009 King Phillip	39	95.0	175	F	2
32 09/09/2009 King Phillip	40	78.0	169	M	1
32 09/09/2009 King Phillip	41	76.5	173	M	1
32 09/09/2009 King Phillip	42	78.0	173	M	1
32 09/09/2009 King Phillip	43	79.0	169	M	1
32 09/09/2009 King Phillip	44	83.0	168	F	2
32 09/09/2009 King Phillip	45	78.5	179	M	1
32 09/09/2009 King Phillip	46	64.0	167	F	2
32 09/09/2009 King Phillip	47	75.5	162	F	2
32 09/09/2009 King Phillip	48	72.0	165	M	1
32 09/09/2009 King Phillip	49	70.0	155	F	2
32 09/09/2009 King Phillip	50	58.5	155	M	1
33 09/09/2009 King Phillip	1	81.5	176	M	1
33 09/09/2009 King Phillip	2	89.0	169	F	2
33 09/09/2009 King Phillip	3	83.0	178	M	1
33 09/09/2009 King Phillip	4	79.5	179	M	1
33 09/09/2009 King Phillip	5	78.5	167	F	2
33 09/09/2009 King Phillip	6	82.0	170	F	2
33 09/09/2009 King Phillip	7	96.0	191	F	2
33 09/09/2009 King Phillip	8	82.5	170	F	2
33 09/09/2009 King Phillip	9	77.5	180	M	1
33 09/09/2009 King Phillip	10	88.5	185	F	2
33 09/09/2009 King Phillip	11	83.5	173	M	1
33 09/09/2009 King Phillip	12	79.5	177	F	2
33 09/09/2009 King Phillip	13	82.0	171	M	1
33 09/09/2009 King Phillip	14	68.0	159	M	1
33 09/09/2009 King Phillip	15	88.5	174	F	2
33 09/09/2009 King Phillip	16	79.5	174	M	1
33 09/09/2009 King Phillip	17	76.0	174	M	1
33 09/09/2009 King Phillip	18	77.5	176	F	2
33 09/09/2009 King Phillip	19	83.0	177	M	1
33 09/09/2009 King Phillip	20	85.5	183	F	2
33 09/09/2009 King Phillip	21	82.5	173	F	2
33 09/09/2009 King Phillip	22	91.0	175	M	1
33 09/09/2009 King Phillip	23	77.5	167	M	1
33 09/09/2009 King Phillip	24	85.0	185	F	2

33 09/09/2009 King Phillip	25	82.5	182	F	2
33 09/09/2009 King Phillip	26	72.5	161	M	1
33 09/09/2009 King Phillip	27	75.5	175	M	1
33 09/09/2009 King Phillip	28	71.0	166	M	1
33 09/09/2009 King Phillip	29	61.5	162	M	1
33 09/09/2009 King Phillip	30	81.5	175	M	1
33 09/09/2009 King Phillip	31	95.5	186	F	2
33 09/09/2009 King Phillip	32	78.5	171	F	2
33 09/09/2009 King Phillip	33	89.0	190	F	2
33 09/09/2009 King Phillip	34	69.0	160	M	1
33 09/09/2009 King Phillip	35	84.0	181	F	2
33 09/09/2009 King Phillip	36	69.0	170	F	2
33 09/09/2009 King Phillip	37	76.0	176	M	1
33 09/09/2009 King Phillip	38	88.5	189	F	2
33 09/09/2009 King Phillip	39	81.5	176	F	2
33 09/09/2009 King Phillip	40	90.0	171	F	2
33 09/09/2009 King Phillip	41	77.0	175	M	1
33 09/09/2009 King Phillip	42	85.5	183	M	1
33 09/09/2009 King Phillip	43	78.0	175	M	1
33 09/09/2009 King Phillip	44	65.5	170	F	1
33 09/09/2009 King Phillip	45	80.5	173	M	1
33 09/09/2009 King Phillip	46	83.0	177	F	2
33 09/09/2009 King Phillip	47	79.5	166	M	1
33 09/09/2009 King Phillip	48	100.0	189	M	1
33 09/09/2009 King Phillip	49	94.5	188	M	1
33 09/09/2009 King Phillip	50	85.0	182	M	1
34 09/09/2009 Ocean Angel IV	1	84.0	182	M	1
34 09/09/2009 Ocean Angel IV	2	95.0	198	F	2
34 09/09/2009 Ocean Angel IV	3	83.0	182	M	1
34 09/09/2009 Ocean Angel IV	4	77.5	175	M	1
34 09/09/2009 Ocean Angel IV	5	82.5	179	F	2
34 09/09/2009 Ocean Angel IV	6	94.0	187	F	2
34 09/09/2009 Ocean Angel IV	7	89.5	183	F	2
34 09/09/2009 Ocean Angel IV	8	78.5	178	M	1
34 09/09/2009 Ocean Angel IV	9	87.5	175	M	1
34 09/09/2009 Ocean Angel IV	10	69.0	168	M	1
34 09/09/2009 Ocean Angel IV	11	90.0	180	M	2
34 09/09/2009 Ocean Angel IV	12	82.5	174	M	1
34 09/09/2009 Ocean Angel IV	13	77.5	173	M	1
34 09/09/2009 Ocean Angel IV	14	88.5	178	M	1
34 09/09/2009 Ocean Angel IV	15	76.5	169	F	2
34 09/09/2009 Ocean Angel IV	16	85.0	179	F	2
34 09/09/2009 Ocean Angel IV	17	84.0	173	M	1
34 09/09/2009 Ocean Angel IV	18	82.0	180	M	2
34 09/09/2009 Ocean Angel IV	19	58.5	157	M	1

34 09/09/2009 Ocean Angel IV	20	71.0	173	M	1
34 09/09/2009 Ocean Angel IV	21	103.0	182	F	3
34 09/09/2009 Ocean Angel IV	22	75.5	170	M	1
34 09/09/2009 Ocean Angel IV	23	69.0	163	F	1
34 09/09/2009 Ocean Angel IV	24	86.0	175	M	1
34 09/09/2009 Ocean Angel IV	25	93.0	185	F	2
34 09/09/2009 Ocean Angel IV	26	74.5	167	F	2
34 09/09/2009 Ocean Angel IV	27	72.0	169	M	1
34 09/09/2009 Ocean Angel IV	28	81.0	177	F	2
34 09/09/2009 Ocean Angel IV	29	82.5	181	M	1
34 09/09/2009 Ocean Angel IV	30	74.5	166	F	1
34 09/09/2009 Ocean Angel IV	31	85.5	178	M	1
34 09/09/2009 Ocean Angel IV	32	47.5	148	M	1
34 09/09/2009 Ocean Angel IV	33	87.5	177	M	1
34 09/09/2009 Ocean Angel IV	34	80.5	179	F	3
34 09/09/2009 Ocean Angel IV	35	82.0	174	F	1
34 09/09/2009 Ocean Angel IV	36	84.5	178	M	2
34 09/09/2009 Ocean Angel IV	37	83.5	176	F	2
34 09/09/2009 Ocean Angel IV	38	86.5	175	F	2
34 09/09/2009 Ocean Angel IV	39	89.0	178	F	2
34 09/09/2009 Ocean Angel IV	40	93.5	186	F	2
34 09/09/2009 Ocean Angel IV	41	118.0	196	M	2
34 09/09/2009 Ocean Angel IV	42	82.5	186	M	2
34 09/09/2009 Ocean Angel IV	43	74.5	173	M	1
34 09/09/2009 Ocean Angel IV	44	79.0	177	M	1
34 09/09/2009 Ocean Angel IV	45	80.5	175	M	1
34 09/09/2009 Ocean Angel IV	46	79.5	173	M	1
34 09/09/2009 Ocean Angel IV	47	70.5	170	M	2
34 09/09/2009 Ocean Angel IV	48	93.5	179	F	2
34 09/09/2009 Ocean Angel IV	49	82.5	175	M	1
34 09/09/2009 Ocean Angel IV	50	85.5	177	M	1
35 09/09/2009 Ocean Angel IV	1	86.5	176	M	1
35 09/09/2009 Ocean Angel IV	2	87.5	183	F	2
35 09/09/2009 Ocean Angel IV	3	87.5	177	M	1
35 09/09/2009 Ocean Angel IV	4	73.0	172	F	2
35 09/09/2009 Ocean Angel IV	5	86.0	170	F	2
35 09/09/2009 Ocean Angel IV	6	79.0	176	M	1
35 09/09/2009 Ocean Angel IV	7	62.0	157	F	1
35 09/09/2009 Ocean Angel IV	8	84.5	183	F	2
35 09/09/2009 Ocean Angel IV	9	79.0	175	F	2
35 09/09/2009 Ocean Angel IV	10	84.0	181	M	1
35 09/09/2009 Ocean Angel IV	11	84.5	178	M	1
35 09/09/2009 Ocean Angel IV	12	74.5	169	F	2
35 09/09/2009 Ocean Angel IV	13	72	175	M	1
35 09/09/2009 Ocean Angel IV	14	65	154	M	1

35 09/09/2009 Ocean Angel IV	15	76.5	173	M	1
35 09/09/2009 Ocean Angel IV	16	96	184	M	1
35 09/09/2009 Ocean Angel IV	17	101	177	F	2
35 09/09/2009 Ocean Angel IV	18	87	170	M	1
35 09/09/2009 Ocean Angel IV	19	80.5	182	M	1
35 09/09/2009 Ocean Angel IV	20	82	175	F	2
35 09/09/2009 Ocean Angel IV	21	54	157	F	1
35 09/09/2009 Ocean Angel IV	22	55	146	F	1
35 09/09/2009 Ocean Angel IV	23	86.5	173	M	1
35 09/09/2009 Ocean Angel IV	24	79	176	F	2
35 09/09/2009 Ocean Angel IV	25	82.5	174	M	1
35 09/09/2009 Ocean Angel IV	26	82	176	M	1
35 09/09/2009 Ocean Angel IV	27	84.5	182	F	2
35 09/09/2009 Ocean Angel IV	28	95.5	187	F	2
35 09/09/2009 Ocean Angel IV	29	91.5	174	F	2
35 09/09/2009 Ocean Angel IV	30	79.5	174	M	1
35 09/09/2009 Ocean Angel IV	31	48	144	F	2
35 09/09/2009 Ocean Angel IV	32	54	147	F	1
35 09/09/2009 Ocean Angel IV	33	44	144	M	1
35 09/09/2009 Ocean Angel IV	34	71.5	172	M	1
35 09/09/2009 Ocean Angel IV	35	55	151	F	1
35 09/09/2009 Ocean Angel IV	36	65	163	M	1
35 09/09/2009 Ocean Angel IV	37	92	177	F	2
35 09/09/2009 Ocean Angel IV	38	86.5	179	M	1
35 09/09/2009 Ocean Angel IV	39	91.5	171	M	1
35 09/09/2009 Ocean Angel IV	40	89	186	M	1
35 09/09/2009 Ocean Angel IV	41	78.5	175	M	1
35 09/09/2009 Ocean Angel IV	42	93.5	185	M	1
35 09/09/2009 Ocean Angel IV	43	99.5	192	M	1
35 09/09/2009 Ocean Angel IV	44	85	177	F	2
35 09/09/2009 Ocean Angel IV	45	78.5	172	M	1
35 09/09/2009 Ocean Angel IV	46	81	181	M	1
35 09/09/2009 Ocean Angel IV	47	89.5	178	M	1
35 09/09/2009 Ocean Angel IV	48	51.5	143	M	1
35 09/09/2009 Ocean Angel IV	49	96	190	F	2
35 09/09/2009 Ocean Angel IV	50	76.5	164	M	1
36 09/09/2009 Ocean Angel IV	1	94.5	178	F	2
36 09/09/2009 Ocean Angel IV	2	72.5	160	M	1
36 09/09/2009 Ocean Angel IV	3	91	177	M	1
36 09/09/2009 Ocean Angel IV	4	82	179	F	2
36 09/09/2009 Ocean Angel IV	5	74	174	F	2
36 09/09/2009 Ocean Angel IV	6	82	171	F	2
36 09/09/2009 Ocean Angel IV	7	73	166	F	2
36 09/09/2009 Ocean Angel IV	8	85.5	187	M	1
36 09/09/2009 Ocean Angel IV	9	71	171	M	1

36 09/09/2009 Ocean Angel IV	10	72	175	M	1
36 09/09/2009 Ocean Angel IV	11	83.5	170	M	1
36 09/09/2009 Ocean Angel IV	12	81	176	F	2
36 09/09/2009 Ocean Angel IV	13	97.5	188	M	1
36 09/09/2009 Ocean Angel IV	14	80.5	170	M	1
36 09/09/2009 Ocean Angel IV	15	86.5	169	F	2
36 09/09/2009 Ocean Angel IV	16	58	160	F	1
36 09/09/2009 Ocean Angel IV	17	94.5	185	F	2
36 09/09/2009 Ocean Angel IV	18	82.5	161	M	1
36 09/09/2009 Ocean Angel IV	19	79.5	175	F	2
36 09/09/2009 Ocean Angel IV	20	91.5	185	M	1
36 09/09/2009 Ocean Angel IV	21	82.5	175	M	1
36 09/09/2009 Ocean Angel IV	22	78.5	166	M	1
36 09/09/2009 Ocean Angel IV	23	82	183	F	2
36 09/09/2009 Ocean Angel IV	24	82	182	F	2
36 09/09/2009 Ocean Angel IV	25	98.5	193	M	1
36 09/09/2009 Ocean Angel IV	26	90	177	F	2
36 09/09/2009 Ocean Angel IV	27	76.5	176	M	1
36 09/09/2009 Ocean Angel IV	28	71.5	173	M	1
36 09/09/2009 Ocean Angel IV	29	84	179	F	2
36 09/09/2009 Ocean Angel IV	30	99	195	M	1
36 09/09/2009 Ocean Angel IV	31	86	184	M	1
36 09/09/2009 Ocean Angel IV	32	77.5	175	F	2
36 09/09/2009 Ocean Angel IV	33	71	175	M	1
36 09/09/2009 Ocean Angel IV	34	71	169	M	1
36 09/09/2009 Ocean Angel IV	35	80.5	179	M	1
36 09/09/2009 Ocean Angel IV	36	54	183	M	1
36 09/09/2009 Ocean Angel IV	37	87.5	182	M	2
36 09/09/2009 Ocean Angel IV	38	71	177	F	2
36 09/09/2009 Ocean Angel IV	39	97.5	189	M	1
36 09/09/2009 Ocean Angel IV	40	80	175	F	2
36 09/09/2009 Ocean Angel IV	41	83.5	177	F	2
36 09/09/2009 Ocean Angel IV	42	84.5	179	M	1
36 09/09/2009 Ocean Angel IV	43	84.5	183	M	1
36 09/09/2009 Ocean Angel IV	44	70	172	F	2
36 09/09/2009 Ocean Angel IV	45	89.5	182	F	2
36 09/09/2009 Ocean Angel IV	46	46.5	146	M	1
36 09/09/2009 Ocean Angel IV	47	90	185	M	1
36 09/09/2009 Ocean Angel IV	48	93	184	F	2
36 09/09/2009 Ocean Angel IV	49	74	174	F	2
36 09/09/2009 Ocean Angel IV	50	99.5	188	F	2

37 09/10/2009 Ocean Angel IV	1	85	183	F	2
37 09/10/2009 Ocean Angel IV	2	85	167	F	2
37 09/10/2009 Ocean Angel IV	3	87.5	180	M	1
37 09/10/2009 Ocean Angel IV	4	94	182	F	2
37 09/10/2009 Ocean Angel IV	5	87	173	M	1
37 09/10/2009 Ocean Angel IV	6	71	163	M	1
37 09/10/2009 Ocean Angel IV	7	63	161	F	1
37 09/10/2009 Ocean Angel IV	8	51	147	F	1
37 09/10/2009 Ocean Angel IV	9	55	159	F	2
37 09/10/2009 Ocean Angel IV	10	84	179	F	2
37 09/10/2009 Ocean Angel IV	11	78.5	177	F	2
37 09/10/2009 Ocean Angel IV	12	91.5	176	F	2
37 09/10/2009 Ocean Angel IV	13	72.5	177	F	2
37 09/10/2009 Ocean Angel IV	14	83	172	F	2
37 09/10/2009 Ocean Angel IV	15	75.5	171	M	1
37 09/10/2009 Ocean Angel IV	16	78	179	M	1
37 09/10/2009 Ocean Angel IV	17	75.5	174	M	1
37 09/10/2009 Ocean Angel IV	18	88	182	M	1
37 09/10/2009 Ocean Angel IV	19	75.5	156	M	1
37 09/10/2009 Ocean Angel IV	20	89.5	168	F	2
37 09/10/2009 Ocean Angel IV	21	93	188	M	1
37 09/10/2009 Ocean Angel IV	22	76.5	177	M	1
37 09/10/2009 Ocean Angel IV	23	99.5	179	F	2
37 09/10/2009 Ocean Angel IV	24	77.5	177	M	1
37 09/10/2009 Ocean Angel IV	25	72	161	M	1
37 09/10/2009 Ocean Angel IV	26	80.5	171	F	2
37 09/10/2009 Ocean Angel IV	27	59.5	153	M	1
37 09/10/2009 Ocean Angel IV	28	77.5	178	M	1
37 09/10/2009 Ocean Angel IV	29	73.5	175	M	1
37 09/10/2009 Ocean Angel IV	30	82	172	F	2
37 09/10/2009 Ocean Angel IV	31	77.5	181	M	1
37 09/10/2009 Ocean Angel IV	32	64	169	M	1
37 09/10/2009 Ocean Angel IV	33	56	157	F	1
37 09/10/2009 Ocean Angel IV	34	79.5	172	F	2
37 09/10/2009 Ocean Angel IV	35	80	178	M	1
37 09/10/2009 Ocean Angel IV	36	99	196	M	1
37 09/10/2009 Ocean Angel IV	37	75.5	175	M	1
37 09/10/2009 Ocean Angel IV	38	92	172	F	2
37 09/10/2009 Ocean Angel IV	39	79	179	F	2
37 09/10/2009 Ocean Angel IV	40	83	172	M	1
37 09/10/2009 Ocean Angel IV	41	55	156	F	1
37 09/10/2009 Ocean Angel IV	42	95	184	M	1
37 09/10/2009 Ocean Angel IV	43	103	190	F	2
37 09/10/2009 Ocean Angel IV	44	82.5	168	M	1
37 09/10/2009 Ocean Angel IV	45	85.5	175	M	1

37 09/10/2009 Ocean Angel IV	46	84	179	F	2
37 09/10/2009 Ocean Angel IV	47	88	189	M	1
37 09/10/2009 Ocean Angel IV	48	93.5	178	F	2
37 09/10/2009 Ocean Angel IV	49	73	175	M	1
37 09/10/2009 Ocean Angel IV	50	89.5	179	M	1
38 09/10/2009 King Phillip	1	92	183	F	2
38 09/10/2009 King Phillip	2	73	170	F	2
38 09/10/2009 King Phillip	3	78.5	177	M	1
38 09/10/2009 King Phillip	4	46.5	156	F	1
38 09/10/2009 King Phillip	5	73	172	M	1
38 09/10/2009 King Phillip	6	68.5	170	M	1
38 09/10/2009 King Phillip	7	38	140	M	1
38 09/10/2009 King Phillip	8	73.5	174	F	2
38 09/10/2009 King Phillip	9	64	165	M	1
38 09/10/2009 King Phillip	10	86	179	F	2
38 09/10/2009 King Phillip	11	88.5	188	F	2
38 09/10/2009 King Phillip	12	67	167	M	1
38 09/10/2009 King Phillip	13	58.5	168	F	1
38 09/10/2009 King Phillip	14	70.5	171	F	2
38 09/10/2009 King Phillip	15	69.5	172	F	2
38 09/10/2009 King Phillip	16	89	200	F	2
38 09/10/2009 King Phillip	17	88.5	189	M	2
38 09/10/2009 King Phillip	18	97	191	F	2
38 09/10/2009 King Phillip	19	73.5	184	F	2
38 09/10/2009 King Phillip	20	80.5	172	F	2
38 09/10/2009 King Phillip	21	69	166	M	1
38 09/10/2009 King Phillip	22	55.5	161	M	1
38 09/10/2009 King Phillip	23	74.5	173	M	1
38 09/10/2009 King Phillip	24	89.5	181	M	1
38 09/10/2009 King Phillip	25	55	158	F	1
38 09/10/2009 King Phillip	26	75	170	F	2
38 09/10/2009 King Phillip	27	45.5	149	F	1
38 09/10/2009 King Phillip	28	53.5	153	M	1
38 09/10/2009 King Phillip	29	67.5	168	M	1
38 09/10/2009 King Phillip	30	71.5	167	M	1
38 09/10/2009 King Phillip	31	70	169	F	1
38 09/10/2009 King Phillip	32	80.5	177	M	2
38 09/10/2009 King Phillip	33	67.5	164	M	1
38 09/10/2009 King Phillip	34	86.5	178	F	2
38 09/10/2009 King Phillip	35	76.5	179	M	1
38 09/10/2009 King Phillip	36	86	171	F	2
38 09/10/2009 King Phillip	37	51	147	M	1
38 09/10/2009 King Phillip	38	78.5	173	M	1
38 09/10/2009 King Phillip	39	68	167	M	1
38 09/10/2009 King Phillip	40	85.5	185	F	2

38 09/10/2009 King Phillip	41	52.5	157	M	1
38 09/10/2009 King Phillip	42	44.5	153	F	1
38 09/10/2009 King Phillip	43	81.5	172	F	2
38 09/10/2009 King Phillip	44	66.5	174	M	1
38 09/10/2009 King Phillip	45	66.5	168	F	1
38 09/10/2009 King Phillip	46	88.5	172	M	1
38 09/10/2009 King Phillip	47	80.5	170	M	1
38 09/10/2009 King Phillip	48	72.5	173	F	1
38 09/10/2009 King Phillip	49	45	151	M	1
38 09/10/2009 King Phillip	50	45	151	M	1
39 09/10/2009 King Phillip	1	72	162	M	1
39 09/10/2009 King Phillip	2	74	165	F	2
39 09/10/2009 King Phillip	3	85.5	170	F	2
39 09/10/2009 King Phillip	4	69	167	F	2
39 09/10/2009 King Phillip	5	80.5	171	M	1
39 09/10/2009 King Phillip	6	73	173	F	2
39 09/10/2009 King Phillip	7	80.5	177	F	2
39 09/10/2009 King Phillip	8	83	173	F	2
39 09/10/2009 King Phillip	9	77.5	171	F	2
39 09/10/2009 King Phillip	10	58	154	M	1
39 09/10/2009 King Phillip	11	56	156	F	1
39 09/10/2009 King Phillip	12	57.5	151	F	1
39 09/10/2009 King Phillip	13	72.5	177	M	1
39 09/10/2009 King Phillip	14	47	142	M	1
39 09/10/2009 King Phillip	15	72.5	174	M	1
39 09/10/2009 King Phillip	16	84.5	184	F	2
39 09/10/2009 King Phillip	17	87.5	169	M	1
39 09/10/2009 King Phillip	18	91.5	194	F	2
39 09/10/2009 King Phillip	19	82	181	F	2
39 09/10/2009 King Phillip	20	73.5	166	M	1
39 09/10/2009 King Phillip	21	84	186	M	1
39 09/10/2009 King Phillip	22	64.5	167	M	1
39 09/10/2009 King Phillip	23	78.5	174	F	2
39 09/10/2009 King Phillip	24	72.5	165	M	1
39 09/10/2009 King Phillip	25	74	173	M	1
39 09/10/2009 King Phillip	26	74	166	M	1
39 09/10/2009 King Phillip	27	85.5	177	M	1
39 09/10/2009 King Phillip	28	75	175	F	2
39 09/10/2009 King Phillip	29	55.5	149	F	1
39 09/10/2009 King Phillip	30	42	149	F	1
39 09/10/2009 King Phillip	31	71	173	M	1
39 09/10/2009 King Phillip	32	76.5	172	M	1
39 09/10/2009 King Phillip	33	94.5	176	M	1
39 09/10/2009 King Phillip	34	67	172	M	1
39 09/10/2009 King Phillip	35	74.5	174	M	1

39 09/10/2009 King Phillip	36	79	166	F	2
39 09/10/2009 King Phillip	37	78.5	174	F	2
39 09/10/2009 King Phillip	38	80.5	177	F	2
39 09/10/2009 King Phillip	39	83	167	F	2
39 09/10/2009 King Phillip	40	85	183	M	1
39 09/10/2009 King Phillip	41	73	176	F	2
39 09/10/2009 King Phillip	42	79	170	F	2
39 09/10/2009 King Phillip	43	76	175	F	2
39 09/10/2009 King Phillip	44	70	175	M	1
39 09/10/2009 King Phillip	45	68	173	F	2
39 09/10/2009 King Phillip	46	77.5	166	M	1
39 09/10/2009 King Phillip	47	93	183	F	2
39 09/10/2009 King Phillip	48	85.5	179	M	1
39 09/10/2009 King Phillip	49	71	175	M	1
39 09/10/2009 King Phillip	50	92.5	187	F	2
40 09/10/2009 King Phillip	1	54	157	F	2
40 09/10/2009 King Phillip	2	53	146	M	1
40 09/10/2009 King Phillip	3	46.5	153	M	1
40 09/10/2009 King Phillip	4	70	178	F	2
40 09/10/2009 King Phillip	5	68.5	179	M	1
40 09/10/2009 King Phillip	6	70.5	167	F	2
40 09/10/2009 King Phillip	7	46	154	M	1
40 09/10/2009 King Phillip	8	50.5	144	F	1
40 09/10/2009 King Phillip	9	86	171	M	1
40 09/10/2009 King Phillip	10	52.5	162	M	1
40 09/10/2009 King Phillip	11	75.5	171	F	2
40 09/10/2009 King Phillip	12	95.5	197	F	2
40 09/10/2009 King Phillip	13	83.5	184	F	2
40 09/10/2009 King Phillip	14	73	170	F	2
40 09/10/2009 King Phillip	15	72.5	178	M	1
40 09/10/2009 King Phillip	16	88	180	F	2
40 09/10/2009 King Phillip	17	80.5	176	M	1
40 09/10/2009 King Phillip	18	70.5	168	M	1
40 09/10/2009 King Phillip	19	81	174	F	2
40 09/10/2009 King Phillip	20	69.5	164	M	1
40 09/10/2009 King Phillip	21	84	184	F	2
40 09/10/2009 King Phillip	22	69	160	M	1
40 09/10/2009 King Phillip	23	79.5	180	F	2
40 09/10/2009 King Phillip	24	89.5	179	M	1
40 09/10/2009 King Phillip	25	85	186	M	1
40 09/10/2009 King Phillip	26	56	160	M	1
40 09/10/2009 King Phillip	27	83.5	174	M	1
40 09/10/2009 King Phillip	28	57.5	150	F	1
40 09/10/2009 King Phillip	29	68.5	176	F	2
40 09/10/2009 King Phillip	30	76.5	175	F	2

40 09/10/2009 King Phillip	31	62	155	F	1
40 09/10/2009 King Phillip	32	65.5	172	M	1
40 09/10/2009 King Phillip	33	51.5	143	M	1
40 09/10/2009 King Phillip	34	62.5	160	F	1
40 09/10/2009 King Phillip	35	76	159	F	2
40 09/10/2009 King Phillip	36	57	156	M	1
40 09/10/2009 King Phillip	37	69.5	172	M	1
40 09/10/2009 King Phillip	38	83	171	M	1
40 09/10/2009 King Phillip	39	77.5	177	F	2
40 09/10/2009 King Phillip	40	87	172	M	1
40 09/10/2009 King Phillip	41	67.5	167	F	2
40 09/10/2009 King Phillip	42	55.5	161	F	2
40 09/10/2009 King Phillip	43	83	179	M	1
40 09/10/2009 King Phillip	44	51.5	157	M	1
40 09/10/2009 King Phillip	45	84	186	M	1
40 09/10/2009 King Phillip	46	76.5	175	M	1
40 09/10/2009 King Phillip	47	76	176	M	1
40 09/10/2009 King Phillip	48	83	181	F	2
40 09/10/2009 King Phillip	49	82.5	184	F	2
40 09/10/2009 King Phillip	50	85.5	183	F	2
41 09/10/2009 Ocean Angel IV	1	82.5	178	M	1
41 09/10/2009 Ocean Angel IV	2	79.5	168	M	2
41 09/10/2009 Ocean Angel IV	3	76	176	F	2
41 09/10/2009 Ocean Angel IV	4	79	179	F	2
41 09/10/2009 Ocean Angel IV	5	76.5	174	M	1
41 09/10/2009 Ocean Angel IV	6	79.5	181	F	2
41 09/10/2009 Ocean Angel IV	7	83.5	171	F	2
41 09/10/2009 Ocean Angel IV	8	86	187	M	1
41 09/10/2009 Ocean Angel IV	9	77.5	176	M	1
41 09/10/2009 Ocean Angel IV	10	80.5	172	F	2
41 09/10/2009 Ocean Angel IV	11	76	173	F	2
41 09/10/2009 Ocean Angel IV	12	87	189	M	1
41 09/10/2009 Ocean Angel IV	13	66.5	167	M	1
41 09/10/2009 Ocean Angel IV	14	79.5	183	F	2
41 09/10/2009 Ocean Angel IV	15	92.5	197	F	2
41 09/10/2009 Ocean Angel IV	16	77	188	F	2
41 09/10/2009 Ocean Angel IV	17	80.5	177	F	2
41 09/10/2009 Ocean Angel IV	18	95.5	182	M	1
41 09/10/2009 Ocean Angel IV	19	62.5	169	F	1
41 09/10/2009 Ocean Angel IV	20	71.5	177	M	1
41 09/10/2009 Ocean Angel IV	21	82.5	179	M	1
41 09/10/2009 Ocean Angel IV	22	68	167	M	1
41 09/10/2009 Ocean Angel IV	23	79	179	F	2
41 09/10/2009 Ocean Angel IV	24	82.5	170	M	1
41 09/10/2009 Ocean Angel IV	25	49.5	156	M	1

41 09/10/2009 Ocean Angel IV	26	88.5	189	F	2
41 09/10/2009 Ocean Angel IV	27	80.5	176	M	1
41 09/10/2009 Ocean Angel IV	28	81	182	F	2
41 09/10/2009 Ocean Angel IV	29	75.5	172	F	2
41 09/10/2009 Ocean Angel IV	30	79	174	M	1
41 09/10/2009 Ocean Angel IV	31	60	167	F	2
41 09/10/2009 Ocean Angel IV	32	82	180	F	2
41 09/10/2009 Ocean Angel IV	33	73.5	176	M	1
41 09/10/2009 Ocean Angel IV	34	95.5	197	F	3
41 09/10/2009 Ocean Angel IV	35	72.5	171	M	1
41 09/10/2009 Ocean Angel IV	36	69	169	M	1
41 09/10/2009 Ocean Angel IV	37	82.5	174	M	1
41 09/10/2009 Ocean Angel IV	38	56.5	158	M	1
41 09/10/2009 Ocean Angel IV	39	77.5	178	M	1
41 09/10/2009 Ocean Angel IV	40	71	174	M	1
41 09/10/2009 Ocean Angel IV	41	92	188	M	1
41 09/10/2009 Ocean Angel IV	42	82	172	F	2
41 09/10/2009 Ocean Angel IV	43	73.5	176	F	1
41 09/10/2009 Ocean Angel IV	44	77	182	M	1
41 09/10/2009 Ocean Angel IV	45	76.5	165	M	1
41 09/10/2009 Ocean Angel IV	46	79.5	176	F	2
41 09/10/2009 Ocean Angel IV	47	92.5	192	M	1
41 09/10/2009 Ocean Angel IV	48	84	187	M	1
41 09/10/2009 Ocean Angel IV	49	89.5	179	F	2
41 09/10/2009 Ocean Angel IV	50	92	181	M	1
42 09/10/2009 Ocean Angel IV	1	80	167	M	1
42 09/10/2009 Ocean Angel IV	2	86.5	169	M	1
42 09/10/2009 Ocean Angel IV	3	64	162	F	2
42 09/10/2009 Ocean Angel IV	4	80	168	M	1
42 09/10/2009 Ocean Angel IV	5	86.5	172	M	1
42 09/10/2009 Ocean Angel IV	6	92.5	189	F	2
42 09/10/2009 Ocean Angel IV	7	74.5	174	M	1
42 09/10/2009 Ocean Angel IV	8	71.5	171	F	2
42 09/10/2009 Ocean Angel IV	9	77	171	M	1
42 09/10/2009 Ocean Angel IV	10	86.5	172	F	2
42 09/10/2009 Ocean Angel IV	11	84	184	F	2
42 09/10/2009 Ocean Angel IV	12	81	172	M	1
42 09/10/2009 Ocean Angel IV	13	76.5	181	M	1
42 09/10/2009 Ocean Angel IV	14	111.5	202	M	2
42 09/10/2009 Ocean Angel IV	15	61	165	F	1
42 09/10/2009 Ocean Angel IV	16	90	171	F	2
42 09/10/2009 Ocean Angel IV	17	88	180	M	1
42 09/10/2009 Ocean Angel IV	18	82	179	F	2
42 09/10/2009 Ocean Angel IV	19	95	188	M	1
42 09/10/2009 Ocean Angel IV	20	69.5	169	F	1

42 09/10/2009 Ocean Angel IV	21	85	173	F	2
42 09/10/2009 Ocean Angel IV	22	82	164	F	2
42 09/10/2009 Ocean Angel IV	23	89.5	172	M	1
42 09/10/2009 Ocean Angel IV	24	87.5	179	M	1
42 09/10/2009 Ocean Angel IV	25	74.5	165	F	2
42 09/10/2009 Ocean Angel IV	26	101	184	F	2
42 09/10/2009 Ocean Angel IV	27	85.5	178	F	2
42 09/10/2009 Ocean Angel IV	28	79.5	165	M	1
42 09/10/2009 Ocean Angel IV	29	79.5	166	M	1
42 09/10/2009 Ocean Angel IV	30	90.5	186	M	1
42 09/10/2009 Ocean Angel IV	31	63.5	165	M	1
42 09/10/2009 Ocean Angel IV	32	76	162	F	2
42 09/10/2009 Ocean Angel IV	33	62	163	F	2
42 09/10/2009 Ocean Angel IV	34	58.5	156	F	1
42 09/10/2009 Ocean Angel IV	35	82.5	176	F	2
42 09/10/2009 Ocean Angel IV	36	76	178	M	1
42 09/10/2009 Ocean Angel IV	37	82	175	M	1
42 09/10/2009 Ocean Angel IV	38	88	173	F	2
42 09/10/2009 Ocean Angel IV	39	76.5	170	F	2
42 09/10/2009 Ocean Angel IV	40	71	167	M	1
42 09/10/2009 Ocean Angel IV	41	60	150	M	1
42 09/10/2009 Ocean Angel IV	42	77	173	M	1
42 09/10/2009 Ocean Angel IV	43	84	185	M	1
42 09/10/2009 Ocean Angel IV	44	83	175	M	1
42 09/10/2009 Ocean Angel IV	45	91	187	F	2
42 09/10/2009 Ocean Angel IV	46	84	179	M	1
42 09/10/2009 Ocean Angel IV	47	74	169	M	1
42 09/10/2009 Ocean Angel IV	48	79	181	M	1
42 09/10/2009 Ocean Angel IV	49	83.5	167	F	2
42 09/10/2009 Ocean Angel IV	50	64	153	F	1
43 09/10/2009 Ocean Angel IV	1	67.5	166	M	1
43 09/10/2009 Ocean Angel IV	2	82.5	173	M	1
43 09/10/2009 Ocean Angel IV	3	83.5	175	M	1
43 09/10/2009 Ocean Angel IV	4	94.5	182	F	2
43 09/10/2009 Ocean Angel IV	5	76.5	163	F	2
43 09/10/2009 Ocean Angel IV	6	83	172	M	1
43 09/10/2009 Ocean Angel IV	7	90.5	182	F	2
43 09/10/2009 Ocean Angel IV	8	82	177	F	1
43 09/10/2009 Ocean Angel IV	9	75	171	F	2
43 09/10/2009 Ocean Angel IV	10	80	171	M	1
43 09/10/2009 Ocean Angel IV	11	86.5	176	M	1
43 09/10/2009 Ocean Angel IV	12	69.5	172	M	1
43 09/10/2009 Ocean Angel IV	13	86.5	178	M	1
43 09/10/2009 Ocean Angel IV	14	49.5	149	M	1
43 09/10/2009 Ocean Angel IV	15	73.5	176	M	1

43 09/10/2009 Ocean Angel IV	16	77.5	175	M	1
43 09/10/2009 Ocean Angel IV	17	90.5	176	M	1
43 09/10/2009 Ocean Angel IV	18	82	176	M	1
43 09/10/2009 Ocean Angel IV	19	78	175	M	1
43 09/10/2009 Ocean Angel IV	20	76	171	M	2
43 09/10/2009 Ocean Angel IV	21	91.5	176	M	1
43 09/10/2009 Ocean Angel IV	22	96.5	186	F	2
43 09/10/2009 Ocean Angel IV	23	76	173	M	1
43 09/10/2009 Ocean Angel IV	24	76.5	168	F	2
43 09/10/2009 Ocean Angel IV	25	81	173	F	2
43 09/10/2009 Ocean Angel IV	26	82.5	173	F	2
43 09/10/2009 Ocean Angel IV	27	82	174	F	1
43 09/10/2009 Ocean Angel IV	28	80.5	173	M	1
43 09/10/2009 Ocean Angel IV	29	90.5	175	F	2
43 09/10/2009 Ocean Angel IV	30	73	165	M	1
43 09/10/2009 Ocean Angel IV	31	83.5	174	F	2
43 09/10/2009 Ocean Angel IV	32	84	177	F	2
43 09/10/2009 Ocean Angel IV	33	77.5	172	M	1
43 09/10/2009 Ocean Angel IV	34	79	171	M	1
43 09/10/2009 Ocean Angel IV	35	85.5	174	F	2
43 09/10/2009 Ocean Angel IV	36	77.5	166	M	1
43 09/10/2009 Ocean Angel IV	37	96	189	M	1
43 09/10/2009 Ocean Angel IV	38	84	171	F	2
43 09/10/2009 Ocean Angel IV	39	84	173	M	1
43 09/10/2009 Ocean Angel IV	40	85	179	F	2
43 09/10/2009 Ocean Angel IV	41	88.5	178	F	2
43 09/10/2009 Ocean Angel IV	42	90	178	M	1
43 09/10/2009 Ocean Angel IV	43	86.5	175	F	2
43 09/10/2009 Ocean Angel IV	44	82	174	F	2
43 09/10/2009 Ocean Angel IV	45	91.5	178	M	1
43 09/10/2009 Ocean Angel IV	46	60	164	M	1
43 09/10/2009 Ocean Angel IV	47	79	174	F	1
43 09/10/2009 Ocean Angel IV	48	99	181	F	2
43 09/10/2009 Ocean Angel IV	49	94	182	M	1
43 09/10/2009 Ocean Angel IV	50	86	174	F	2
44 09/11/2009 King Phillip	1	74.5	174	F	2
44 09/11/2009 King Phillip	2	83	179	M	1
44 09/11/2009 King Phillip	3	77.5	171	F	2
44 09/11/2009 King Phillip	4	84.5	178	F	2
44 09/11/2009 King Phillip	5	65	168	F	1
44 09/11/2009 King Phillip	6	60.5	172	F	2
44 09/11/2009 King Phillip	7	83.5	173	F	2
44 09/11/2009 King Phillip	8	60.5	158	M	1
44 09/11/2009 King Phillip	9	59.5	160	M	1
44 09/11/2009 King Phillip	10	89	180	F	2

44 09/11/2009 King Phillip	11	66	166	M	1
44 09/11/2009 King Phillip	12	63	168	F	2
44 09/11/2009 King Phillip	13	74	176	F	2
44 09/11/2009 King Phillip	14	81	178	M	1
44 09/11/2009 King Phillip	15	73.5	177	M	1
44 09/11/2009 King Phillip	16	89	175	F	2
44 09/11/2009 King Phillip	17	71	172	M	1
44 09/11/2009 King Phillip	18	75.5	170	M	1
44 09/11/2009 King Phillip	19	52.5	160	F	1
44 09/11/2009 King Phillip	20	57	159	M	1
44 09/11/2009 King Phillip	21	73	173	M	1
44 09/11/2009 King Phillip	22	65	183	M	1
44 09/11/2009 King Phillip	23	61	164	M	1
44 09/11/2009 King Phillip	24	53	153	F	1
44 09/11/2009 King Phillip	25	69	167	F	2
44 09/11/2009 King Phillip	26	83.5	167	M	1
44 09/11/2009 King Phillip	27	75.5	175	M	1
44 09/11/2009 King Phillip	28	92	181	M	1
44 09/11/2009 King Phillip	29	68.5	159	M	1
44 09/11/2009 King Phillip	30	65.5	163	F	2
44 09/11/2009 King Phillip	31	84.5	172	M	1
44 09/11/2009 King Phillip	32	92	182	M	1
44 09/11/2009 King Phillip	33	71	174	F	2
44 09/11/2009 King Phillip	34	79.5	172	F	2
44 09/11/2009 King Phillip	35	89.5	177	M	1
44 09/11/2009 King Phillip	36	72.5	192	M	1
44 09/11/2009 King Phillip	37	77	192	M	1
44 09/11/2009 King Phillip	38	45	152	F	1
44 09/11/2009 King Phillip	39	74	162	F	2
44 09/11/2009 King Phillip	40	51.5	160	F	1
44 09/11/2009 King Phillip	41	73	173	M	1
44 09/11/2009 King Phillip	42	77.5	172	F	1
44 09/11/2009 King Phillip	43	63.5	186	F	2
44 09/11/2009 King Phillip	44	82	171	F	2
44 09/11/2009 King Phillip	45	80.5	176	F	2
44 09/11/2009 King Phillip	46	78.5	168	M	1
44 09/11/2009 King Phillip	47	72	175	M	1
44 09/11/2009 King Phillip	48	66.5	167	M	1
44 09/11/2009 King Phillip	49	85.5	179	F	2
44 09/11/2009 King Phillip	50	100	212	F	2
45 09/11/2009 King Phillip	1	95.5	190	M	1
45 09/11/2009 King Phillip	2	85	175	M	2
45 09/11/2009 King Phillip	3	79	187	F	2
45 09/11/2009 King Phillip	4	75	171	M	1
45 09/11/2009 King Phillip	5	64	163	M	1

45 09/11/2009 King Phillip	6	78	172	M	1
45 09/11/2009 King Phillip	7	86.5	181	F	2
45 09/11/2009 King Phillip	8	78.5	180	F	2
45 09/11/2009 King Phillip	9	80.5	185	F	2
45 09/11/2009 King Phillip	10	78.5	178	F	1
45 09/11/2009 King Phillip	11	87.5	186	F	2
45 09/11/2009 King Phillip	12	66.5	178	M	1
45 09/11/2009 King Phillip	13	66.5	168	F	2
45 09/11/2009 King Phillip	14	44.5	157	F	1
45 09/11/2009 King Phillip	15	85	190	M	2
45 09/11/2009 King Phillip	16	88.5	190	M	2
45 09/11/2009 King Phillip	17	90	185	M	1
45 09/11/2009 King Phillip	18	85.5	186	F	2
45 09/11/2009 King Phillip	19	73.5	178	F	2
45 09/11/2009 King Phillip	20	83	171	M	1
45 09/11/2009 King Phillip	21	73.5	186	M	1
45 09/11/2009 King Phillip	22	73	173	M	1
45 09/11/2009 King Phillip	23	83	169	M	1
45 09/11/2009 King Phillip	24	93	193	M	1
45 09/11/2009 King Phillip	25	69	162	F	1
45 09/11/2009 King Phillip	26	86	184	F	2
45 09/11/2009 King Phillip	27	50.5	160	F	1
45 09/11/2009 King Phillip	28	87	188	F	2
45 09/11/2009 King Phillip	29	69	167	M	1
45 09/11/2009 King Phillip	30	75.5	173	M	1
45 09/11/2009 King Phillip	31	76	183	M	1
45 09/11/2009 King Phillip	32	85.5	193	M	1
45 09/11/2009 King Phillip	33	83.5	194	F	2
45 09/11/2009 King Phillip	34	76	164	F	2
45 09/11/2009 King Phillip	35	75.5	175	F	2
45 09/11/2009 King Phillip	36	87	186	M	1
45 09/11/2009 King Phillip	37	73.5	177	F	2
45 09/11/2009 King Phillip	38	76	168	M	1
45 09/11/2009 King Phillip	39	69.5	171	M	1
45 09/11/2009 King Phillip	40	82.5	168	F	2
45 09/11/2009 King Phillip	41	54.5	162	M	1
45 09/11/2009 King Phillip	42	47	143	F	1
45 09/11/2009 King Phillip	43	77.5	181	M	1
45 09/11/2009 King Phillip	44	60.5	159	F	1
45 09/11/2009 King Phillip	45	85.5	189	M	1
45 09/11/2009 King Phillip	46	89.5	184	M	1
45 09/11/2009 King Phillip	47	61.5	162	M	1
45 09/11/2009 King Phillip	48	62	170	M	1
45 09/11/2009 King Phillip	49	92.5	186	M	1
45 09/11/2009 King Phillip	50	86	185	M	1

46 09/11/2009 King Phillip	1	81	184	F	3
46 09/11/2009 King Phillip	2	67	161	F	2
46 09/11/2009 King Phillip	3	81.5	184	M	1
46 09/11/2009 King Phillip	4	90.5	192	F	2
46 09/11/2009 King Phillip	5	86	176	M	1
46 09/11/2009 King Phillip	6	88	192	M	1
46 09/11/2009 King Phillip	7	75	179	M	1
46 09/11/2009 King Phillip	8	56	159	F	2
46 09/11/2009 King Phillip	9	73.5	161	F	2
46 09/11/2009 King Phillip	10	90.5	184	F	2
46 09/11/2009 King Phillip	11	80.5	189	F	2
46 09/11/2009 King Phillip	12	81	174	M	1
46 09/11/2009 King Phillip	13	74.5	169	M	1
46 09/11/2009 King Phillip	14	47.5	151	M	1
46 09/11/2009 King Phillip	15	72.5	176	M	1
46 09/11/2009 King Phillip	16	82.5	175	F	2
46 09/11/2009 King Phillip	17	85.5	192	M	1
46 09/11/2009 King Phillip	18	79.5	184	F	2
46 09/11/2009 King Phillip	19	72	182	F	3
46 09/11/2009 King Phillip	20	76.5	179	M	1
46 09/11/2009 King Phillip	21	68	177	M	1
46 09/11/2009 King Phillip	22	78.5	185	F	2
46 09/11/2009 King Phillip	23	80.5	170	M	1
46 09/11/2009 King Phillip	24	76.5	181	F	2
46 09/11/2009 King Phillip	25	74	178	F	2
46 09/11/2009 King Phillip	26	64.5	174	M	1
46 09/11/2009 King Phillip	27	73.5	178	M	1
46 09/11/2009 King Phillip	28	73.5	160	M	1
46 09/11/2009 King Phillip	29	72	180	F	2
46 09/11/2009 King Phillip	30	79	176	M	1
46 09/11/2009 King Phillip	31	60.5	153	F	2
46 09/11/2009 King Phillip	32	98	185	F	2
46 09/11/2009 King Phillip	33	73	168	F	1
46 09/11/2009 King Phillip	34	65.5	165	M	1
46 09/11/2009 King Phillip	35	49	159	M	1
46 09/11/2009 King Phillip	36	56.5	156	F	1
46 09/11/2009 King Phillip	37	57	152	F	1
46 09/11/2009 King Phillip	38	82	178	F	2
46 09/11/2009 King Phillip	39	82	181	M	1
46 09/11/2009 King Phillip	40	56	161	F	2
46 09/11/2009 King Phillip	41	83.5	182	M	1
46 09/11/2009 King Phillip	42	73	172	F	2
46 09/11/2009 King Phillip	43	64	155	M	1
46 09/11/2009 King Phillip	44	88.5	184	F	2
46 09/11/2009 King Phillip	45	64	164	M	1

46 09/11/2009 King Phillip	46	55.5	156	F	1
46 09/11/2009 King Phillip	47	80.5	168	F	2
46 09/11/2009 King Phillip	48	75.5	171	F	2
46 09/11/2009 King Phillip	49	57.5	159	M	1
46 09/11/2009 King Phillip	50	59	162	F	1
47 09/14/2009 Ocean Angel IV	1	86.5	177	M	1
47 09/14/2009 Ocean Angel IV	2	75	173	F	2
47 09/14/2009 Ocean Angel IV	3	86	177	M	1
47 09/14/2009 Ocean Angel IV	4	87	187	M	1
47 09/14/2009 Ocean Angel IV	5	81.5	173	M	1
47 09/14/2009 Ocean Angel IV	6	88.5	184	M	1
47 09/14/2009 Ocean Angel IV	7	82	180	M	1
47 09/14/2009 Ocean Angel IV	8	78	176	F	2
47 09/14/2009 Ocean Angel IV	9	71.5	175	F	2
47 09/14/2009 Ocean Angel IV	10	70	174	F	2
47 09/14/2009 Ocean Angel IV	11	77.5	173	M	1
47 09/14/2009 Ocean Angel IV	12	72.5	177	M	1
47 09/14/2009 Ocean Angel IV	13	65	163	M	1
47 09/14/2009 Ocean Angel IV	14	71	166	F	2
47 09/14/2009 Ocean Angel IV	15	80	176	F	2
47 09/14/2009 Ocean Angel IV	16	79.5	175	M	1
47 09/14/2009 Ocean Angel IV	17	72	172	F	2
47 09/14/2009 Ocean Angel IV	18	79.5	174	M	1
47 09/14/2009 Ocean Angel IV	19	90.5	177	F	2
47 09/14/2009 Ocean Angel IV	20	75	175	M	1
47 09/14/2009 Ocean Angel IV	21	69.5	177	F	2
47 09/14/2009 Ocean Angel IV	22	90	183	F	2
47 09/14/2009 Ocean Angel IV	23	59.5	160	F	2
47 09/14/2009 Ocean Angel IV	24	93	185	M	1
47 09/14/2009 Ocean Angel IV	25	93	184	M	1
47 09/14/2009 Ocean Angel IV	26	83	176	M	1
47 09/14/2009 Ocean Angel IV	27	79.5	178	M	1
47 09/14/2009 Ocean Angel IV	28	71	172	M	1
47 09/14/2009 Ocean Angel IV	29	80.5	185	F	2
47 09/14/2009 Ocean Angel IV	30	87.5	184	F	2
47 09/14/2009 Ocean Angel IV	31	95	183	F	2
47 09/14/2009 Ocean Angel IV	32	66	166	F	2
47 09/14/2009 Ocean Angel IV	33	81.5	177	M	1
47 09/14/2009 Ocean Angel IV	34	81	176	M	1
47 09/14/2009 Ocean Angel IV	35	77	171	M	1
47 09/14/2009 Ocean Angel IV	36	79.5	179	F	2
47 09/14/2009 Ocean Angel IV	37	84.5	181	M	1
47 09/14/2009 Ocean Angel IV	38	83	174	M	1
47 09/14/2009 Ocean Angel IV	39	71.5	172	M	1
47 09/14/2009 Ocean Angel IV	40	87.5	181	M	1

47	09/14/2009	Ocean Angel IV	41	88	186	F	1
47	09/14/2009	Ocean Angel IV	42	88.5	182	M	1
47	09/14/2009	Ocean Angel IV	43	97	187	M	1
47	09/14/2009	Ocean Angel IV	44	74	178	M	1
47	09/14/2009	Ocean Angel IV	45	79	178	F	2
47	09/14/2009	Ocean Angel IV	46	77.5	178	M	1
47	09/14/2009	Ocean Angel IV	47	75	172	F	2
47	09/14/2009	Ocean Angel IV	48	87.5	184	M	1
47	09/14/2009	Ocean Angel IV	49	77	179	F	2
47	09/14/2009	Ocean Angel IV	50	78	179	M	1

ASSESSMENT OF THE PACIFIC SARDINE RESOURCE IN 2009 FOR U.S. MANAGEMENT IN 2010

Kevin T. Hill[1], Nancy C. H. Lo[1], Beverly J. Macewicz[1],
Paul R. Crone[1], and Roberto Felix-Uraga[2]

[1] NOAA National Marine Fisheries Service
Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, California, USA 92037

[2] CICIMAR-IPN
Ave. IPN s/n A.P. 592
Col. Playa Palo Sta. Rita C.P. 230096
La Paz, Baja California Sur, México

October 14, 2009

Disclaimer: This information is distributed solely for the purpose of pre-dissemination peer review under applicable information quality guidelines. It has not been formally disseminated by NOAA-National Marine Fisheries Service. It does not represent and should not be construed to represent any agency determination or policy.

BLANK PAGE

TABLE OF CONTENTS

ACRONYMS AND ABBREVIATIONS 5
ACKNOWLEDGMENTS 7
PREFACE 8
EXECUTIVE SUMMARY 9
INTRODUCTION 12
Scientific Name, Distribution, Stock Structure, Management Units 12
Important Features of Life History that Affect Management 13
Relevant History of the Fishery 15
Early Management History 16
Management Performance Under the CPS-FMP (2000-present) 17
ASSESSMENT 17
Biological Data 17
Stock Structure 17
Weight-at-length 18
Age and growth 18
Maturity 18
Natural mortality 18
Fishery Data 19
Overview 19
Landings 19
Length composition 20
Age composition 20
Fishery-Independent Data 21
Overview 21
Daily Egg Production Method 21
Total Egg Production 22
NWFSC Predator-Forage Fish Survey 22
West Coast Vancouver Island Trawl Survey 23
West Coast Aerial Sardine Survey of 2009 24
History of Modeling Approaches 25

SS Model Description 25
Assessment Program with Last Revision Date 26
Likelihood Components, Constraints on Parameters, Selectivity Assumptions 26
Stock-recruitment 27
Convergence criteria 27
Model Selection and Evaluation 27
Base Model Results 28
Growth 28
Selectivity estimates and fits to composition data 28
Fits to DEPM and TEP Survey Indices 28
Fits to PFFS and WCVI Survey Indices 29
Fit to Aerial Survey 2009 29
Harvest and exploitation rates 29
Spawning stock biomass 30
Recruitment 30
Stock biomass (ages 1+) for PFMC management 30
Stock-recruitment 30
Uncertainty, Sensitivity, and Unresolved Problems 30
Sensitivity to natural mortality assumptions 30
Prospective analysis 31
Retrospective analysis 31
Comparison to previous assessments 31
HARVEST GUIDELINE FOR 2010 32
RESEARCH AND DATA NEEDS 32
LITERATURE CITED 34
TABLES 41
FIGURES 55
APPENDICES 159
Appendix I – Revised estimation of spawning biomass of Pacific sardine using the Daily Egg Production Method 160
Appendix II – Stock Synthesis Input Files 184

ACRONYMS AND ABBREVIATIONS

ABC	allowable biological catch (equivalent to HG in the CPS-FMP)
ADMB	automatic differentiation model builder (programming language)
Aerial	West Coast Aerial Sardine Survey of 2009
ASAP	age structured assessment program
BAMM	best ad-hoc mortality method (Lorenzen's hockey-stick *M*)
BC	British Columbia
CA	State of California
CANSAR-TAM	catch-at-age analysis for sardine – two area model
CalCOFI	California Cooperative Oceanic Fisheries Investigations
CalVET	California Vertical Egg Tow (ichthyoplankton net)
CCA	Central California fishery
CDFG	California Department of Fish and Game
CDFO	Canada Department of Fisheries and Oceans
CICIMAR	Centro Interdisciplinario de Ciencias Marinas
CONAPESCA	Comisión Nacional de Acuacultura y Pesca
CPS	Coastal Pelagic Species
CPSAS	Coastal Pelagic Species Advisory Subpanel
CPSMT	Coastal Pelagic Species Management Team
CV	coefficient of variation
DEPM	Daily egg production method
ENS	Ensenada (México) fishery
FMP	fishery management plan
HG	harvest guideline, as defined in the CPS-FMP (equivalent to ABC)
INP-CRIP	Instituto Nacional de la Pesca – Centro Regional de Invest. Pesquera
MLE	maximum likelihood estimate
MSY	maximum sustainable yield
mt	metric tons
mmt	million metric tons
MX	México
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NWFSC	Northwest Fisheries Science Center
OR	State of Oregon
ODFW	Oregon Department of Fish and Wildlife
PFFS	Predator-forage fish survey (NWFSC Newport Lab)
PFMC	Pacific Fishery Management Council
PNW	Pacific Northwest fishery (Oregon, Wash., and British Columbia)
SAFE	stock assessment and fishery evaluation
S1	Season 1 (Jul-Dec)
S2	Season 2 (Jan-Jun)
SCA	Southern California fishery
SIO	Scripps Institution of Oceanography
SS2	Stock Synthesis version 2
SS3	Stock Synthesis version 3
SSB	spawning stock biomass

SSC	Scientific and Statistical Committee
SST	sea surface temperature
STAR	Stock Assessment Review
STAT	Stock Assessment Team
SWFSC	Southwest Fisheries Science Center
TEP	Total egg production
VPA	virtual population analysis
WA	State of Washington
WCVI	West Coast Vancouver Island sardine survey (CDFO)
WDFW	Washington Department of Fish and Wildlife

ACKNOWLEDGMENTS

This annual stock assessment depends in large part on the diligent efforts of many colleagues and the timely receipt of their data products. Landings data from the Ensenada fishery were provided by INP-CRIP and CONAPESCA of México. Port samples for the Ensenada, México, fishery were collected by INP-CRIP (Ensenada) and aged by Roberto Felix-Uraga and Casimiro Quiñonez (CICIMAR, La Paz). Port samples and age data for the California fishery were provided by CDFG Marine Region personnel in Los Alamitos, Santa Barbara, San Diego, and Monterey, with special thanks to Dianna Porzio, Bob Read, Leeanne Laughlin, Mandy Lewis, Bill Miller, Paul Ton, Santi Luangpraseut, Dale Sweetnam, Briana Brady, Ed Dunn, Sonia Torres, and Lou Zeidberg for long dockside and laboratory hours. Thanks also go to the dedicated staff that collected and processed biological samples from the fisheries off Oregon and Washington, including Jill Smith, Keith Matteson, Sheryl Manley, Kelly Corbet, and David Wolfe Wagman of ODFW, and Carol Henry of WDFW. Sandra Rosenfield and Jennifer Topping (WDFW) aged all Oregon and Washington otoliths. Monthly landings and size data for the British Columbia fishery along with data from the WCVI trawl survey, were kindly provided by Jake Schweigert of DFO-Canada. We are grateful to Robert Emmett (NWFSC-Newport) for providing data and guidance regarding the PFFS survey. Numerous staff from SIO, NMFS, and CDFG assisted in the ongoing collection and identification of CalCOFI ichthyoplankton samples. Sea surface temperature data were provided by Scripps Institution of Oceanography's Shore Stations program, currently funded by the California Department of Boating and Motorways. We are indebted to Richard Methot (NWFSC) for developing and continuously improving the Stock Synthesis model. We thank Ian Stewart and Ian Taylor (NWFSC) for developing and maintaining the 'R' function to summarize SS3 outputs. Finally, we thank Kevin Piner and Hui-Hua Lee (PISFC), Mark Maunder (IATTC), and Jenny McDaniel (SWFSC), for providing valuable feedback and assistance throughout the assessment.

PREFACE

The Pacific sardine resource is assessed each year in support of the Pacific Fishery Management Council (PFMC) process that, in part, establishes an annual harvest guideline ('HG', or 'ABC') for the U.S. fishery. The following assessment was conducted using the 'Stock Synthesis 3' (SS3) model, and includes fishery and survey data from updated and new sources. The draft assessment was reviewed by a STAR Panel 21-25 September, 2009, in La Jolla, California. During the course of the STAR meeting, modifications to input data and model structure were incorporated in the base model and are included in this report. The present draft will be presented to the PFMC's advisory bodies (SSC, CPSMT, CPSAS) and the PFMC at their November 2009 meetings in Costa Mesa, CA. The outcome of these reviews may form the basis for U.S. Pacific sardine management in 2010.

EXECUTIVE SUMMARY

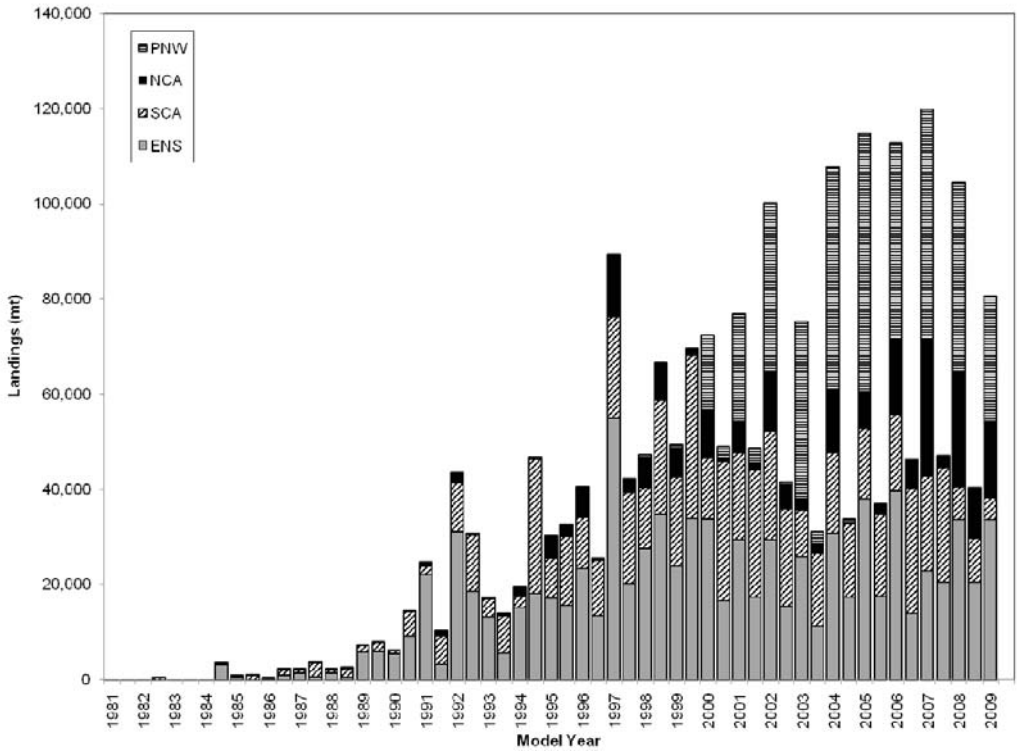
Stock

Pacific sardine (*Sardinops sagax caerulea*) range from southeastern Alaska to the Gulf of California, México, and is thought to comprise three subpopulations. In this assessment, we model the northern subpopulation which ranges seasonally from northern Baja California, México, to British Columbia, Canada, and offshore as far as 300 nm. All U.S., Canada, and Ensenada (México) landings are assumed to be taken from a single northern stock. Future modeling efforts will explore a scenario separating the catches in Ensenada and San Pedro into the respective northern and southern stocks based on objective criteria.

Catches

This assessment includes sardine landings from four commercial fisheries: Ensenada (México), Southern California (San Pedro to Santa Barbara), Central California (Monterey), and the Pacific Northwest (Oregon, Washington, and British Columbia), from 1981 to 2009.

Model Year	ENS	SCA	CCA	PNW
2000	50,457	42,059	10,857	17,923
2001	46,948	44,939	8,042	25,683
2002	44,938	43,125	17,589	36,123
2003	37,040	25,141	4,508	39,861
2004	48,007	32,581	13,278	47,747
2005	55,600	31,991	9,857	54,254
2006	53,617	42,472	21,724	41,221
2007	43,436	43,982	31,284	48,237
2008	54,213	16,108	34,834	39,800
2009	33,642	4,634	16,104	26,244



Data and assessment
This assessment was conducted using 'Stock Synthesis' version 3.03a and utilizes fishery and survey data collected from mid-1981 through mid-2009. The model uses a July-June 'model year', with two semester-based seasons per year (1=Jul-Dec and 2=Jan-Jun). Fishery data include catch and biological samples for the fisheries off Ensenada, Southern California, Central California, and the Pacific Northwest. Two indices of relative abundance are included in the base model: Daily Egg Production Method and Total Egg Production estimates of spawning stock biomass (1986-2009), both based on annual surveys conducted off California. Finally, the tuned base model was run with the addition of the 2009 aerial survey estimate of absolute abundance (q=1) to derive population quantities for 2010 management.

Stock biomass and recruitment
Stock biomass, used for setting ABC, is defined as the sum of the biomass for sardine ages 1 and older. Biomass increased rapidly through the 1980s and 1990s, peaking at 1.69 million mt in 2000. Biomass has subsequently trended downward to the present (July 1, 2009) level of 702,024 mt.

Recruitment was modeled using the Ricker stock-recruitment relationship. The estimate of steepness was high (h=2.32). Virgin recruitment (R_0) was estimated at 4.94 billion age-0 fish for the base model. Recruitment increased rapidly through the mid-1990s, peaking at 16.79 billion fish in 1997, 22.01 billion in 1998, and 18.62 billion fish in 2003. Recruitments have been notably lower since 2006.

Model Year	Stock Biomass (age 1+, mt)	Recruits (age-0, Billions)
2000	1,686,190	2.875
2001	1,494,760	8.492
2002	1,312,620	0.739
2003	1,025,580	18.622
2004	1,112,660	10.226
2005	1,237,180	10.328
2006	1,317,350	2.943
2007	1,194,680	3.331
2008	955,948	1.737
2009	702,024	6.912

Exploitation status
Exploitation rate is defined as calendar year catch divided by total mid-year biomass (July-1, ages 0+). Exploitation rate was relatively high during the early recovery period (mid-1980s), but declined and stabilized as the stock underwent the most rapid phase of recovery. Exploitation rate has subsequently increased in recent years as the stock has again declined. Ensenada catch during 2009 is unknown (unavailable), so is assumed the same as 2008. Total exploitation rate is currently less than 16%.

Calendar Year	ENS	SCA	CCA	PNW	Total
2000	4.0%	2.7%	0.7%	0.9%	8.3%
2001	2.9%	3.0%	0.5%	1.6%	8.0%
2002	3.6%	3.7%	1.1%	2.9%	11.3%
2003	3.5%	2.5%	0.6%	3.2%	9.8%
2004	3.5%	2.7%	1.3%	4.1%	11.5%
2005	4.2%	2.3%	0.6%	4.2%	11.2%
2006	4.3%	2.5%	1.3%	3.1%	11.1%
2007	3.0%	3.8%	2.8%	3.9%	13.6%
2008	5.6%	3.2%	2.7%	4.1%	15.6%
2009	7.1%	1.8%	3.5%	3.4%	15.8%

Management performance

Based on results from the base model, the harvest guideline for the U.S. fishery in calendar year 2010 would be 72,039 mt. The HG (=ABC) is based on the control rule defined in the CPS-FMP:

$$HG_{2010} = (BIOMASS_{2009} - CUTOFF) \bullet FRACTION \bullet DISTRIBUTION;$$

where HG_{2010} is the total USA (California, Oregon, and Washington) harvest guideline in 2010, $BIOMASS_{2009}$ is the estimated July 1, 2009 stock biomass (ages 1+) from the assessment (702,024 mt), CUTOFF is the lowest level of estimated biomass at which harvest is allowed (150,000 mt), FRACTION is an environment-based percentage of biomass above the CUTOFF that can be harvested by the fisheries (see below), and DISTRIBUTION (87%) is the average portion of BIOMASS assumed in U.S. waters. The following formula is used to determine the appropriate FRACTION value:

$$\text{FRACTION or } F_{msy} = 0.248649805(T^2) - 8.190043975(T) + 67.4558326,$$

where T is the running average sea-surface temperature at Scripps Pier, La Jolla, California during the three preceding seasons (July-June). Based on the current (T_{2009}) SST estimate of 17.92 °C, the F_{msy} exploitation fraction should remain at 15%.

Year	U.S. ABC	U.S. Landings	Total ABC	Total Landings
2000	186,791	67,985	214,702	120,876
2001	134,737	75,733	154,870	99,578
2002	118,442	96,876	136,140	141,357
2003	110,908	69,931	127,480	101,411
2004	122,747	92,723	141,089	141,364
2005	136,179	90,016	156,528	148,539
2006	118,937	91,039	136,709	149,834
2007	152,564	127,789	175,361	166,156
2008	89,093	87,184	102,406	151,832
2009	66,932	65,652	76,933	TBD

INTRODUCTION

Scientific Name, Distribution, Stock Structure, Management Units

Information regarding Pacific sardine (*Sardinops sagax caerulea*) biology is available in Clark and Marr (1955), Ahlstrom (1960), Murphy (1966), MacCall (1979), Leet et al. (2001), and in the references cited below. Other common names for Pacific sardine include 'California pilchard', 'pilchard' (in Canada), and 'sardina monterrey' (in México).

Sardines are small pelagic schooling fish that inhabit coastal subtropical and temperate waters. The genus *Sardinops* is found in eastern boundary currents of the Atlantic and Pacific, and in western boundary currents of the Indo-Pacific oceans. Recent studies indicate that sardines in the Agulhas, Benguela, California, Kuroshio, and Peru currents, and off New Zealand and Australia are a single species (*Sardinops sagax*, Parrish et al. 1989), but stocks in different areas of the globe may be different at the subspecies level (Bowen and Grant 1997).

Pacific sardine have at times been the most abundant fish species in the California Current. When the population is large it is abundant from the tip of Baja California (23^{o} N latitude) to southeastern Alaska (57^{o} N latitude), and throughout the Gulf of California. In the northern portion of the range, occurrence tends to be seasonal. When sardine abundance is low, as during the 1960s and 1970s, sardine do not occur in commercial quantities north of Point Conception.

It is generally accepted that sardine off the West Coast of North America consists of three subpopulations or 'stocks'. A northern subpopulation (northern Baja California to Alaska), a southern subpopulation (outer coastal Baja California to southern California), and a Gulf of California subpopulation were distinguished on the basis of serological techniques (Vrooman 1964) and, more recently, a study of temperature-at capture (Felix-Uraga et al., 2004; 2005). An electrophoretic study (Hedgecock et al. 1989) showed, however, no genetic variation among sardine from central and southern California, the Pacific coast of Baja California, or the Gulf of California. Although the ranges of the northern and southern subpopulations overlap, the adult spawning stocks may move north and south in synchrony and not overlap significantly. The northern stock is exploited by fisheries off Canada, the U.S., and northern Baja California and is included in the Coast Pelagic Species Fishery Management Plan (CPS-FMP; PFMC 1998).

Pacific sardine probably migrated extensively during historical periods when abundance was high, moving north as far as British Columbia in the summer and returning to southern California and northern Baja California in the fall. Tagging studies indicate that the older and larger fish moved farther north (Janssen 1938, Clark and Janssen 1945; Figure 1). Migratory patterns were probably complex, and the timing and extent of movement were affected by oceanographic conditions (Hart 1973) and stock biomass. During the 1950s to 1970s, a period of reduced stock size and unfavorably cold sea surface temperatures apparently caused the stock to abandon the northern portion of its range. In recent decades, the combination of increased stock size and warmer sea surface temperatures resulted in the stock re-occupying areas off Central California, Oregon, Washington, and British Columbia, as well as distant-offshore areas off California. During a cooperative U.S.-U.S.S.R. research cruise for jack mackerel in 1991, several tons of sardine were collected 300 nm west of the Southern California Bight (Macewicz and

Abramenkoff 1993). Abandonment and re-colonization of the higher latitude portion of their range has been associated with changes in abundance of sardine populations around the world (Parrish et al. 1989).

Important Features of Life History that Affect Management

Life History

Pacific sardine may reach 41 cm in length, but are seldom longer than 30 cm. They may live as long as 15 years, but individuals in California commercial catches are usually younger than five years. In contrast, the most common ages in the historical Canadian sardine fishery were six years to eight years. There is evidence for regional variation in size-at-age, with size increasing from south to north and from inshore to offshore (Phillips 1948, Hill 1999). Size- and age-at-maturity may decline with a decrease in biomass, but latitude and temperature are likely also important (Butler 1987). At relatively low biomass levels, sardine appear to be fully mature at age one, whereas at very high biomass levels only some of the two-year-olds are mature (MacCall 1979).

Age-specific mortality estimates are available for the entire suite of life history stages (Butler et al. 1993). Mortality is high at the egg and yolk sac larvae stages (instantaneous rates in excess of 0.66 d^{-1}). Adult natural mortality rates has been estimated to be M=0.4 yr^{-1} (Murphy 1966; MacCall 1979) and 0.51 yr^{-1} (Clark and Marr 1955). A natural mortality rate of M=0.4 yr^{-1} means that 33% of the sardine stock would die each year of natural causes if there were no fishery.

Pacific sardine spawn in loosely aggregated schools in the upper 50 meters of the water column. Spawning occurs year-round in the southern stock and peaks April through August between San Francisco and Magdalena Bay, and January through April in the Gulf of California (Allen et al. 1990). Off California, sardine eggs are most abundant at sea surface temperatures of 13^{o}C to 15^{o}C and larvae are most abundant at 13^{o}C to 16^{o}C. Temperature requirements are apparently flexible, however, because eggs are most common at 22^{o}C to 25^{o} C in the Gulf of California and at 17^{o}C to 21^{o}C off Central and Southern Baja (Lluch-Belda et al. 1991).

The spatial and seasonal distribution of spawning is influenced by temperature. During periods of warm water, the center of sardine spawning shifts northward and spawning extends over a longer period of time (Butler 1987; Ahlstrom 1960). Recent spawning has been concentrated in the region offshore and north of Point Conception (Lo et al. 1996 & 2005). Historically, spawning may also have been fairly regular off central California. Spawning was observed off Oregon (Bentley et al. 1996), and young fish were seen in waters off British Columbia in the early fishery (Ahlstrom 1960) and during recent years (Hargreaves et al. 1994). The main spawning area for the historical population off the U.S. was between Point Conception and San Diego, California, out to about 100 miles offshore, with evidence of spawning as far as 250 miles offshore.

Sardine are oviparous, multiple-batch spawners with annual fecundity that is indeterminate and age- or size-dependent (Macewicz et al. 1996). Butler et al. (1993) estimated that two-year-old sardine spawn on average six times per year whereas the oldest sardine spawn up to 40 times per

year. Both eggs and larvae are found near the surface. Sardine eggs are spheroid, have a large perivitelline space, and require about three days to hatching at 15°C.

Sardine are planktivorous omnivores and consume both phytoplankton and zooplankton. When biomass is high, Pacific sardine may consume a considerable proportion of total organic production in the California Current system.

Pacific sardine are consumed by a variety of predators throughout all life stages. Sardine eggs and larvae are consumed by an assortment of invertebrate and vertebrate planktivores, including adult sardine. Although it has not been demonstrated in the field, anchovy predation on sardine eggs and larvae was postulated as a possible mechanism for increased larval sardine mortality from 1951 through 1967 (Butler 1987). There have been few studies about sardine as forage, but juvenile and adult sardine are consumed by a variety of predators, including commercially important fish (e.g., yellowtail, barracuda, bonito, tuna, marlin, mackerel, hake, salmon, and sharks), seabirds (pelicans, gulls, and cormorants), and marine mammals (sea lions, seals, porpoises, and whales). In all probability, sardine are consumed by the same predators (including endangered species) that utilize anchovy. It is also likely that sardine become more important as prey as their numbers increase. For example, while sardine were abundant during the 1930s, they were a major forage species for both coho and chinook salmon off Washington (Chapman 1936).

Abundance, Recruitment, and Population Dynamics

Extreme natural variability and susceptibility to recruitment overfishing are characteristic of clupeoid stocks such as Pacific sardine (Cushing 1971). Estimates of the abundance of sardine from 300 through 1970 have been reconstructed from the deposition of fish scales in sediment cores from the Santa Barbara basin off southern California (Soutar and Issacs 1969, 1974; Baumgartner et al. 1992). Significant sardine populations existed throughout the period with biomass levels varying widely (Figure 54). Both sardine and anchovy populations tend to vary over periods of roughly 60 years, although sardine have varied more than anchovy. Sardine population declines were characterized as lasting an average of 36 years; recoveries lasted an average of 30 years. Biomass estimates of the sardine population inferred from scale-deposition rates in the 19th and 20th centuries (Soutar and Isaacs 1969; Smith 1978) indicate that the biomass peaked in 1925 at about six million mt.

Sardine ages three and older were fully recruited to the fishery until 1953 (MacCall 1979). Recent fishery data indicate that sardine begin to recruit at age zero and are fully recruited to the southern California fishery by age two. Age-dependent availability to the fishery likely depends upon the location of the fishery; young fish are unlikely to be fully available to fisheries located in the north and old fish are less likely to be fully available to fisheries south of Point Conception.

Sardine spawning biomass estimated from catch-at-age analysis averaged 3.5 million mt from 1932 through 1934, fluctuated between 1.2 million mt to 2.8 million mt over the next ten years, then declined steeply during 1945 through 1965, with some short-term reversals following periods of particularly successful recruitment (Murphy 1966, MacCall 1979; Figure 53). During the 1960s and 1970s, spawning biomass levels were thought to be less than about five thousand

to ten thousand mt (Barnes et al. 1992). The sardine stock began to increase by an average rate of 27% per annum in the early 1980s (Barnes et al. 1992).

Recruitment success for sardine is generally autocorrelated and affected by environmental processes occurring on long (decadal) time scales. Lluch-Belda et al. (1991) and Jacobson and MacCall (1995) demonstrated relationships between recruitment success in Pacific sardine and sea surface temperatures measured over relatively long periods (i.e., three years to five years). Their results suggest that equilibrium spawning biomass and potential sustained yield are highly dependent upon environmental conditions associated with sea surface temperature.

Recruitment of Pacific sardine is highly variable. Analyses of the sardine stock recruitment relationship have been controversial, with some studies showing a strong density-dependent relationship (production of young sardine declines at high levels of spawning biomass) and others finding no relationship (Clark and Marr 1955; Murphy 1966; MacCall 1979). The most recent study (Jacobson and MacCall 1995) found both density-dependent and environmental factors to be important.

MacCall (1979) estimated that the average potential population growth rate of sardine was 8.5% per annum during the historical fishery while the population was declining. He concluded that, even with no fishing mortality, the population on average was capable of little more than replacement. Jacobson and MacCall (1995) obtained similar results for cold, unproductive regimes, but also found that the stock was very productive during warmer regimes.

MSY for the historical Pacific sardine population was estimated to be 250,000 mt annually (MacCall 1979; Clark 1939), which is far below the catch of sardine during the peak of the historical fishery (>700,000 mt). Jacobson and MacCall (1995) found that MSY for sardine depends on environmental conditions, and developed a Ricker stock-recruitment model that incorporates a three-season running average of sea-surface temperature measured off La Jolla, California**.** Their results indicate that MSY can range from 9,000 mt to 346,000 mt for mean SSTs between 16.5 °C and 17.3 °C, respectively (Jacobson and MacCall 1995)**.** Their stock-recruitment model was been used in recent assessments employing CANSAR and CANSAR-TAM (Deriso et al. 1996, Hill et al. 1999, Conser et al. 2003).

Relevant History of the Fishery

The sardine fishery was first developed in response to demand for food during World War I. Landings increased from 1916 to 1936, and peaked at over 700,000 mt in 1936. Pacific sardine supported the largest fishery in the western hemisphere during the 1930s and 1940s, with landings along the coast in British Columbia, Washington, Oregon, California, and México. The fishery declined, beginning in the late 1940s and with some short-term reversals, to extremely low levels in the 1970s. There was a southward shift in the catch as the fishery decreased, with landings ceasing in the Pacific Northwest in 1947 through 1948, and in San Francisco in 1951 through 1952. Sardine were primarily used for reduction to fish meal, oil, and as canned food, with small quantities taken for live bait. A lucrative dead bait market developed in central California in the 1960s.

In the early 1980s, sardine fishers began to take sardine incidentally with Pacific (chub) mackerel and jack mackerel in the southern California mackerel fishery. Sardine were primarily canned for pet food, although some were canned for human consumption. As sardine continued to increase in abundance, a directed purse-seine fishery was reestablished. Sardine landed in the directed sardine U.S. fisheries are mostly frozen and sold overseas as bait and aquaculture feed, with minor amounts canned or sold fresh for human consumption and animal food. Small quantities are harvested live bait.

Besides San Pedro and Monterey, California, substantial Pacific sardine landings are now made in the Pacific northwest and in Baja California, México. Sardine landed in México are used for reduction, canning, and frozen bait. Total annual harvest of Pacific sardine by the Mexican fishery is not regulated by quotas, but there is a minimum legal size limit of 165 mm. To date, no international management agreements between México, the U.S., and Canada have been developed.

Early Management History

The sardine fishery developed in response to an increased demand for protein products that arose during World War I. The fishery developed rapidly and became so large that by the 1930s sardines accounted for almost 25% of all fish landed in the U.S. (Leet et al. 2001). Coast wide landings exceeded 350,000 mt each season from 1933 through 1934 to 1945 through 1946; 83% to 99% of these landings were made in California, the remainder in British Columbia, Washington, and Oregon. Sardine landings peaked at over 700,000 tons in 1936. In the early 1930s, the State of California implemented management measures including control of tonnage for reduction, case pack requirements, and season restrictions.

In the late 1940s, sardine abundance and landings declined dramatically (MacCall 1979; Radovich 1982). The decline has been attributed to a combination of overfishing and environmental conditions, although the relative importance of the two factors is still open to debate (Clark and Marr 1955; Jacobson and MacCall 1995). Reduced abundance was accompanied by a southward shift in the range of the resource and landings (Radovich 1982). As a result, harvests ceased completely in British Columbia, Washington, and Oregon in the late 1940s, but significant amounts continued to be landed in California through the 1950s.

During 1967, in response to low sardine biomass, the California legislature imposed a two-year moratorium that eliminated directed fishing for sardine, and limited the take to 15% by weight in mixed loads (primarily jack mackerel, Pacific [chub] mackerel and sardines); incidentally-taken sardines could be used for dead bait. In 1969, the legislature modified the moratorium by limiting dead bait usage to 227 mt (250 short tons). From 1967 to 1974, a lucrative fishery developed that supplied dead bait to anglers in the San Francisco Bay-Delta area. Sardine biomass remained at low levels and, in 1974, legislation was passed to permit incidentally-taken sardines to be used only for canning or reduction. The law also included a recovery plan for the sardine population, allowing a 907 mt (1,000-short ton) directed quota only when the spawning population reached 18,144 mt (20,000 short tons), with increases as the spawning stock increased further.

In the late 1970s and early 1980s, CDFG began receiving anecdotal reports about the sighting, setting, and dumping of "pure" schools of juvenile sardines, and the incidental occurrence of sardines in other fisheries, suggesting increased abundance. In 1986, the state lifted its 18-year moratorium on sardine harvest on the basis of sea-survey and other data indicating that the spawning biomass had exceeded 18,144 mt (20,000 short tons). CDFG Code allowed for a directed fishery of at least 1,000 short tons (907 mt) once the spawning population had returned to this level. California's annual directed quota was set at 907 mt from 1986 to 1990; increased to 10,886 mt in 1991, 18,597 mt in 1992, 18,144 mt in 1993, 9,072 mt in 1994, 47,305 mt in 1995, 34,791 mt in 1996, 48,988 mt in 1997, 43,545 mt in 1998, and 120,474 mt in 1999.

Management Performance Under the CPS-FMP (2000-present)

In January 2000, management authority for the U.S. Pacific sardine fishery was transferred to the Pacific Fishery Management Council. Pacific sardine was one of five species included in the federal CPS-FMP (PFMC 1998). The CPS-FMP includes a maximum sustainable yield (MSY) control rule intended to prevent Pacific sardine from being overfished and to maintain relatively high and consistent catch levels over a long-term horizon. The harvest formula for sardine is provided at the end of this report ('Harvest Guideline for 2010' section**)**. A thorough description of PFMC management actions for sardine, including harvest guidelines, may be found in the most recent CPS SAFE document (PFMC 2009). U.S. harvest guidelines and resultant landings since calendar year 2000 are displayed in Table 1 and Figure 2a. Coast-wide harvests (Ensenada to British Columbia) and implied ABCs since 2000 are provided in Figure 2b. Pacific sardine landings for all major fishing regions off the West Coast of North America may be found in Table 2.

ASSESSMENT

Biological Data

Stock Structure

For purposes of this assessment, we assume to model the northern subpopulation ('cold stock') that ranges from northern Baja California, México to British Columbia, Canada and extends out to 300 nm offshore (Macewicz and Abramenkoff 1993). More specifically, all U.S. and Canadian landings are assumed to be taken from the single stock being accessed. Similarly, all sardine landed in Ensenada, Baja California, México are also assumed to be taken from the single stock being accessed and sardine landed in Mexican ports south of Ensenada are considered to be part of another stock that may extend from southern Baja California into the Gulf of California. Future modeling scenarios will consider a case that separates the catches in Ensenada and San Pedro into the respective northern ('cold') and southern ('temperate') stocks using temperature-at-catch and otolith morphometric criteria proposed by Felix-Uraga et al. (2004, 2005). Subpopulation differences in growth, maturation, and natural mortality would also be taken into account.

Weight-at-length

The weight-length relationship for Pacific sardine (combined sexes) was modeled using fishery samples collected from 1981 to 2009 and the standard power function:

$$W = a\,(L^b),$$

where W is weight (kg) at length L (cm), and a and b are regression coefficients. The estimated coefficients were a = 9.47212e-06 and b = 3.14752 (corrected R^2 = 0.936; n = 131,291). Coefficients a and b were fixed parameters in all models (Figure 3a).

Age and growth

The largest recorded Pacific sardine was 41.0 cm long (Eschmeyer et al. 1983), but the largest Pacific sardine taken by commercial fishing since 1983 was 28.8 cm and 0.323 kg. The oldest recorded age is 15 years, but commercially-caught sardine are typically less than five years old.

Sardine otolith ageing methods were first described by Walford and Mosher (1943) and further clarified by Yaremko (1996). Pacific sardine are routinely aged by fishery biologists in México, California, and the Pacific Northwest using annuli in whole sagittae. A birth date of July 1 is assumed when assigning year class. Lab-specific ageing errors were calculated and applied as described in 'Conditional age-at-length compositions'.

Sardine growth was initially estimated outside the SS model to provide initial parameter values and CVs for the length at Age_{min} (0.5 yrs), the length at Age_{max} (15 yrs), and the growth coefficient K. During the STAR panel of September 2009, examination of residuals for the age- and length-composition data revealed that growth was likely not constant over time. Specifically, there was strong evidence for a shift in growth rates in 1991. Growth parameters were therefore modeled for two time blocks (1981-1990 and 1991-2009) in the final base model (see Model Results section, Table 6 and Figure 3b).

Maturity

Maturity-at-length was estimated using sardine collected from survey trawls between 1986 and 2006 (n=3,591). Reproductive state was established through histological examination. Parameters for the logistic function were fixed in SS (Figure 4a), where the length-at-inflexion (i.e. 50% maturity) = 16.0 cm and slope = -0.7571, given:

$$\text{Maturity} = 1/(1+\exp(slope*\text{Length}(inflexion)))$$

Resultant maturity and fecundity-at-age during the spawning season, derived from the final base model, are presented in Figure 4b.

Natural mortality

Adult natural mortality rates have been estimated to be M=0.4 yr^{-1} (Murphy 1966; MacCall 1979) and 0.51 yr^{-1} (Clark and Marr 1955). A natural mortality rate of M=0.4 yr^{-1} means that 33% of the sardine stock would die of natural causes each year if there were no fishery. Consistent with all previous sardine assessments, the base-case value for the instantaneous rate

of natural mortality was taken as 0.4 yr^{-1} for all ages and years (Murphy 1966, Deriso et al. 1996, Hill et al. 1999).

Fishery Data

Overview

Fishery data include commercial landings and biological samples from four regional fisheries: 1) Ensenada ('ENS', northern Baja California); Southern California ('SCA', San Pedro to Santa Barbara); 3) Central California ('CCA', Monterey Bay); and 4) the Pacific Northwest ('PNW': Oregon, Washington, and British Columbia). Biological data include individual weight (kg), standard length (cm), sex, maturity, and otoliths for age determination. Mexican port samples, collected by INP-Ensenada 1989-2002, were aged and made available for this assessment by Roberto Felix-Uraga (CICIMAR-IPN). CDFG currently collects 12 random port samples (25 fish per sample) per month from each region. California port samples span the entire range of model years. Oregon and Washington fishery samples are typically collected more intensively in time due to a compressed fishing season, but each sample contains 25 fish. ODFW and WDFW have collected port samples since 1999. CDFO collects 100 fish per sample from the Vancouver Island fishery.

All fishery data were compiled based on the sardine's biological year ('model year') to match the July-1 birth date assumption used in age assignments. Each model year is labeled with the first of the two calendar years spanned (e.g. model year '1981' includes data from July 1, 1981 through June 30, 1982). Further, each model year was assigned semester (6-month) seasons, where 'S1'=Jul-Dec and 'S2'=Jan-Jun. For the final model, the SCA and CCA fisheries were treated with semester-based selectivities and are labeled as such (e.g. SCA_S1). See the 'SS Model Description' section for rationale.

Landings by model year and semester are provided in Table 3, and sample sizes (ESS) are provided in Table 4.

Landings

Ensenada (ENS) landings from 1981 to 2002 were compiled using the 'Boletín Anual' series published by the Instituto Nacional de la Pesca's (INP) Ensenada office (e.g. see Garcia and Sánchez, 2003). Landings for 2003 to 2007 were taken from CONAPESCA's web archive of Mexican fishery yearbook statistics (CONAPESCA 2009). Total catch in 2008 was taken from Cota et al. (2009), as abstracted in the proceedings of Mexico's annual workshop on small pelagic species (Hernandez 2009). Ensenada's 2008 annual total was apportioned to months using monthly catch proportions from the previous three years, then aggregated to semester totals. Ensenada catch during 2009 is unknown, so was assumed identical to 2008.

California (SCA & CCA) commercial landings were obtained from a variety of sources based on dealer landing receipts (CDFG), which in some cases were augmented with special sampling for mixed load portions. During California's incidental sardine fishery (1981 through 1990), many processors reported sardine as mixed with jack or Pacific mackerel, but in some cases sardine were not accurately reported on landing receipts. For these years, sardine landings data were augmented with shore-side 'bucket' sampling of mixed-load fish bins to estimate species

portions by weight. CDFG reports these landings data in 'Wetfish Tables', which are still distributed monthly by the Department. These tables are considered more accurate than PacFIN or other landing receipt-based statistics for California CPS, so were used for this assessment.

For the Pacific Northwest (PNW) fishery, we included sardine landed in Oregon, Washington, and British Columbia. Monthly landing statistics were provided by ODFW (McCrae 2001-2004, McCrae and Smith 2005), WDFW (WDFW 2001, 2002 and 2005; Robinson 2003, Culver and Henry 2004), and CDFO (Jake Schweigert, pers. comm.).

The SS model includes landings from 1981 through 2009. Landings by model year, semester, and fishery are presented in Table 3 and Figure 5.

Length composition

Length compositions for each fishery and semester were the sums of weighted length observations, with monthly landings within semester being the sampling unit. Length compositions were comprised of 0.5 cm bins ranging from 9 cm to 26 cm standard length (35 bins total). The 9-cm bin reflects all fish $\leq$9.49 cm, the 26-cm bin reflects all fish $\geq$26 cm, and all other bins (9.5 to 25.5 cm) reflect the lower end of the respective 0.5-cm interval (e.g., the 9.5-cm bin includes fish ranging 9.5 to 9.99 cm).

Total numbers of lengths observed in each fishery-semester stratum was divided by the average number of fish collected per sampled load (25 fish per sample for most regions, 100 fish per sample in Canada), and was input as the effective sample size (ESS). Compositions having fewer than two samples (<50 fish) per semester were omitted from the analysis. Length-compositions were input as proportions. ESS by model year, semester, and fishery are provided in Table 4. Length-compositions by fishery are displayed in Figures 6a-f. Population length bins in SS were specified to range from 8 cm to 28 cm in 0.5 cm increments.

Age composition

Implied (ghost) age compositions were compiled based on the same fishery samples and weighting methods described above in 'Length composition'. Implied age-compositions were included as model inputs with effective sample sizes set to "-1". Inclusion of these input data facilitated comparison of model predictions of age-composition to the inferred values through examination of model residual patterns. Implied age composition data are presented adjacent to corresponding length compositions in Figures 7a-f.

Conditional age-at-length compositions were constructed from the same fishery samples and weighting methods described above. Age bins included 0, 1, 2, 3, 4, 5, 6, 7, 8-10, 11-14, and 15 (11 bins total). No fish older than 14 were observed in the fishery samples, so the age-15 bin served as an accumulator allowing growth to approach L_∞. Age-compositions were input as proportions of fish in 1-cm length bins. As per the length-compositions, the number of individuals comprising each bin was divided by number of fish per sample to set the initial effective sample size. In most cases, age data were available for every length observation. Conditional age-at-length compositions for each fishery are presented in Figures 8a-f.

Ageing error vectors (std. dev. by age) were calculated and linked to fishery-specific age-compositions (Figure 9). Error estimates were on based on paired readings by two or more individuals within each ageing laboratory (CICIMAR-IPN for ENS samples; CDFG for SCA and CCA samples; WDFW for PNW samples) for a range of ages typically observed within each sampled region. Standard deviations were regressed when double-reads were unavailable for a given age.

Fishery-Independent Data

Overview

Two fishery-independent series were used in previous SS assessments (Hill et al. 2007a, Hill et al. 2008), and both were based on the SWFSC's egg production survey that ranges from San Diego to San Francisco each spring. The daily egg production method (DEPM) index of SSB is used when adult daily-specific fecundity data are available from the survey. The total egg production (TEP) index of SSB is used when survey-specific fecundity data are unavailable. Both time series are treated as indices of relative abundance.

The SWFSC egg production survey and estimation methodology were reviewed by a STAR panel in May 2009. The panel made specific recommendations for modifying past estimates and improving standard estimation procedures across the complete time series. As a result, raw data and procedures from all past surveys were re-examined for this assessment. A complete description of these changes is provided in Appendix I. New DEPM and TEP estimates, summarized in Table 5, were used in all model runs this year. The September 2009 STAR panel reviewed these revisions and adopted the new DEPM and TEP values for use in the final base model.

In addition to the standard egg production time series from California, we examined the potential utility of three new data sources representing sardine abundance in the Pacific Northwest: 1) the NWFSC Predator Forage Fish Survey (PFFS) conducted off northern Oregon and southern Washington, 2) the CDFO's West Coast Vancouver Island (WCVI) swept area trawl survey, and 3) the West Coast Aerial Sardine Survey of 2009. During the course of the September STAR panel, results from the Aerial survey were adopted for use in the assessment model. The aerial survey estimate was included as an index of absolute abundance (q=1) in the final base model.

Daily Egg Production Method (DEPM)

Daily egg production method (DEPM) spawning biomass estimates were available for model years 1986, 1987, 1993, 2003, 2004, and 2006-2008 (Table 5, Figure 33a; see also Appendix I). In the past, DEPM estimates were input as total SSB (combined sexes). However, the May 2009 STAR panel recommended using only female SSB, so all DEPM values are input as such. The latest DEPM estimate, based on eggs and adults collected during cruise 0904 (April 15 to May 9, 2009; Figure 10a,b), was 99,162 mt of female SSB (CV=0.24) (Table 5). The 2009 DEPM estimate is slightly higher than the 2008 value, but still considerably lower than estimates from other recent years. In SS, the DEPM series was taken to represent female SSB (length selectivity option '30') in the middle of Semester 2 (April).

Total Egg Production (TEP)

Adult sardine samples are needed to calculate daily specific fecundity for true DEPM estimates. Adult sardine trawls were not always conducted during the egg production surveys (specifically, model years 1987, 1995-2002, and 2006; see Table 4a,b in Appendix I). Beginning in 2007, we chose to include these data as a Total Egg Production (TEP) series, which is simply the product of egg density (P_0) and spawning area (km^2). Recalculated TEP values are provided in Table 5 and displayed in Figure 34a. Details regarding the modified TEP estimates are provided in Appendix I. TEP was also taken to represent SSB in the model, but in this case the female fraction was unknown.

NWFSC Predator-Forage Fish Survey (PFFS)

NOAA Fisheries (Northwest Fisheries Science Center, Hatfield Marine Science Center, Newport, OR) has conducted a Predator/Forage Fish Survey (PFFS) off the Columbia River mouth during the spring and summer months from 1998 to the present. The primary goal of the PFFS is to collect density/abundance and biological data applicable to both juvenile salmon (predator) and associated species (forage, including Pacific sardine) that typically inhabit these productive waters, based on season and oceanographic conditions. Data collection in the field entailed sampling at night using surface-trawl gear following a biweekly cruise schedule and two fixed transects, situated south and north of the river mouth (Emmett et al. 2005; Lo and Allen 2008). The following data were omitted from the overall data set, given concerns surrounding consistency in sampling methods across time (e.g., omission of 1998 data), and substantial (inherent) variability in catches early in the season due to the stock's movement, which is largely driven by oceanographic conditions in any given year (e.g., omission of April - June data). Throughout the development of the time series from this survey, we discussed the appropriateness of the data set summaries, statistical methods, and subsequent results with the principal investigator responsible for the PFFS (R. Emmett, NOAA Fisheries, NWFSC/HMSC, Newport, OR, August 2009). The PFFS sample-related statistics follow (1999-08): (1) the number of hauls (trawl samples) conducted in each year ranged from 33 (2000) to 86 (2005); and (2) the total number of fish sampled from all hauls in each year ranged from 677 (2000) to 1,703 (2005), i.e., roughly 20 fish per haul were collected.

It is important to note that the time series developed from the PFFS are intended as (potential) additional information to be used in the ongoing stock assessment of Pacific sardine, i.e., a PFFS index of relative abundance and associated length distributions (1999-08) have not been included in past assessment models. In this context, caution is recommended when considering such data in the formal assessment model now in place, given: (1) the PFFS design represents a very small spatial area along the U.S. Pacific coast (~7,660 km^2, Figure 11a); (2) the movement dynamics of the stock necessarily hampered the timing of the PFFS; and finally, (3) this is the first year these data have been examined for purposes of inclusion in a relatively complex (multiple data source/multi-dimensional), fully-integrated stock assessment model.

Annual size (standard length in cm) distributions were developed from data collected in the PFFS (Figure 11b). For some cruises, all fish sampled were measured and in cases when large numbers of fish were obtained, a random subset was collected. The size distributions were developed following methods previously described for the fishery length compositions.

A catch-per-unit-effort (CPUE or density) index was derived from the ratio of catch and effort data from the PFFS, based on a straightforward 'volume swept' method (see Emmett et al. 2005). Ultimately, individual CPUE (density) estimates represented the number of fish/10^6 m^3 associated with each haul (sample) As stated above, sardines captured during the PFFS were typically most abundant in July and August and thus, data from these months were used in the regression (standardization) analysis. The final time series was based on a classical generalized linear model (GLM), whereby: (1) individual records of the summarized data set included year, month, haul, latitude/longitude, and density (number/10^6 m^3); (2) a constant of 0.01was added to each density estimate to allow logarithm (natural, *ln*) transformation of the 'zero' density estimates (effort exerted, but no catch realized); (3) density estimates represented the response variables and the years 1999-08 and months July-August the explanatory variables, i.e., no regional factors were included, given spatial limitations of the overall survey design; and finally, (4) results from the regression analysis based on *ln*(density) were back-transformed ($e^{ln(\text{density})}$) to produce the final time series of standardized CPUE (in number of fish/10^6 m^3) (Figure 35a).

West Coast Vancouver Island (WCVI) Trawl Survey

Surveys employing mid-water trawls near the surface have been conducted on the west coast of Vancouver Island from 1992 to present to examine the distribution and relative abundance of sardines (McFarlane and MacDougall 2001, McFarlane et al. 2005). Abundance estimates were calculated using sets from the surface to 30 m depth, and from cruises in late June, July and August. The July cruises have generally been most indicative of the relative sardine biomass in Canadian offshore waters. For estimating abundance, the west coast of Vancouver Island was partitioned into 6 major "regions" or strata, and the total surface volume to the maximum depth of the net (30m) was determined for each region to allow biomass estimates to be calculated regionally and coastwide (Figure 12a). Total volume for each region was determined by multiplying the area determined for each region by maximum net depth (30 m, or .030 km):

Total volume (km^3) = Area of region (km^2) * 0.030 km

Each region contained 3-5 transects or sampling sites. At each site a total of 2-51 sets were completed. Total number of sardine caught per set was recorded either by frequency or by weight. Where sardine catch was recorded by weight only, the number of fish caught was converted to frequency by dividing weight in kg by average weight per fish, 0.165 kg.

In each region survey transects were run parallel to shore or perpendicular to the coast out to a bottom depth of 500 m. The water volume swept during each tow was determined by multiplying the area of the mid-water trawl net used during the fishing operations, by the distance travelled. Tows of 20-60 minutes duration are conducted sequentially along the length of each transect. Swept volume for each set was determined by multiplying the area of the net by the distance travelled during the completion of each set:

Swept Volume (km^3) = Net height (km) * Net width (km) * Distance (km).

An average swept volume was determined from all sets in each region separately, to be used in the abundance calculations.

From 1997 to 2004 all tows were conducted during daytime hours. In July 2005, day/night catch comparisons were conducted off Nootka and Barkley Sounds. In each area tows were completed during 2 days and 2 nights of fishing. A calibration factor was developed for day/night catch ratios and applied to the 2006, 2008, and 2009 data to standardize the time series to day time catches. All tows were conducted at night during 2006, 2008 and 2009.

Biomass estimates were calculated from data collected during directed abundance cruises conducted in July of 1997 to 2009. Biomass estimates were calculated according to the method described in Beamish et al. (2000) assuming a stratified random sampling design:

$$C_h = \frac{V_h}{v_h} \bullet \overline{c_h}$$

where:

C_h = estimated number of sardine in stratum h
c_h = the average number of sardine sampled in stratum h
V_h = volume of stratum h
v_h = average of the volumes sampled in stratum h
$N_h = V_h/v_h$ or the total number of possible samples of size v_h in stratum h

Abundance in numbers of sardine was converted to weight (kg) by multiplying abundance in numbers by average weight (kg) of an individual sardine (calculated to be 0.165 kg) from 1997, 1999, and 2001, as the average size of fish during these years was similar. Areas where sardines were captured in three or fewer sets were not included in abundance estimates. Total abundance for each region was determined from numbers of sardines in the swept volume, extrapolated to the total volume. The log-scale time series is presented in Figure 37a. Length compositions were compiled for each annual survey as described above for the fishery data (Figure 12b).

During the course of the Sept '09 STAR Panel, it was decided that only estimates derived from nighttime surveys (i.e. 2006, 2008, and 2009; Table 5, Figure 37) should be considered in alternative case models. The decision was based on uncertainties regarding the day/night calibration approach, and the fact that that all night-trawl estimates, though calibrated, where considerably higher than day trawl estimates. Furthermore, variances for the survey estimates were not available at the time of this assessment, so nominal CVs of 0.5 were applied to all values. Future assessments may reconsider the full series once the raw survey data and estimation procedures are more rigorously documented and reviewed.

West Coast Aerial Sardine Survey of 2009

The Pacific sardine industry funded an aerial sardine survey ranging from Monterey to the northern border of Washington during summer of 2009 (Figure 13a). The 2009 survey was built upon methods developed during a pilot study conducted in 2008. The overall approach was reviewed and refined by a STAR panel held in May of 2009. The 2009 survey employed two sampling elements: 1) high-resolution photographs collected by spotter planes to estimate the number and surface area of sardine schools, and 2) using fishing vessels to conduct point sets on schools to determine the relationship between surface area and biomass, and to determine size

composition of the schools. A complete description of the methods and results can be found in Jagielo (2009).

The 2009 survey results were reviewed during the September 2009 STAR panel (STAR 2009). The Panel made numerous recommendations for analysis throughout the week, resulting in refinement of the survey estimate and associated CV. The Panel ultimately endorsed the 2009 aerial survey estimate of 1,353,170 mt (CV=0.55) for use in the stock assessment model. A weighted length composition for the survey (Figure 13b) was fit using the double-normal selectivity function. The estimate was fit with a catchability coefficient (q) of 1. The final base model was tuned prior to adding the aerial survey value.

History of Modeling Approaches

The Pacific sardine population (pre-collapse) was first modeled by Murphy (1966), who used VPA methods and adjusted fishing mortality according to trends in fishery CPUE. MacCall (1979) further refined Murphy's analysis using additional data and prorated portions of Mexican landings to exclude catches from the southern subpopulation. Deriso et al. (1996) modeled the recovering population (1982 forward) using CANSAR, a modification of Deriso's (1985) CAGEAN model. CANSAR was subsequently modified into a quasi-two area model 'CANSAR-TAM' (Hill et al. 1999) to account for net losses from the core model area during the peak of the population's expansion. Both versions of CANSAR modeled the population using two semesters per year with separate selectivities per semester, and incorporated a modified Ricker spawner-recruit function. The modified Ricker function included an environmental covariate (SST at SIO Pier) to adjust recruitments according to change in prevailing ocean climate (Jacobson and MacCall 1995; Deriso et al. 1996). CANSAR and CANSAR-TAM were used for annual stock assessments and management advice (CDFG and later PFMC) from 1996 through 2004. In 2004, a STAR panel endorsed use of the ASAP model for routine assessments. ASAP was used for sardine assessment and management advice for calendar years 2005 to 2007 (Conser et al. 2004, Hill et al. 2006a,b). In 2007, a STAR panel reviewed and endorsed an assessment using the model 'Stock Synthesis 2' (Methot 2005, 2007), and these results were adopted for management in 2008 (Hill et al. 2007a,b). The 2008 assessment update used for 2009 management was based on the same methodology and one additional year of fishery and survey data (Hill et al. 2008).

SS Model Description

Stock Synthesis version 3.03a (Methot 2005, 2009) is based on the AD Model Builder software environment, which is essentially a C++ library of automatic differentiation code for nonlinear statistical optimization (Otter Research 2001). The SS model framework allows the integration of both size and age structure. The general estimation approach used in the SS model accounts for most relevant sources of variability and expresses goodness of fit in terms of the original data, potentially allowing final estimates of model precision to capture most relevant sources of uncertainties.

The SS model comprises three sub-models: 1) a population dynamics sub-model, where abundance, mortality and growth patterns are incorporated to create a synthetic representation of the true population; 2) an observation sub-model that defines various processes and filters to

derive expected values for the different type of data; 3) a statistical sub-model that quantifies the difference between observed data and their expected values and implement algorithms to search for the set of parameters that maximizes the goodness of fit. These sub-models are fully integrated and the SS model uses forward-algorithms, which begin estimation prior to or in the first year of available data and continues forward up to the last year of data (Methot 2005).

Assessment Program with Last Revision Date

SS Version 3.03a, compiled 11 May 2009, was used in this assessment. The reader is referred to Methot (2005, 2009) for a complete description of the SS model.

Likelihood Components, Constraints on Parameters, Selectivity Assumptions

The objective function for the final base model included likelihood contributions from the DEPM, TEP, and Aerial surveys, contributions from the length-compositions and conditional age-at-length data from the four fisheries, a contribution from the deviations about the spawner-recruit relationship and minor contributions from parameter soft-bound penalties (Table 7).

Length data from all four fisheries (ENS, SCA, CCA, PNW) were fit using a length-based selectivity functions (double-normal, 6 parameters). Pronounced shifts in length-composition were observed to occur over time in both the Ensenada and California fisheries. The change was attributed to increasing sardine density and shifts in sardine distribution (i.e. local availability) throughout phases of the population's recovery, with expansion to offshore and northern feeding and spawning habitats. During 1981-91, sardine abundance was low and large fish were primarily caught in areas off Ensenada and Southern California. Sardine abundance substantially increased by the 1992-98 period, pure schools were common off northern Baja California and California, large spawning events were observed off central California, and sardine were encountered 300 nm off the California coast (Macewicz and Abramenkoff 1993) and as far north as British Columbia. By the third period (1999-09), substantial fisheries for larger sardine had developed in the Pacific Northwest, and the Ensenada and California fisheries typically caught smaller, younger fish. To capture this dynamic, Ensenada and California fishery selectivities were broken into three periods: 1981-91, 1992-99, and 1999-09 for ENS and SCA fisheries; and 1981-92, 1993-99, and 1999-09 for CCA.

Related to the above discussion, observations of length composition data for the California fisheries suggest that large fish are present in the southern part of the range in spring (S2) but not in summer (S1), when they move northward. To better model this dynamic, the SCA and CCA fisheries were modeled with seasonal selectivities. Early test models displayed better than expected improvements to the likelihood for these two fisheries when seasonal selectivities were applied, so this change was retained in the final base model. In some seasons and time periods, selectivities for SCA and CCA had very narrow tops, so in this event the 'top' parameter (#2) was not estimable so was fixed to a minimal value. The initial selectivity parameter (#5) was fixed at a minimal value (-10) for all fleets.

For the PNW fishery, the double normal function was forced to assume an asymptotic shape by fixing four parameters and freely estimating the peak and ascending slope parameters. This approach permitted a more flexible form than the simple logistic function and provided better

overall fits to the data. Consistent with recommendations from the 2007 STAR panel, the PNW selectivity was modeled in two periods: 1981-03, and 2004-09.

The pre-STAR base model displayed chronic residual patterns in the fits to implied age composition data (consistent under-estimation of the first several ages) for the ENS and SCA fisheries during the 1980s. This was presumed due to a change in growth rate between the early and later periods, perhaps a density-dependent effect. Examination of growth residuals during the STAR revealed poor fit to size-at-age prior to 1991. Growth was therefore modeled for two periods in the final base model (1981-90 and 1991-09) with marked improvement to the MLE and better overall it to all data for the early model period.

To start the population in a depleted state, the recruitment R_0 offset parameter 'R_1' was freely estimated. Recruitment deviations were estimated starting in 1975, so the initial age composition is based on observations from at least six cohorts in the initial fishery data.

Stock-recruitment

Pacific sardine are believed to have a broad spawning season, beginning in January off northern Baja California and ending by July off the Pacific Northwest. The SWFSC's annual egg production surveys are timed to capture (as best is possible) the peak of spawning activity off the central and southern California coast during April. In our semester-based model, we calculated SSB at the mid-point of S2 (i.e. April). Recruitment was specified to occur in Semester-1 of the following model year (consistent with the July-1 birth date assumption).

Model runs based on the Ricker relationship were ultimately more stable and improved the trend in recruitment deviations (Hill et al. 2007a). Jacobson and MacCall (1995) found that Pacific sardine were best modeled using Ricker assumptions, and past assessments using CANSAR and CANSAR-TAM included a modified Ricker S-R function (e.g. Deriso et al. 1996, Hill et al. 1999, Conser et al. 2003). Sardine recruitment can theoretically be limited under high population sizes due to egg predation by planktivores (including sardine), limitations to spawning or feeding habitat, or shifts in habitat size related to environmental change.

Convergence criteria

The iterative process for determining numerical solutions in the model was continued until the difference between successive likelihood estimates was <0.0001.

Model Selection and Evaluation

Parameter estimates for the base model are provided in Table 6. The final base model had the following specifications:

- Model Year based on the July 1 birth date assumption (July 1-June 30 time span);
- Assessment years 1981-2009; Two semesters per year (S1=Jul-Dec; S2=Jan-Jun);
- Four fisheries (ENS, SCA, CCA, PNW), with annual selectivity patterns for ENS and PNW and seasonal selectivity patterns for SCA and CCA (S1 & S2).
- Use of length-frequency and conditional age-at-length data for all fisheries;
- Length-based, double-normal selectivity with time-blocking:
    - ENS, SCA_S1, & SCA_S2: 1981-91, 1992-98, 1999-09;

    - CCA_S1 & CCA_S2: 1981-92, 1993-98, 1999-09;
    - PNW: 1981-03, 2004-09;
- M = 0.4yr^{-1} for all ages and years;
- Two growth periods: 1981-90 and 1991-09;
- Ricker stock-recruitment relationship; σ_R = 0.89; Steepness estimated;
- Initial recruitment (R_1) estimated; recruitment devs estimated from 1975 to 2007;
- Hybrid-F fishing mortality option;
- DEPM and TEP measures of spawning biomass (1986, 1987, 1993, 2003, 2004, and 2006-08 for DEPM, and 1987, 1995-2002 and 2005 for TEP) and the 2009 aerial survey estimate of abundance.
- Length-frequency data for the 2009 aerial survey, taken from point-set samples

Base Model Results

Growth

Growth parameters (size at age 0.5, size at age 15, von Bertalanffy growth rate '*K'*) were estimated for two periods within the model: 1981-90, and 1991-09. For the 1981-90 period, sardine were estimated to grow to 9.78 cm SL by age 0.5, to 22.9 cm SL by age 15, with a growth rate (K) of 0.91 yr^{-1} For the 1991-09 period, sardine grew to 9.77 cm SL by age 0.5, to 24.4 cm SL by age 15, with a growth rate (K) of 0.46 yr^{-1}. Modeled length-at-age is displayed in Figure 3b and growth parameters and standard deviations are shown in Table 6.

Selectivity estimates and fits to composition data

Selectivity estimates for each fishery and time period are displayed in Figures 14a-d. The ENS, SCA and CCA fisheries caught progressively smaller fish over time, but the shift was most pronounced for the SCA fishery, particularly SCA_S2 (Figure 14b). Selectivity for the PNW fishery shifted toward smaller fish after 2003 (Figure 14d).

Model fits to length frequencies and implied age-frequencies, along with associated Pearson residuals, are shown in Figures 15-26. Results are grouped by fleet so, for example, the reader can examine fits to length compositions, bubble plots of the input data, and bubble plots of Pearson residuals across facing pages. Corresponding fits to implied age compositions for the same fishery are subsequently found on the following two pages. Results indicate random residual patterns for most fleets. Some fisheries (e.g. SCA and PNW) displayed notable residuals patterns when the strongest year classes (e.g. 1997, 1998, and 2003) moved through each fishery. Residual patterns for the PNW fishery compositions improved in comparison to past assessments. This may be due to re-weighting of composition data and/or inclusion of new data (larger fish) from the BC fishery.

Observed and effective sample sizes for length frequency and conditional age-at-length data are displayed in Figures 27-32. Input effective sample sizes for each fishery composition were iteratively reweighted (multiplicative constant) to match model estimates of variance.

Fits to DEPM and TEP Survey Indices

Fits to the DEPM and TEP series are displayed in Figures 33 and 34. Input CVs for each index were iteratively adjusted (additive constant) to match model estimates of variance. Catchability

coefficient (q) for the DEPM series of female SSB was estimated to be 0.1645. The TEP series was best fit with q=0.4195.

Fits to PFFS and WCVI Survey Indices

Alternative models were run in which fits to the PFFS and/or WCVI indices were included in the model likelihood. The PFFS time series was relatively flat (excepting the 2000 observation) and not influential to the overall model fit or population estimates due to the large standard errors (Figures 35 and 36). The STAT concluded, and the STAR concurred, that the PFFS series was uninformative to the assessment and should be excluded from the base model.

The WCVI survey (night trawls only, 2006-2009) was fit in an alternative case of the base model. The trend observed for these three survey years was consistent with the overall model, and had a q of 0.2815 (Figure 37). Fits to the length composition data are displayed in Figure 38. Stock biomass from the WCVI alternative model is compared to the base model in Figure 44. The STAR panel concluded that the WCVI survey should not be included in the base model or this assessment, but that this index should be considered in future assessments once the data and methods are more thoroughly reviewed. A detailed analysis of the day/night trawl calibration is warranted. Survey estimates should have associated standard errors available before this survey is further explored.

Fit to Aerial Survey 2009

The aerial survey estimate (1.35 mmt, CV=0.55) was fit with q fixed at 1. The aerial survey observation was considerably higher than biomass from the DEPM and TEP surveys, and this scaled model estimates of biomass upward and caused the model to shift, in some cases, to a different parameter space. Because of this contrast among data sources, the base model was first tuned (i.e. variance adjustments, Sigma-R) without the aerial spotter estimate. Once tuned, the aerial estimate was included, without subsequent retuning, to derive final base model results. The base model estimate corresponding to the 2009 aerial survey estimate of selected abundance was outside of the lower 99% confidence interval for the estimate. This discrepancy would be lessened if the survey composition were to be fit with an asymptotic rather than dome-shaped selectivity. Fit to the aerial survey length composition is displayed in Figure 39.

Harvest and exploitation rates

Harvest rates (catch per selected biomass) by fishery for the base model (w/ aerial survey) are displayed in Figure 40a. For comparison, harvest rates for the model fit without the aerial survey are shown in Figure 40b. Harvest rates for the model excluding the 2009 aerial survey are extremely high (F=3.8 for ENS and F=2.3 for CCA_S1). Addition of the aerial survey scaled biomass upward and brought harvest rates into a more plausible range (Figure 40a).

Exploitation rates (calendar year catch/total mid-year biomass, ages 0+) by fishery and country for the base model are displayed in Figure 41. Total exploitation rate has trended upward since the mid-1990s, but is still relatively low in recent years (<16%).

Spawning stock biomass

Base model estimates of total SSB are presented in Tables 8-9 and Figure 42a. Unexploited SSB (S_0) from the update model was estimated to be 1.03 mmt. Addition of the aerial survey datum scaled SSB considerably upward, and increased uncertainty around the estimate.

Recruitment

Time series of recruit (age-0) abundance are provided in Tables 8-9 and Figures 42b and 43b. Virgin recruitment (R_0) was estimated at 4.94 billion age-0 fish. Recruitment increased rapidly through the mid-1990s, peaking at 16.79 billion fish in 1997, 22.01 billion in 1998, and 18.62 billion fish in 2003. Recruitments have been notably lower since 2005. Recruitments for 2008 and 2009 were derived from the spawner-recruit curve.

Stock biomass (ages 1+) for PFMC management

Stock biomass, used for management purposes, is defined as the sum of the biomass for sardine aged 1 and older. Base model estimates of stock biomass are shown in Table 9 and Figure 43a. Stock biomass increased rapidly through the 1980s and 1990s, starting at 8,210 mt in 1981 and peaking at 1.69 mmt in 2000. Stock biomass has subsequently declined to the present (July 1, 2009) level of 702,024 mt.

Stock-recruitment

The Ricker stock-recruitment relationship for the base model is displayed in Figure 45a. The estimate of steepness (h) was 2.32462 for the base model (Table 6). Ricker model fit to the recruitment time series is shown in Figure 45b.

Recruitment deviations (main period) were estimated from 1981 through 2007. Initial models estimating recruitment deviations through 2008 had high standard error (0.839) for that year. Recruitments for 2008 and 2009 were thus taken directly from the stock-recruitment curve. Recruitment deviations and their asymptotic standard errors are shown in Figure 46.

Steepness (h) was profiled using values ranging from 1.0 to 3.5. The profile was bowl-shaped, with the lowest likelihood centered on the estimate for the converged model (Figure 47a).

Recruitment variance (sigma-R) for the base model (0.84708) was adjusted to approximately match the root mean square error estimate from the model. Model estimates of sigma-R were examined over a broad range of input values (0.5-1.2), and model estimates ranged from 0.79 to 0.88 (Figure 47b).

Uncertainty, Sensitivity, and Unresolved Problems

Sensitivity to natural mortality assumptions

Natural mortality (M) was profiled for the base model, with and without the aerial survey, using values ranging 0.1 to 0.8 yr^{-1}. For the model excluding aerial survey (Figure 48b), the best length and survey likelihoods occurred at M = 0.40 yr^{-1}. Age compositions were better fit at higher values of M. Inclusion of the aerial survey resulted in no appreciable change to M profiles for the length or age compositions, but did affect the survey likelihoods toward better fit at higher M

values (Figure 48a). The current, long-standing assumption that M=0.4 yr^{-1} appears to be a reasonable given the model fits to the data.

Uncertainty around base model biomass estimates was bracketed using a range of plausible *M* values (0.3 to 0.5 yr^{-1}). Results for base models including aerial survey are shown in Figure 49a, and results for the model excluding aerial survey are presented in Figure 49b.

Prospective analysis

A series of prospective runs were conducted in which the model start year was incrementally advanced from 1981 to 1989. The first year for calculation of recruitment devs was likewise adjusted forward. The prospective analysis was repeated for the base model including and excluding the aerial survey (Figures 50-51). The base model excluding the aerial survey appeared to be fairly robust with respect to initial years of data. Advancing the model start year resulted in a very minor upward scaling of the biomass and recruitment series (Figures 50-51). When the aerial survey was included, the models were stable through start year 1984. Models beginning in 1985 or later were unstable and produced estimates that scaled considerably higher (Figure 50a).

Retrospective analysis

Like prospective analysis, retrospective analysis can provide an additional means of examining properties of the model and further characterizing uncertainty. A retrospective of the base model was performed, where data were incrementally removed from the end year back to 2003. Stock biomasses and recruitment series from these analyses are displayed in Figure 52. The models exhibited no obvious retrospective pattern.

Comparison to previous assessments

Stock biomass and recruits from the base model were compared to final values from SS assessments used for management in 2008 and 2009 (Figures 43a,b). Stock biomass and recruitment from the 2009 base model (w/Aerial) was very similar to results from the final 2007 assessment. Both the 2009-Base and final 2007 models scaled higher than the 2008 update and the 2009 base model that excluded the aerial survey (Figure 43).

Historically, Pacific sardine have undergone wide fluctuations in abundance (boom-bust cycles) typical of coastal pelagic species worldwide. Base model biomass of sardine aged 2 and older are compared to Murphy's estimates for the historic period (1932-1960) in Figure 53. The recent era of high abundance is still low relative to estimates from the 1930s, when biomass peaked at 4 million mt. Baumgartner et al's. (1992) analysis of sardine scales deposited in the sedimentary record shows strong inter-decadal fluctuations in sardine abundance occurring back to the year 300, centuries before commercial-scale fisheries ever developed (Figure 54). Sardine recruitment success and total abundance is strongly dependent upon environmental forcing factors.

HARVEST GUIDELINE FOR 2010

Based on results from the base model, the harvest guideline (HG, or ABC) for the U.S. fishery in calendar year 2010 would be 72,039 mt. Parameters used to determine this harvest guideline are discussed below and presented in Table 10. To calculate the proposed harvest guideline for 2010, we used the maximum sustainable yield (MSY) control rule defined in Amendment 8 of the Coastal Pelagic Species-Fishery Management Plan, Option J, Table 4.2.5-1, PFMC (1998). This formula is intended to prevent Pacific sardine from being overfished and maintain relatively high and consistent catch levels over the long-term. The Amendment 8 harvest formula for sardine is:

$$HG_{2010} = (BIOMASS_{2009} - CUTOFF) \bullet FRACTION \bullet DISTRIBUTION;$$

where HG_{2010} is the total USA (California, Oregon, and Washington) harvest guideline in 2010, $BIOMASS_{2009}$ is the estimated July 1, 2009 stock biomass (ages 1+) from the assessment (702,024 mt), CUTOFF is the lowest level of estimated biomass at which harvest is allowed (150,000 mt), FRACTION is an environmentally-based percentage of biomass above the CUTOFF that can be harvested by the fisheries, and DISTRIBUTION (87%) is the average portion of BIOMASS assumed in U.S. waters.

The value for FRACTION in the MSY control rule for Pacific sardine is a proxy for F_{msy} (i.e., the fishing mortality rate that achieves equilibrium MSY). Given F_{msy} and the productivity of the sardine stock have been shown to increase when relatively warm-ocean conditions persist, the following formula has been used to determine an appropriate (sustainable) FRACTION value:

$$\text{FRACTION or } F_{msy} = 0.248649805(T^2) - 8.190043975(T) + 67.4558326,$$

where T is the running average sea-surface temperature at Scripps Pier, La Jolla, California during the three preceding seasons (July-June). Ultimately, under Option J (PFMC 1998), F_{msy} is constrained and ranges between 5% and 15%. Based on the T values observed throughout the period covered by this stock assessment (Figure 55), the appropriate F_{msy} exploitation fraction has consistently been 15%; and this remains the case under current conditions (T_{2009} = 17.92 °C).

RESEARCH AND DATA NEEDS

The following recommendations were excerpted from the STAR panel report (STAR 2009):

1) Future assessments should consider the fishery-independent mid-water trawl surveys off the west coast of Vancouver Island. This data set needs to be analyzed further before it can be included in a future assessment. If necessary, the lead investigator from CDFO should be invited to attend the next STAR Panel to present results for this time series.
2) Further review the sampling protocols and analysis methods for other potential indices of abundance (such as the SWFSC juvenile rockfish survey and the acoustic surveys, which have been conducted in conjunction with egg surveys since 2003) and consider inclusion of such data in future assessments.
3) Density-dependent changes in growth or reproduction have not been fully evaluated. Maturity at length is variable from year to year, although adult sampling has not been

consistent, and young fish may be under-represented. Available maturation ogives could be compared to biomass estimates to identify possible density-dependent effects.

4) Fecundity at age is based on weight and does not account for the total number of batches of eggs produced during a season (annual fecundity). While the spawning frequency during the peak season does not appear to be age-dependent, the length of the spawning season may be longer in older fish. This may affect the stock-recruitment relationship. Whether visual estimates of activity (presence of developed gonads) from port-collected samples can be used to estimate length-specific timing and duration of spawning across the stock's range should be explored.
5) There continues to be uncertainty in the DEPM survey as a key indicator of spawning stock biomass trends coastwide. Attempts should be made to expand coastwide sampling of adult fish to further refine the estimate of the proportion spawning.
6) Temperature at catch could provide insight in stock structure and the appropriate catch stream to use for assessments, because the southern subpopulation is thought to prefer warmer water. Conduct sensitivity tests to alternative assumptions regarding the fraction of the ENS and SCA catch that comes from the northern subpopulation.
7) The assessment would benefit not only from data from Mexico and Canada, but also from a joint assessment, which includes assessment team members from these countries.
8) Re-evaluate the magnitude of discards in each fishery, and account for discards in future assessments.
9) Otolith and microchemistry studies are useful tools for evaluating stock structure. Results should be evaluated to determine if the spatial distribution is purely age-dependent or due to an alternate life history strategy. These evaluations could be combined with a traditional tagging study (which has not been done since the 1940s) to provide useful information about fish migration and distribution.
10) The relationship between environmental correlates and abundance should be examined. In particular, the relationship between environmental covariates and recruitment deviations should be explored further.
11) Further evaluate the appropriate form of stock-recruitment relationship for Pacific sardine, including appropriate environmental covariates.
12) Consider spatial models for Pacific sardine, which can be used to explore the implications of regional recruitment patterns and region-specific biological parameters. These models could be used to identify critical biological data gaps.
13) Re-estimate age-reading error matrices and include them in updated assessments.

LITERATURE CITED

Ahlstrom, E. H. 1960. Synopsis on the biology of the Pacific sardine (*Sardinops caerulea*). Proc. World Sci. Meet. Biol. Sardines and Related Species, FAO, Rome, 2: 415-451

Allen, M. J., R. J. Wolotira, Jr., T. M. Sample, S. F. Noel, and C. R. Iten. 1990. West coast of North America coastal and oceanic zones strategic assessment: Data Atlas. N.O.A.A. Seattle, WA. Invertebrate and fish 145.

Barnes, J. T., L. D. Jacobson, A. D. MacCall, and P. Wolf. 1992. Recent population trends and abundance estimates of the Pacific sardine (*Sardinops sagax*). CalCOFI Rep. 33: 60-75.

Baumgartner, T., A. Soutar, and V. Ferriera-Bartrina. 1992. Reconstruction of the history of pacific sardine and northern anchovy populations over the past two millennia from sediments of the Santa Barbara Basin, California. CalCOFI Rep. 33: 24-40.

Bentley, P. J., R. L. Emmett, N. C. H. Lo and G. Moser. 1996. Egg production of Pacific sardine (*Sardinops sagax*) off Oregon in 1994. CalCOFI Rep. 37:193-200.

Bowen, B. W., and W.S. Grant. 1997. Phylogeography of the sardines (*Sardinops* spp.): Assessing biogeographic models and population histories in temperate upwelling zones. Evolution 51, 1601-1610.

Butler, J. L. 1987. Comparisons of the larval and juvenile growth and larval mortality rates of Pacific sardine and northern anchovy and implications for species interactions. Ph. D. Thesis, Univ. Calif., San Diego, 240 pp.

Butler, J.L., P.E. Smith, and N.C.H. Lo. 1993. The effect of natural variability of life-history parameters on anchovy and sardine population growth. CalCOFI Rep. 34: 104-111.

Chapman W.M. 1936. The pilchard fishery of the state of Washington in 1936 with notes on the food of the silver and chinook salmon off the Washington coast. Dept. of Fisheries, State of Washington, Biological Rept. 36. 30p.

Clark, F. N. 1939. Can the supply of sardines be maintained in California waters? Calif. Fish and Game 25: 172-176.

Clark, F. N., and J. F. Janssen. Jr. 1945. Movements and abundance of the sardine as measured by tag returns. Calif. Div. Fish Game Fish. Bull. 61: 7-42.

Clark, F. N., and J. C. Marr. 1955. Population dynamics of the Pacific sardine. CalCOFI Prog. Rep. 1 July 1953-31 March 1955: 11-48.

CONAPESCA. 2009. Anuario Estadístico de Acuacultura y Pesca. http://www.conapesca.sagarpa.gob.mx/wb/cona/cona_anuario_estadistico_de_pesca

Conser, R. J., K. T. Hill, P. R. Crone, N. C. H. Lo, and D. Bergen. 2003. Stock assessment of Pacific sardine with management recommendations for 2004: Executive Summary. Pacific Fishery Management Council, November 2003. 15 p.

Conser, R., K. Hill, P. Crone, N. Lo, and R. Felix-Uraga. 2004. Assessment of the Pacific sardine stock for U.S. management in 2005: Pacific Fishery Management Council, November 2004. 135 p.

Cota-V., A., R. Troncoso-G., and M. Romero-M. 2009. La pesqueria de pelágicos menores in Ensenada, Baja California. Temporada de pesca 2008. (Abstract) *In:* Hernandez, M. (Ed.). 2009. XVII Taller del Comité Técnico de Pelagicos Menores - Memorias. Guaymas, Sonora, México, 10 al 12 de Junio del 2009. 39 p.

Culver, M. and C. Henry. 2004. Summary Report of the 2004 Experimental Purse Seine Fishery for Pacific Sardine (*Sardinops sagax*). Washington Department of Fish and Wildlife, Montesano, WA. 12 p. http://wdfw.wa.gov/fish/commercial/sardine/04sardine_summary.pdf

Cushing, D. H. 1971. The dependence of recruitment of parent stock on different groups of fishes. J. Cons. Int. Explor. Mer. 33: 340-362.

Deriso, R., T. J. Quinn and P. R. Neal. 1985. Catch-age analysis with auxiliary information. Can. J. Fish. Aquat. Sci. 42:4.

Deriso, R. B., J. T. Barnes, L. D. Jacobson, and P. J. Arenas. 1996. Catch-at-age analysis for Pacific sardine (*Sardinops sagax*), 1983-1995. CalCOFI Rep. 37:175-187.

Emmett, R. L., R. D., Brodeur, T. W. Miller, S. S. Pool, P. J. Bentley, G. K. Krutzikowsky, and J. McCrae. 2005. Pacific sardine (Sardinops sagax) abundance, distribution and ecological relationships in the Pacific Northwest. Calif. Coop. Ocean. Fish. Invest. Rep. 46:122–143.

Eschmeyer, W. N., E. S. Herald, and H. Hammann. 1983. A Field Guide to Pacific Coast Fishes of North America. Houghton Mifflin Company, Boston, MA. 336 p.

Félix-Uraga, R., V. M. Gómez-Muñoz, C. Quiñónez-Velázquez, F. Neri Melo-Barrera, and W. García-Franco. 2004. On the existence of Pacific sardine groups off the west coast of Baja California and Southern California. CalCOFI Rep. 45: 146-151.

Felix-Uraga, R., V. M. Gómez-Muñoz, C. Quiñónez-Velázquez, F. Neri Melo-Barrera, K. T. Hill and W. García-Franco. 2005. Pacific sardine stock discrimination off the west coast of Baja California and southern California using otolith morphometry. CalCOFI Rep. 46: 113-121.

García F. W. and Sánchez R. F. J. 2003. Análisis de la pesquería de pelágicos menores de la costa occidental de Baja California durante la temporada del 2002. Boletín Anual 2003. Secretaria de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación. Instituto Nacional de la Pesca. Centro Regional de Investigación Pesquera de Ensenada, Cámara Nacional de la Industria Pesquera y Acuícola, Delegación Baja California. 15 p.

Hargreaves, N.B., D.M. Ware, and G.A. McFarlane. 1994. Return of the Pacific sardine (*Sardinops sagax*) to the British Columbia coast in 1992. Can. J. Fish. Aquat. Sci. 51: 460-463.

Hart, J. L. 1973. Pacific fishes of Canada. Fish. Res. Board Can., Bull. 180. 740 p.

Hedgecock, D., E. S. Hutchinson, G. Li, F. L. Sly, and K. Nelson. 1989. Genetic and morphometric variation in the Pacific sardine, *Sardinops sagax caerulea*: comparisons and contrasts with historical data and with variability in the northern anchovy, *Engraulis mordax*. Fish. Bull. 87: 653-671.

Hernandez, M. (Ed.). 2009. XVII Taller del Comité Técnico de Pelagicos Menores - Memorias. Guaymas, Sonora, México, 10 al 12 de Junio del 2009. 39 p.

Hill, K. T. 1999. Determining age composition of coastal pelagic species in northern California, Oregon, and Washington coastal waters. Pacific States Marine Fisheries Commission. Gladstone, Oregon. Project #1-IJ-9 Final Report. 47 p.

Hill, K.T., L.D. Jacobson, N.C.H. Lo, M. Yaremko, and M. Dege. 1999. Stock assessment of Pacific sardine for 1998 with management recommendations for 1999. Calif. Dept. Fish. Game. Marine Region Admin. Rep. 99-4. 92 pp.

Hill, K. T., N. C. H. Lo, B. J. Macewicz, and R. Felix-Uraga. 2006a. Assessment of the Pacific sardine (*Sardinops sagax caerulea*) population for U.S. management in 2006. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-386. 75 p.

Hill, K. T., N. C. H. Lo, B. J. Macewicz, and R. Felix-Uraga. 2006b. Assessment of the Pacific sardine (*Sardinops sagax caerulea*) population for U.S. management in 2007. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-396. 99 p.

Hill, K. T., E. Dorval, N. C. H. Lo, B. J. Macewicz, C. Show, and R. Felix-Uraga. 2007a. Assessment of the Pacific sardine resource in 2007 for U.S. management in 2008. Pacific Fishery Management Council, November 2007 Briefing Book, Agenda Item G.1.b. 250 p

Hill, K. T., E. Dorval, N. C. H. Lo, B. J. Macewicz, C. Show, and R. Felix-Uraga. 2007b. Assessment of the Pacific sardine resource in 2007 for U.S. management in 2008. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-413. 178 p.

Hill, K. T., E. Dorval, N. C. H. Lo, B. J. Macewicz, C. Show, and R. Felix-Uraga. 2008. Assessment of the Pacific sardine resource in 2008 for U.S. management in 2009. PFMC, Nov 2008, Agenda Item G.2.b, 236 p.

Jacobson, L. J. and A. D. MacCall. 1995. Stock-recruitment models for Pacific sardine (*Sardinops sagax*). Can. J. Fish. Aquat. Sci. 52:566-577.

Jagielo, T. 2009. West coast aerial sardine survey – sampling results in 2009. PFMC, November 2009 Briefing Book, Agenda Item I.1.

Janssen, J. F. 1938. Second report of sardine tagging in California. Calif. Fish Game 24(4): 376-389.

Leet, W. S., C. M. Dewees, R. Klingbeil, and E. J. Larson (Eds.). 2001. California's Living Marine Resources: A Status Report. Calif. Dep. Fish and Game. ANR Publication #SG01-11.

Lluch-Belda, D., D.B. Lluch-Cota, S. Hernandez-Vazquea, C.A. Salina-Zavala. 1991. Sardine and anchovy spawning as related to temperature and upwelling in the California Current system. CalCOFI Rep. 32: 105-111.

Lo, N. C. H., L. D. Jacobson and J. L. Squire. 1992. Indices of relative abundance from fish spotter data based on delta-lognormal models. Can. J. Fish. Aquat. Sci. 49:2515-2526. http://lajolla.noaa.gov/om/library/publications/CR/1992/9264.pdf

Lo, N. C. H., Y. A. Green Ruiz, Merecedes J. Cervantes, H. G. Moser, R. J. Lynn. 1996. Egg production and spawning biomass of Pacific sardine *(Sardinops sagax*) in 1994, determined by the daily egg production method. CalCOFI Rep. 37:160-174.

Lo, N. C. H., B. J. Macewicz, and D. A. Griffith. 2005. Spawning biomass of Pacific sardine (*Sardinops sagax*) from 1994-2004 off California. CalCOFI Rep. 46: 93-112.

Lo, N. C. H., A. C. Allen, and S. Z. Herzka. 2006. Minutes of the 2005 Trinational Sardine Forum. Southwest Fisheries Science Center, National Marine Fisheries Service, Admin. Rep. LJ-06-05. 118 p.

Lo, N. C. H. and B. J. Macewicz. 2006. Spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2005. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-387. 29 p.

Lo, N. C. H., B. J. Macewicz, D. A. Griffith, and R. L. Charter. 2007a. Spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2006. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-401. 32 p.

Lo, N. C. H., B. J. Macewicz, and R. L. Charter. 2007b. Spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2007. NOAA Tech. Memo. NOAA-TM-NMFS-SWFSC-411. 31 p.

Lo, N. C. H., and A. C. Allen. 2008 (editors). Proceedings of the 2007 Trinational Sardine Forum. Pages 15-24 *in* NOAA/NMFS/SWFSC Administrative Report LJ-08-02., October 2008.

Lo, N. C. H. and B. J. Macewicz, D. A. Griffith and R. L. Charter. 2008. Spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2008. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-430. 33 pp.

MacCall, A. D. 1979. Population estimates for the waning years of the Pacific sardine fishery. CalCOFI Rep. 20: 72-82.

Macewicz, B. J. and D. N. Abramenkoff. 1993. Collection of jack mackerel, *Trachurus symmetricus*, off southern California during 1991 cooperative U.S.-U.S.S.R. cruise. Southwest Fisheries Science Center, National Marine Fisheries Service, Admin. Rep. LJ-93-07. 13 p.

Macewicz B. J, J. J. Castro-Gonzalez, C. E. Cotero Altamirano, and J. R. Hunter. 1996. Adult reproductive parameters of Pacific Sardine (*Sardinops sagax*) during 1994 CalCOFI Rep 37:140-151.

McCrae, J. 2001. Oregon's Sardine Fishery, 2000. Newport, OR: Oregon Department of Fish and Wildlife. 12pp. http://www.dfw.state.or.us/MRP/publications/sardine_1.pdf

McCrae, J. 2002. Oregon's Sardine Fishery, 2001. Newport, OR: Oregon Department of Fish and Wildlife. 15pp. http://www.dfw.state.or.us/MRP/publications/sardine_2.pdf

McCrae, J. 2003. Oregon's Sardine Fishery, 2002. Newport, OR: Oregon Department of Fish and Wildlife. 13pp. http://www.dfw.state.or.us/MRP/publications/sardine_3.pdf

McCrae, J. 2004. Oregon's Sardine Fishery, 2003. Newport, OR: Oregon Department of Fish and Wildlife. 12pp. http://www.dfw.state.or.us/MRP/publications/sardine_4.pdf

McCrae, J. and J. Smith. 2005. Oregon's Sardine Fishery, 2004. Newport, OR: Oregon Department of Fish and Wildlife. 14pp. http://www.dfw.state.or.us/MRP/publications/sardine_5.pdf

McFarlane, G. A. and L. A. MacDougall. 2001. Biological information for Pacific sardine (*Sardinops sagax*) captured during research cruises, 1992–2000. Can. Tech. Rep. Fish. Aquat. Sci. 2372. 149pp.

McFarlane, G. A., J. Schweigert, L., MacDougall, and C. Hrabok. 2005. Distribution and biology of Pacific sardine (*Sardinops sagax*) off British Columbia, Canada. CalCOFI Rep. 46: 144-160.

Methot, R. 2005. Technical description of the stock synthesis II assessment program. Version 1.17-March 2005.

Methot, R. 2009. User manual for Stock Synthesis. Model version 3.03a. May 11, 2009. NOAA Fisheries, Seattle, WA. 143 p.

Murphy, G. I. 1966. Population biology of the Pacific sardine (*Sardinops caerulea*). Proc. Calif. Acad. Sci. Vol. 34 (1): 1-84.

Otter Research Ltd. 2001. An introduction to AD Model Builder (Version 6.0.2) for use in nonlinear modeling and statistics. Otter Research Ltd., Sidney, B.C., Canada. 202 p.

Parrish, R. H., R. Serra, and W. S. Grant. 1989. The monotypic sardines, *Sardina* and *Sardinops*: their taxonomy, distribution, stock structure and zoogeography. Can. J. Fish. Aquat. Sci. 46: 2019-2036.

PFMC. 1998. Amendment 8 (to the northern anchovy fishery management plan) incorporating a name change to: the coastal pelagic species fishery management plan. Pacific Fishery Management Council, Portland, OR.

PFMC. 2006. Research and Data Needs: 2006-2008. Pacific Fishery Management Council, Portland, OR. http://www.pcouncil.org/research/resdocs/Res_Data_Needs_0608_final_DEC06.pdf

PFMC. 2009. Status of the Pacific Coast Coastal Pelagic Species Fishery and Recommended Acceptable Biological Catches: Stock Assessment and Fishery Evaluation-2009. Pacific Fishery Management Council, Portland, Oregon. June 2009. http://www.pcouncil.org/bb/2009/0609/H1a_SUP_ELEC_ATT1_0609.pdf

Phillips, J. B. 1948. Growth of the sardine, *Sardinops caerulea*, 1941-42 through 1946-47. Calif. Div. Fish Game Fish Bull. 71: 33 p.

Radovich, J. 1982. The collapse of the California sardine fishery: what have we learned? CalCOFI Rep. 23: 56-78.

Robinson, M. 2003. Summary Report of the 2003 Trial Purse Seine Fishery for Pacific Sardine (*Sardinops sagax*). Washington Department of Fish and Wildlife, Montesano, WA. http://wdfw.wa.gov/fish/commercial/sardine/03sardine_summary.pdf

Smith, P. E. 1978. Biological effects of ocean variability: time inferred from fish scales in anaerobic sediments off California. CalCOFI Rep. 13: 63-70.

Soutar, A. and J. D. Isaacs. 1969. History of fish populations inferred from fish scales in anaerobic sediments off California. CalCOFI Rep. 13: 63-70.

Soutar, A., and J. D. Isaacs. 1974. Abundance of pelagic fish during the 19th and 20th centuries as recorded in anaerobic sediment off the Californias. Fish. Bull. 72: 257-273.

Stock Assessment Review (STAR) Panel. 2009. Pacific sardine STAR panel meeting report. André Punt (chair) and members Selina Heppell, Dvora Hart, and John Wheeler. NOAA Fisheries, Southwest Fisheries Science Center, La Jolla CA, September 21-25, 2009. 27 p.

Vrooman, A. M. 1964. Serologically differentiated subpopulations of the Pacific sardine, *Sardinops caerulea*. J. Fish. Res. Bd. Canada, 21: 691-701.

Walford, L. A. and K. H. Mosher. 1943. Studies on the Pacific pilchard or sardine (*Sardinops caerulea*). U.S. Dep. Of Interior, Fish and Wildlife Service, Special Sci. Rep. No. 20. 33 p.

WDFW. 2001. Summary Report of the 2001 Trial Purse Seine Fishery for Pacific Sardine (*Sardinops sagax*). Washington Department of Fish and Wildlife, Montesano, WA. http://wdfw.wa.gov/fish/commercial/sardine/01sardine_summary.pdf.

WDFW. 2002. Summary Report of the 2002 Trial Purse Seine Fishery for Pacific Sardine (*Sardinops sagax*). Washington Department of Fish and Wildlife, Montesano, WA. http://wdfw.wa.gov/fish/commercial/sardine/02sardine_summary.pdf

WDFW. 2005. 2005 Washington Experimental Sardine Fishery Summary. http://wdfw.wa.gov/fish/commercial/sardine/sardine_creel05.htm

Wolf, P. and P. E. Smith. 1986. The relative magnitude of the 1985 Pacific sardine spawning biomass off southern California. CalCOFI Rep. 27: 25-31.

Wolf. P., P. E. Smith, and C. L. Scannell. 1987. The relative magnitude of the 1986 Pacific sardine spawning biomass off California. CalCOFI Rep. 28: 21-26.

Wolf, P. 1988a. Status of the spawning biomass of Pacific sardine, 1987-1988. Calif. Dep. Fish Game, Mar. Res. Div., Rep. to the Legislature, 9 p.

Wolf, P. 1988b. Status of the spawning biomass of Pacific sardine, 1988-1989. Calif. Dep. Fish Game, Mar. Res. Div., Rep. to the Legislature, 8 p.

Yaremko, M. L. 1996. Age determination in Pacific sardine, *Sardinops sagax*. NOAA Tech. Mem. NOAA-TM-NMFS-SWFSC-223. 33 p.

Table 1. Fishery performance since the onset of federal management (ABC=HG). Total ABCs are limits inferred by the U.S. harvest control rule, but they are not implemented or enforced through any international treaty. U.S. landings for 2009 are preliminary, and total catch during 2009 is unknown.

Year	U.S. ABC	U.S. Landings	Total ABC	Total Landings
2000	186,791	67,985	214,702	120,876
2001	134,737	75,733	154,870	99,578
2002	118,442	96,876	136,140	141,357
2003	110,908	69,931	127,480	101,411
2004	122,747	92,723	141,089	141,364
2005	136,179	90,016	156,528	148,539
2006	118,937	91,039	136,709	149,834
2007	152,564	127,789	175,361	166,156
2008	89,093	87,184	102,406	151,832
2009	66,932	65,652	76,933	*TBD*

Table 2. Pacific sardine landings for major fishing regions off the West Coast of North America, calendar years 1981-2008. The stock assessment includes northern subpopulation catches from Ensenada, México to British Columbia, Canada. \1

	MÉXICO					UNITED STATES					CANADA	
Calendar Year	Gulf of California*	Magdalena Bay	Cedros Island	Ensenada	México Total	So. Calif.	Cen. Calif.	Oregon	Wash.	U.S. Total	British Columbia	GRAND TOTAL
1981	93,989	10,557	1,705	0	106,251	6	0	0	0	6	0	106,256
1982	71,425	9,392	2,362	0	83,179	131	0	0	0	131	0	83,310
1983	111,526	2,386	1,580	274	115,766	352	0	0	0	352	0	116,119
1984	146,467	2,454	1,044	0	149,965	171	64	0	0	235	0	150,199
1985	160,391	10,979	1,429	3,722	176,521	559	34	0	0	593	0	177,114
1986	240,226	14,203	2,808	243	257,480	1,051	113	0	0	1,164	0	258,644
1987	272,574	8,599	2,856	2,432	286,461	2,056	39	0	0	2,095	0	288,556
1988	261,363	12,081	846	2,035	276,325	3,775	10	0	0	3,785	0	280,109
1989	294,095	7,746	2,344	6,224	310,410	3,443	238	0	0	3,681	0	314,091
1990	109,942	16,975	2,086	11,375	140,378	2,508	307	0	0	2,815	0	143,193
1991	113,631	15,893	551	31,392	161,468	6,774	976	0	0	7,750	0	169,217
1992	6,858	5,026	348	34,568	46,801	16,061	3,128	4	0	19,193	0	65,993
1993	7,594	7,671	1,505	32,045	48,814	15,488	705	0	0	16,192	0	65,007
1994	127,486	33,787	1,685	20,877	183,835	10,346	2,359	0	0	12,705	0	196,540
1995	174,951	34,541	0	35,396	244,888	36,561	4,928	0	0	41,489	23	286,400
1996	200,870	25,795	0	39,065	265,730	25,171	8,885	0	0	34,056	0	299,786
1997	203,529	14,656	0	68,439	286,624	32,837	13,361	0	0	46,198	71	332,893
1998	59,400	2,493	0	47,812	109,705	31,975	9,081	1	0	41,056	488	151,249
1999	51,266	11,795	0	58,569	121,630	42,863	13,884	775	0	57,522	24	179,177
2000	65,593	42,276	0	67,845	175,715	46,835	11,367	9,529	4,765	72,496	1,722	249,933
2001	190,862	40,572	0	46,071	277,505	47,662	7,241	12,780	10,837	78,520	1,266	357,292
2002	220,360	50,969	0	46,845	318,174	49,366	14,078	22,711	15,212	101,367	739	420,280
2003	198,757	53,862	0	41,342	293,961	30,289	7,448	25,258	11,604	74,599	977	369,537
2004	102,034	47,173	0	41,897	191,104	32,393	15,308	36,112	8,799	92,613	4,438	288,155
2005	94,341	40,000	0	55,323	189,664	30,253	7,940	45,008	6,929	90,130	3,232	283,025
2006	133,650	52,429	0	57,237	243,316	33,286	17,743	35,648	4,099	90,776	1,575	335,667
2007	178,205	55,550	0	36,847	270,602	46,199	34,782	42,052	4,663	127,695	1,522	399,820
2008	488,573	36,289	0	54,213	579,075	31,089	26,711	22,940	6,435	87,175	10,425	676,675

\1 U.S. and Canadian landings are based on the 2009 CPS SAFE document. Mexican landings for 2008 were presented by INP scientists during the annual Pelagicos Menores workshop held in Guaymas, Mexico (June 10-12, 2009).

\2 Gulf of California catch statistics are compiled by an Oct-Sep fishing season, e.g. the 2008 value represents landings made between Oct. 2007 and Sep. 2008.

Table 3. Pacific sardine landings (mt) by model year, semester, and fishery for the base model.

Model Year	Sem	ENS	SCA	CCA	PNW
1981	1	0	6	0	0
1981	2	0	57	0	0
1982	1	0	74	0	0
1982	2	150	263	0	0
1983	1	124	89	0	0
1983	2	0	159	0	0
1984	1	0	12	64	0
1984	2	3,174	312	10	0
1985	1	548	247	24	0
1985	2	99	854	65	0
1986	1	143	197	48	0
1986	2	975	1,282	22	0
1987	1	1,457	773	17	0
1987	2	620	3,012	8	0
1988	1	1,415	763	3	0
1988	2	461	1,919	235	0
1989	1	5,763	1,524	3	0
1989	2	5,900	1,887	245	0
1990	1	5,475	621	62	0
1990	2	9,271	5,082	90	0
1991	1	22,121	1,692	885	0
1991	2	3,327	5,884	1,113	0
1992	1	31,242	10,177	2,014	4
1992	2	18,648	11,759	369	0
1993	1	13,397	3,729	335	0
1993	2	5,712	7,738	629	0
1994	1	15,165	2,607	1,730	0
1994	2	18,227	28,122	443	0
1995	1	17,169	8,439	4,485	23
1995	2	15,666	14,409	2,486	0
1996	1	23,399	10,762	6,399	0
1996	2	13,498	11,524	343	44
1997	1	54,941	21,313	13,018	27
1997	2	20,239	19,094	2,747	1
1998	1	27,573	12,881	6,334	488
1998	2	34,760	24,050	7,741	75
1999	1	23,810	18,813	6,143	725
1999	2	33,933	34,119	1,285	430
2000	1	33,912	12,716	10,082	15,586
2000	2	16,545	29,343	774	2,337
2001	1	29,526	18,318	6,467	22,547
2001	2	17,422	26,621	1,575	3,136
2002	1	29,424	22,745	12,503	35,526
2002	2	15,514	20,380	5,086	597
2003	1	25,827	9,909	2,363	37,242
2003	2	11,213	15,232	2,146	2,618
2004	1	30,684	17,161	13,163	46,731
2004	2	17,323	15,419	115	1,016
2005	1	38,000	14,834	7,825	54,153
2005	2	17,601	17,158	2,033	102
2006	1	39,636	16,128	15,711	41,221
2006	2	13,981	26,344	6,013	0
2007	1	22,865	19,855	28,769	48,237
2007	2	20,571	24,127	2,515	0
2008	1	33,642	6,962	24,196	39,800
2008	2	20,571	9,146	10,638	0
2009	1	33,642	4,634	16,104	26,244

Table 4. Number of samples (input effective sample sizes) for composition data by model year, semester, and fishery.

Model Year	Sem	ENS	SCA	CCA	PNW
1981	1	0.00	7.00	0.00	0.00
1981	2	0.00	9.52	0.00	0.00
1982	1	0.00	14.44	0.00	0.00
1982	2	0.00	23.32	0.00	0.00
1983	1	0.00	12.16	0.00	0.00
1983	2	0.00	7.52	0.00	0.00
1984	1	0.00	0.00	0.00	0.00
1984	2	0.00	8.64	0.00	0.00
1985	1	0.00	15.00	0.00	0.00
1985	2	0.00	33.40	0.00	0.00
1986	1	0.00	20.20	0.00	0.00
1986	2	0.00	44.20	0.00	0.00
1987	1	0.00	29.40	0.00	0.00
1987	2	0.00	87.68	0.00	0.00
1988	1	0.00	22.76	0.00	0.00
1988	2	0.00	46.80	0.00	0.00
1989	1	3.88	45.76	0.00	0.00
1989	2	2.92	50.28	0.00	0.00
1990	1	9.96	14.56	4.00	0.00
1990	2	26.36	86.60	5.00	0.00
1991	1	49.64	18.88	20.00	0.00
1991	2	38.00	77.08	9.00	0.00
1992	1	19.24	95.48	0.00	0.00
1992	2	9.56	64.84	0.00	0.00
1993	1	4.96	22.12	0.00	0.00
1993	2	8.88	104.84	0.00	0.00
1994	1	10.56	25.92	0.00	0.00
1994	2	9.20	277.56	0.00	0.00
1995	1	12.68	58.52	0.00	0.00
1995	2	7.32	60.88	11.00	0.00
1996	1	12.80	33.96	87.64	0.00
1996	2	6.32	59.00	2.00	0.00
1997	1	14.16	53.88	54.96	0.00
1997	2	5.24	59.80	5.00	0.00
1998	1	7.56	53.88	52.00	0.00
1998	2	13.92	60.56	14.00	0.00
1999	1	10.60	48.60	0.00	2.96
1999	2	11.52	58.28	0.00	4.16
2000	1	11.92	56.20	0.00	97.49
2000	2	8.56	67.96	4.00	10.56
2001	1	5.80	66.80	27.92	97.38
2001	2	8.68	64.84	12.96	17.92
2002	1	0.00	69.92	35.00	199.67
2002	2	0.00	70.00	19.00	4.96
2003	1	0.00	61.00	8.00	180.87
2003	2	0.00	67.28	8.00	10.92
2004	1	0.00	69.00	23.96	136.37
2004	2	0.00	70.96	0.00	5.00
2005	1	0.00	73.00	24.00	105.47
2005	2	0.00	67.00	32.00	3.00
2006	1	0.00	60.96	58.00	26.96
2006	2	0.00	73.84	46.96	0.00
2007	1	0.00	72.08	68.04	112.76
2007	2	0.00	52.64	14.80	0.00
2008	1	0.00	25.48	29.84	320.54
2008	2	0.00	19.88	19.88	0.00

Table 5. Fishery-independent indices of Pacific sardine relative abundance. Complete details regarding revised estimation of DEPM and TEP values can be found in Table 4 of Appendix I. In the SS3 model, indices had a lognormal error structure with units of standard error of $\log_e$(index). Variance of the observations was only available as a CV, so the S.E. was approximated as sqrt($\log_e(1+CV^2)$).

Model Year	DEPM	SE of *ln*(index)	TEP	SE of *ln*(index)	TEP_all	SE of *ln*(index)	PFFS	SE of *ln*(index)	WCVI	SE of *ln*(index)	Aerial	SE of *ln*(index)
1981	---	---	---	---	---	---	---	---	---	---	---	---
1982	---	---	---	---	---	---	---	---	---	---	---	---
1983	---	---	---	---	---	---	---	---	---	---	---	---
1984	---	---	---	---	---	---	---	---	---	---	---	---
1985	---	---	---	---	---	---	---	---	---	---	---	---
1986	4,061	0.60	---	---	11,220	0.73	---	---	---	---	---	---
1987-1	8,661	0.56	---	---	25,637	0.48	---	---	---	---	---	---
1987-2	---	---	17,266	0.35	17,266	0.35	---	---	---	---	---	---
1988	---	---	---	---	---	---	---	---	---	---	---	---
1989	---	---	---	---	---	---	---	---	---	---	---	---
1990	---	---	---	---	---	---	---	---	---	---	---	---
1991	---	---	---	---	---	---	---	---	---	---	---	---
1992	---	---	---	---	---	---	---	---	---	---	---	---
1993	69,065	0.29	---	---	73,374	0.21	---	---	---	---	---	---
1994	---	---	---	---	---	---	---	---	---	---	---	---
1995	---	---	97,923	0.40	97,923	0.40	---	---	---	---	---	---
1996	---	---	482,246	0.21	482,246	0.21	---	---	---	---	---	---
1997	---	---	369,038	0.33	369,038	0.33	---	---	---	---	---	---
1998	---	---	332,177	0.34	332,177	0.34	---	---	---	---	---	---
1999	---	---	1,252,539	0.39	1,252,539	0.39	1.485	0.90	---	---	---	---
2000	---	---	928,806	0.38	928,806	0.38	13.328	1.07	---	---	---	---
2001	---	---	236,660	0.17	236,660	0.17	1.075	0.86	---	---	---	---
2002	---	---	556,177	0.18	556,177	0.18	1.033	0.84	---	---	---	---
2003	145,274	0.23	---	---	307,795	0.24	2.022	0.91	---	---	---	---
2004	459,943	0.55	---	---	486,950	0.40	2.858	0.82	---	---	---	---
2005	---	---	651,994	0.25	651,994	0.25	1.654	0.83	---	---	---	---
2006	198,404	0.30	---	---	306,297	0.26	1.590	0.71	258,702	*0.50*	---	---
2007	66,395	0.27	---	---	128,118	0.21	3.276	0.84	---	---	---	---
2008	99,162	0.24	---	---	162,188	0.22	2.622	0.88	229,721	*0.50*	---	---
2009	---	---	---	---	---	---	---	---	198,365	*0.50*	1,353,170	0.55

Table 6. Base model parameters.

Parameter	Min	Max	Init	Value	Std Dev	Phase	Estimated or Fixed
NatM_p_1_Fem_GP_1	0.3	0.7	0.4	0.4	_	-3	Fixed
L_at_Amin_Fem_GP_1	3	15	9.8	9.8	_	-3	Fixed
L_at_Amax_Fem_GP_1	20	30	24	24	_	-3	Fixed
VonBert_K_Fem_GP_1	0.05	0.99	0.5	0.5	_	-3	Fixed
CV_young_Fem_GP_1	0.05	0.3	0.171502	0.17212	0.00563342	3	Estimated
CV_old_Fem_GP_1	0.01	0.1	0.032336	0.033293	0.00181412	3	Estimated
Wtlen_1_Fem	-3	3	9.47E-06	9.47E-06	_	-3	Fixed
Wtlen_2_Fem	-3	5	3.14752	3.14752	_	-3	Fixed
Mat50%_Fem	9	19	16	16	_	-3	Fixed
Mat_slope_Fem	-20	3	-0.7571	-0.7571	_	-3	Fixed
Eg/gm_inter_Fem	0	10	1	1	_	-3	Fixed
Eg/gm_slope_wt_Fem	-1	5	0	0	_	-3	Fixed
L_at_Amin_Fem_GP_1_BLK_mult1981	-2	2	0.00215292	-0.00253016	0.0340922	3	Estimated
L_at_Amin_Fem_GP_1_BLK_mult1991	-2	2	-0.00305681	-0.00325134	0.0155378	3	Estimated
L_at_Amax_Fem_GP_1_BLK_mult1981	-2	2	-0.0463661	-0.048862	0.00560037	3	Estimated
L_at_Amax_Fem_GP_1_BLK_mult1991	-2	2	0.0201076	0.0172309	0.00517785	3	Estimated
VonBert_K_Fem_GP_1_BLK_mult1981	-2	2	0.572263	0.60153	0.0468559	3	Estimated
VonBert_K_Fem_GP_1_BLK_mult1991	-2	2	-0.106793	-0.0840529	0.0326669	3	Estimated
SR_R0	3	25	16	15.412	0.242698	1	Estimated
SR_steep	0.2	3	2.36989	2.32462	0.195501	6	Estimated
SR_sigmaR	0	2	0.88789	0.88789	_	-3	Fixed
SR_R1_offset	-15	15	-4.15911	-4.19955	0.306528	2	Estimated
InitAgeComp_6	_	_	_	-1.2107	0.612633	_	Estimated
InitAgeComp_5	_	_	_	-1.2436	0.603737	_	Estimated
InitAgeComp_4	_	_	_	-0.983579	0.578194	_	Estimated
InitAgeComp_3	_	_	_	-0.871336	0.529359	_	Estimated
InitAgeComp_2	_	_	_	-0.752996	0.43393	_	Estimated
InitAgeComp_1	_	_	_	0.45449	0.238896	_	Estimated
RecrDev_1981	_	_	_	-0.789973	0.322206	_	Estimated
RecrDev_1982	_	_	_	-0.114602	0.278082	_	Estimated
RecrDev_1983	_	_	_	-0.549448	0.266723	_	Estimated
RecrDev_1984	_	_	_	-0.938099	0.2452	_	Estimated
RecrDev_1985	_	_	_	-0.223452	0.220821	_	Estimated
RecrDev_1986	_	_	_	-0.123764	0.230035	_	Estimated
RecrDev_1987	_	_	_	-0.104458	0.213207	_	Estimated
RecrDev_1988	_	_	_	-0.641137	0.207543	_	Estimated
RecrDev_1989	_	_	_	-0.201099	0.194794	_	Estimated
RecrDev_1990	_	_	_	0.50309	0.18142	_	Estimated
RecrDev_1991	_	_	_	0.122672	0.196762	_	Estimated
RecrDev_1992	_	_	_	0.927209	0.161276	_	Estimated
RecrDev_1993	_	_	_	0.834127	0.14236	_	Estimated
RecrDev_1994	_	_	_	-0.245854	0.143908	_	Estimated
RecrDev_1995	_	_	_	0.222993	0.147164	_	Estimated
RecrDev_1996	_	_	_	1.40216	0.151503	_	Estimated
RecrDev_1997	_	_	_	1.6349	0.127121	_	Estimated
RecrDev_1998	_	_	_	-0.0325931	0.191922	_	Estimated
RecrDev_1999	_	_	_	0.189453	0.276459	_	Estimated
RecrDev_2000	_	_	_	1.49181	0.302691	_	Estimated
RecrDev_2001	_	_	_	-1.22396	0.330093	_	Estimated
RecrDev_2002	_	_	_	1.71315	0.178505	_	Estimated
RecrDev_2003	_	_	_	0.874841	0.144749	_	Estimated

Table 6 (cont'd). Base model parameters.

Parameter	Min	Max	Init	Value	Std Dev	Phase	Estimated or Fixed
RecrDev_2004	_	_	_	0.876842	0.142363	_	Estimated
RecrDev_2005	_	_	_	-0.220949	0.216494	_	Estimated
RecrDev_2006	_	_	_	-0.00418719	0.282129	_	Estimated
RecrDev_2007	_	_	_	-0.771949	0.397111	_	Estimated
Q_base_7_DEPM	-3	3	-1.10601	-1.80507	0.345537	5	Estimated
Q_base_8_TEP	-3	3	-0.374949	-0.868593	0.328443	5	Estimated
Q_base_12_Aerial	-3	3	0	0	_	-5	Fixed
SizeSel_1P_1_ENS_BLK_repl1981	10	26	23.8106	23.7986	0.112334	4	Estimated
SizeSel_1P_1_ENS_BLK_repl1992	10	26	16.5277	16.3718	0.286257	4	Estimated
SizeSel_1P_1_ENS_BLK_repl1999	10	26	16.9992	16.9177	0.454103	4	Estimated
SizeSel_1P_2_ENS_BLK_repl1981	-5	3	-4.9	-4.9	_	-4	Fixed
SizeSel_1P_2_ENS_BLK_repl1992	-5	3	-0.51709	-0.512477	0.126427	4	Estimated
SizeSel_1P_2_ENS_BLK_repl1999	-5	3	-1.68387	-1.75189	0.487246	4	Estimated
SizeSel_1P_3_ENS_BLK_repl1981	-1	9	3.01542	3.07381	0.09168	4	Estimated
SizeSel_1P_3_ENS_BLK_repl1992	-1	9	0.940063	0.846381	0.27349	4	Estimated
SizeSel_1P_3_ENS_BLK_repl1999	-1	9	1.44534	1.42845	0.358774	4	Estimated
SizeSel_1P_4_ENS_BLK_repl1981	-4	9	-3.99421	-3.9951	0.158455	4	Estimated
SizeSel_1P_4_ENS_BLK_repl1992	-1	9	0.145243	0.159489	0.57941	4	Estimated
SizeSel_1P_4_ENS_BLK_repl1999	-1	9	0.928352	1.01292	0.454546	4	Estimated
SizeSel_1P_5_ENS_BLK_repl1981	-10	10	-10	-10	_	-4	Fixed
SizeSel_1P_5_ENS_BLK_repl1992	-10	10	-10	-10	_	-4	Fixed
SizeSel_1P_5_ENS_BLK_repl1999	-10	10	-10	-10	_	-4	Fixed
SizeSel_1P_6_ENS_BLK_repl1981	-10	10	-0.630716	-0.745852	0.771985	4	Estimated
SizeSel_1P_6_ENS_BLK_repl1992	-10	10	-3.06322	-3.26799	1.0753	4	Estimated
SizeSel_1P_6_ENS_BLK_repl1999	-10	10	-5.80902	-6.68789	6.62913	4	Estimated
SizeSel_2P_1_SCA_S1_BLK_repl1981	10	26	21.3865	21.1367	0.743523	4	Estimated
SizeSel_2P_1_SCA_S1_BLK_repl1992	10	26	18.2913	18.2024	0.264981	4	Estimated
SizeSel_2P_1_SCA_S1_BLK_repl1999	10	26	16.269	16.1772	0.178893	4	Estimated
SizeSel_2P_2_SCA_S1_BLK_repl1981	-5	3	0.913317	0.970416	8.14492	4	Estimated
SizeSel_2P_2_SCA_S1_BLK_repl1992	-5	3	-5	-5	_	-4	Fixed
SizeSel_2P_2_SCA_S1_BLK_repl1999	-5	3	-5	-5	_	-4	Fixed
SizeSel_2P_3_SCA_S1_BLK_repl1981	-1	9	2.55337	2.49915	0.367617	4	Estimated
SizeSel_2P_3_SCA_S1_BLK_repl1992	-1	9	2.20117	2.19923	0.138507	4	Estimated
SizeSel_2P_3_SCA_S1_BLK_repl1999	-1	9	2.09147	2.07525	0.120424	4	Estimated
SizeSel_2P_4_SCA_S1_BLK_repl1981	-1	9	3.99209	3.98956	112.435	4	Estimated
SizeSel_2P_4_SCA_S1_BLK_repl1992	-1	9	0.812195	0.862713	0.362726	4	Estimated
SizeSel_2P_4_SCA_S1_BLK_repl1999	-1	9	1.02159	1.05588	0.184464	4	Estimated
SizeSel_2P_5_SCA_S1_BLK_repl1981	-10	10	-10	-10	_	-4	Fixed
SizeSel_2P_5_SCA_S1_BLK_repl1992	-10	10	-10	-10	_	-4	Fixed
SizeSel_2P_5_SCA_S1_BLK_repl1999	-10	10	-10	-10	_	-4	Fixed
SizeSel_2P_6_SCA_S1_BLK_repl1981	-10	10	-1.10102	-1.26334	168.823	4	Estimated
SizeSel_2P_6_SCA_S1_BLK_repl1992	-10	10	-2.91214	-3.11073	0.55762	4	Estimated
SizeSel_2P_6_SCA_S1_BLK_repl1999	-10	10	-6.07771	-6.2836	1.21283	4	Estimated
SizeSel_3P_1_SCA_S2_BLK_repl1981	10	26	25.9884	25.3615	1.35723	4	Estimated
SizeSel_3P_1_SCA_S2_BLK_repl1992	10	26	16.4992	16.4099	0.180466	4	Estimated
SizeSel_3P_1_SCA_S2_BLK_repl1999	10	26	14.5503	14.4982	0.148161	4	Estimated
SizeSel_3P_2_SCA_S2_BLK_repl1981	-5	3	-1.33524	-1.33913	73.0515	4	Estimated
SizeSel_3P_2_SCA_S2_BLK_repl1992	-5	3	-5	-5	_	-4	Fixed
SizeSel_3P_2_SCA_S2_BLK_repl1999	-5	3	-5	-5	_	-4	Fixed
SizeSel_3P_3_SCA_S2_BLK_repl1981	-1	9	3.46286	3.42353	0.211388	4	Estimated
SizeSel_3P_3_SCA_S2_BLK_repl1992	-1	9	1.80316	1.77844	0.107204	4	Estimated

Table 6 (cont'd). Base model parameters.

Parameter	Min	Max	Init	Value	Std Dev	Phase	Estimated or Fixed
SizeSel_3P_3_SCA_S2_BLK_repl1999	-1	9	1.38232	1.36337	0.129763	4	Estimated
SizeSel_3P_4_SCA_S2_BLK_repl1981	-1	9	3.98324	3.97282	113.363	4	Estimated
SizeSel_3P_4_SCA_S2_BLK_repl1992	-1	9	1.55826	1.60135	0.234798	4	Estimated
SizeSel_3P_4_SCA_S2_BLK_repl1999	-1	9	1.77072	1.75114	0.116634	4	Estimated
SizeSel_3P_5_SCA_S2_BLK_repl1981	-10	10	-10	-10	_	-4	Fixed
SizeSel_3P_5_SCA_S2_BLK_repl1992	-10	10	-10	-10	_	-4	Fixed
SizeSel_3P_5_SCA_S2_BLK_repl1999	-10	10	-10	-10	_	-4	Fixed
SizeSel_3P_6_SCA_S2_BLK_repl1981	-10	10	-1.32541	-1.47319	149.118	4	Estimated
SizeSel_3P_6_SCA_S2_BLK_repl1992	-10	10	-2.29699	-2.54593	0.356843	4	Estimated
SizeSel_3P_6_SCA_S2_BLK_repl1999	-10	10	-5.58708	-5.73821	0.695096	4	Estimated
SizeSel_4P_1_CCA_S1_BLK_repl1981	10	26	20.5704	20.5678	0.0715173	4	Estimated
SizeSel_4P_1_CCA_S1_BLK_repl1993	10	26	18.7071	18.6391	0.218724	4	Estimated
SizeSel_4P_1_CCA_S1_BLK_repl1999	10	26	16.7855	16.7379	0.175116	4	Estimated
SizeSel_4P_2_CCA_S1_BLK_repl1981	-5	3	-5	-5	_	-4	Fixed
SizeSel_4P_2_CCA_S1_BLK_repl1993	-5	3	-5	-5	_	-4	Fixed
SizeSel_4P_2_CCA_S1_BLK_repl1999	-5	3	-5	-5	_	-4	Fixed
SizeSel_4P_3_CCA_S1_BLK_repl1981	-1	9	1.00548	1.02414	0.317835	4	Estimated
SizeSel_4P_3_CCA_S1_BLK_repl1993	-1	9	2.3574	2.36622	0.129496	4	Estimated
SizeSel_4P_3_CCA_S1_BLK_repl1999	-1	9	1.39614	1.42018	0.204039	4	Estimated
SizeSel_4P_4_CCA_S1_BLK_repl1981	-4	9	-3.98895	-3.98856	0.363696	4	Estimated
SizeSel_4P_4_CCA_S1_BLK_repl1993	-1	9	0.256433	0.310354	0.376603	4	Estimated
SizeSel_4P_4_CCA_S1_BLK_repl1999	-1	9	0.160941	0.19473	0.298321	4	Estimated
SizeSel_4P_5_CCA_S1_BLK_repl1981	-10	10	-10	-10	_	-4	Fixed
SizeSel_4P_5_CCA_S1_BLK_repl1993	-10	10	-10	-10	_	-4	Fixed
SizeSel_4P_5_CCA_S1_BLK_repl1999	-10	10	-10	-10	_	-4	Fixed
SizeSel_4P_6_CCA_S1_BLK_repl1981	-10	10	-0.965405	-1.06739	0.590748	4	Estimated
SizeSel_4P_6_CCA_S1_BLK_repl1993	-10	10	-3.52512	-3.70197	0.672509	4	Estimated
SizeSel_4P_6_CCA_S1_BLK_repl1999	-10	10	-3.01732	-3.13967	0.222514	4	Estimated
SizeSel_5P_1_CCA_S2_BLK_repl1981	10	26	17.0497	16.9949	1.04284	4	Estimated
SizeSel_5P_1_CCA_S2_BLK_repl1993	10	26	17.7861	17.4878	1.32467	4	Estimated
SizeSel_5P_1_CCA_S2_BLK_repl1999	10	26	17.7112	17.4916	0.432469	4	Estimated
SizeSel_5P_2_CCA_S2_BLK_repl1981	-5	3	-5	-5	_	-4	Fixed
SizeSel_5P_2_CCA_S2_BLK_repl1993	-5	3	-5	-5	_	-4	Fixed
SizeSel_5P_2_CCA_S2_BLK_repl1999	-5	3	-5	-5	_	-4	Fixed
SizeSel_5P_3_CCA_S2_BLK_repl1981	-1	9	0.0205592	-0.0348736	1.63061	4	Estimated
SizeSel_5P_3_CCA_S2_BLK_repl1993	-1	9	2.41869	2.33174	0.604088	4	Estimated
SizeSel_5P_3_CCA_S2_BLK_repl1999	-1	9	3.94488	4.11383	0.587075	4	Estimated
SizeSel_5P_4_CCA_S2_BLK_repl1981	-4	9	6.24069	6.30341	49.2259	4	Estimated
SizeSel_5P_4_CCA_S2_BLK_repl1993	-1	9	2.93323	2.92072	1.30693	4	Estimated
SizeSel_5P_4_CCA_S2_BLK_repl1999	-1	9	1.3935	1.48486	0.367564	4	Estimated
SizeSel_5P_5_CCA_S2_BLK_repl1981	-10	10	-10	-10	_	-4	Fixed
SizeSel_5P_5_CCA_S2_BLK_repl1993	-10	10	-10	-10	_	-4	Fixed
SizeSel_5P_5_CCA_S2_BLK_repl1999	-10	10	-10	-10	_	-4	Fixed
SizeSel_5P_6_CCA_S2_BLK_repl1981	-10	10	0.814964	-1.16342	15.8463	4	Estimated
SizeSel_5P_6_CCA_S2_BLK_repl1993	-10	10	-2.98473	-3.16175	8.56425	4	Estimated
SizeSel_5P_6_CCA_S2_BLK_repl1999	-10	10	-2.73732	-2.82446	0.418307	4	Estimated
SizeSel_6P_1_PNW_BLK_repl1981	10	26	22.2464	22.1264	0.450873	4	Estimated
SizeSel_6P_1_PNW_BLK_repl2004	10	26	20.0824	20.053	0.366911	4	Estimated
SizeSel_6P_2_PNW_BLK_repl1981	-5	3	1	1	_	-4	Fixed
SizeSel_6P_2_PNW_BLK_repl2004	-5	3	1	1	_	-4	Fixed
SizeSel_6P_3_PNW_BLK_repl1981	-1	9	2.16289	2.17506	0.248839	4	Estimated

Table 6 (cont'd). Base model parameters.

Parameter	Min	Max	Init	Value	Std Dev	Phase	Estimated or Fixed
SizeSel_6P_3_PNW_BLK_repl2004	-1	9	1.77802	1.81436	0.216623	4	Estimated
SizeSel_6P_4_PNW_BLK_repl1981	-1	9	1.6	1.6	_	-4	Fixed
SizeSel_6P_4_PNW_BLK_repl2004	-1	9	1.6	1.6	_	-4	Fixed
SizeSel_6P_5_PNW_BLK_repl1981	-10	10	-10	-10	_	-4	Fixed
SizeSel_6P_5_PNW_BLK_repl2004	-10	10	-10	-10	_	-4	Fixed
SizeSel_6P_6_PNW_BLK_repl1981	-10	10	10	10	_	-4	Fixed
SizeSel_6P_6_PNW_BLK_repl2004	-10	10	10	10	_	-4	Fixed
SizeSel_12P_1_Aerial	10	26	18.0002	18.9837	0.602042	4	Estimated
SizeSel_12P_2_Aerial	-5	3	-0.999933	-1.9814	0.889281	4	Estimated
SizeSel_12P_3_Aerial	-1	9	4.00004	-0.724977	1.4	4	Estimated
SizeSel_12P_4_Aerial	-1	9	3.99994	-0.41581	1.05746	4	Estimated
SizeSel_12P_5_Aerial	-10	10	-10	-10	_	-4	Fixed
SizeSel_12P_6_Aerial	-10	10	-0.000129392	-5.44967	2.8267	4	Estimated

Table 7. Likelihood components and derived quantities for the base and alternative models.

Component \ Model	BASE-w/Aerial	BASE-no Aerial	w/WCVI survey	Beverton-Holt S-R
Surveys				
DEPM	-1.138200	-2.276760	-0.787860	-2.366930
TEP	-0.764622	-0.402065	-0.615410	-0.505086
WCVI	---	---	-4.776420	---
Aerial	9.513680	---	7.979060	23.750400
Survey Subtotal	**7.610860**	**-2.678830**	**1.799370**	**20.878400**
Length Comp				
ENS	361.712	361.837	363.551	359.674
SCA_S1	352.866	352.452	354.284	356.114
SCA_S2	426.604	428.692	430.651	429.575
CCA_S1	161.505	163.891	161.485	163.442
CCA_S2	191.526	192.779	192.231	193.012
PNW	190.870	183.168	189.030	183.711
WCVI	---	---	16.431	---
Aerial	1.282	---	1.087	3.126
Length Comp Subtotal	**1686.370**	**1682.820**	**1708.750**	**1688.650**
Age Comp				
ENS	265.060	263.495	266.794	263.994
SCA_S1	223.171	223.411	222.537	223.039
SCA_S2	492.886	487.581	494.465	483.260
CCA_S1	108.877	109.410	108.925	109.978
CCA_S2	158.659	160.642	157.783	160.957
PNW	135.033	133.145	135.161	131.902
Age Comp Subtotal	**1383.690**	**1377.680**	**1385.670**	**1373.130**
Recruitment	55.600	56.899	51.389	58.574
Catch Penalty	0.000	0.005	0.000	0.005
Parm Soft Bounds	0.032	0.031	0.026	0.040
TOTAL LIKELIHOOD	**3133.290**	**3114.760**	**3147.630**	**3141.280**

Derived Quantities of Interest	**BASE-w/Aerial**	**BASE-no Aerial**	**w/WCVI survey**	**Beverton-Holt S-R**
SSB-virgin (mt)	1,034,580	653,583	1,089,240	865,844
R-virgin (1,000s)	4,935,470	3,132,820	5,127,770	4,160,960
B-1+ peak (mt)	1,686,190	1,092,410	1,710,750	1,293,090
B-1+ 2009 (mt)	702,024	220,025	834,402	268,237
HG-2010	72,039	9,138	89,314	15,430

Table 8. Derived SSB (mt) and Recruits (1,000s of age-0 fish) and standard deviations from the base model. SSB estimates are calculated near the end of each model year, e.g. the 2009 value is SSB in spring of calendar year 2010. Recruits are age-0 fish calculated at the beginning of each subsequent model year so, for example, the 2003 year class (18.622e+06) is displayed in row 2002 since they were produced by the SSB of that year.

YEAR	SSB (mt)	SSB Std Dev	Recruits in year+1 (1,000s)	Recruits Std Dev
VIRG	1,034,600	254,160	4,935,500	1,197,800
INIT	15,521	6,159	74,044	29,080
1981	7,686	2,812	112,750	41,086
1982	9,935	3,535	284,900	93,224
1983	12,676	4,362	233,860	78,474
1984	21,621	6,943	265,050	82,456
1985	27,080	9,504	670,110	196,570
1986	34,074	11,403	917,010	258,170
1987	51,103	16,870	1,349,500	403,790
1988	79,974	25,150	1,157,200	361,900
1989	119,240	37,947	2,452,900	732,530
1990	148,680	49,322	5,788,900	1,490,700
1991	169,720	63,111	4,308,700	1,177,700
1992	217,120	81,733	11,078,000	2,643,800
1993	304,250	110,580	11,629,000	2,563,800
1994	482,160	155,030	4,196,200	960,430
1995	717,270	214,770	5,882,200	1,301,600
1996	851,700	246,250	16,791,000	3,573,800
1997	815,380	244,070	22,012,000	4,262,100
1998	937,480	266,480	3,630,200	729,910
1999	1,278,100	334,470	2,874,800	549,580
2000	1,423,600	367,340	8,492,100	1,374,200
2001	1,240,500	331,160	738,750	231,670
2002	1,027,600	284,090	18,622,000	3,735,100
2003	821,820	239,900	10,226,000	2,203,000
2004	814,100	237,780	10,328,000	2,065,400
2005	955,530	276,820	2,943,100	622,860
2006	1,030,500	302,630	3,330,900	822,910
2007	935,690	295,190	1,736,800	687,480
2008	728,740	259,020	6,911,700	1,273,500
2009	529,540	217,620	7,857,700	1,489,500

Table 9. Pacific sardine biomass and population number-at-age (1,000s) by model year and semester from the base model.

		BIOMASS (mt)			POPULATION NUMBERS-AT-AGE (1,000s of fish)										
Model Year	Sem	Total (0+)	Age 1+	SSB	0 (R)	1	2	3	4	5	6	7	8	9	10+
VIRG	1	1,193,010	1,149,100	_	4,935,470	3,308,340	2,217,650	1,486,530	996,453	667,943	447,735	300,126	201,180	134,855	274,194
VIRG	2	1,153,330	1,095,890	1,034,580	4,040,820	2,708,640	1,815,660	1,217,070	815,827	546,865	366,575	245,722	164,713	110,410	224,491
INIT	1	17,898	17,239	_	74,044	49,633	33,270	22,302	14,949	10,021	6,717	4,503	3,018	2,023	4,114
INIT	2	17,303	16,441	15,521	60,622	40,636	27,239	18,259	12,239	8,204	5,500	3,686	2,471	1,656	3,368
1981	1	8,909	8,210	_	78,647	52,719	10,564	6,291	3,769	1,948	1,350	4,503	3,018	2,023	4,114
1981	2	9,429	8,514	7,686	64,391	43,153	8,642	5,146	3,083	1,594	1,104	3,683	2,469	1,655	3,365
1982	1	11,557	10,554	_	112,752	52,712	35,216	7,026	4,176	2,500	1,292	895	2,986	2,001	4,069
1982	2	12,147	10,835	9,935	92,313	43,070	28,613	5,702	3,389	2,029	1,048	726	2,423	1,624	3,302
1983	1	15,980	13,445	_	284,896	75,527	34,594	22,488	4,439	2,629	1,572	812	562	1,876	3,813
1983	2	17,178	13,862	12,676	233,252	61,603	27,869	18,025	3,553	2,104	1,258	650	450	1,501	3,051
1984	1	24,047	21,966	_	233,861	190,926	50,154	22,543	14,536	2,862	1,694	1,012	523	362	3,663
1984	2	27,355	24,634	21,621	191,469	156,191	40,821	18,367	11,856	2,335	1,382	826	427	295	2,989
1985	1	31,097	28,739	_	265,051	156,350	117,278	27,842	12,071	7,704	1,512	894	534	276	2,122
1985	2	32,872	29,787	27,080	217,003	127,155	93,173	21,905	9,473	6,041	1,185	701	419	216	1,664
1986	1	42,081	36,120	_	670,107	177,538	102,170	73,468	17,125	7,381	4,701	922	545	325	1,462
1986	2	44,773	36,975	34,074	548,635	144,982	82,684	59,329	13,827	5,960	3,796	744	440	263	1,180
1987	1	62,026	53,869	_	917,012	448,678	115,013	63,332	44,762	10,376	4,464	2,841	557	329	1,079
1987	2	68,620	57,949	51,103	750,773	363,372	89,772	48,663	34,249	7,929	3,410	2,170	425	251	824
1988	1	94,889	82,885	_	1,349,470	613,842	287,239	68,181	36,290	25,366	5,857	2,516	1,601	314	793
1988	2	105,470	89,766	79,974	1,104,840	499,188	228,326	53,662	28,485	19,894	4,593	1,973	1,255	246	622
1989	1	138,600	128,306	_	1,157,210	903,987	401,808	180,801	42,183	22,330	15,580	3,595	1,544	982	679
1989	2	147,351	133,884	119,243	947,424	729,975	309,018	135,809	31,467	16,624	11,591	2,674	1,148	730	505
1990	1	182,662	160,842	_	2,452,920	774,826	577,379	235,649	102,068	23,538	12,416	8,652	1,996	857	922
1990	2	190,291	161,747	148,677	2,008,250	629,286	455,172	182,988	78,900	18,171	9,580	6,675	1,540	661	711
1991	1	270,166	218,670	_	5,788,900	1,641,620	491,401	337,228	132,675	56,794	13,047	6,873	4,787	1,104	984
1991	2	267,086	199,859	169,724	4,739,290	1,315,440	352,645	229,281	89,102	38,061	8,741	4,605	3,207	740	658
1992	1	344,887	306,559	_	4,308,670	3,878,300	1,052,840	271,422	173,488	67,069	28,604	6,566	3,458	2,408	1,050
1992	2	350,240	300,212	217,118	3,526,800	2,929,080	676,463	193,364	132,544	52,400	22,508	5,180	2,731	1,902	830
1993	1	470,856	372,311	_	11,077,800	2,857,370	2,129,830	498,560	150,806	105,725	42,077	18,112	4,171	2,200	2,201
1993	2	512,641	383,996	304,249	9,069,140	2,286,370	1,633,010	388,991	121,147	85,745	34,214	14,740	3,396	1,791	1,792
1994	1	708,982	605,536	_	11,628,900	7,390,860	1,792,390	1,286,460	312,792	98,370	69,798	27,869	12,009	2,767	2,919
1994	2	794,963	659,916	482,157	9,520,460	5,952,150	1,399,550	1,011,110	251,173	79,956	56,897	22,736	9,799	2,258	2,383
1995	1	920,582	883,254	_	4,196,240	7,724,440	4,480,360	1,065,180	794,594	201,741	64,752	46,163	18,456	7,956	3,768
1995	2	982,276	933,546	717,270	3,435,340	6,218,560	3,495,090	838,846	636,970	163,801	52,796	37,673	15,066	6,495	3,076
1996	1	1,060,110	1,007,780	_	5,882,250	2,800,420	4,878,530	2,749,360	670,321	514,241	133,115	43,002	30,702	12,280	7,802
1996	2	1,040,140	971,834	851,698	4,815,550	2,246,740	3,768,280	2,148,500	535,226	415,835	108,351	35,072	25,052	10,021	6,368
1997	1	1,179,700	1,030,330	_	16,790,900	3,925,470	1,764,100	2,971,700	1,721,170	432,817	337,889	88,260	28,592	20,427	13,365
1997	2	1,114,290	919,335	815,380	13,743,700	3,032,510	1,222,470	2,129,020	1,311,580	341,998	271,244	71,383	23,180	16,572	10,845
1998	1	1,374,150	1,178,340	_	22,012,300	11,159,800	2,293,420	931,009	1,670,110	1,047,770	275,800	219,656	57,928	18,826	22,272
1998	2	1,451,150	1,195,540	937,483	18,020,000	8,884,090	1,732,320	714,395	1,319,860	842,585	223,489	178,534	47,154	15,332	18,143
1999	1	1,623,340	1,591,050	_	3,630,240	14,652,800	6,763,050	1,317,640	557,569	1,050,700	678,372	180,865	144,807	38,293	27,202
1999	2	1,706,630	1,664,490	1,278,080	2,970,850	11,633,300	5,264,700	1,053,740	452,790	857,303	554,192	147,807	118,352	31,299	22,234

Table 9 (cont'd). Pacific sardine biomass and population number-at-age (1,000s) by model year and semester from the base model.

		BIOMASS (mt)			POPULATION NUMBERS-AT-AGE (1,000s of fish)										
Model Year	Sem	Total (0+)	Age 1+	SSB	0 (R)	1	2	3	4	5	6	7	8	9	10+
2000	1	1,711,760	1,686,190	_	2,874,750	2,379,710	8,815,240	4,130,540	849,269	368,797	700,398	453,127	120,881	96,800	43,787
2000	2	1,614,520	1,581,150	1,423,630	2,352,520	1,874,920	6,733,680	3,247,190	678,628	296,159	563,186	364,492	97,248	77,879	35,229
2001	1	1,570,300	1,494,760	_	8,492,140	1,832,980	1,334,550	5,230,100	2,617,700	552,227	241,549	459,602	297,503	79,380	92,329
2001	2	1,408,910	1,310,460	1,240,460	6,940,440	1,353,630	937,048	3,982,950	2,067,610	440,371	193,079	367,616	238,012	63,512	73,876
2002	1	1,319,190	1,312,620	_	738,754	5,331,960	911,882	702,780	3,165,930	1,674,110	358,339	157,316	299,639	194,027	112,006
2002	2	1,154,850	1,146,280	1,027,600	603,625	3,803,600	595,748	511,976	2,435,360	1,307,670	281,006	123,501	235,317	152,398	87,983
2003	1	1,191,240	1,025,580	_	18,621,900	470,342	2,651,160	448,119	406,578	1,973,440	1,065,700	229,352	100,844	192,179	196,331
2003	2	1,068,940	852,953	821,818	15,226,200	350,380	1,823,250	328,122	310,567	1,528,850	828,781	178,560	78,540	149,696	152,943
2004	1	1,203,630	1,112,660	_	10,226,100	12,094,100	256,134	1,392,180	260,995	251,304	1,243,350	674,920	145,469	63,994	246,609
2004	2	1,179,810	1,061,150	814,095	8,365,070	9,102,970	174,841	997,452	194,928	190,514	946,447	514,334	110,898	48,793	188,044
2005	1	1,329,050	1,237,180	_	10,328,000	6,761,790	7,058,830	138,028	804,250	158,685	155,538	773,284	420,327	90,636	193,575
2005	2	1,282,270	1,162,400	955,534	8,451,020	5,257,970	5,110,390	101,555	605,581	120,602	118,519	589,669	320,596	69,137	147,669
2006	1	1,343,540	1,317,350	_	2,943,080	6,798,340	4,045,810	4,040,990	82,088	493,786	98,586	96,948	482,442	262,317	177,402
2006	2	1,256,530	1,222,370	1,030,540	2,407,780	5,204,320	2,891,290	3,015,180	63,163	383,893	76,859	75,640	376,498	204,732	138,468
2007	1	1,224,310	1,194,680	_	3,330,930	1,900,950	3,827,390	2,256,060	2,430,980	51,457	313,615	62,834	61,850	307,886	280,668
2007	2	1,056,400	1,017,780	935,692	2,722,900	1,378,530	2,553,230	1,653,200	1,853,770	39,613	241,980	48,511	47,761	237,768	216,758
2008	1	971,399	955,948	_	1,736,820	2,075,030	905,263	1,891,810	1,310,970	1,502,920	32,309	197,672	39,647	39,040	371,567
2008	2	803,671	783,527	728,737	1,420,080	1,437,630	536,531	1,297,790	975,869	1,146,220	24,797	151,974	30,498	30,038	285,927
2009	1	763,509	702,024	_	6,911,700	1,091,040	926,854	372,917	994,335	781,249	929,602	20,181	123,812	24,856	257,580

Table 10 Harvest guideline (=ABC) for Pacific sardine for the 2010 management year for the base model. See 'Harvest Guideline' section for methods used to derive the harvest guideline.

Model	Stock biomass (age 1+, mt)	Cutoff (mt)	Harvest Fraction	U.S. Distribution	U.S. ABC for 2010 (mt)
BASE	702,024	150,000	0.15	0.87	72,039

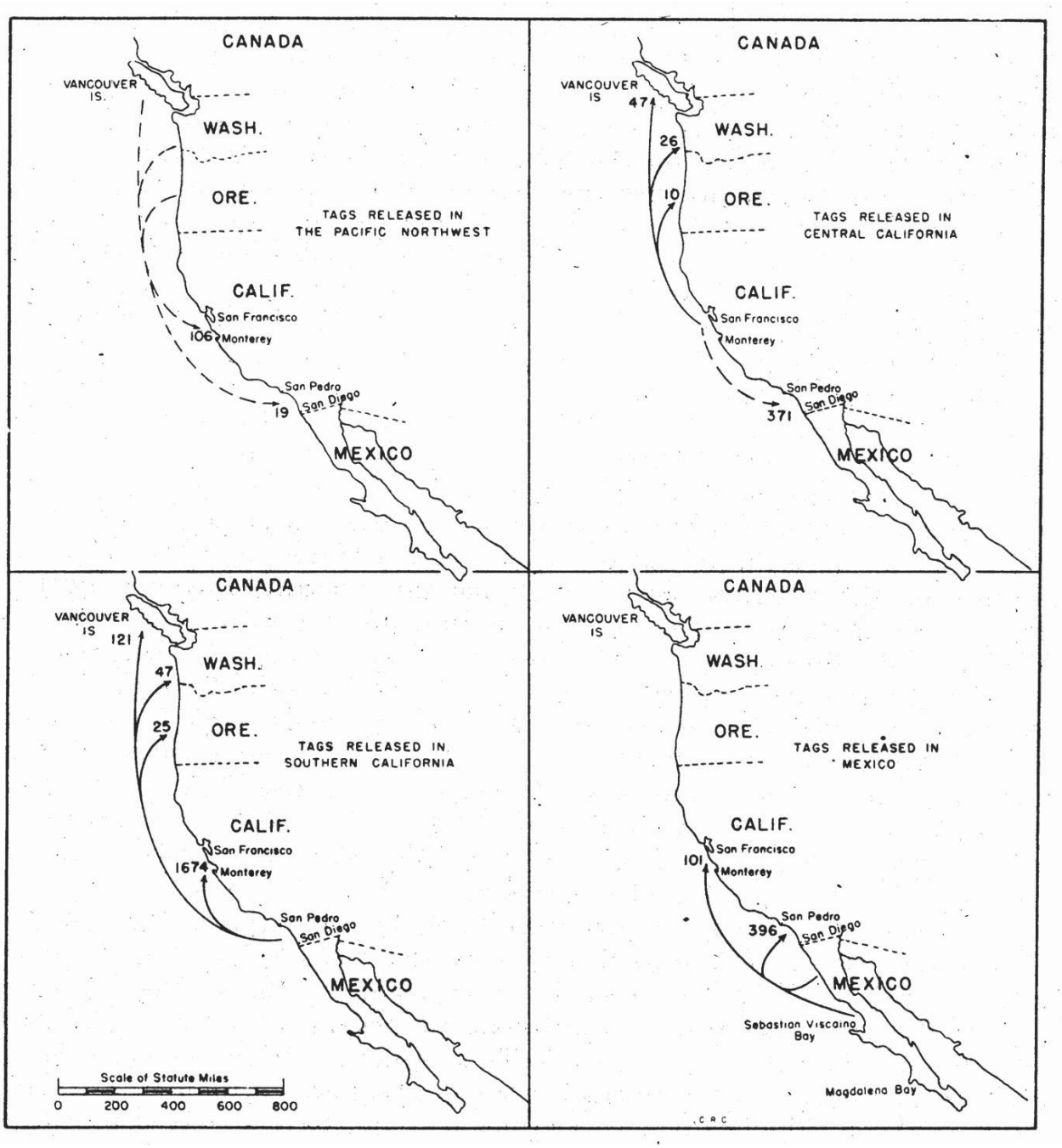


Figure 1. Sections of the Pacific Coast of North America showing the major movements of tagged sardines as indicated by recoveries from June 1935 to May, 1944 (reproduced from Clark and Janssen, 1945).

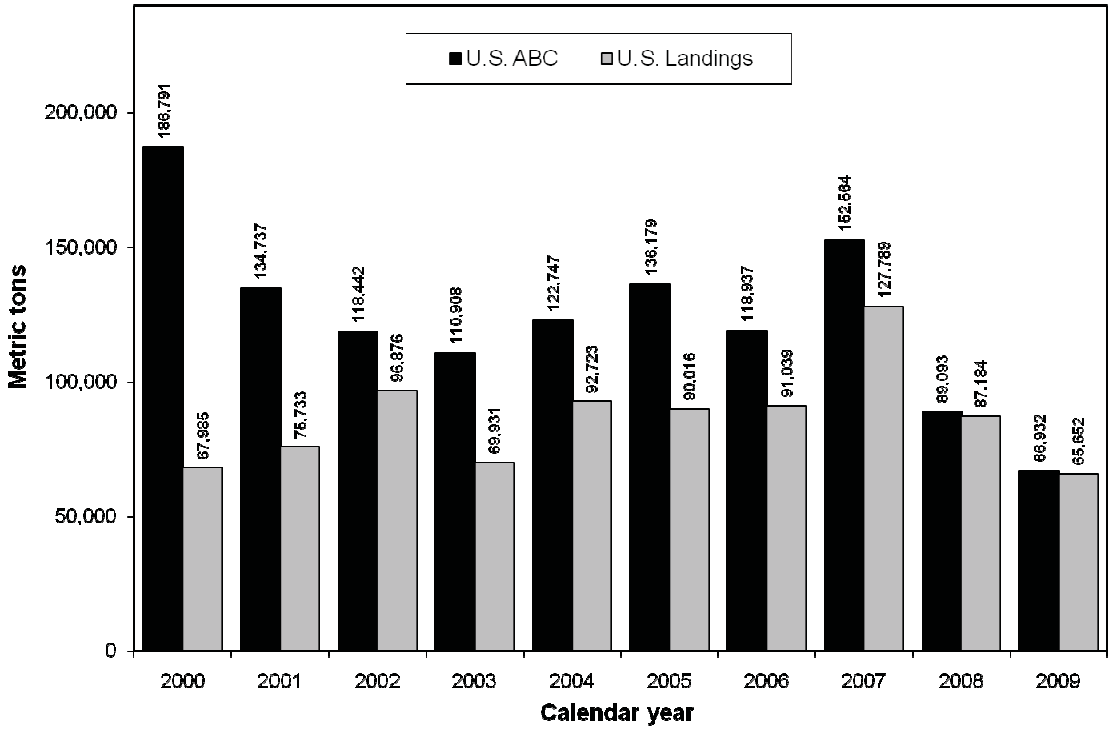


Figure 2a. Performance of the U.S. Pacific sardine fishery since calendar year 2000.

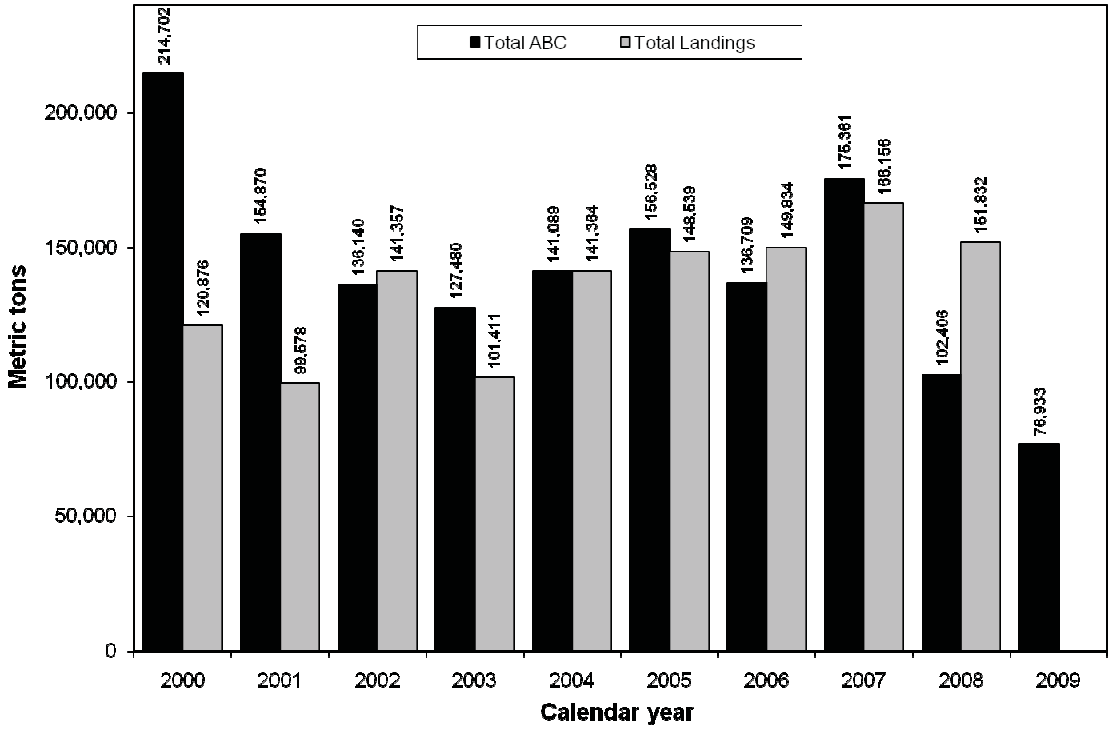


Figure 2b. Coast-wide harvest (Ensenada to British Columbia) and implied ABCs since 2000.

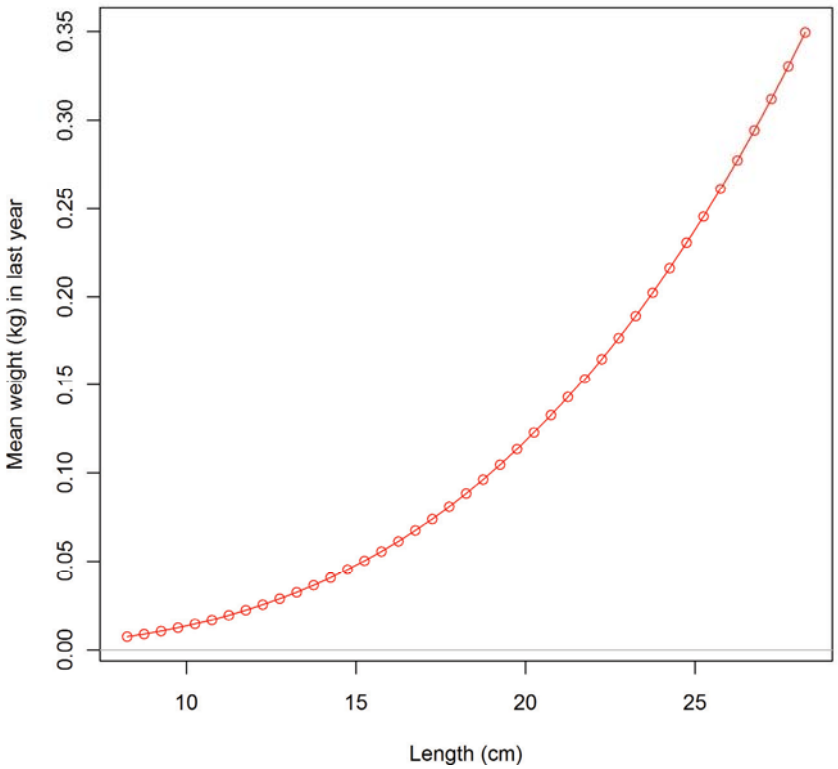


Figure 3a. Weight-at-length as applied in the base model (a = 9.47212e-06, b = 3.14752).

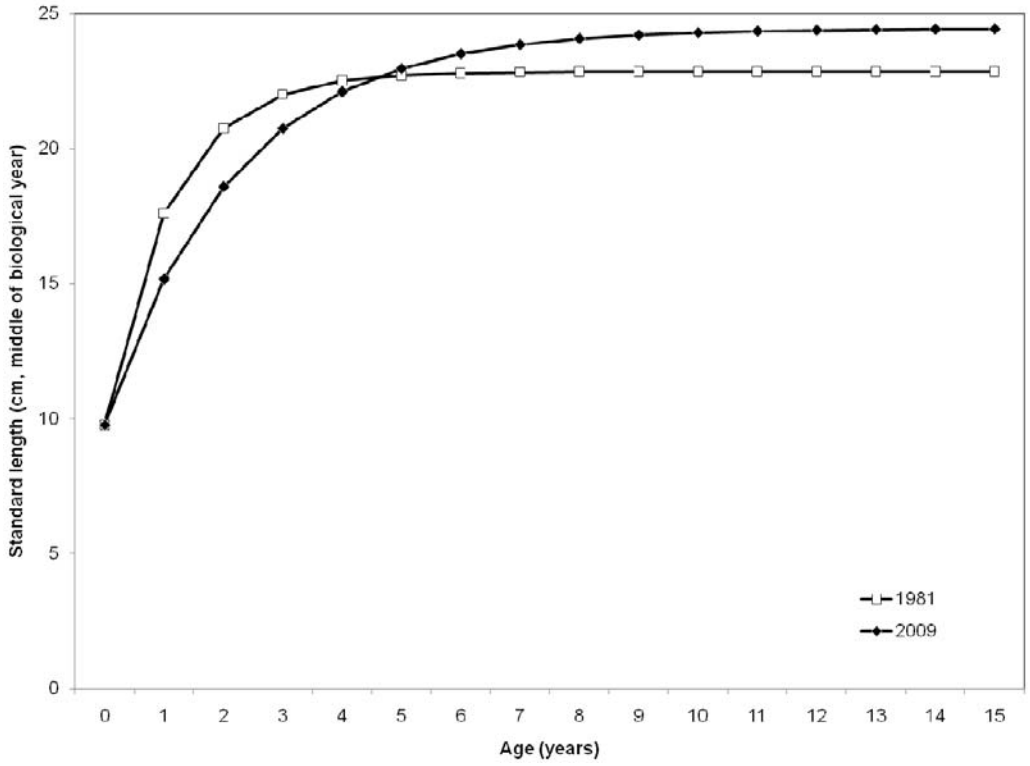


Figure 3b. Length-at-age as estimated in the base model (1981-90 period: $L_{0.5yr}$ = 9.77524, L_{15yr}=22.8555, K=0.91246. 1991-09 period: $L_{0.5yr}$ = 9.76819, L_{15yr}=24.4358, K=0.45969).

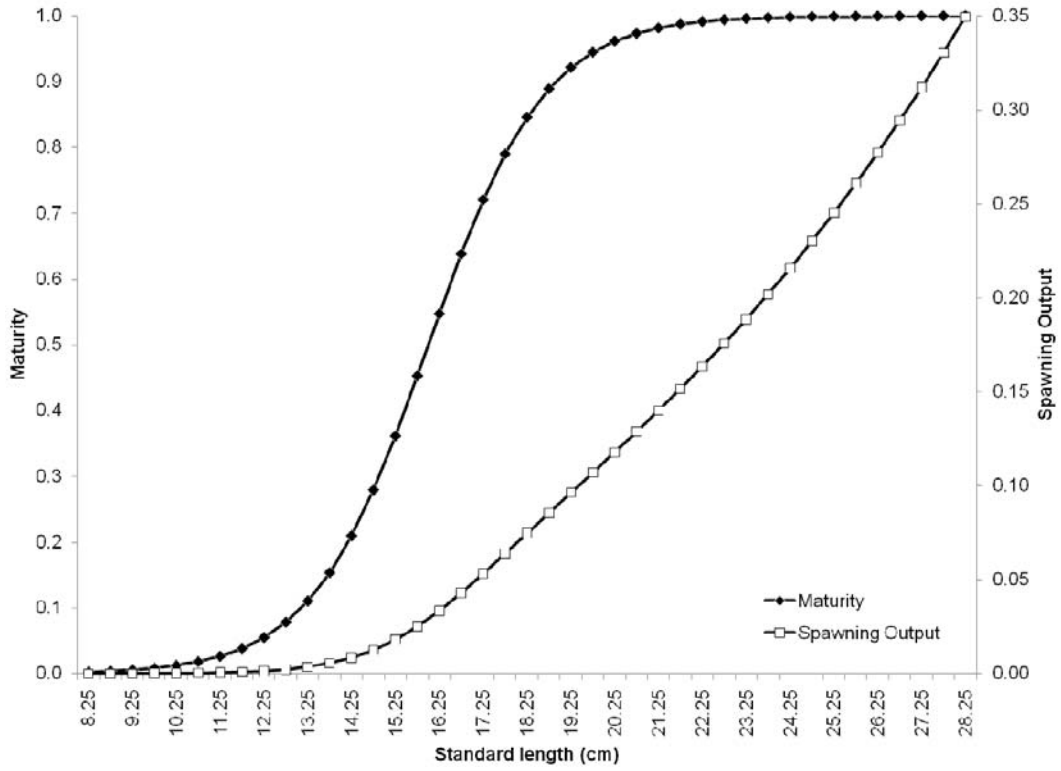


Figure 4a. Maturity (L_{50} = 16.0 cm) and spawning output as a function of length in base model.

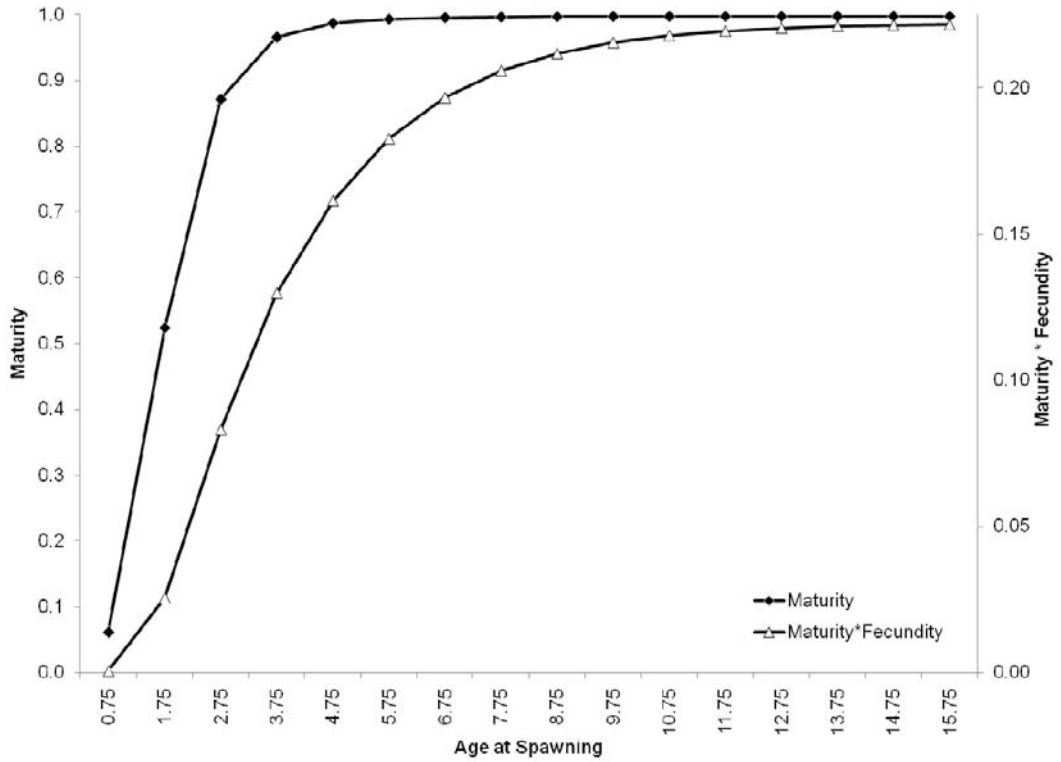


Figure 4b. Maturity and fecundity as a function of age, as derived from the base model.

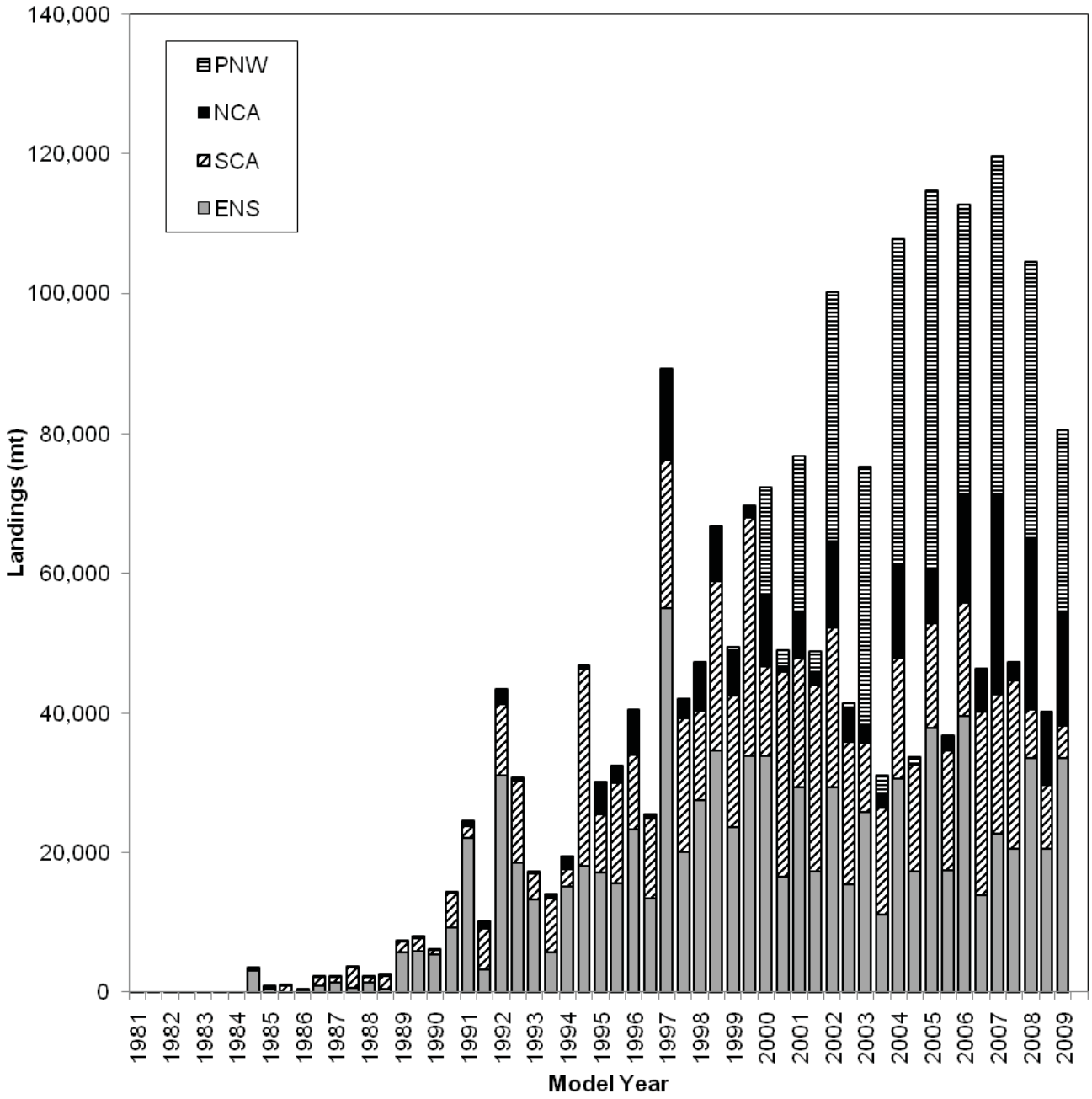


Figure 5. Pacific sardine landings (mt) by fishery, model year and semester as used in SS3.

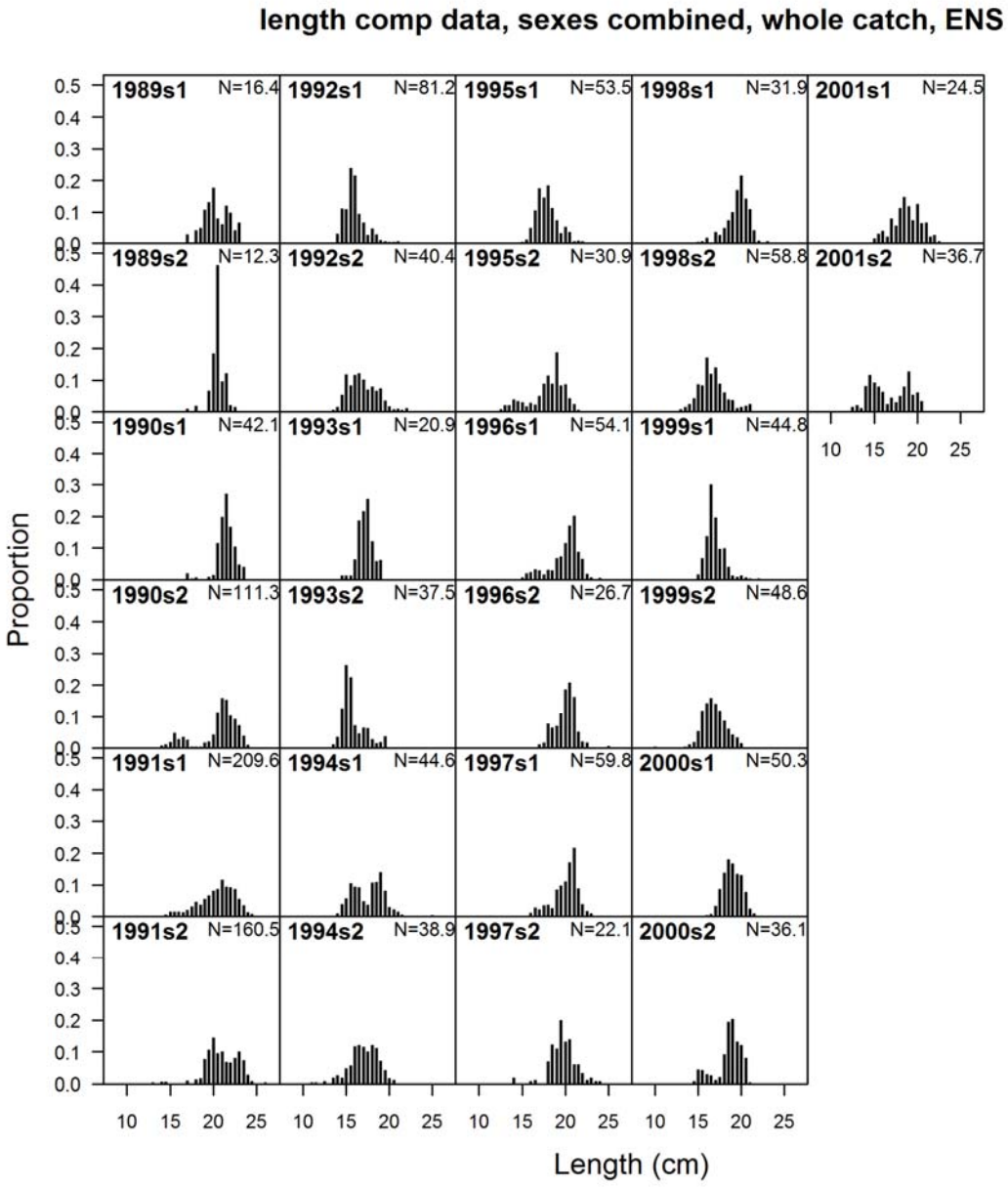


Figure 6a. Length-composition data for the ENS fishery.

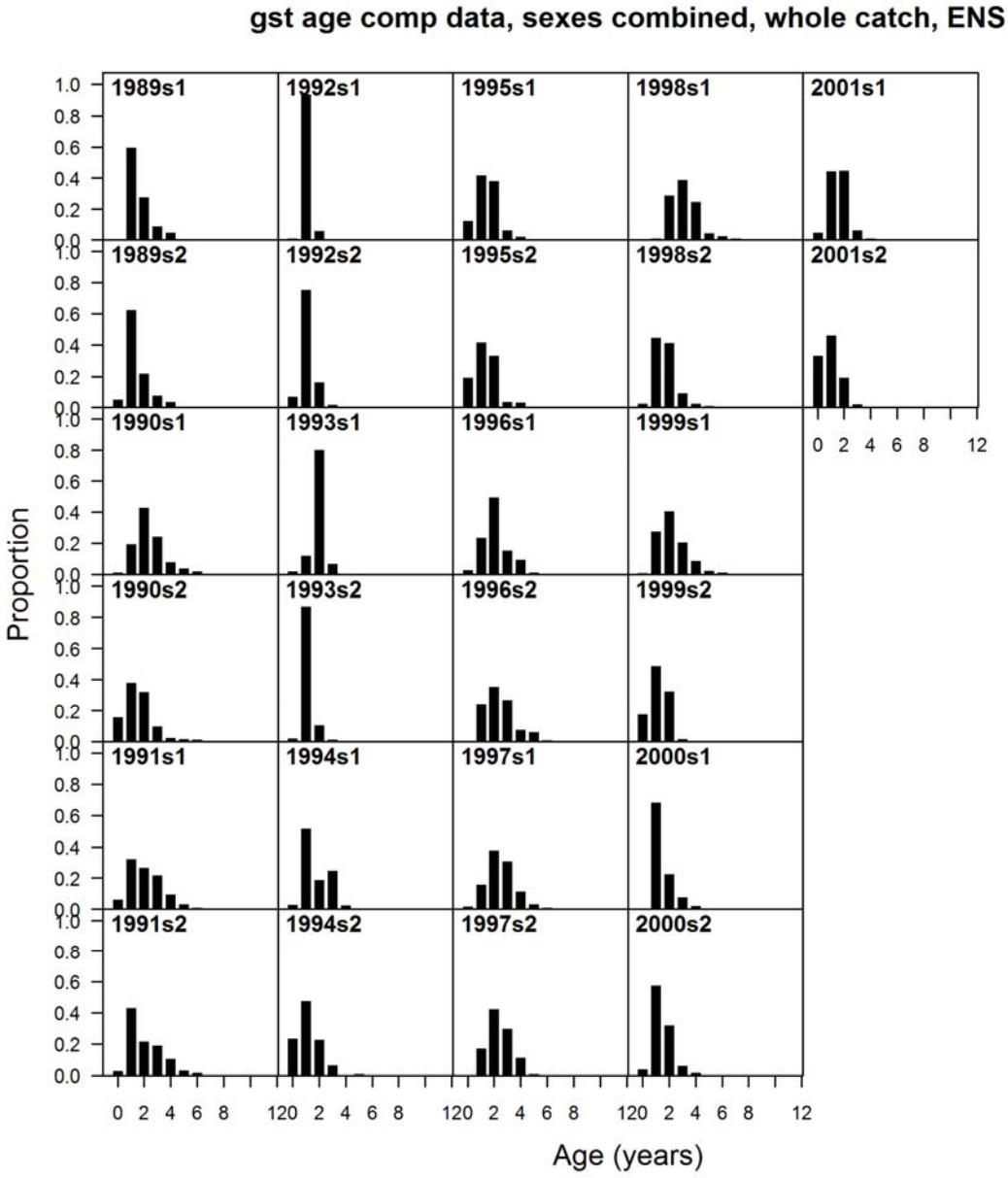


Figure 7a. Implied age-composition data for the ENS fishery.

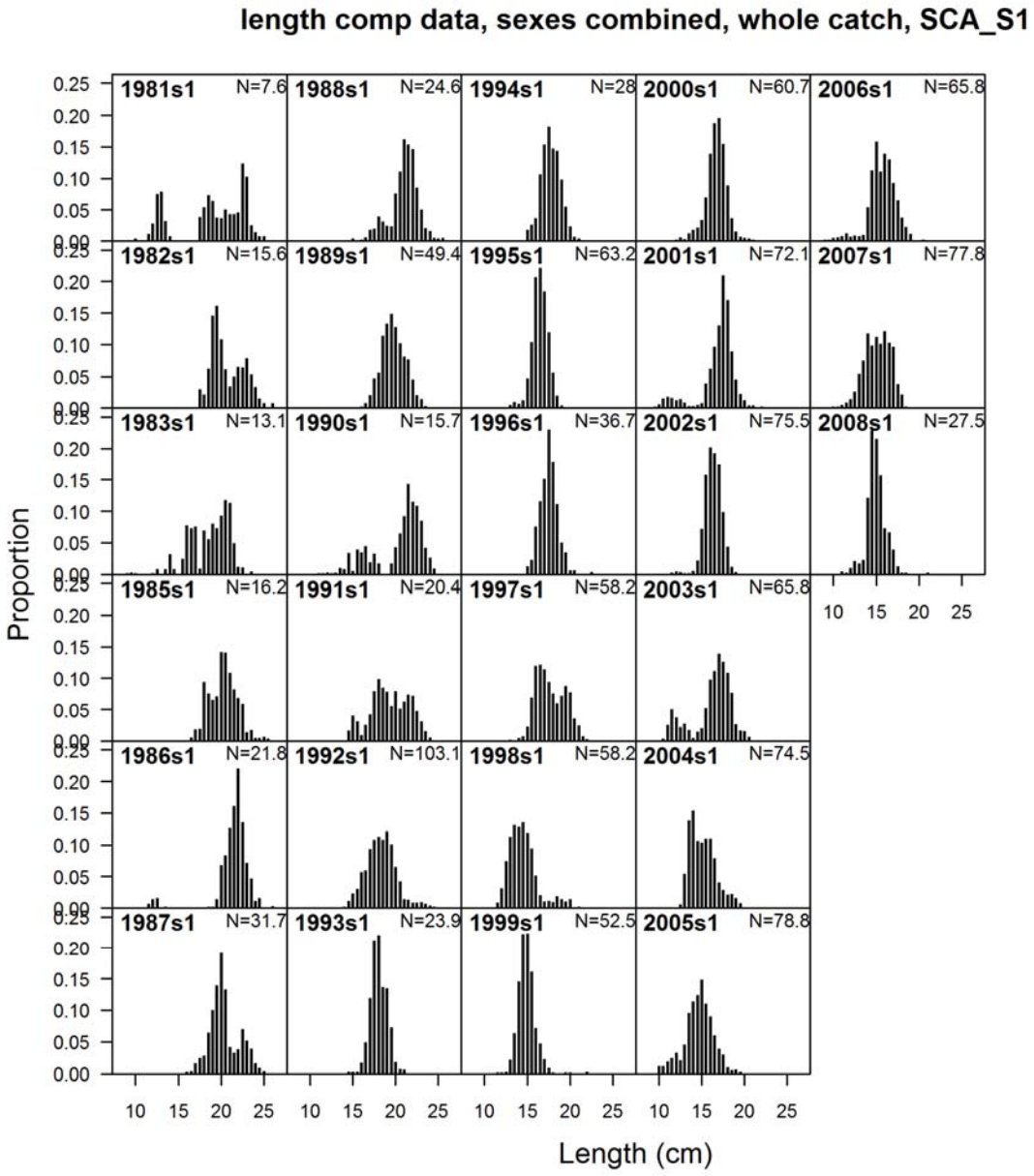


Figure 6b. Length-composition data for the SCA_S1 fishery.

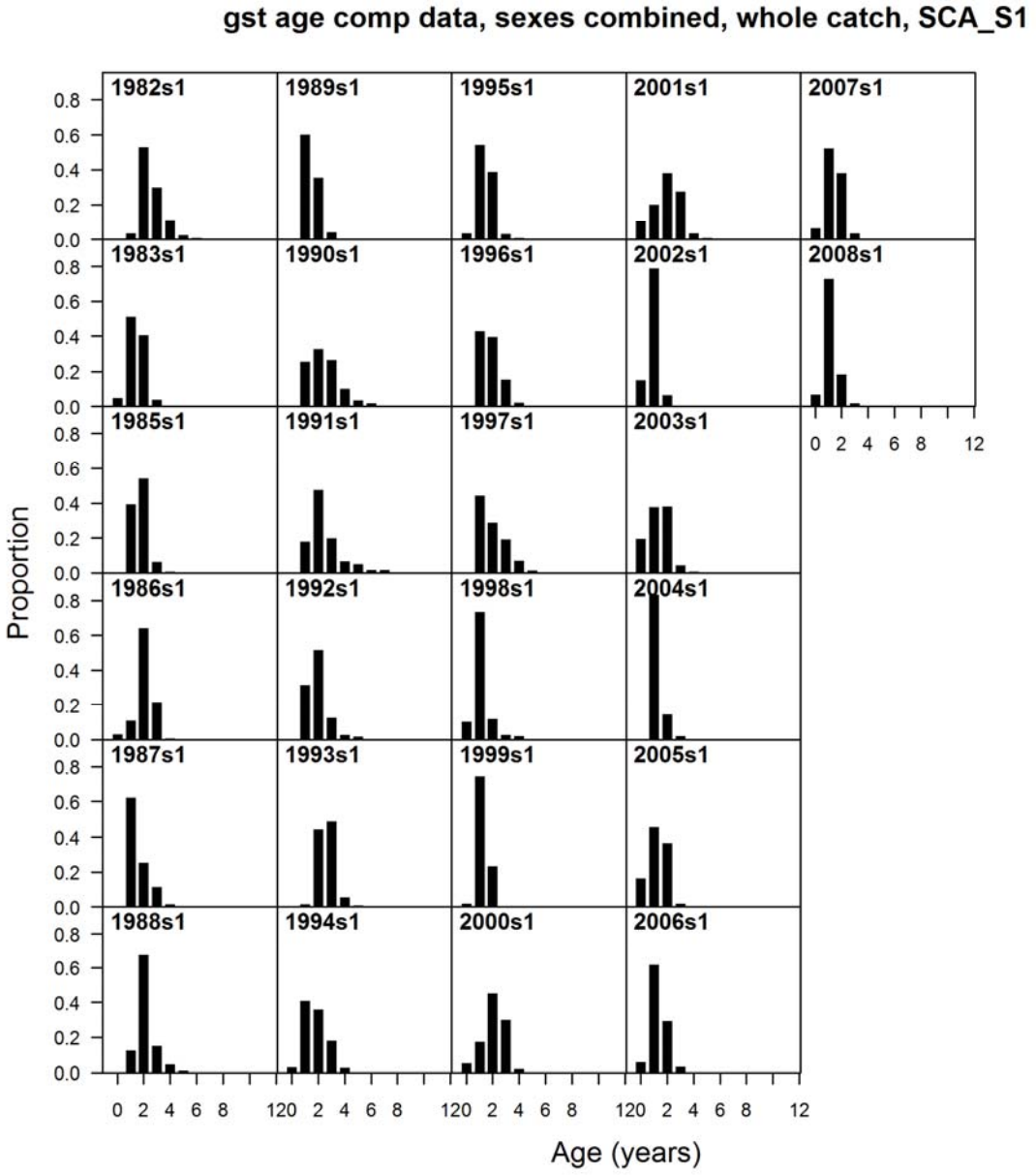


Figure 7b. Implied age-composition data for the SCA_S1 fishery.

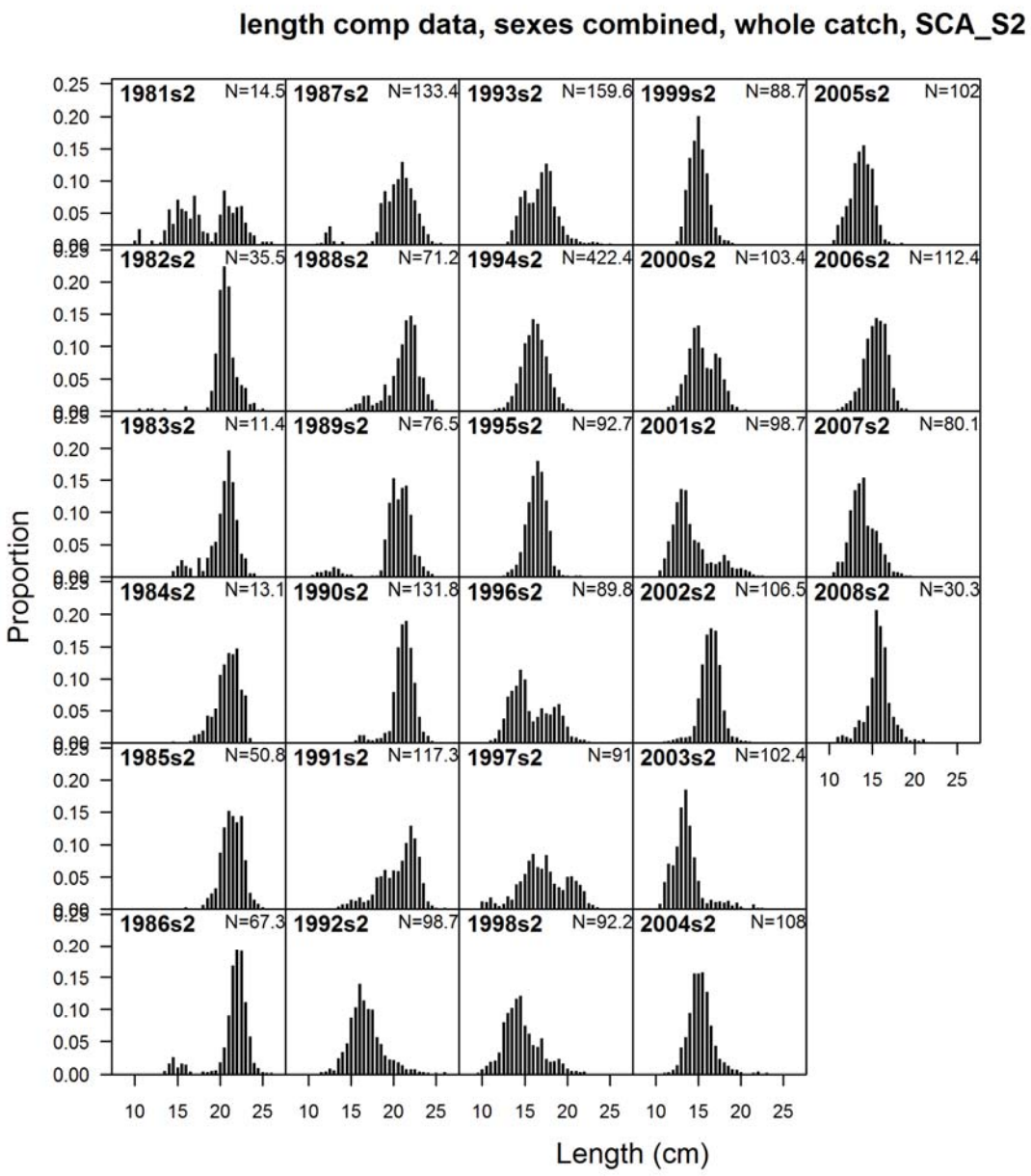


Figure 6c. Length-composition data for the SCA_S2 fishery.

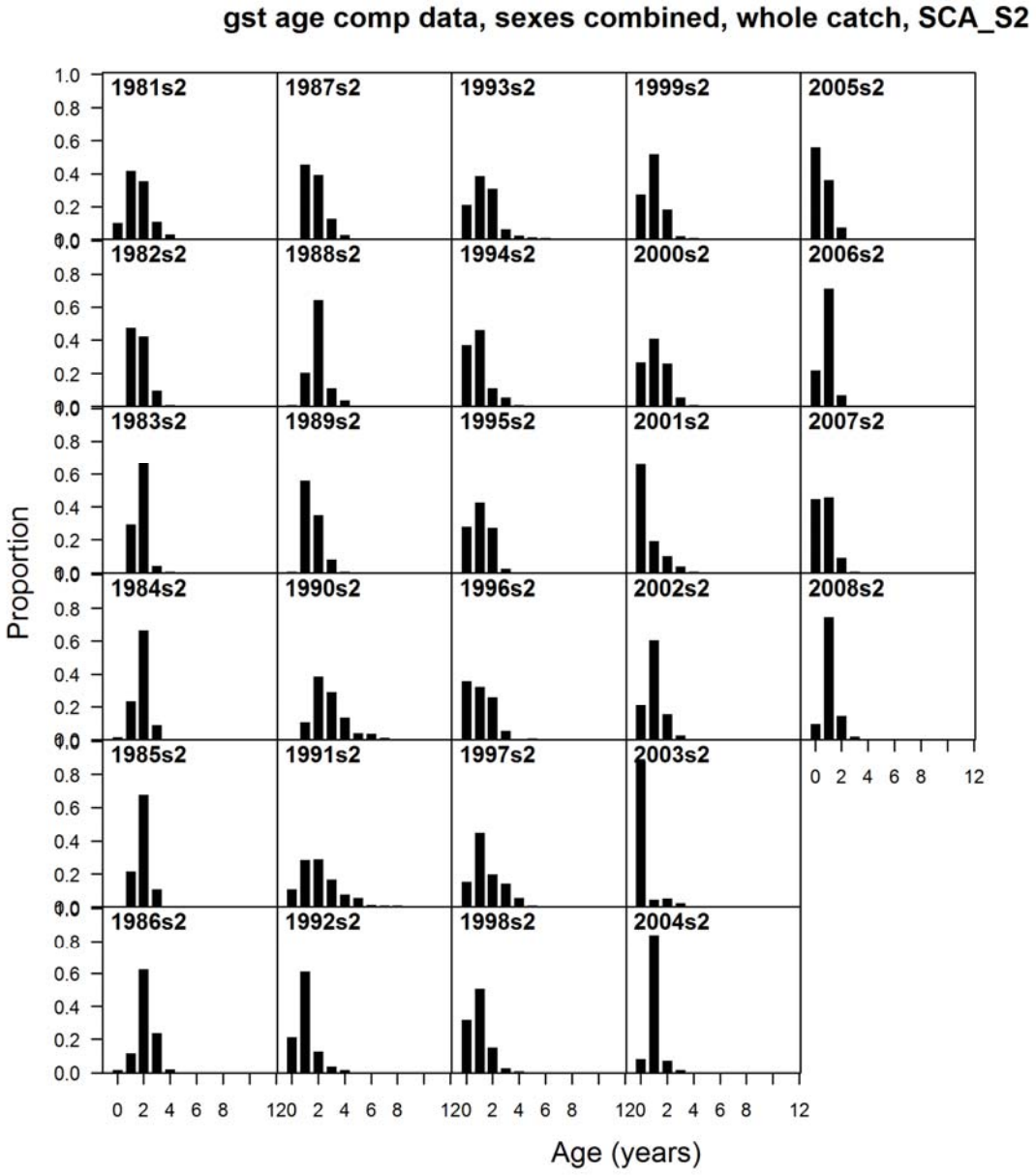


Figure 7c. Implied age-composition data for the SCA_S2 fishery.

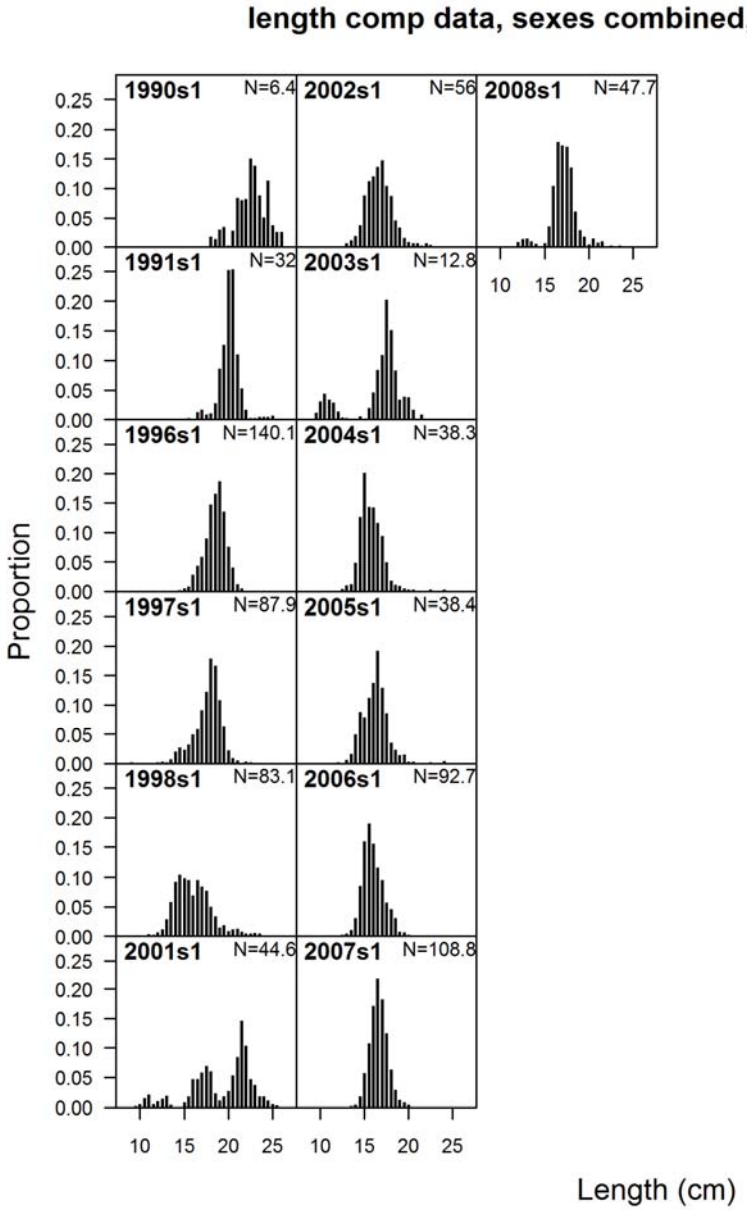


Figure 6d. Length-composition data for the CCA_S1 fishery.

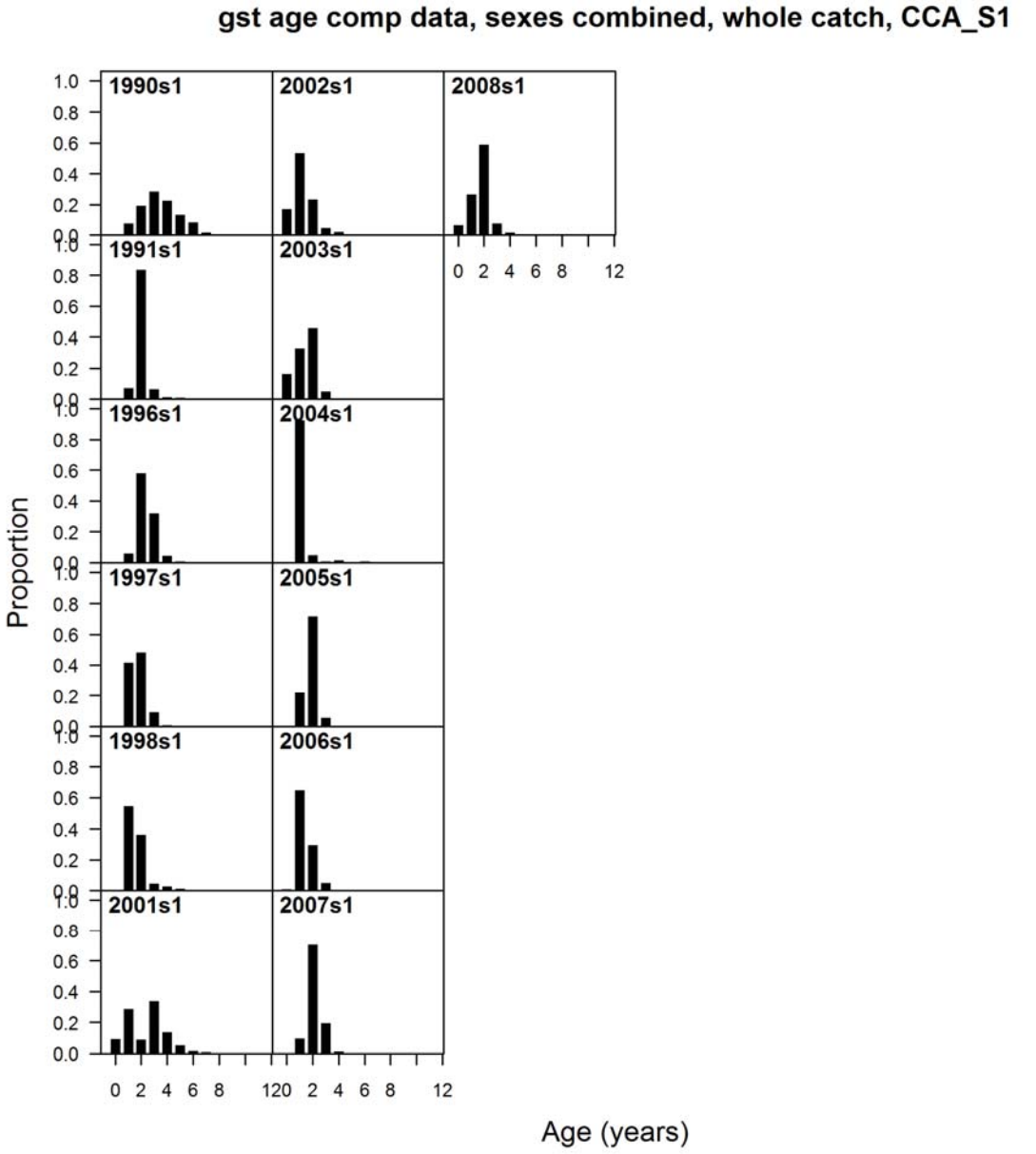


Figure 7d. Implied age-composition data for the CCA_S1 fishery.

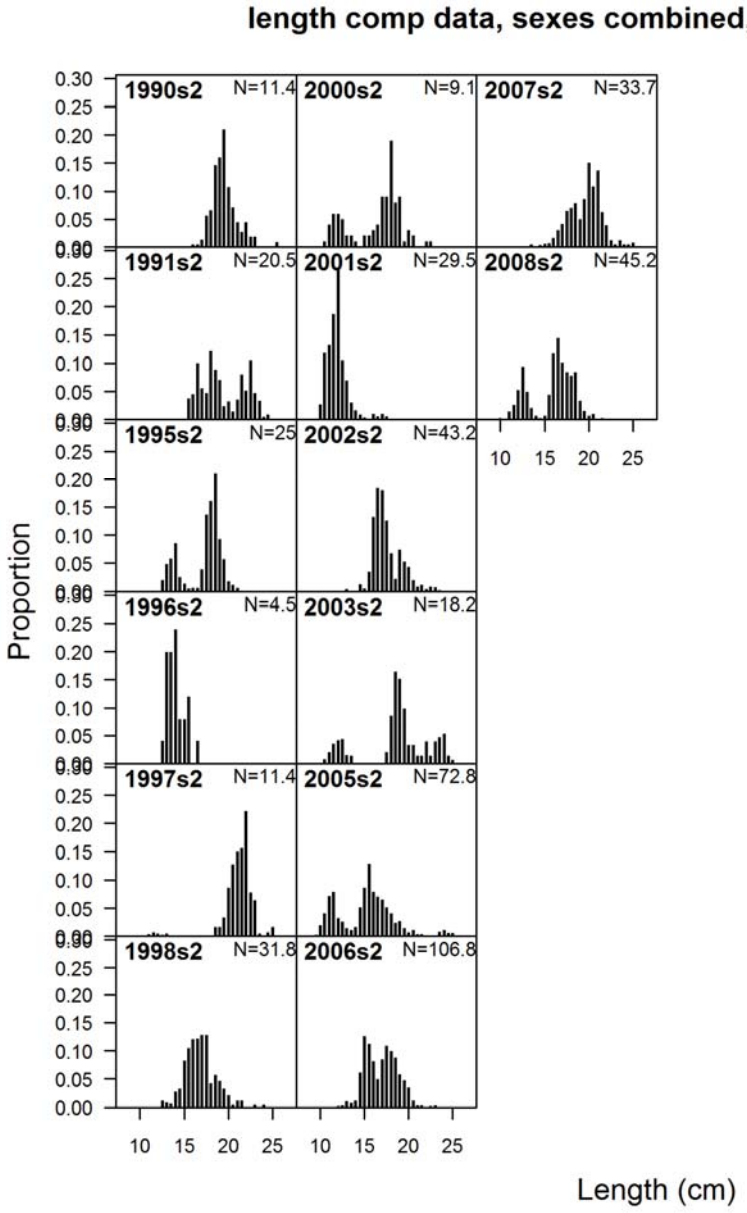


Figure 6e. Length-composition data for the CCA_S2 fishery.

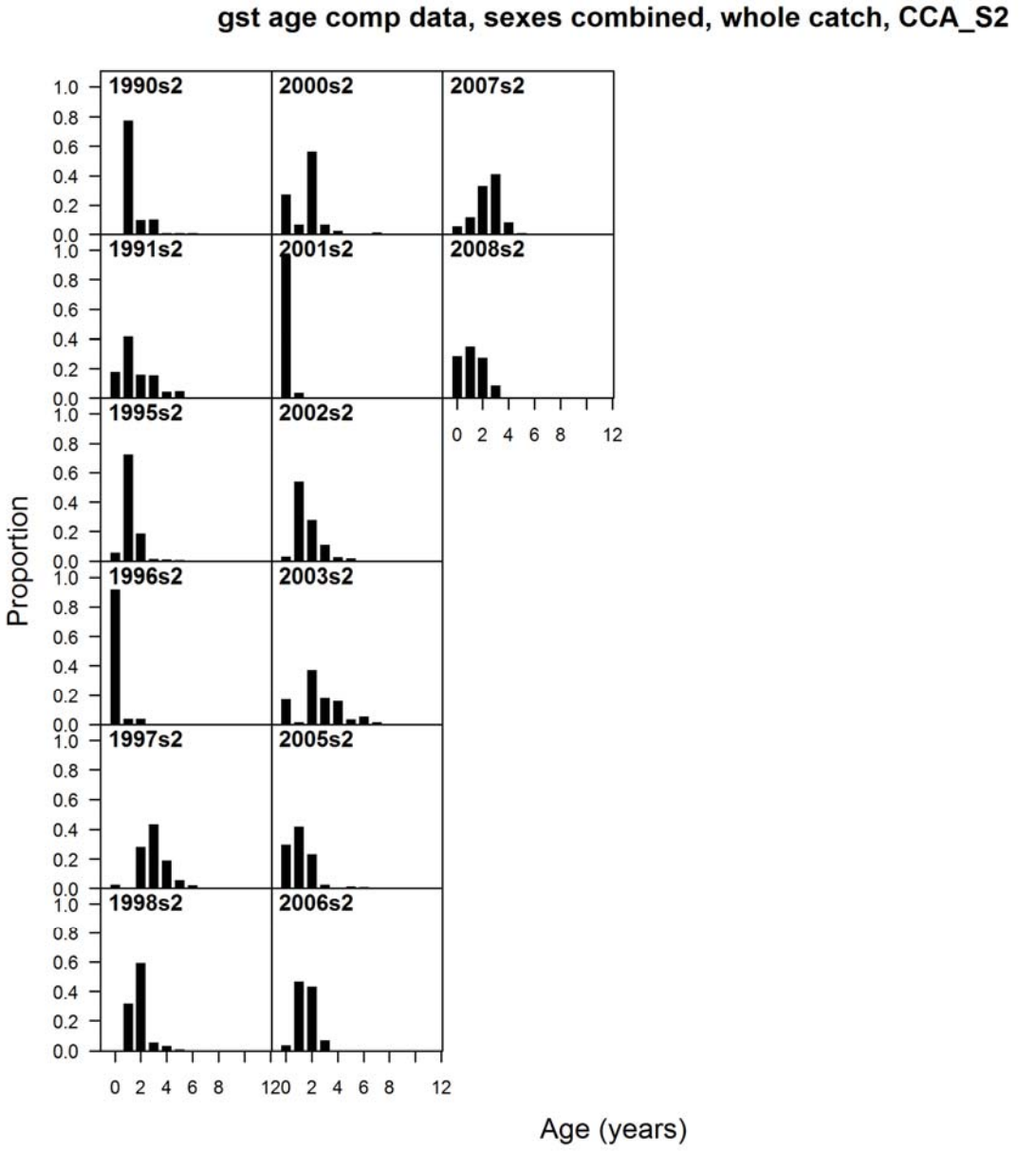


Figure 7e. Implied age-composition data for the CCA_S2 fishery.

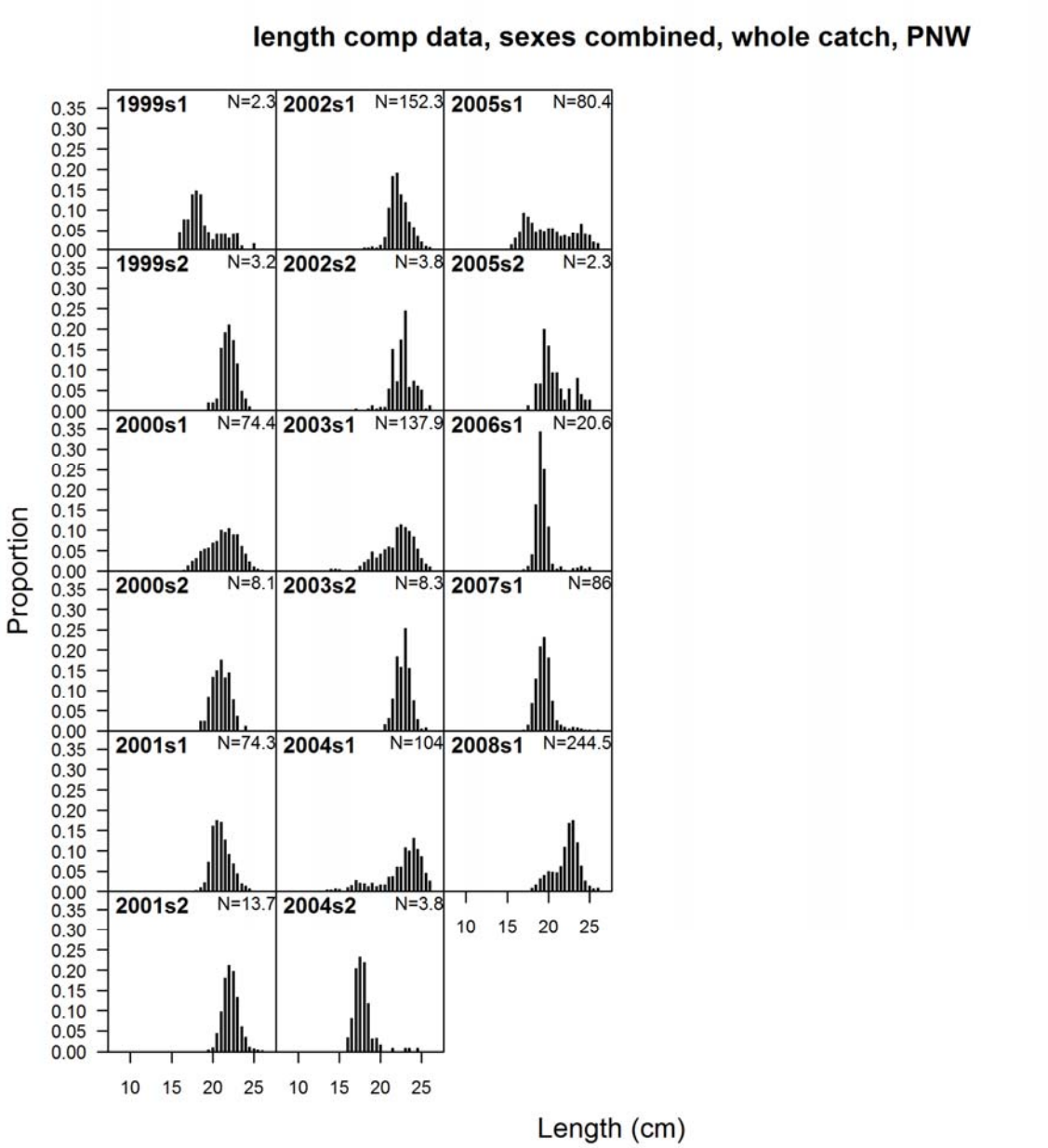


Figure 6f. Length-composition data for the PNW fishery.

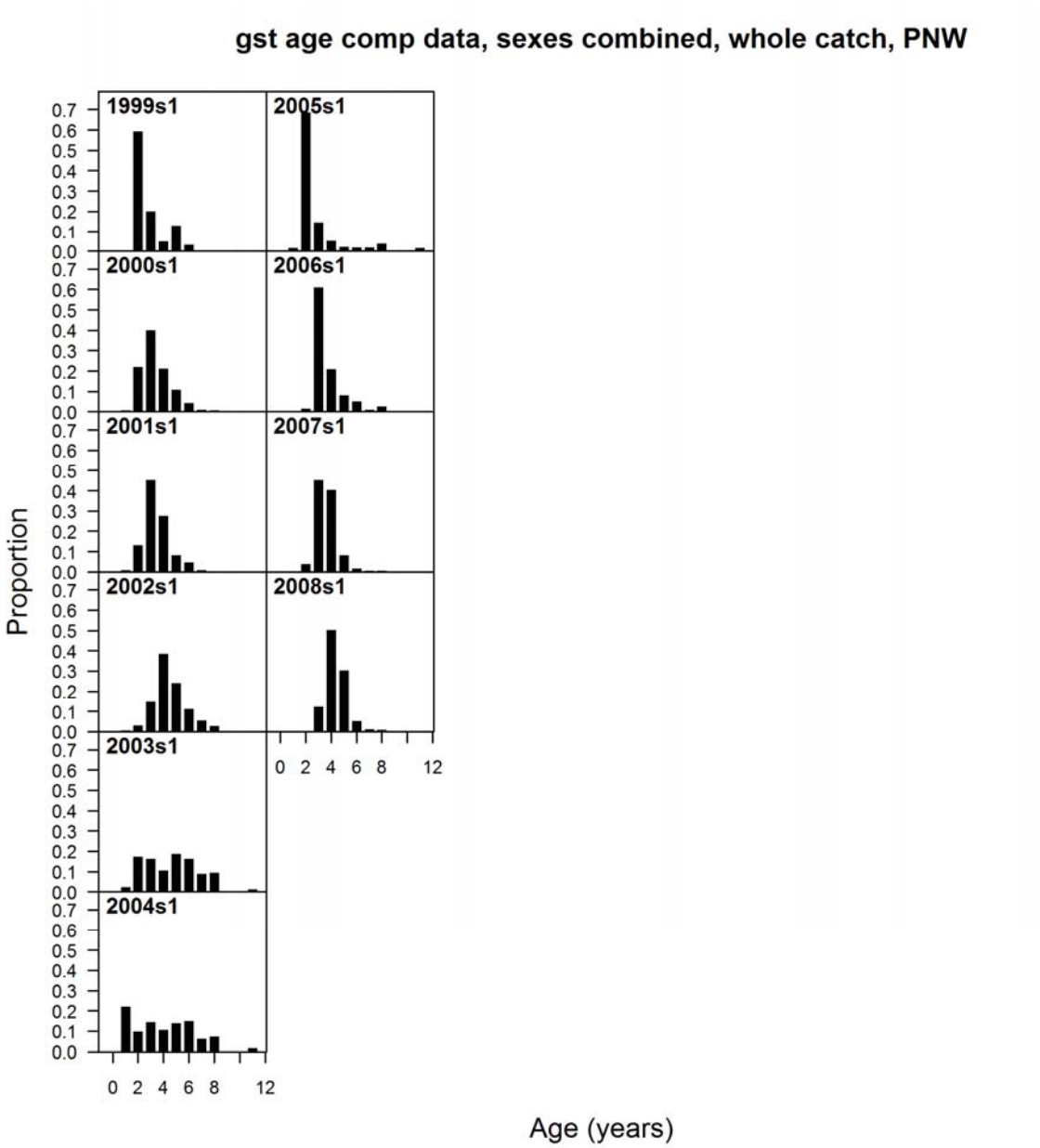


Figure 7f. Implied age-composition data for the PNW fishery.

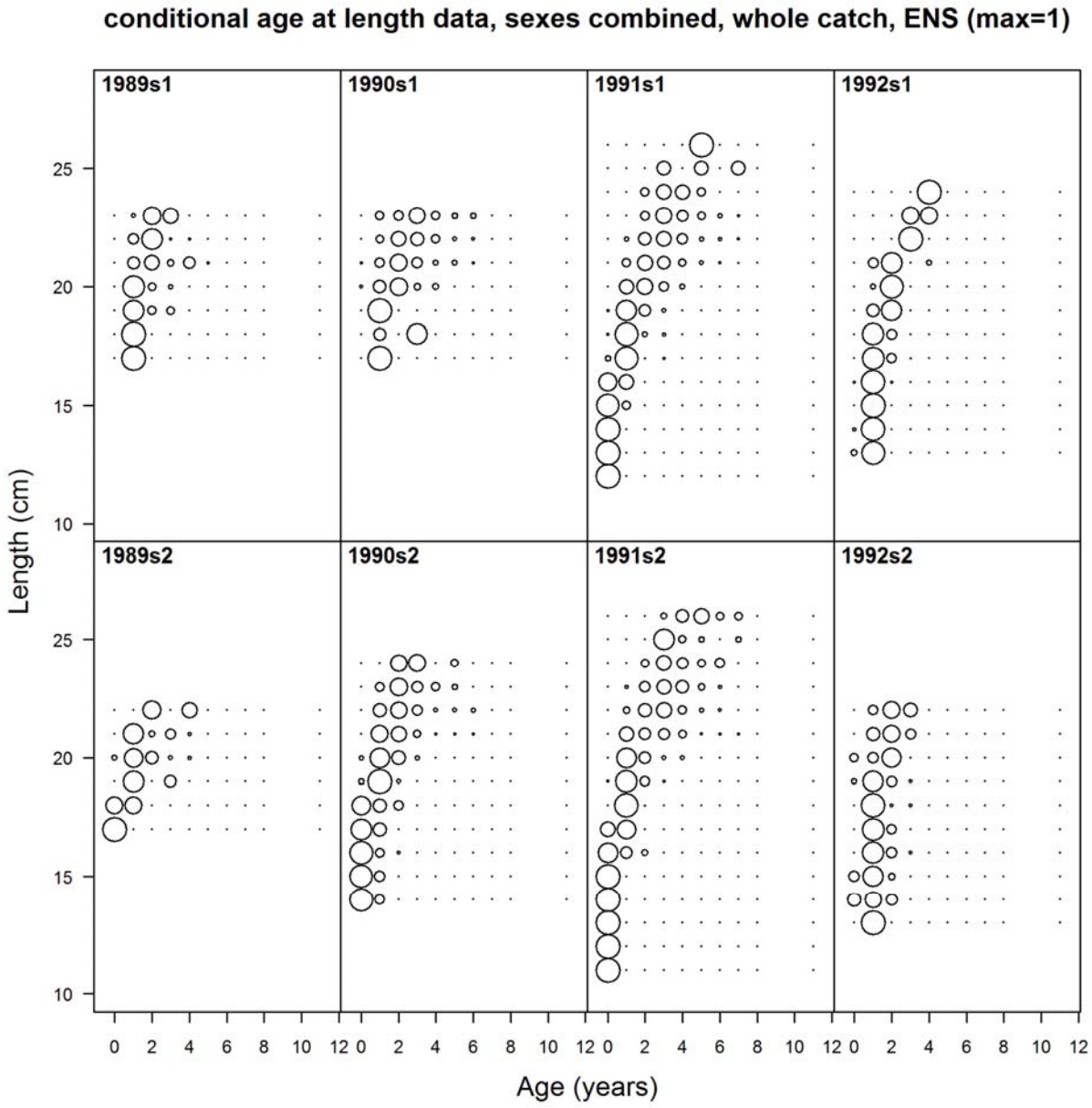


Figure 8a. Conditional age-at-length data for the ENS fishery, 1989-1992.

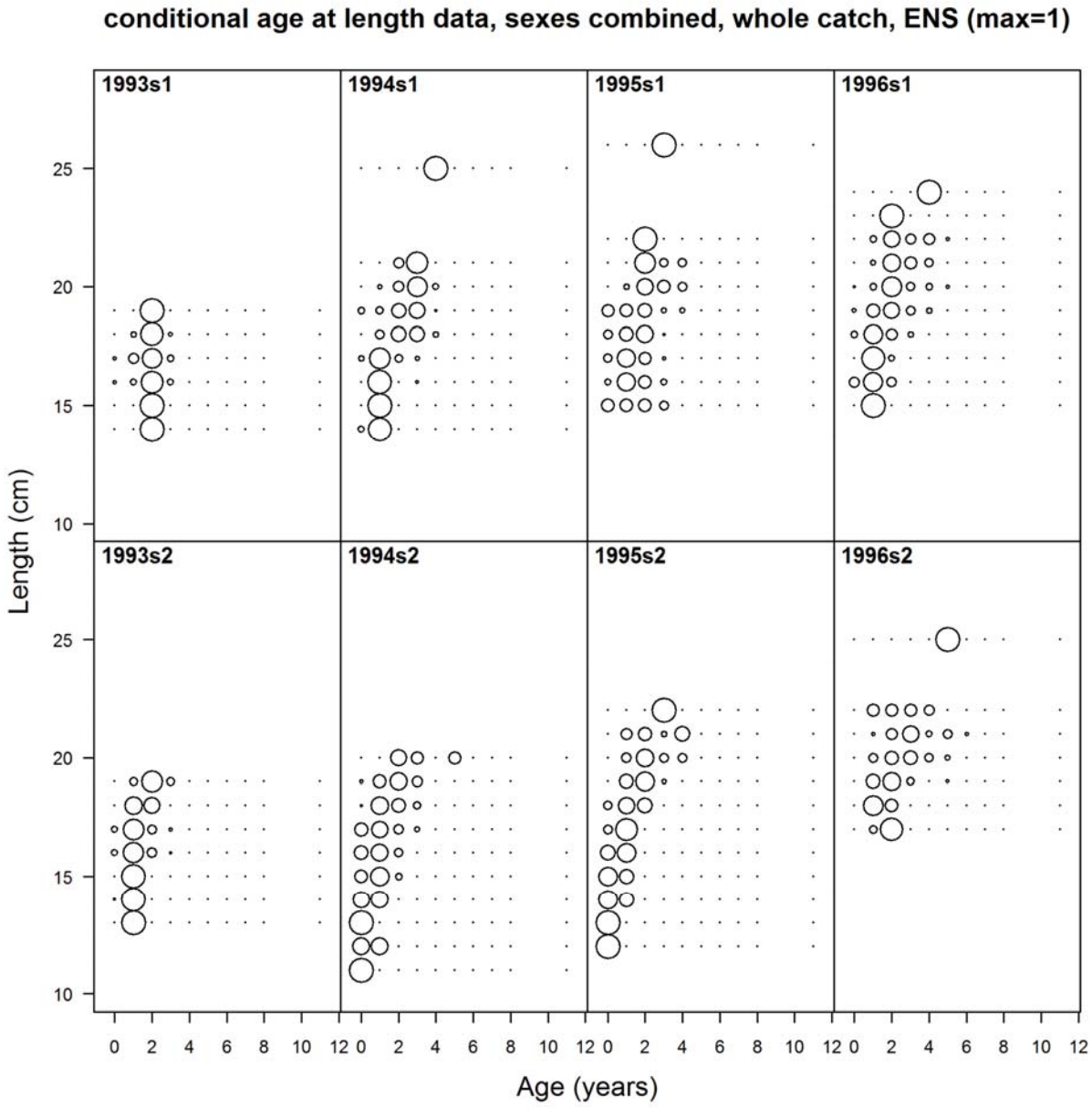


Figure 8a (cont'd). Conditional age-at-length data for the ENS fishery, 1993-1996.

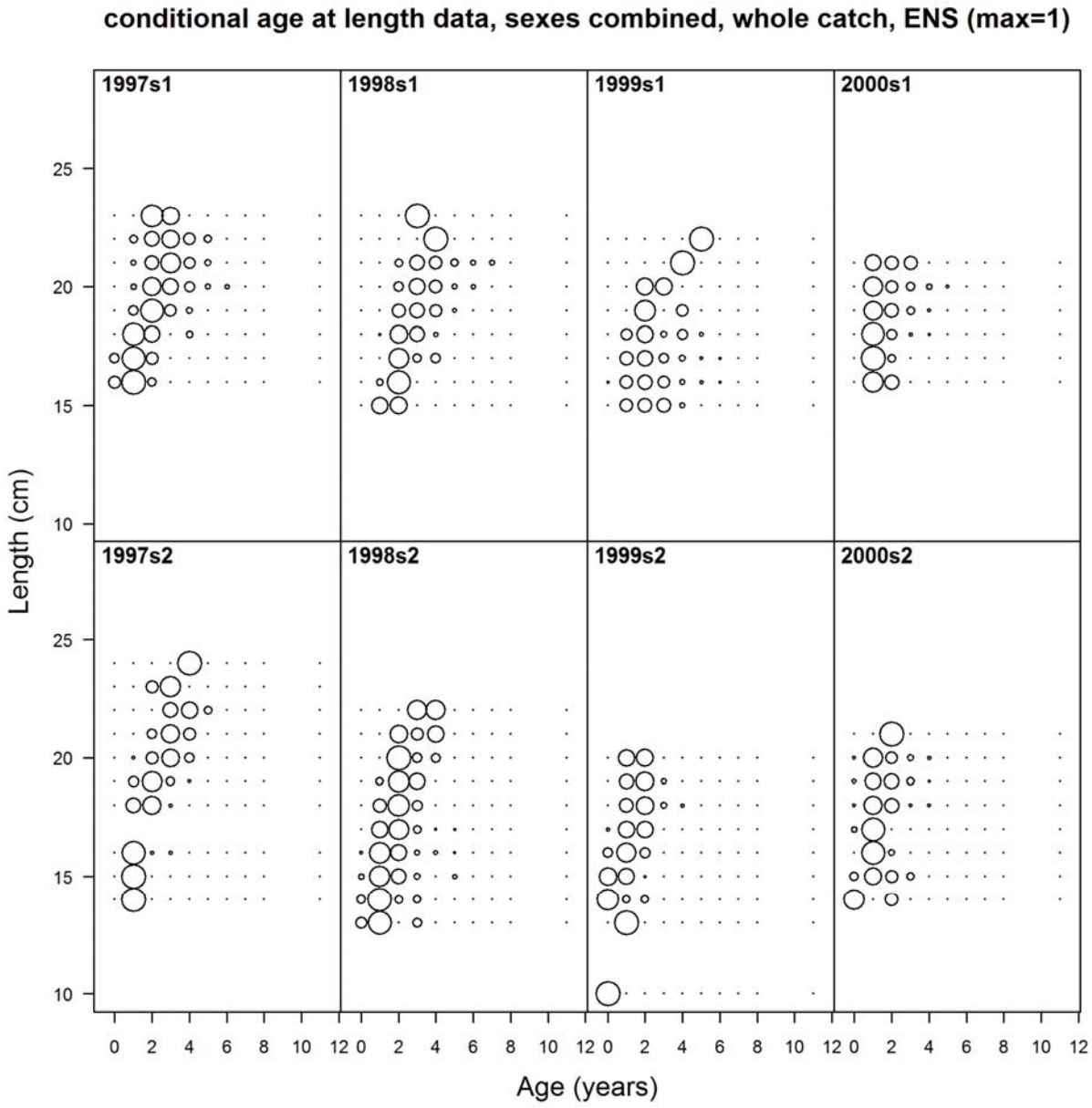


Figure 8a (cont'd). Conditional age-at-length data for the ENS fishery, 1997-2000.

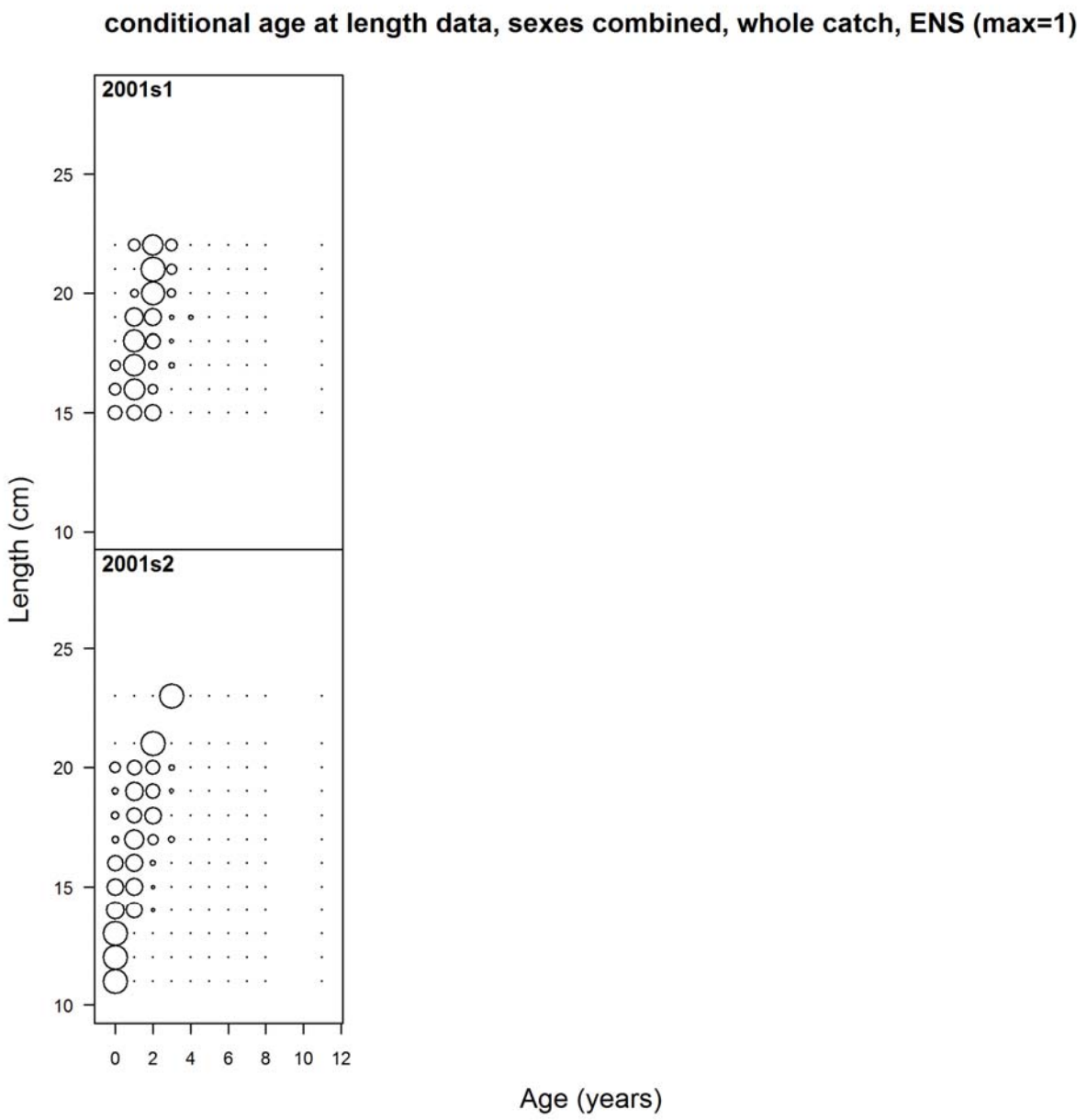


Figure 8a (cont'd). Conditional age-at-length data for the ENS fishery, 2001.

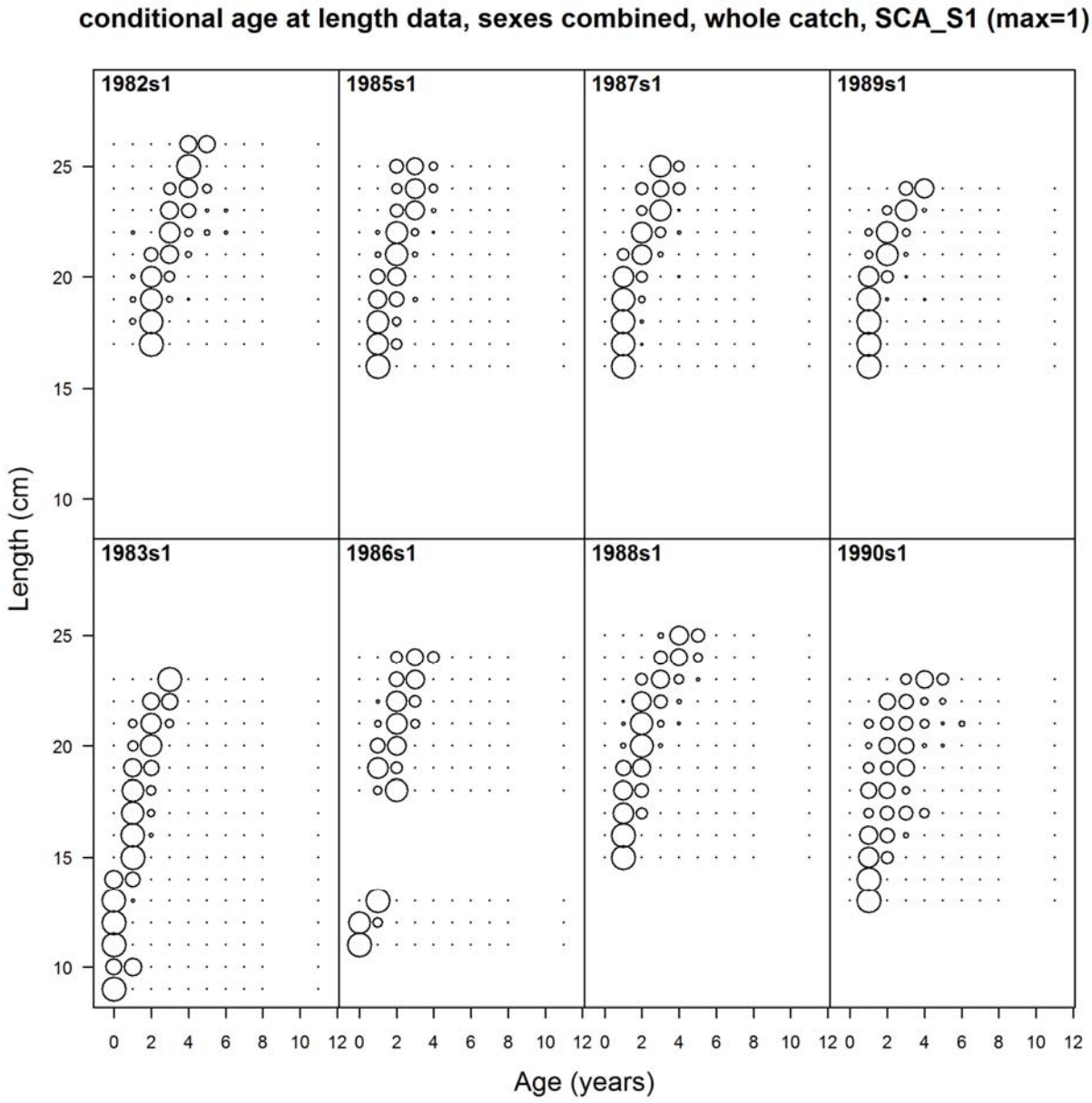


Figure 8b. Conditional age-at-length data for the SCA_S1 fishery, 1982-1990.

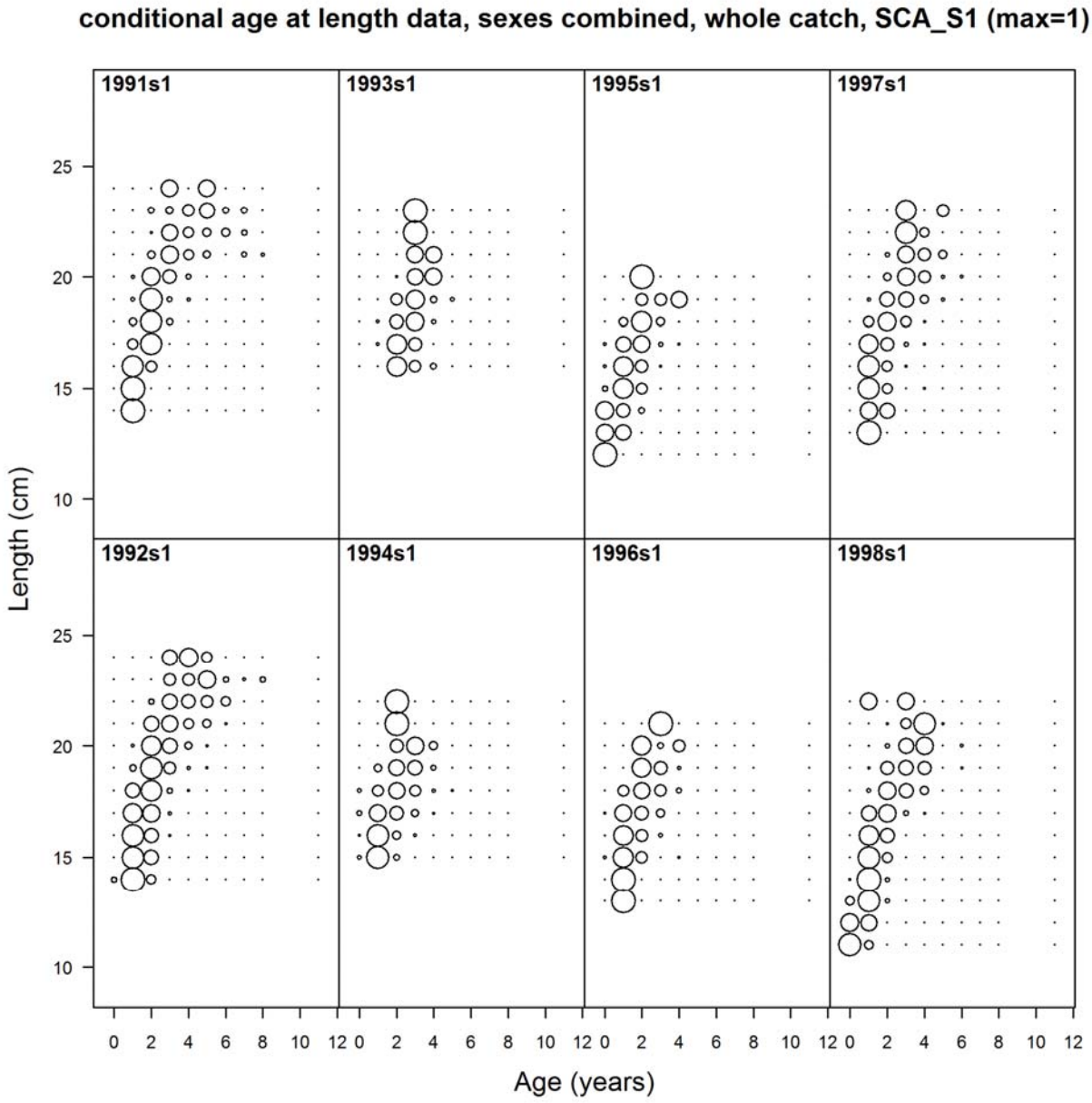


Figure 8b (cont'd). Conditional age-at-length data for the SCA_S1 fishery, 1991-1998.

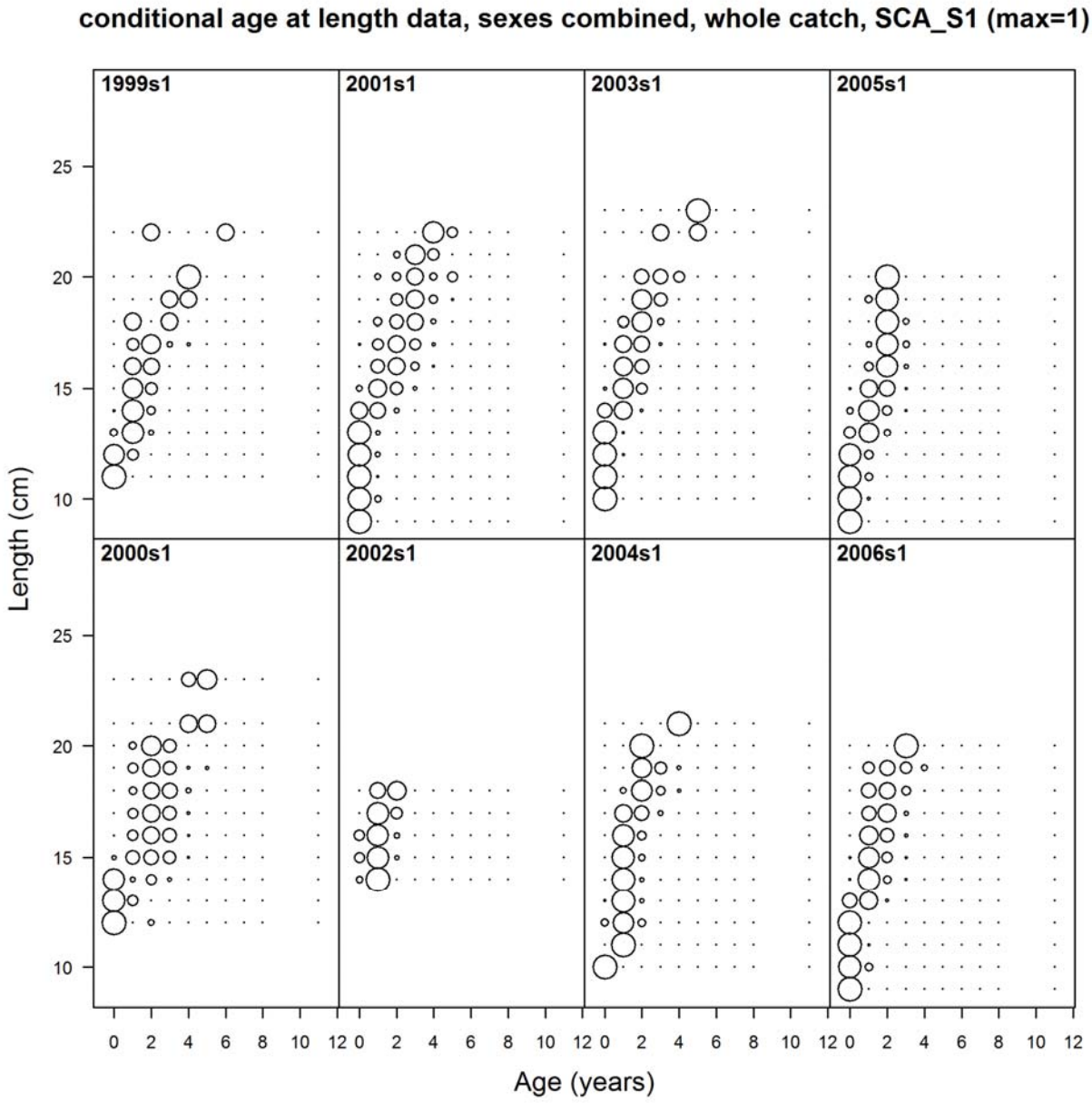


Figure 8b (cont'd). Conditional age-at-length data for the SCA_S1 fishery, 1999-2006.

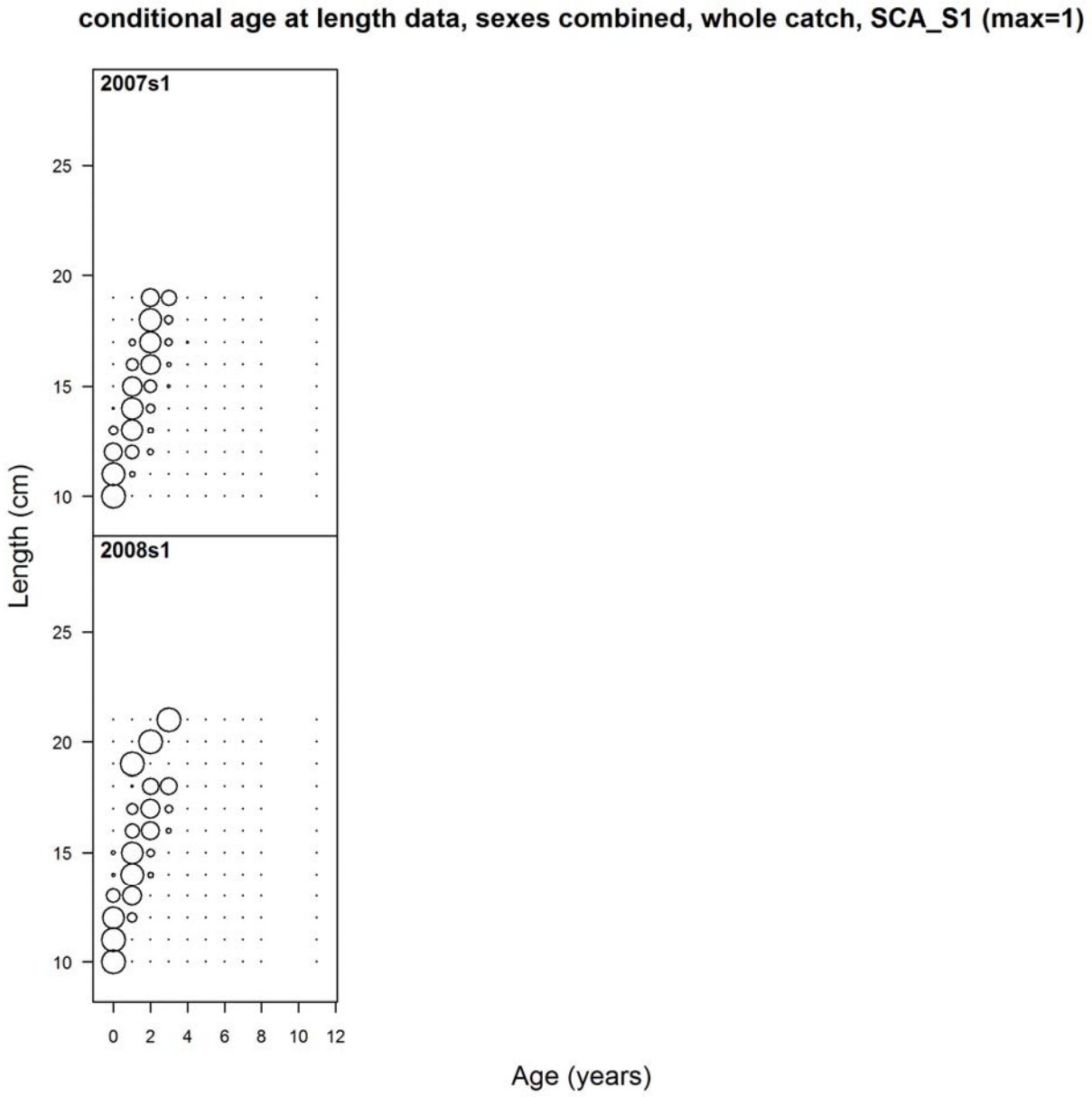


Figure 8b (cont'd). Conditional age-at-length data for the SCA_S1 fishery, 2007-2008.

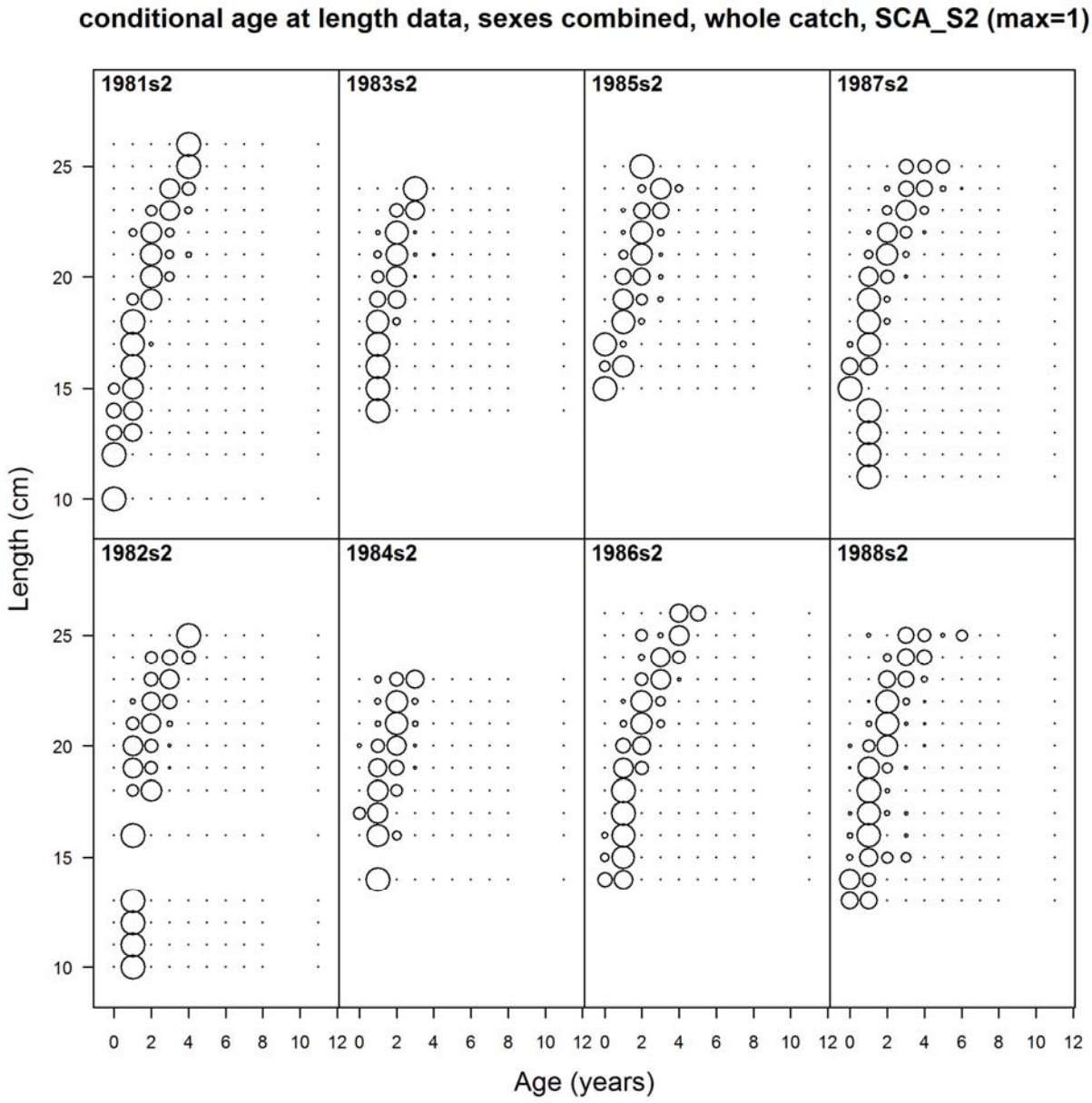


Figure 8c. Conditional age-at-length data for the SCA_S2 fishery, 1981-1988.

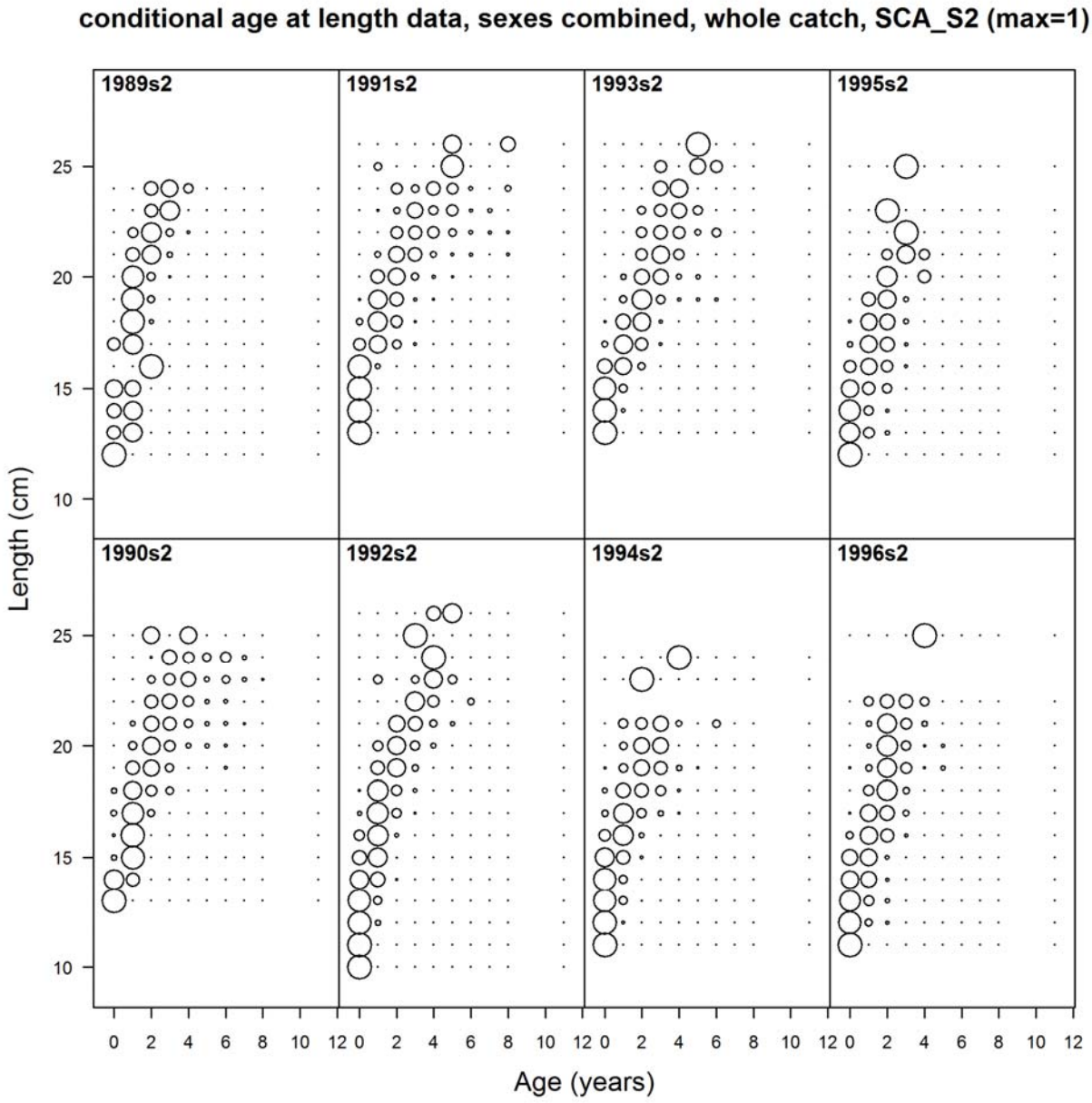


Figure 8c (cont'd). Conditional age-at-length data for the SCA_S2 fishery, 1989-1996.

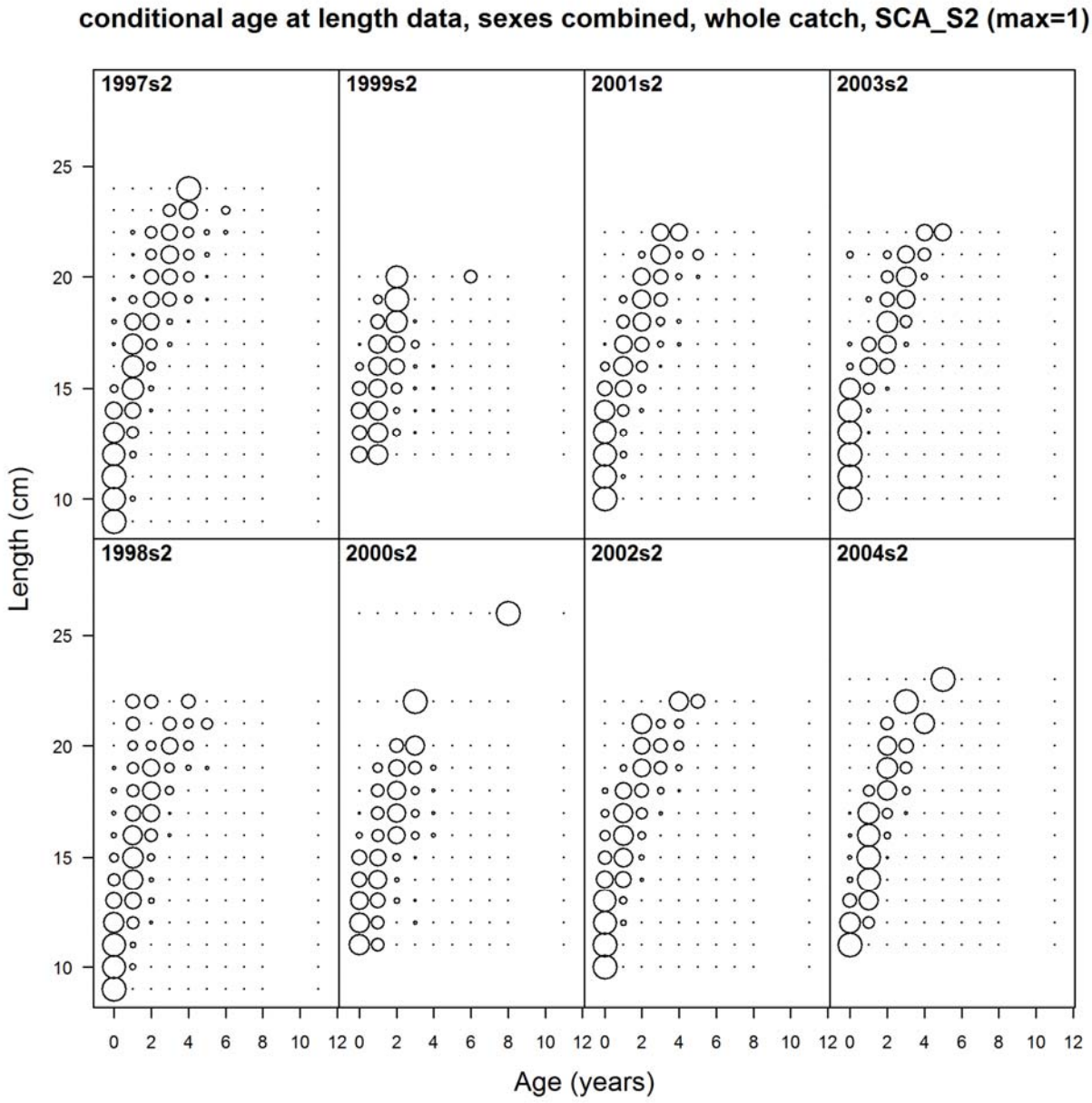


Figure 8c (cont'd). Conditional age-at-length data for the SCA_S2 fishery, 1997-2004.

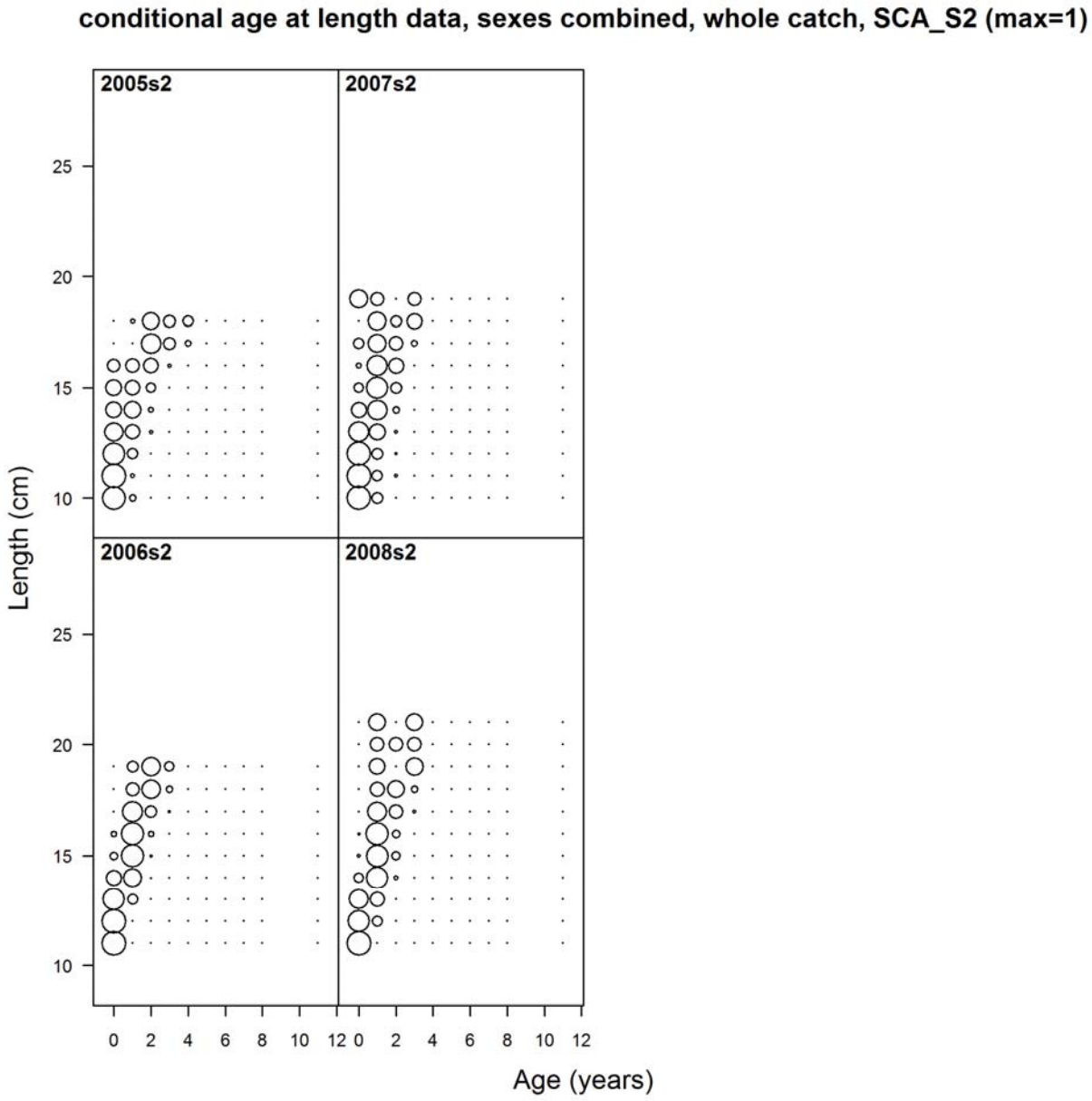


Figure 8c (cont'd). Conditional age-at-length data for the SCA_S2 fishery, 2005-2008.

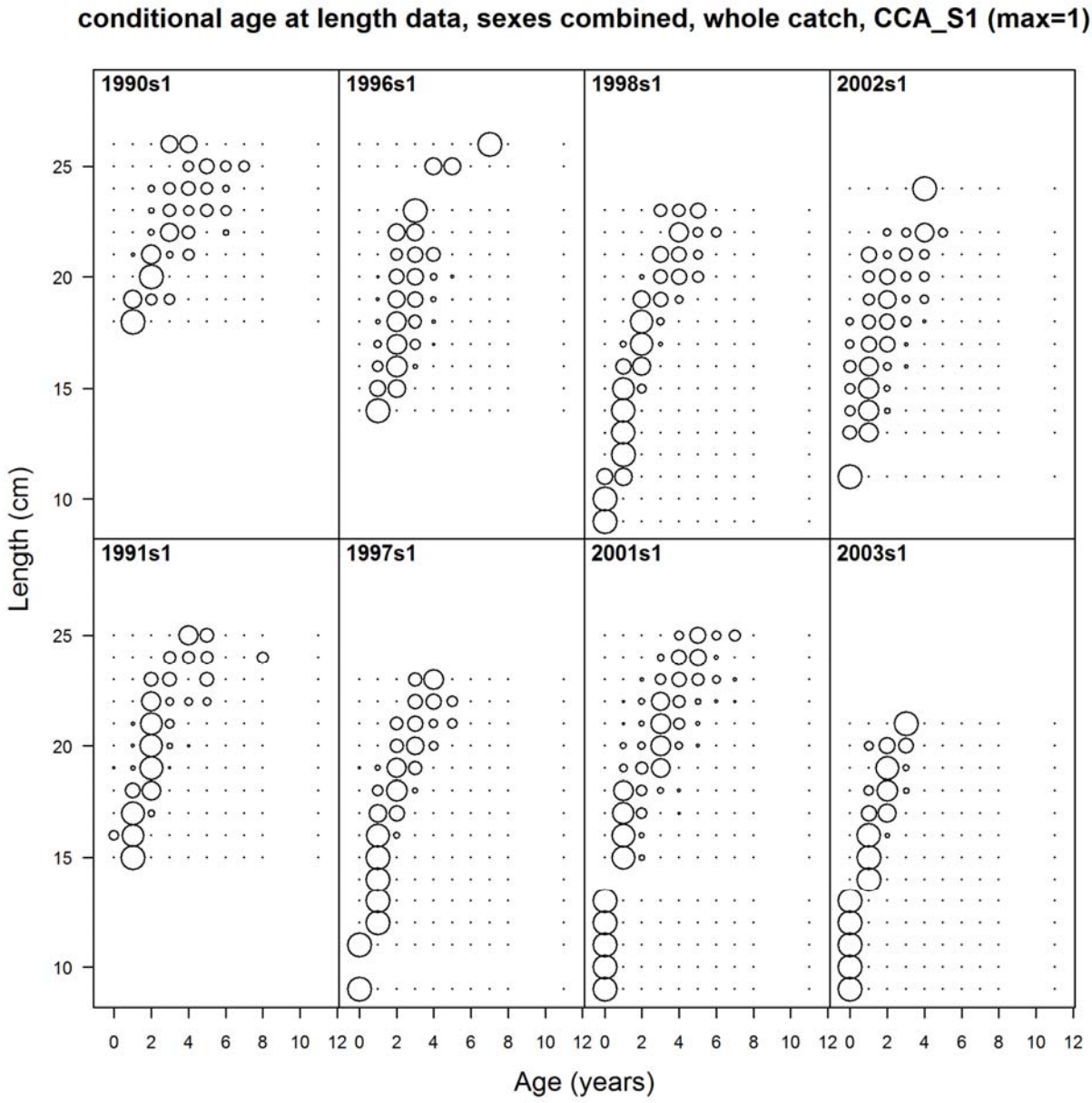


Figure 8d. Conditional age-at-length data for the CCA_S1 fishery, 1990-2003.

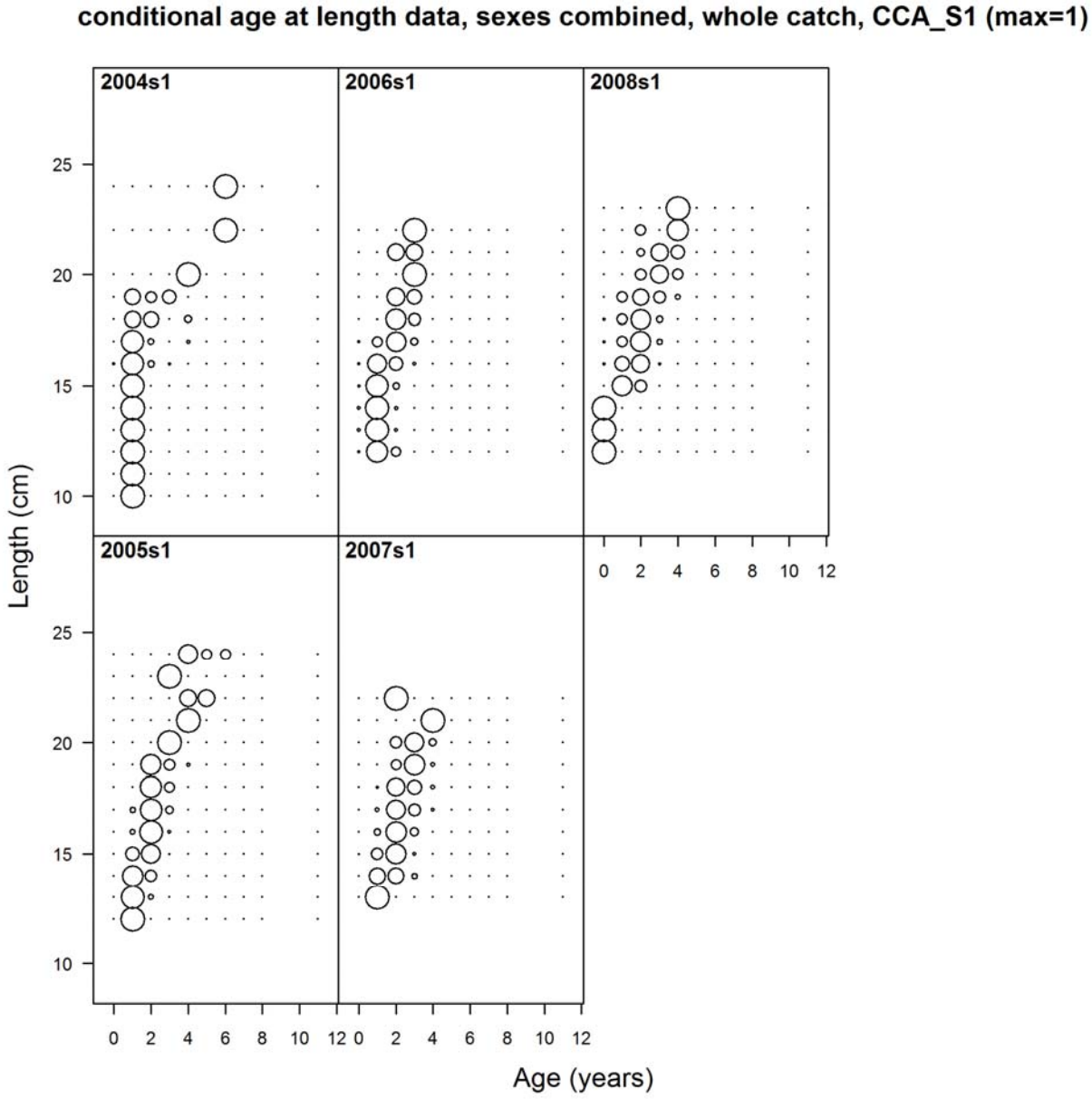


Figure 8d (cont'd). Conditional age-at-length data for the CCA_S1 fishery, 2004-2007.

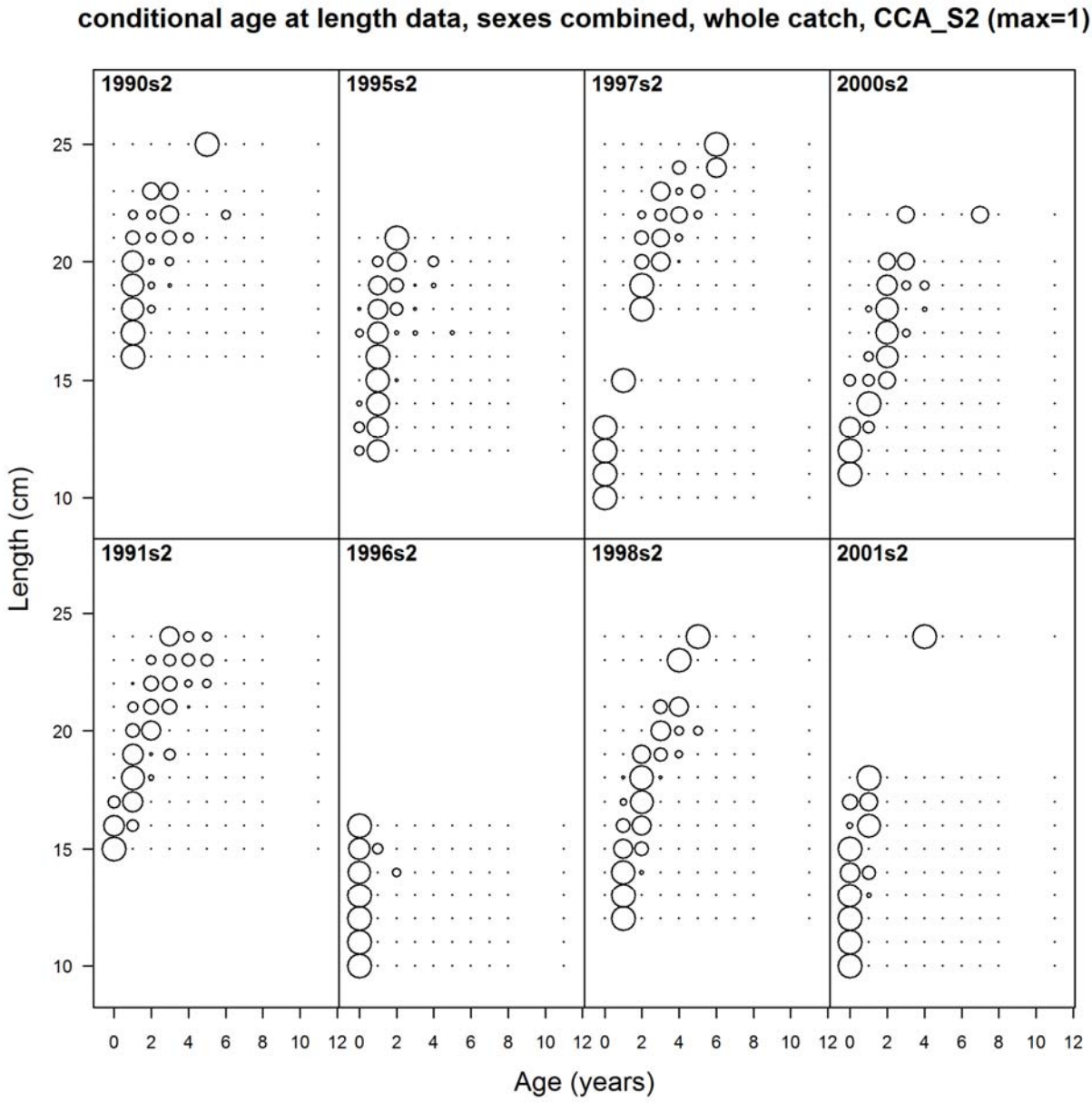


Figure 8e. Conditional age-at-length data for the CCA_S2 fishery, 1990-2001.

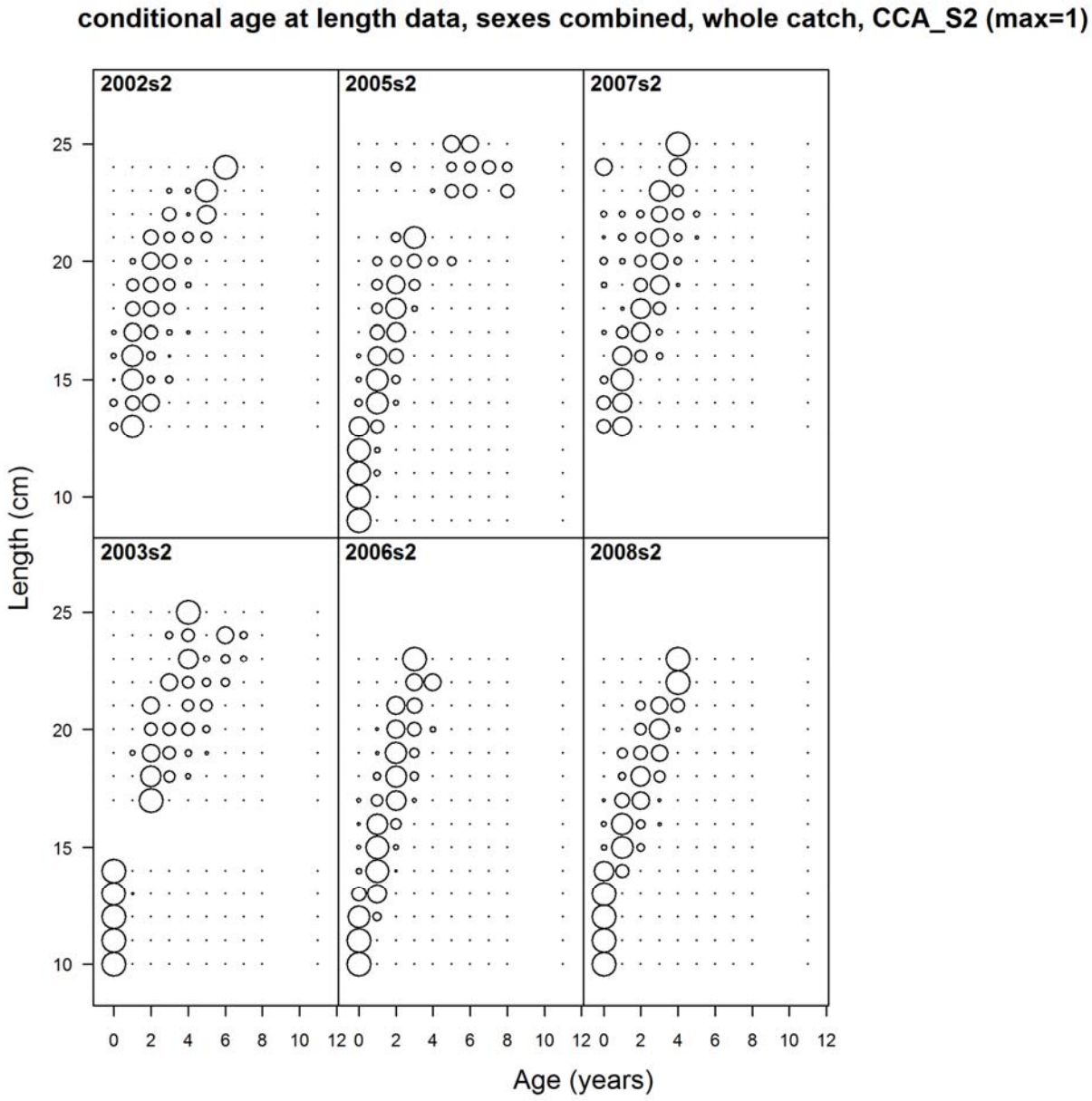


Figure 8e (cont'd). Conditional age-at-length data for the CCA_S2 fishery, 2002-2008.

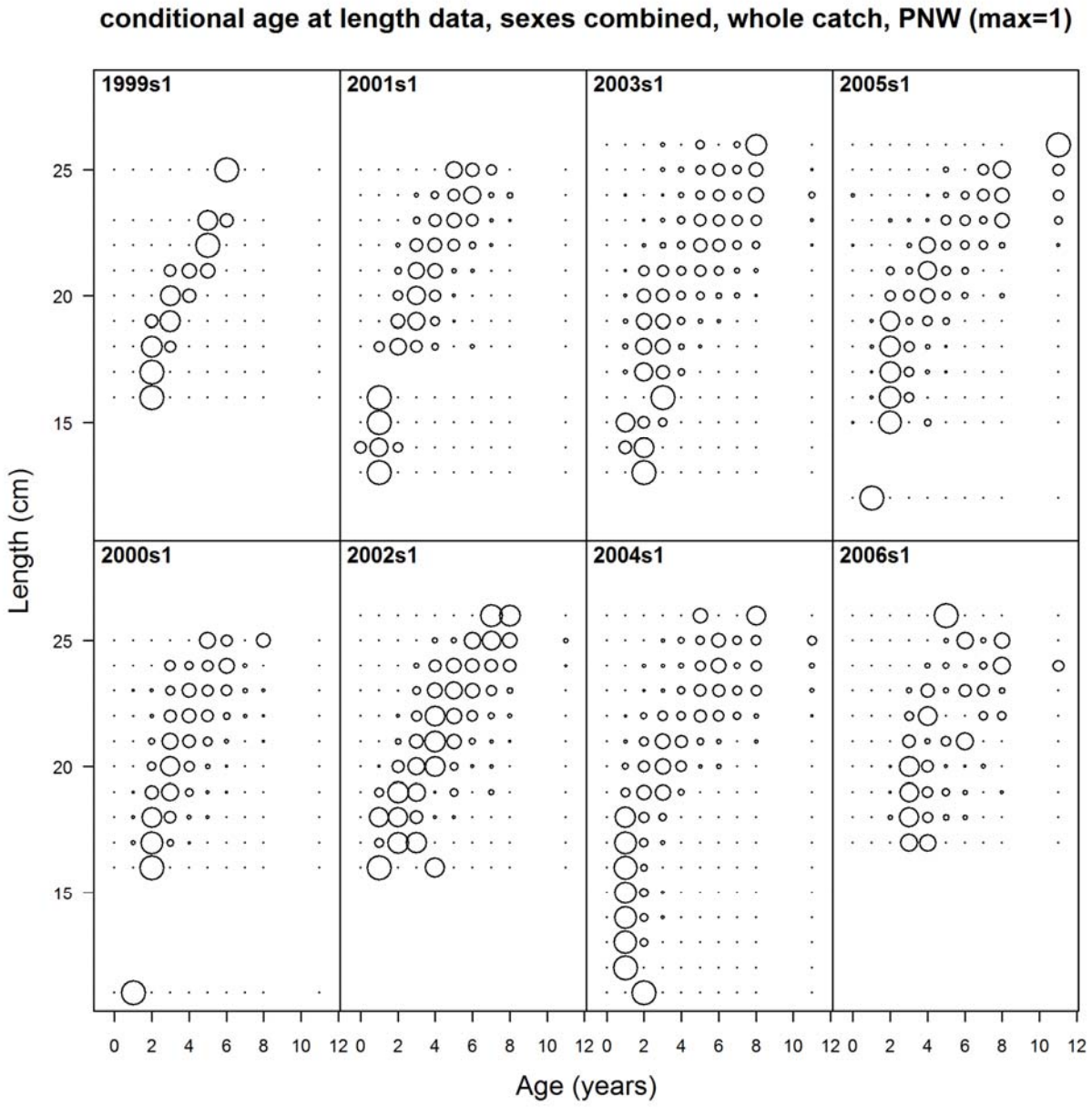


Figure 8f. Conditional age-at-length data for the PNW fishery, 1999-2006.

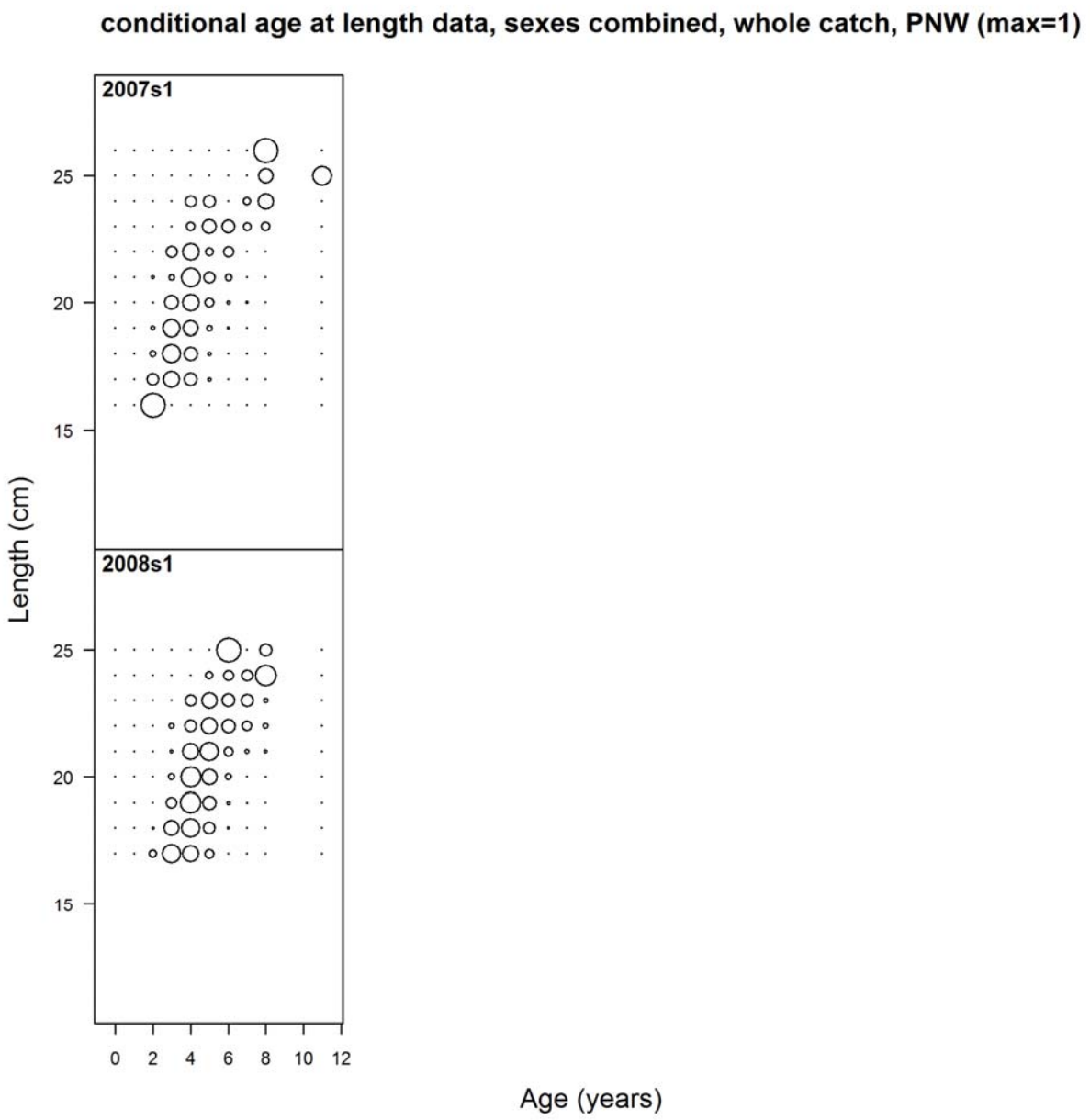


Figure 8f (cont'd). Conditional age-at-length data for the PNW fishery.

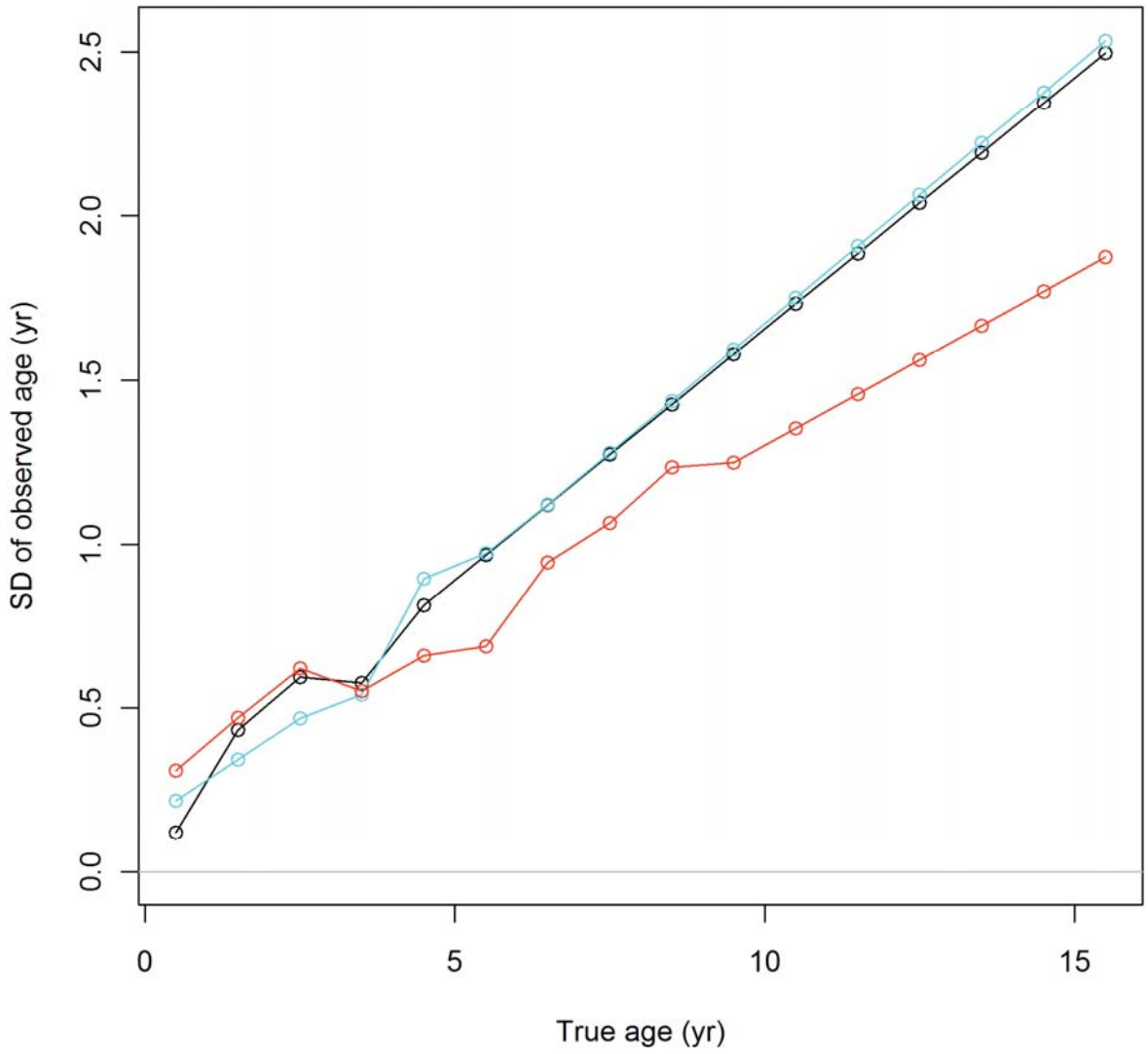


Figure 9. Fishery-specific ageing errors: black line is ENS, blue line is SCA and CCA, and red line is PNW.

BLANK PAGE

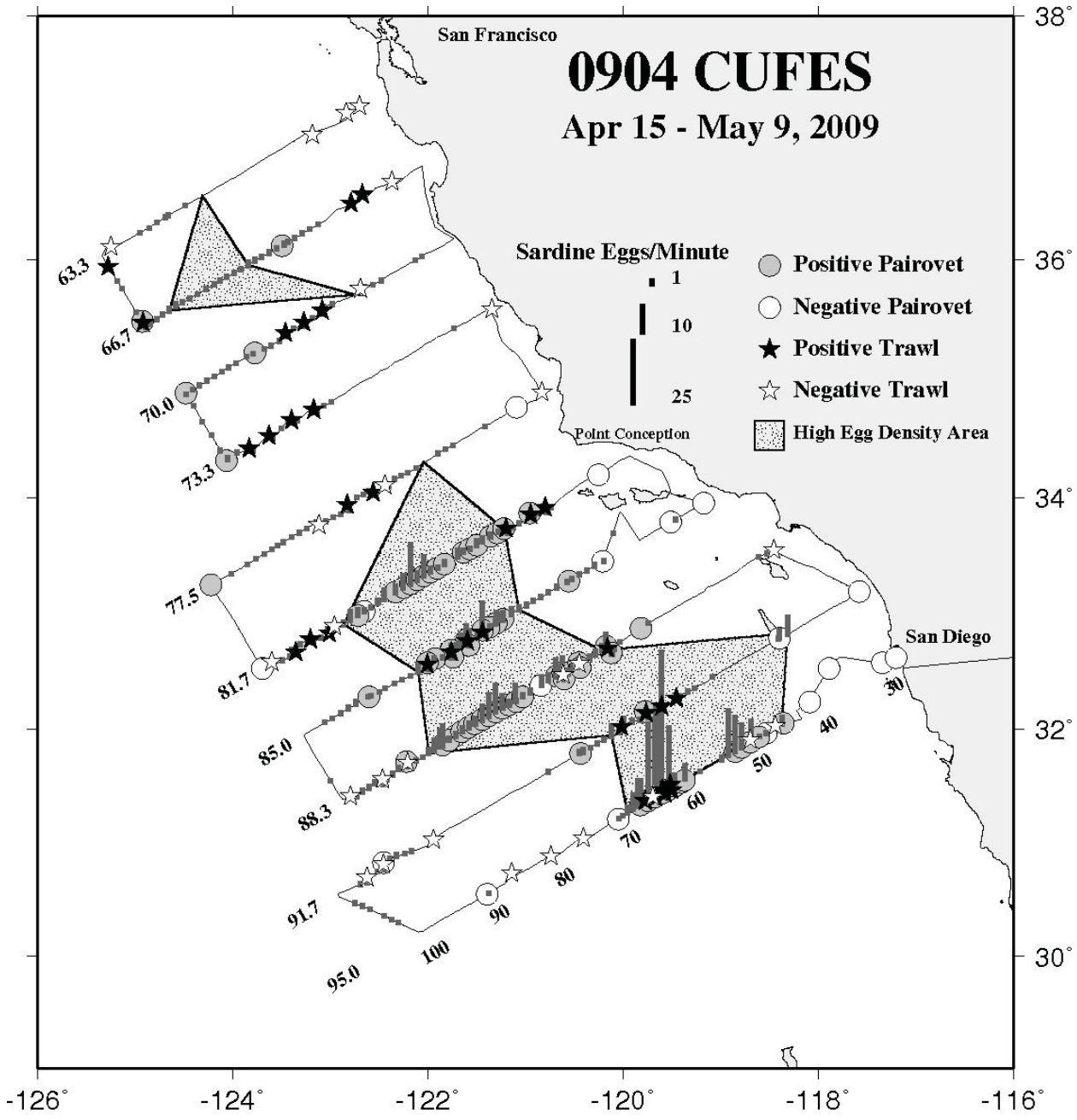


Figure 10a. Distribution of CUFES and Pairovet ichthyoplankton collections, and adult trawl samples from the SWFSC 0904 sardine survey, conducted onboard the F/V Frosti, April 15 to May 9, 2009.

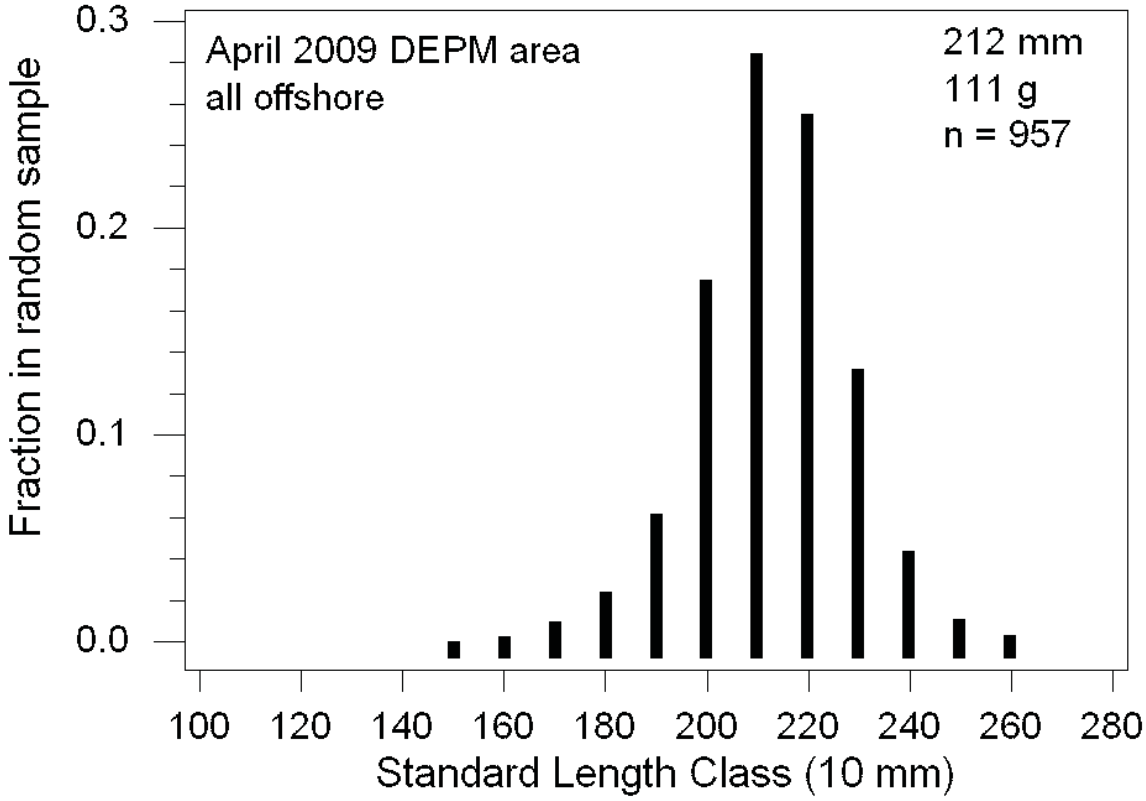


Figure 10b. Length-composition from the SWFSC 0904 survey.

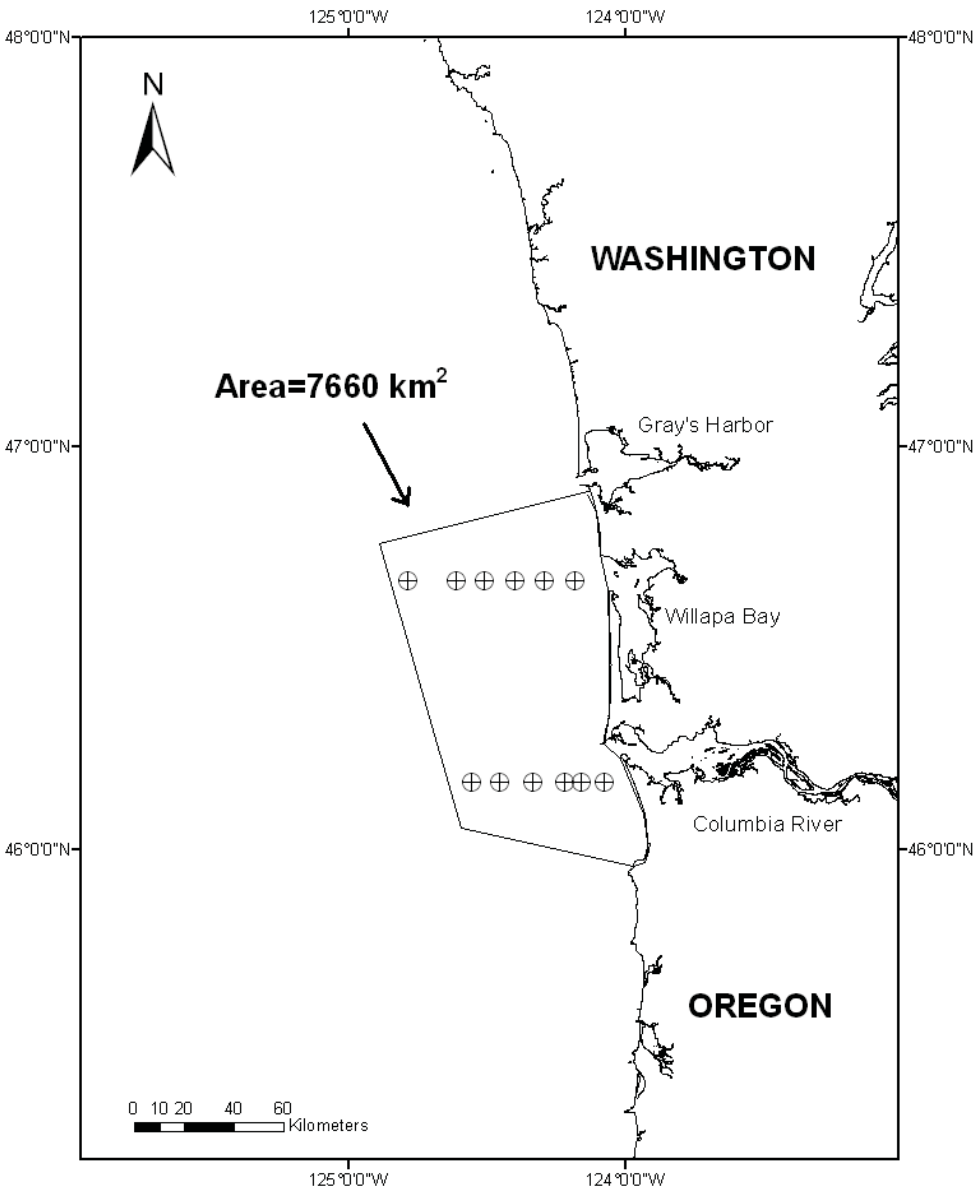


Figure 11a. NWFSC Predator Forage-Fish Survey (PFFS) trawl locations sampled near the Columbia River from late April through early August, 1998-2008. Estimated representative survey area is 7,660 km^2.

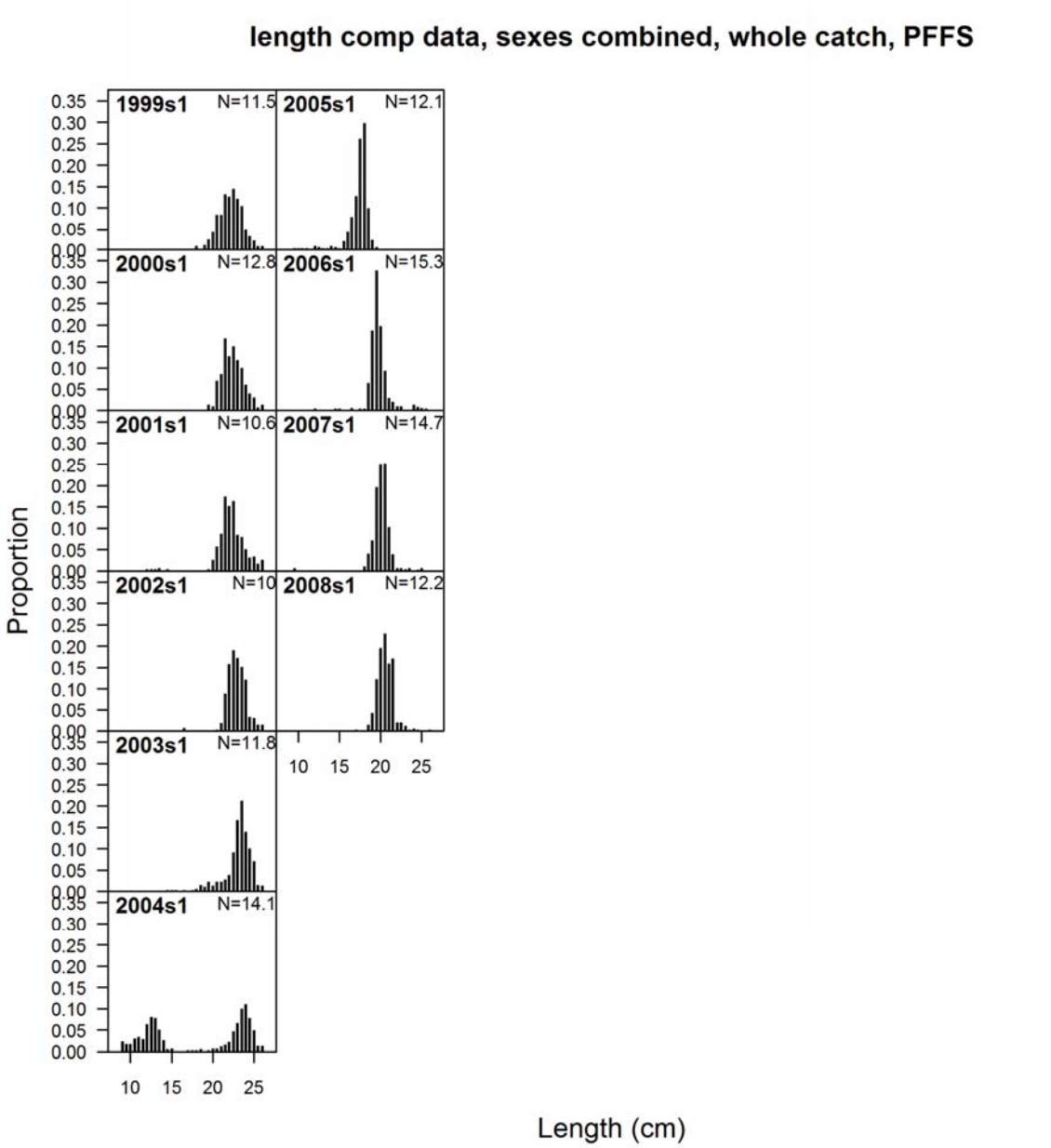


Figure 11b. Length-composition data for the NWFSC's PFFS survey (Predator Forage Fish Survey, 1999-2008).

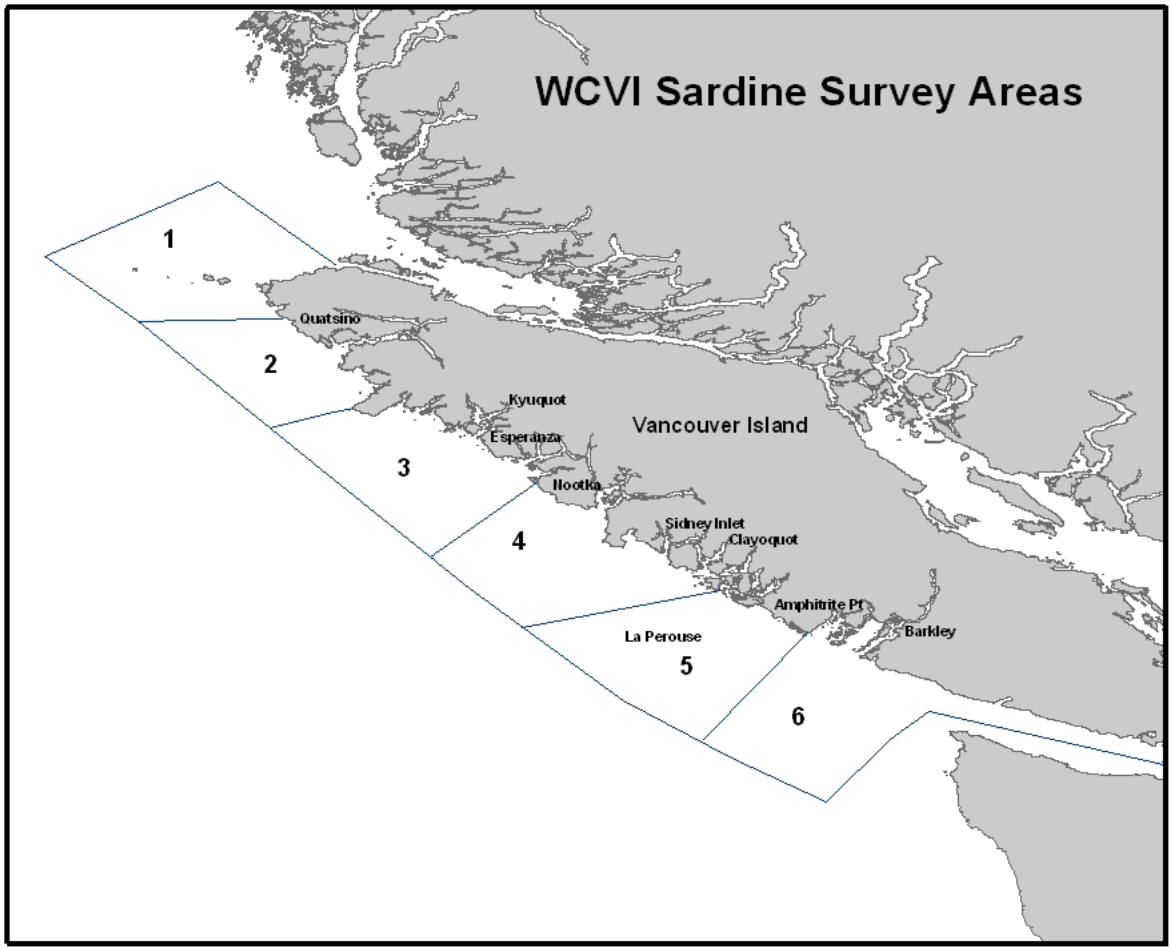


Figure 12a. CDFO West Coast Vancouver Island (WCVI) trawl survey areas sampled.

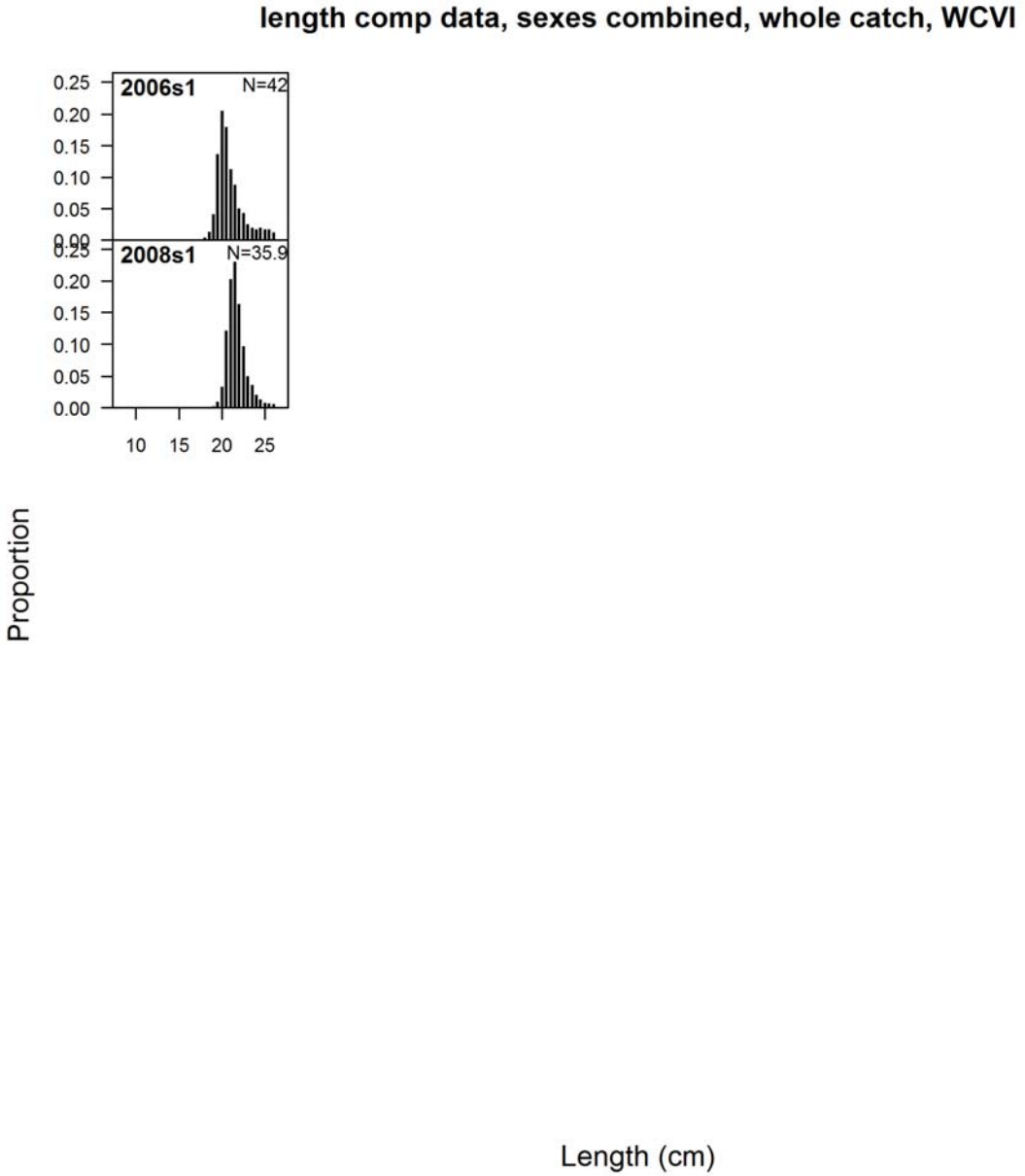


Figure 12b. Length-composition data for CDFO's WCVI survey. Data collected from 1997 to 2005 were excluded from the analysis.

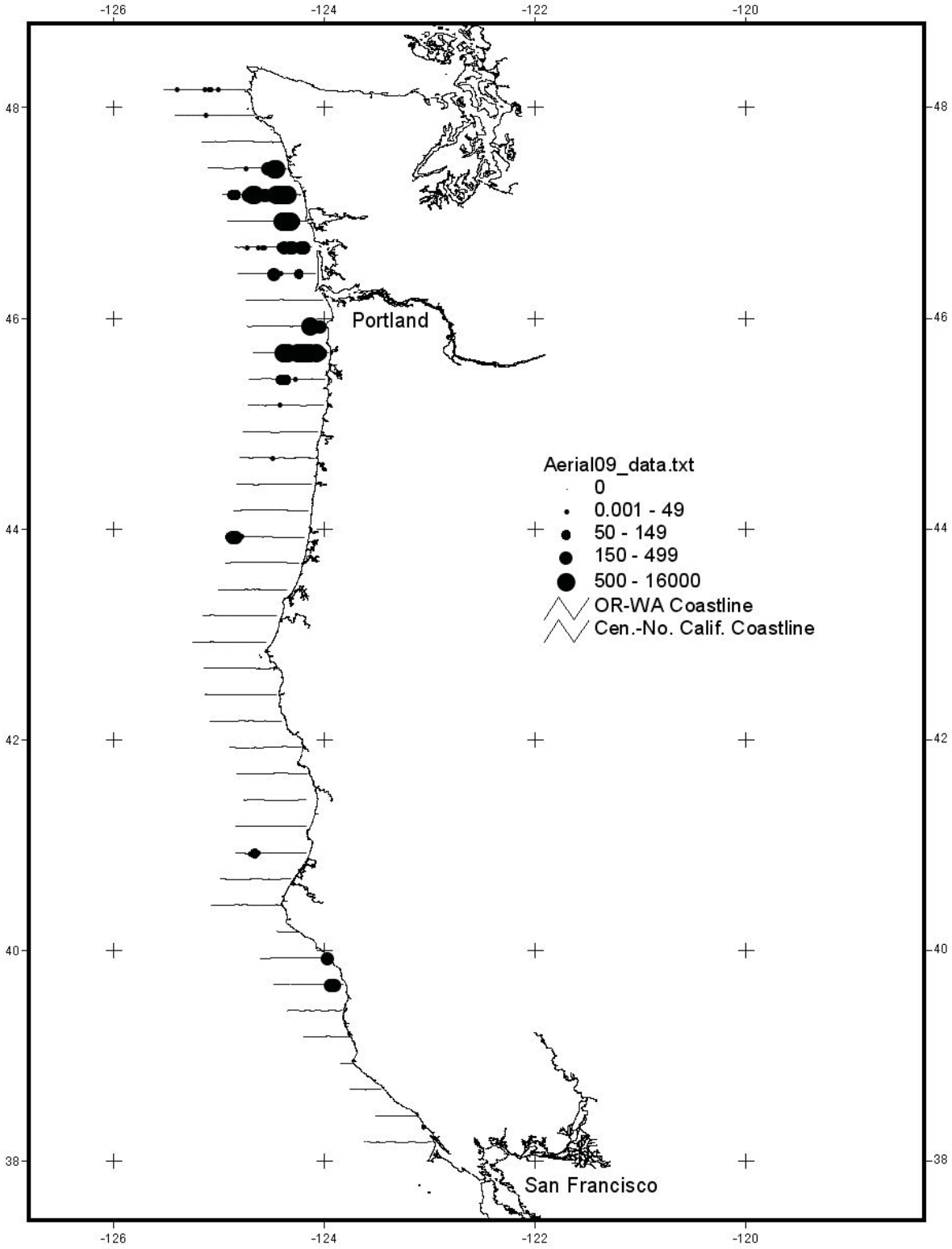


Figure 13a. Map showing the distribution of sardine schools observed in the 2009 Aerial Sardine Survey (data from Jagielo 2009).

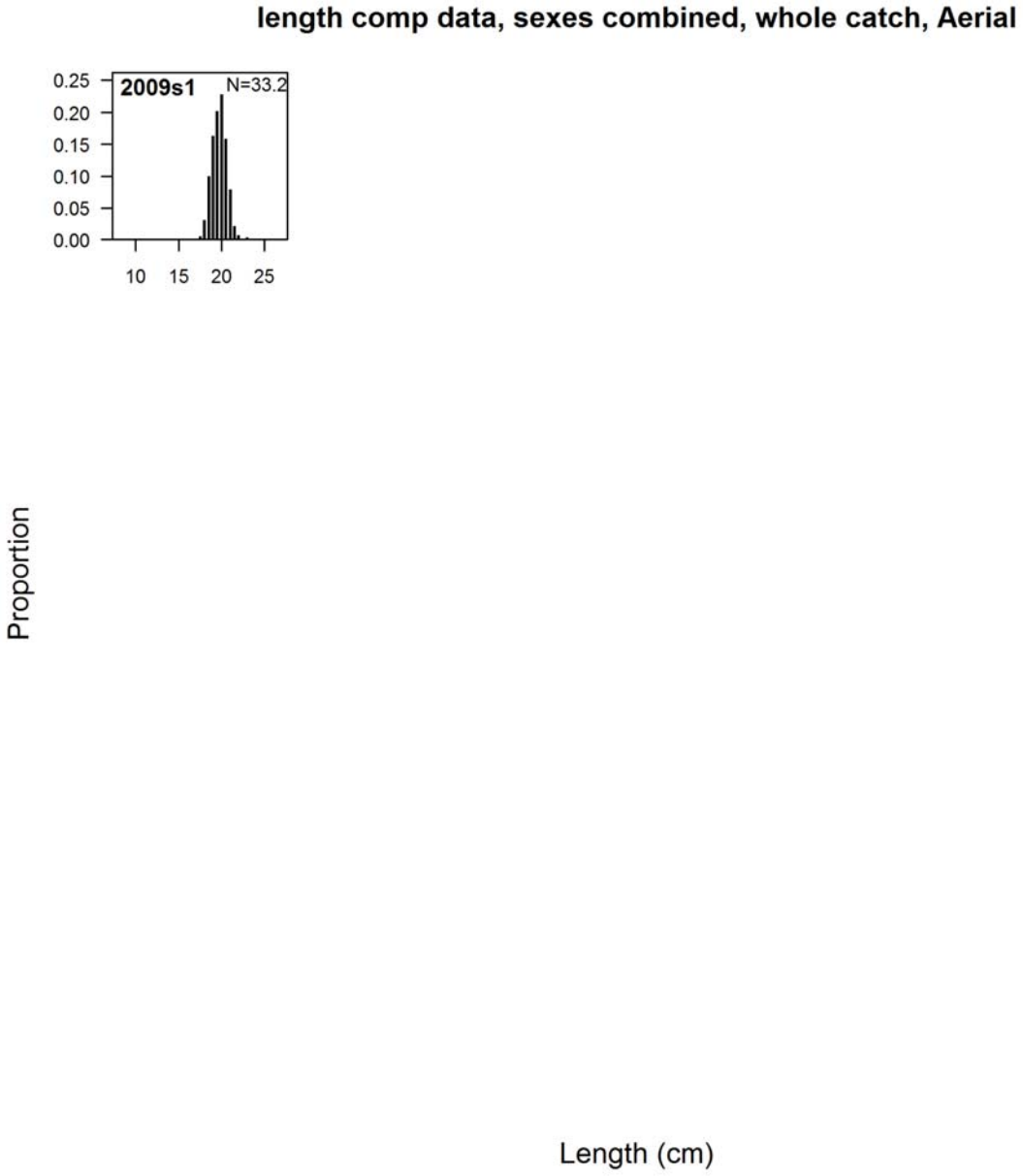


Figure 13b. Length-composition data for the 2009 Aerial Survey.

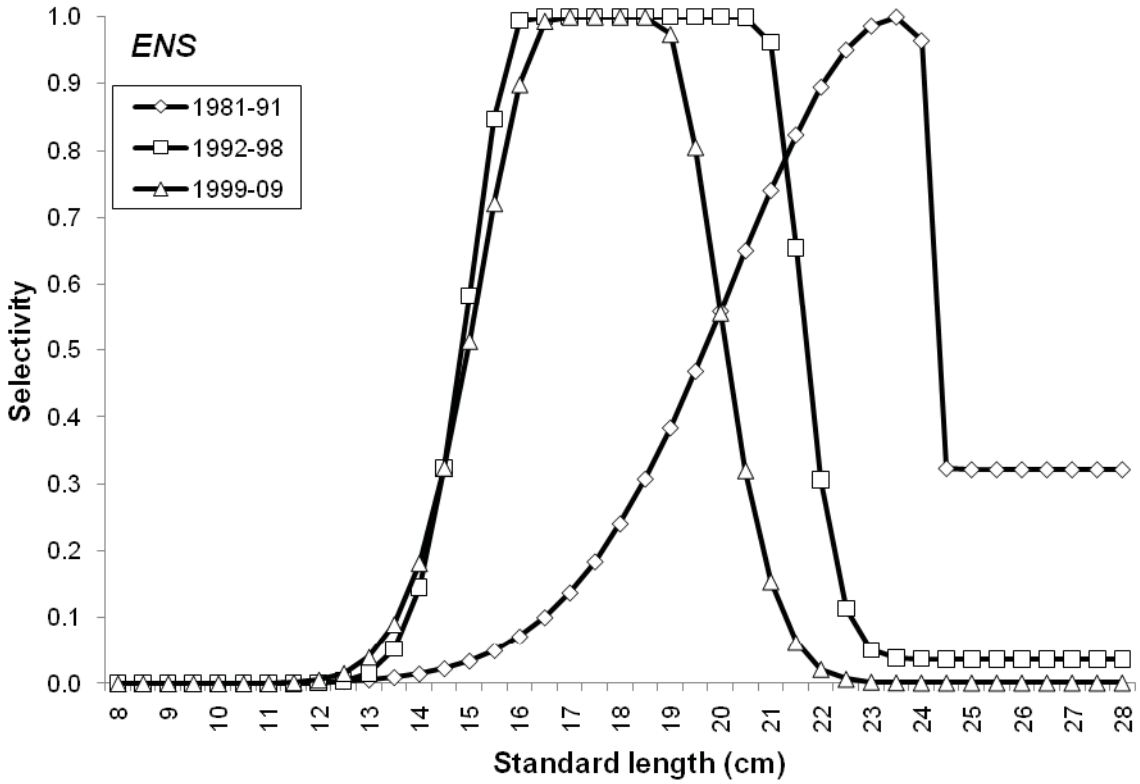
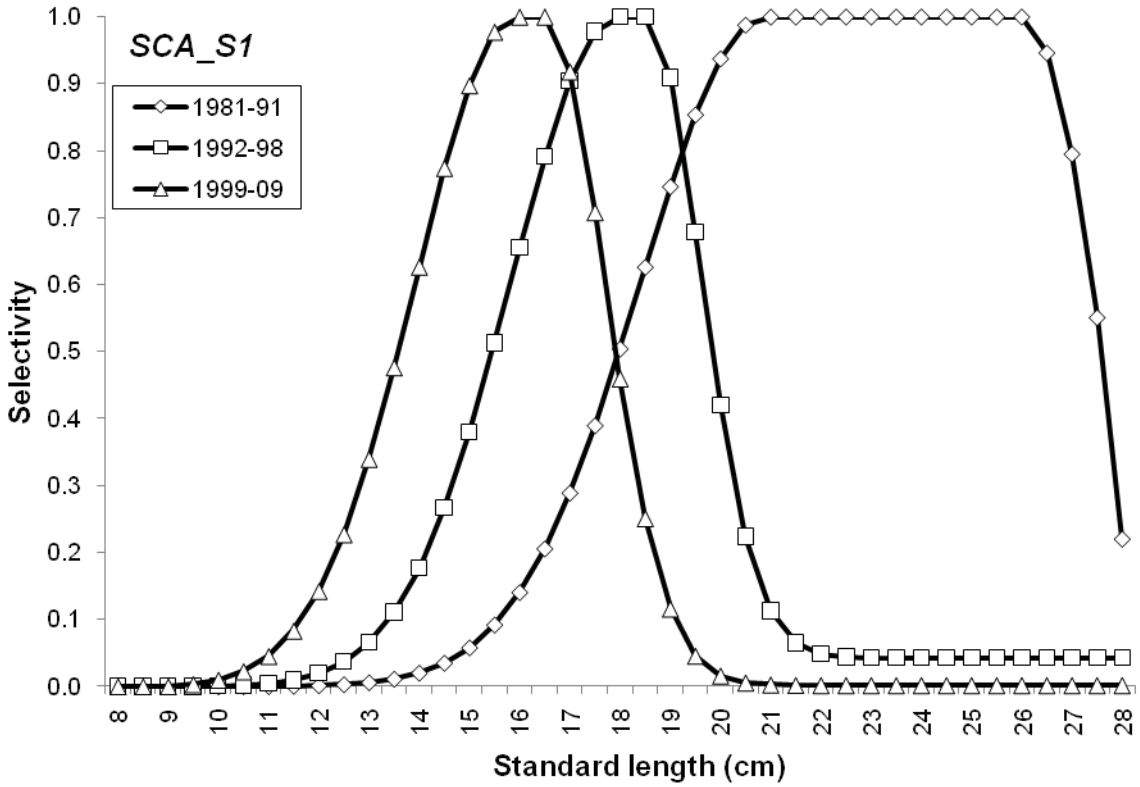


Figure 14a. Length-based selectivity for the ENS fleet by time block.



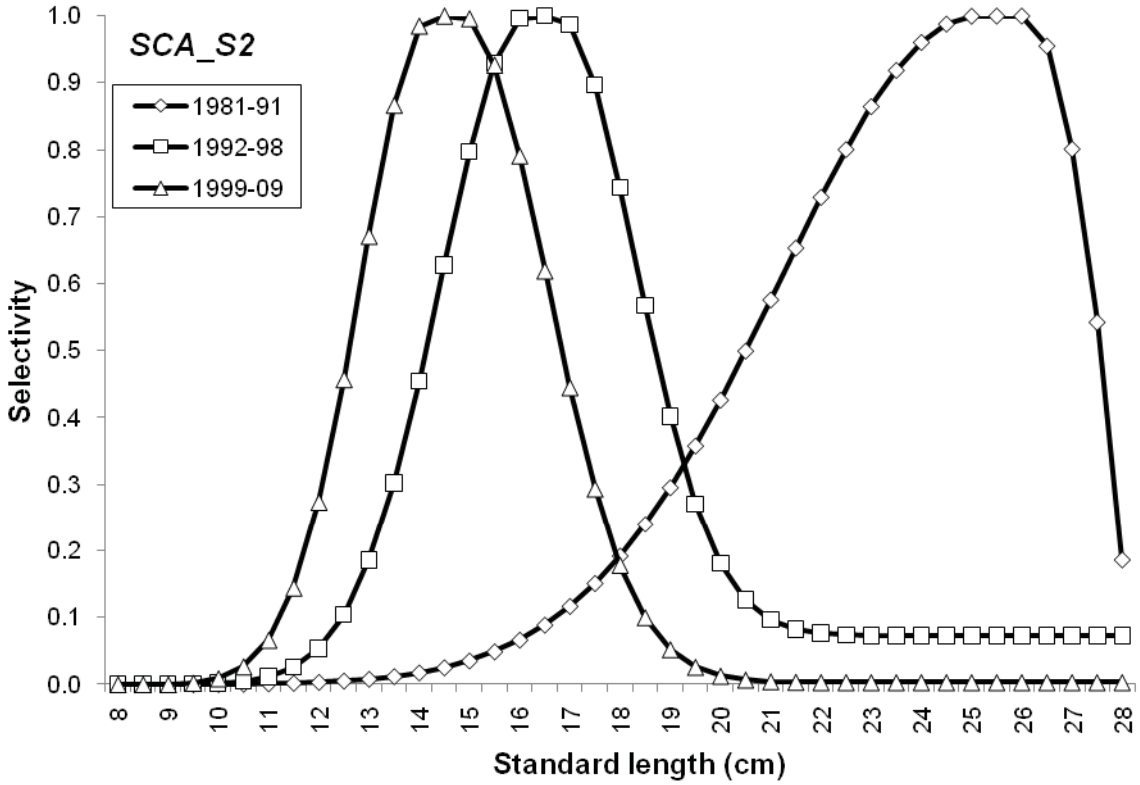


Figure 14b. Length-based selectivity for the SCA fleet by semester and time block.

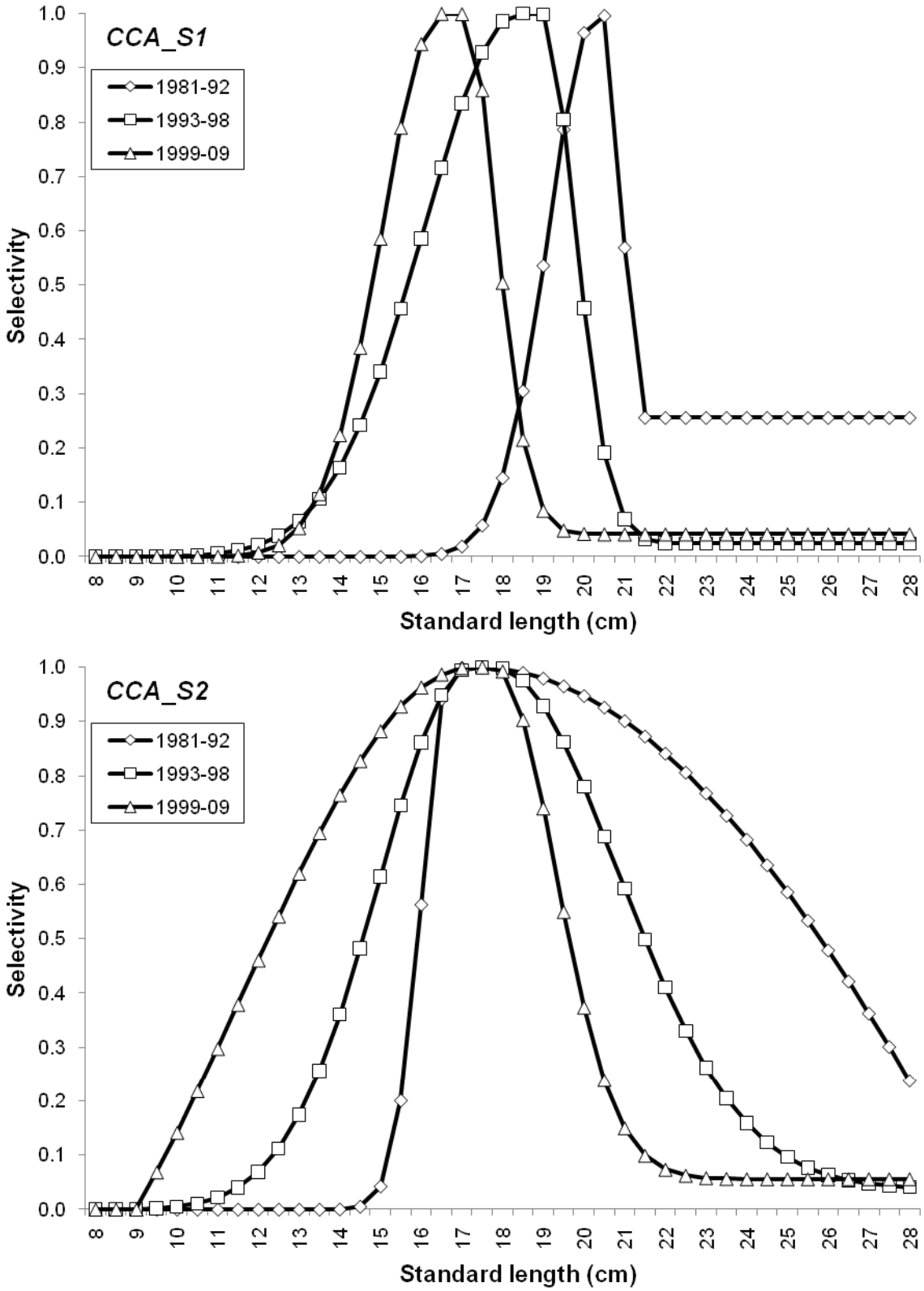


Figure 14c. Length-based selectivity for the CCA fleet by semester and time block.

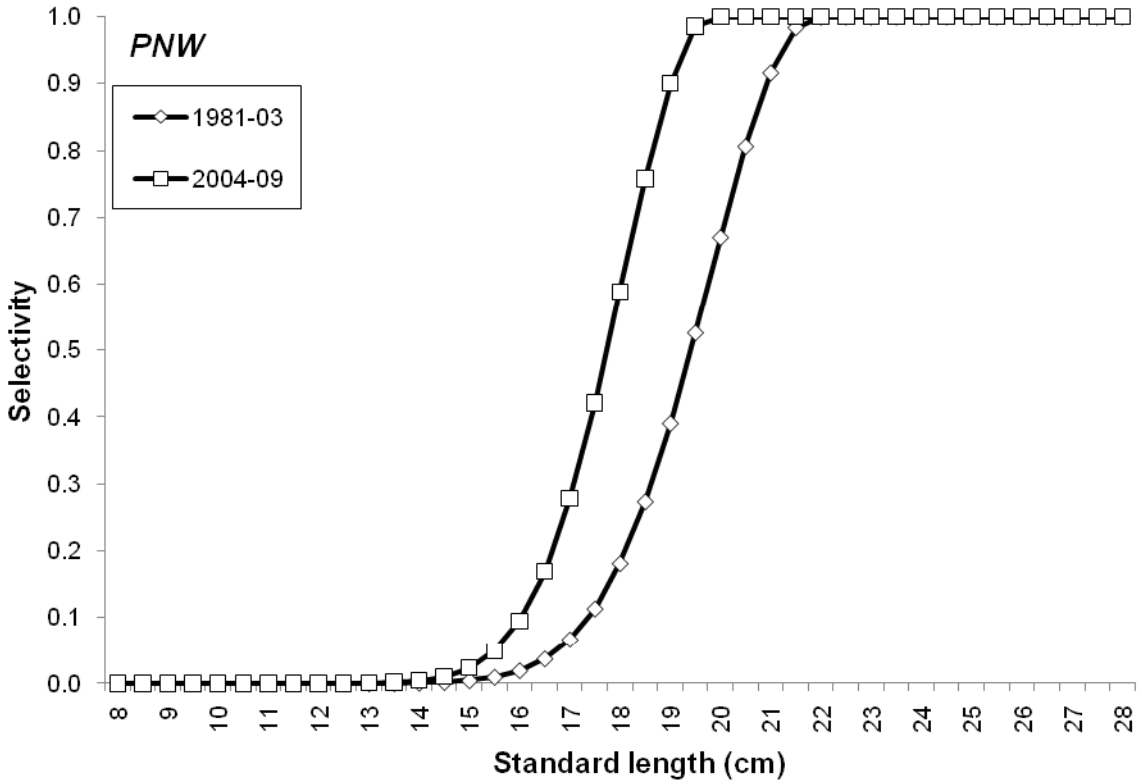


Figure 14d. Length-based selectivity by fleet and time block.

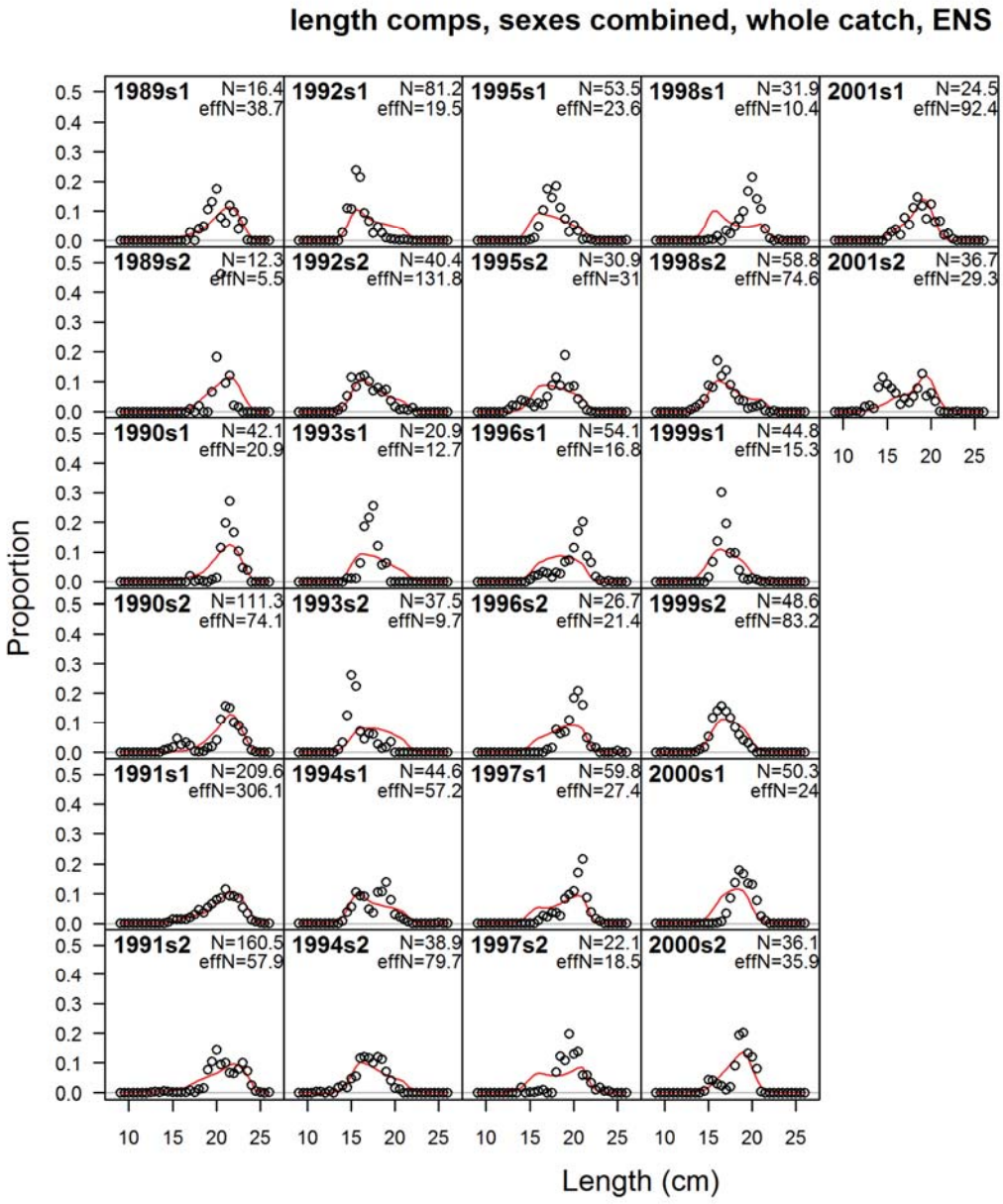


Figure 15a. Base model fits to length-frequency data for the ENS fishery.

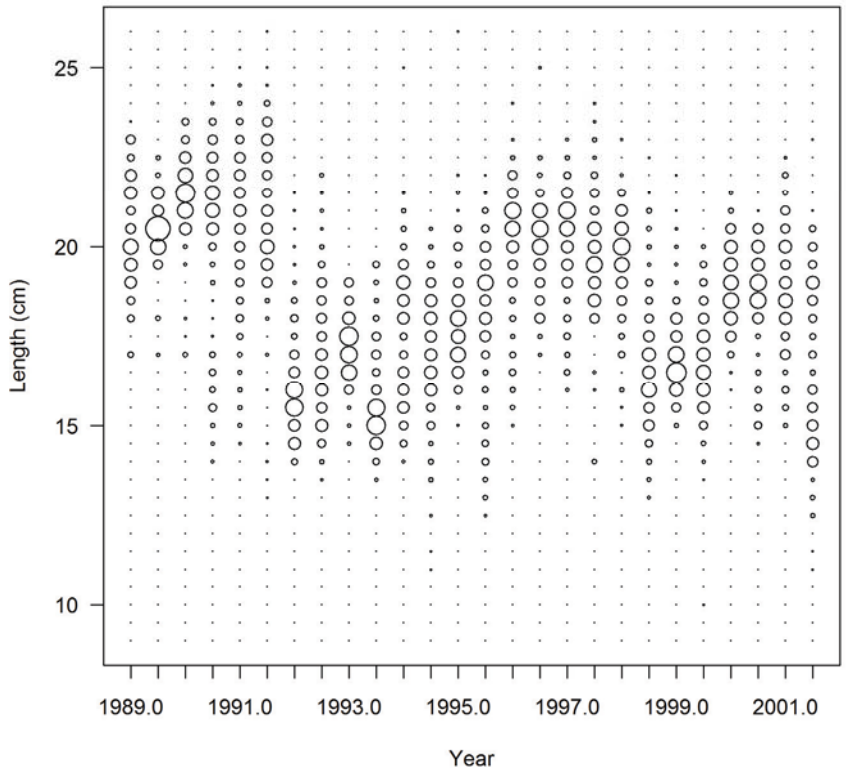


Figure 15b. Bubble plot of length-frequency data for the ENS fishery.

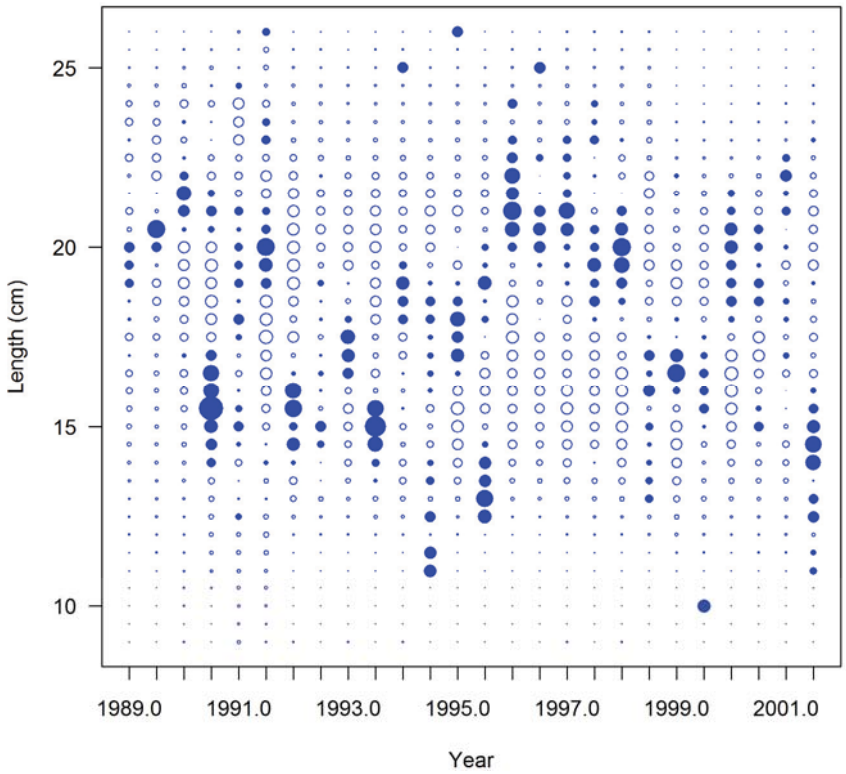


Figure 15c. Pearson residuals (max=7.43) for fit to length-frequency data for the ENS fishery.

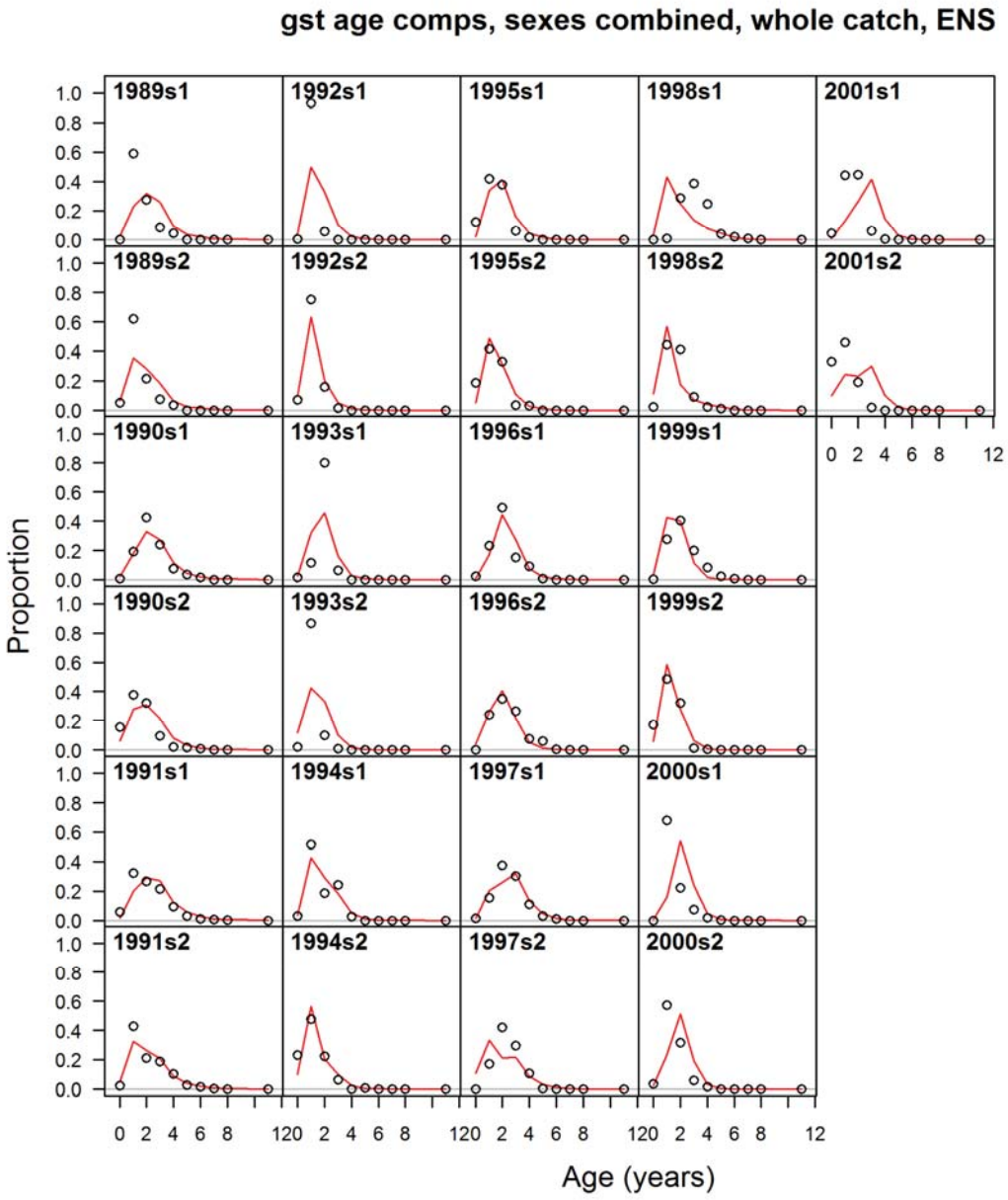


Figure 16a. Base model fits to implied age-frequency data for the ENS fishery.

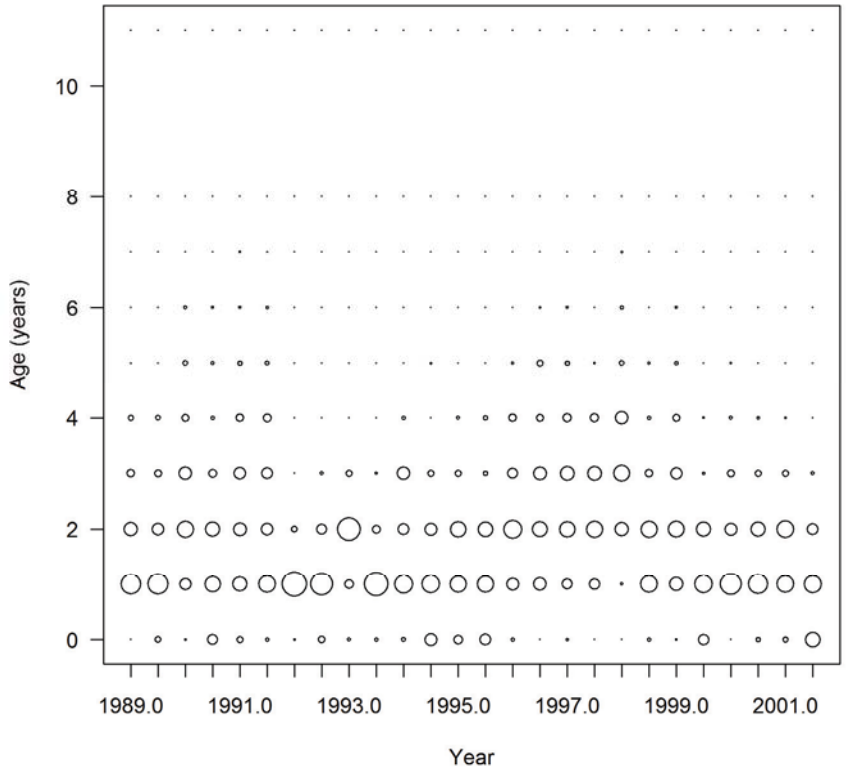


Figure 16b. Bubble plot of age-frequency data for the ENS fishery.

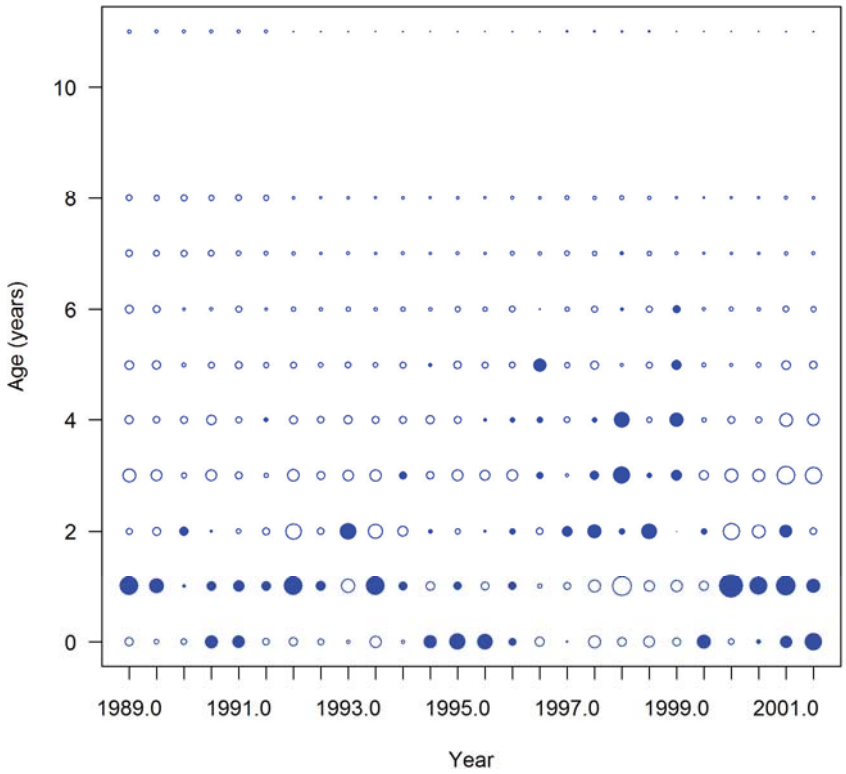


Figure 16c. Pearson residuals (max=1.41) for fit to implied age-frequency data for the ENS fishery.

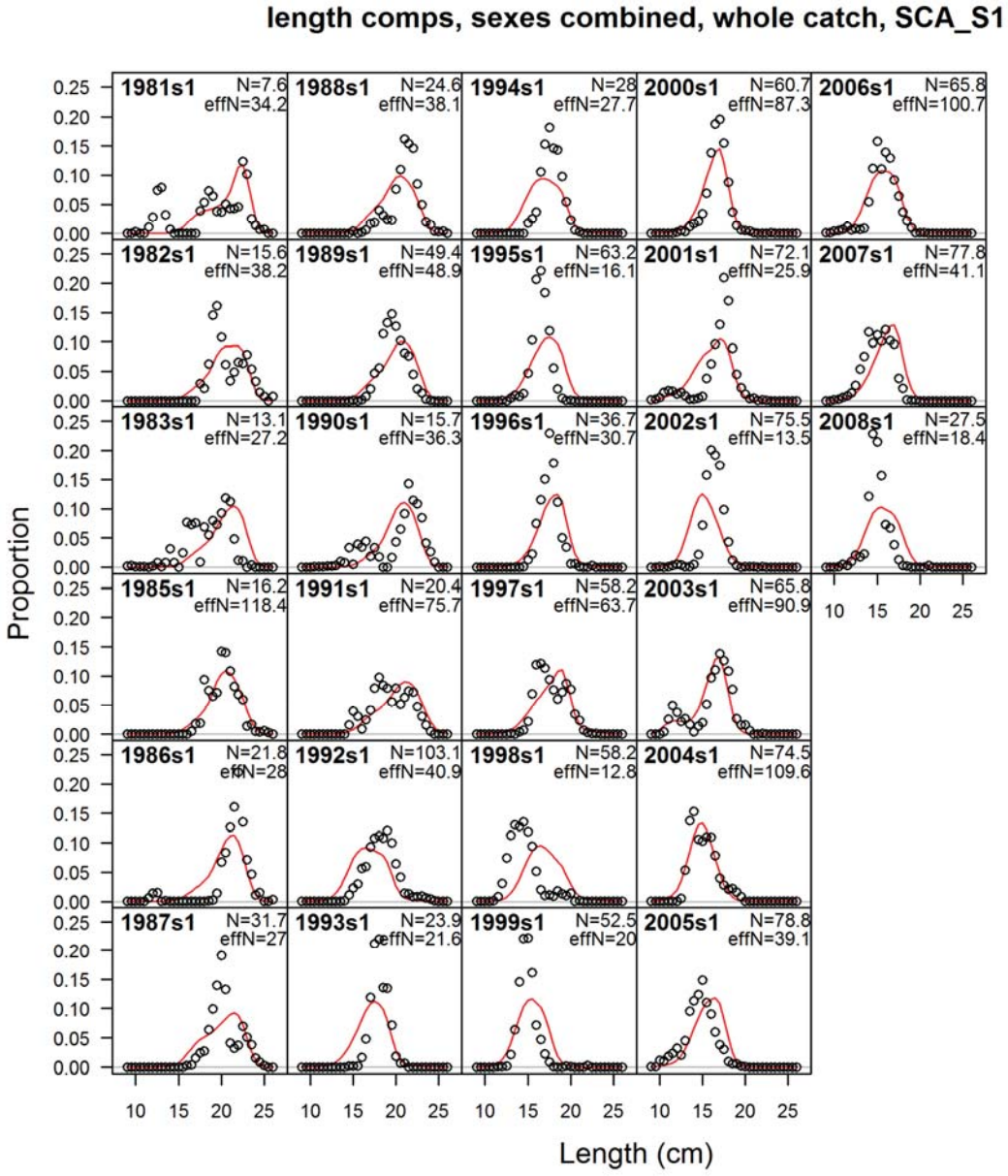


Figure 17a. Base model fits to length-frequency data for the SCA_S1 fishery.

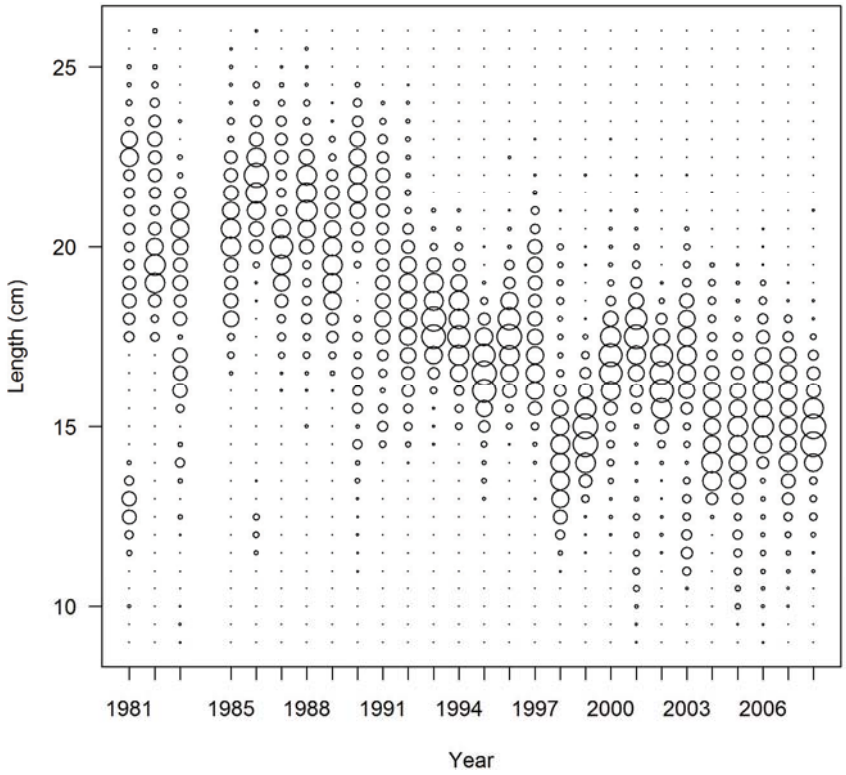


Figure 17b. Bubble plot of length-frequency data for the SCA_S1 fishery.

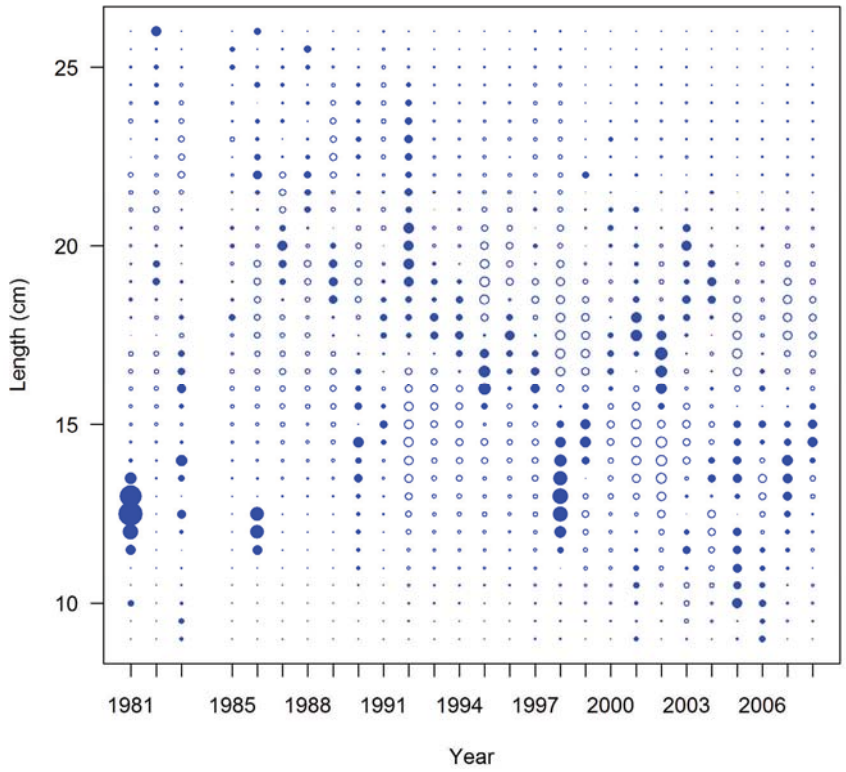


Figure 17c. Pearson residuals (max=14.67) for fit to length-frequency data for the SCA_S1 fishery.

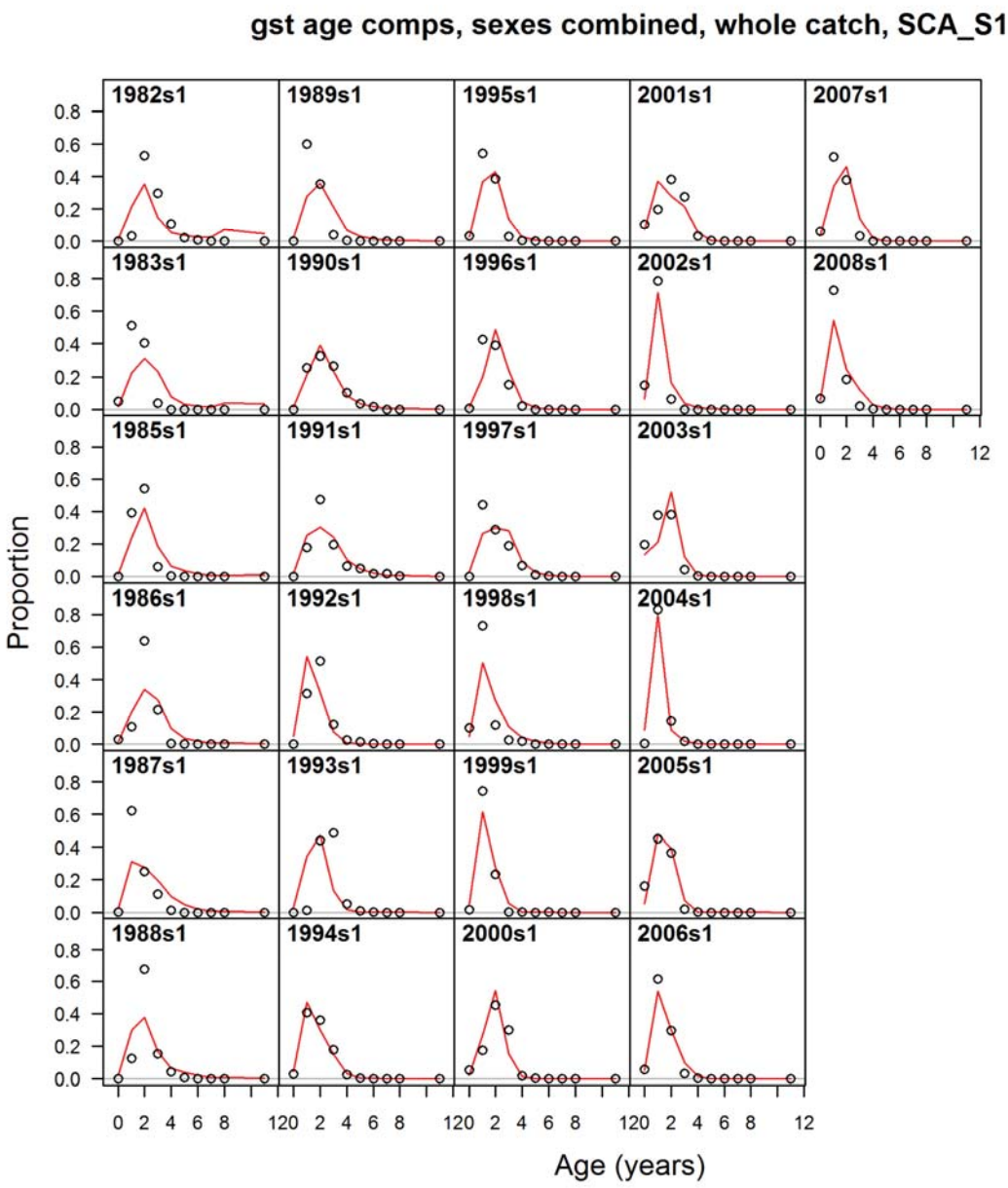


Figure 18a. Base model fits to implied age-frequency data for the SCA_S1 fishery.

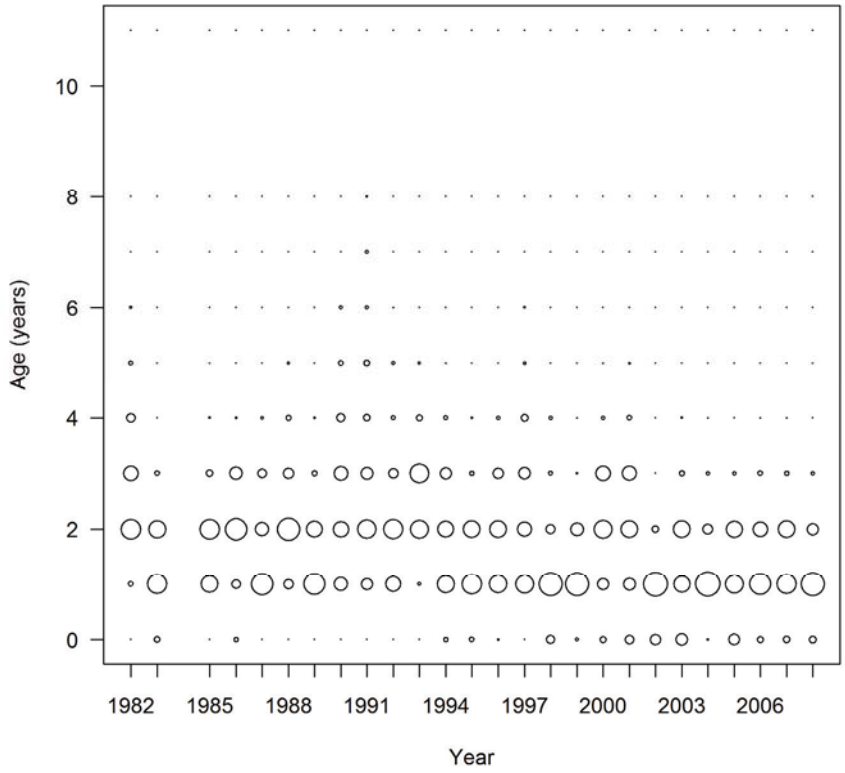


Figure 18b. Bubble plot of age-frequency data for the SCA_S1 fishery.

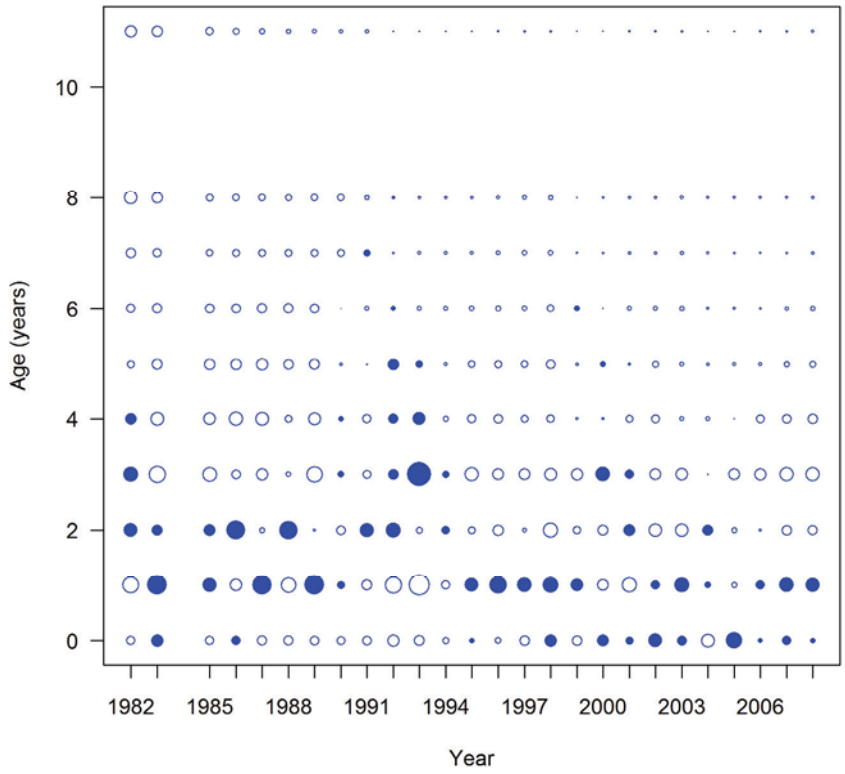


Figure 18c. Pearson residuals (max=1.04) for fit to implied age-frequency data for the SCA_S1 fishery.

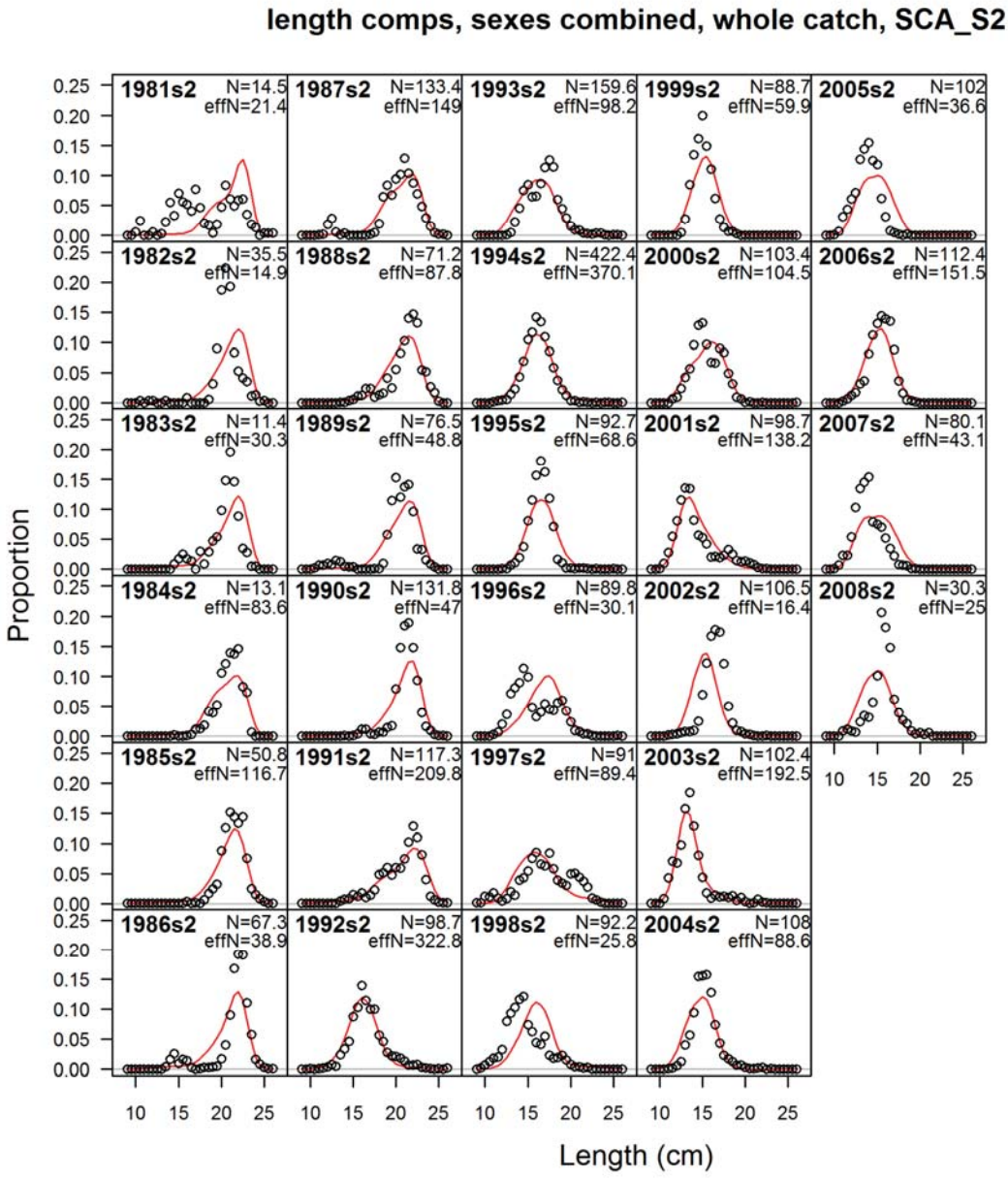


Figure 19a. Base model fits to length-frequency data for the SCA_S2 fishery.

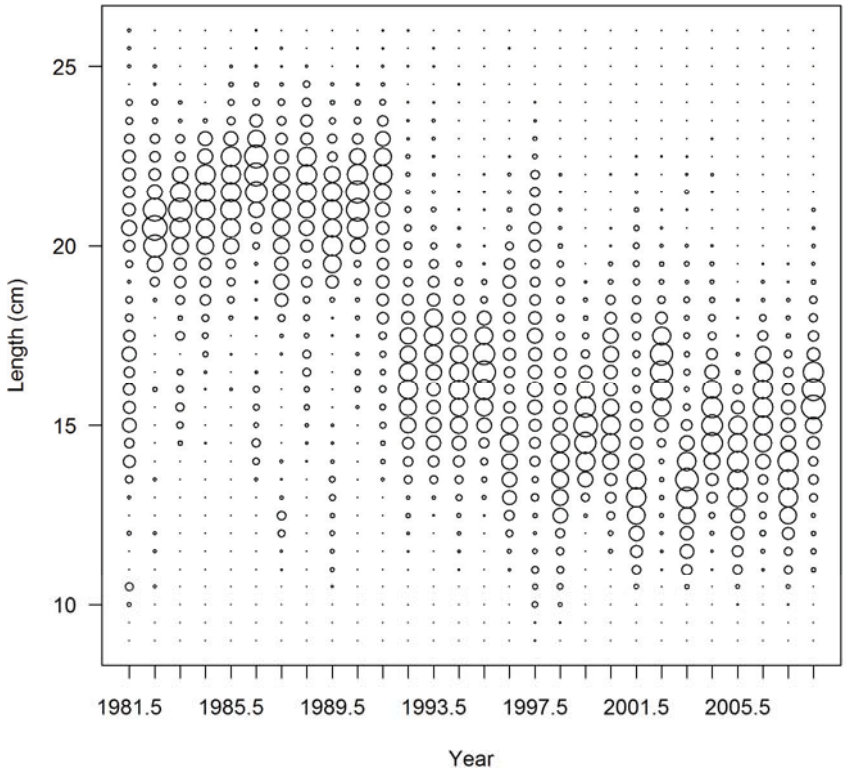


Figure 19b. Bubble plot of length-frequency data for the SCA_S2 fishery.

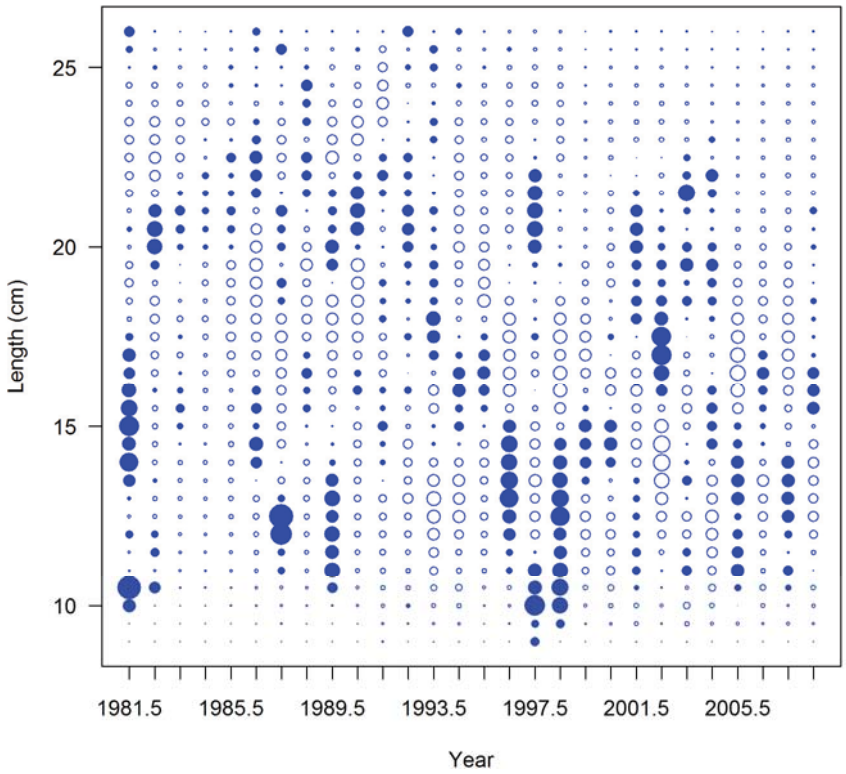


Figure 19c. Pearson residuals (max=6.75) for fit to length-frequency data for the SCA_S2 fishery.

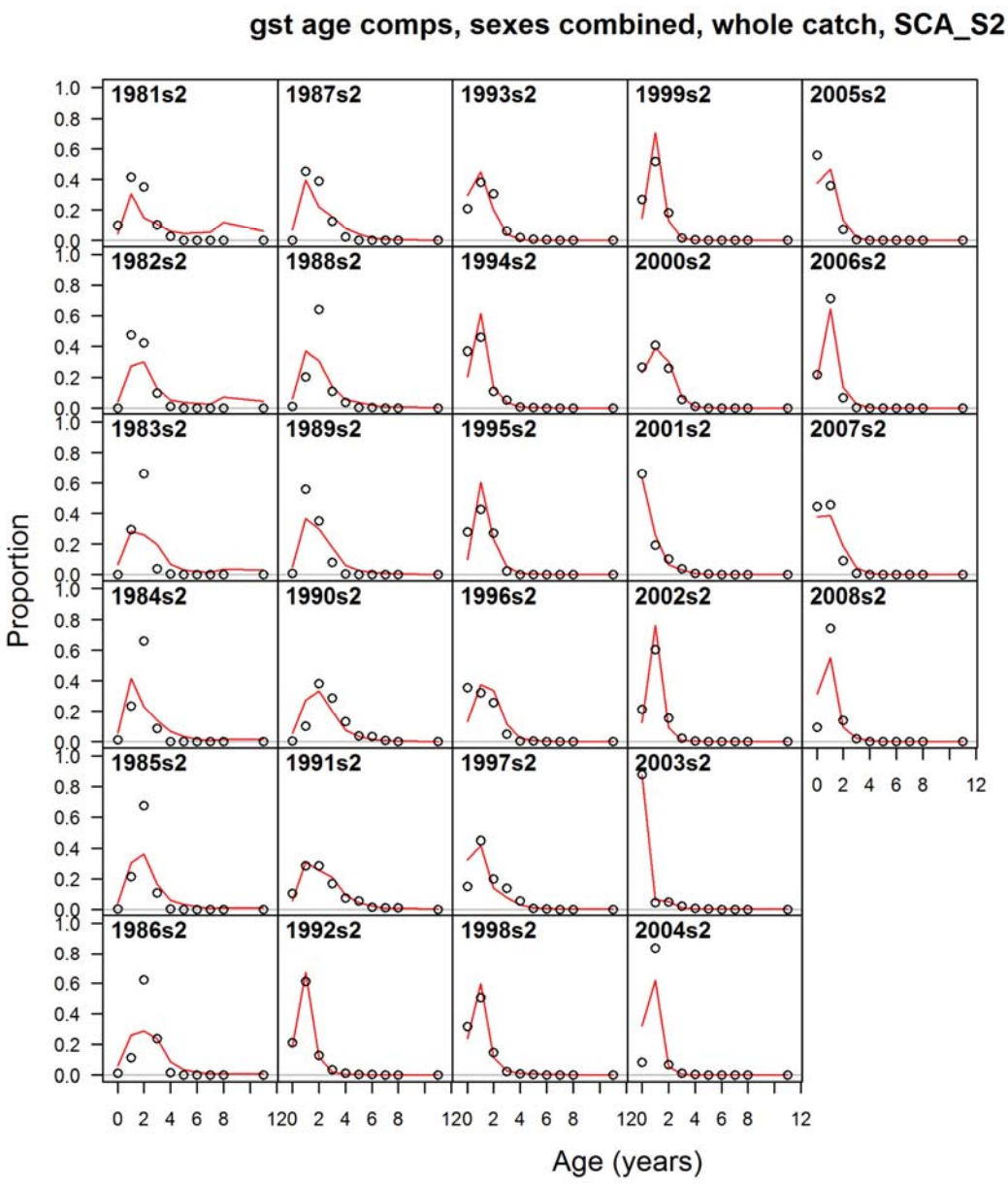


Figure 20a. Base model fits to implied age-frequency data for the SCA_S2 fishery.

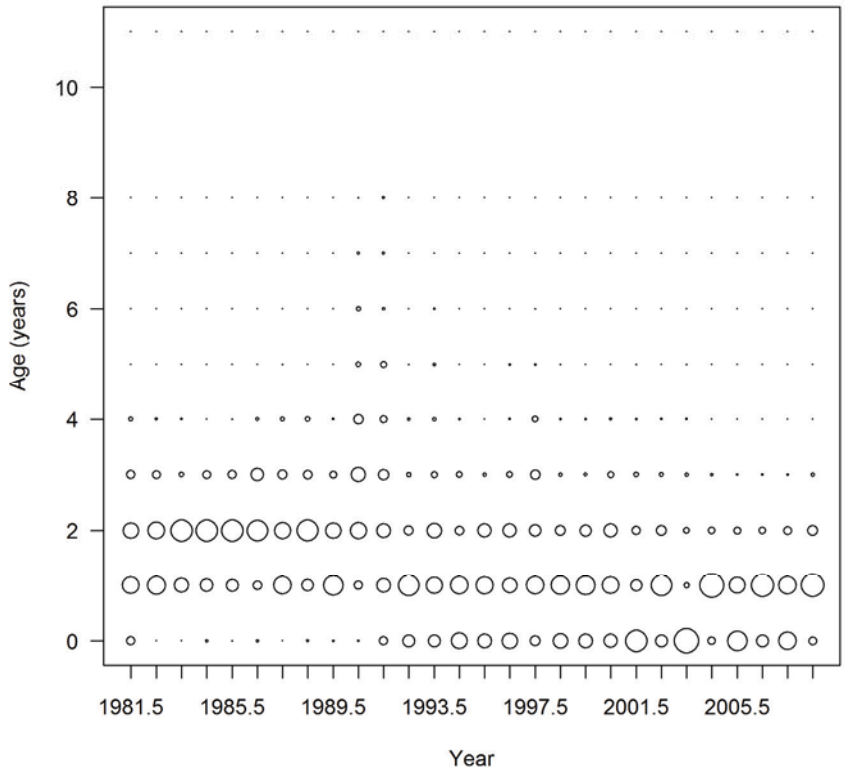


Figure 20b. Bubble plot of implied age-frequency data for the SCA_S2 fishery.

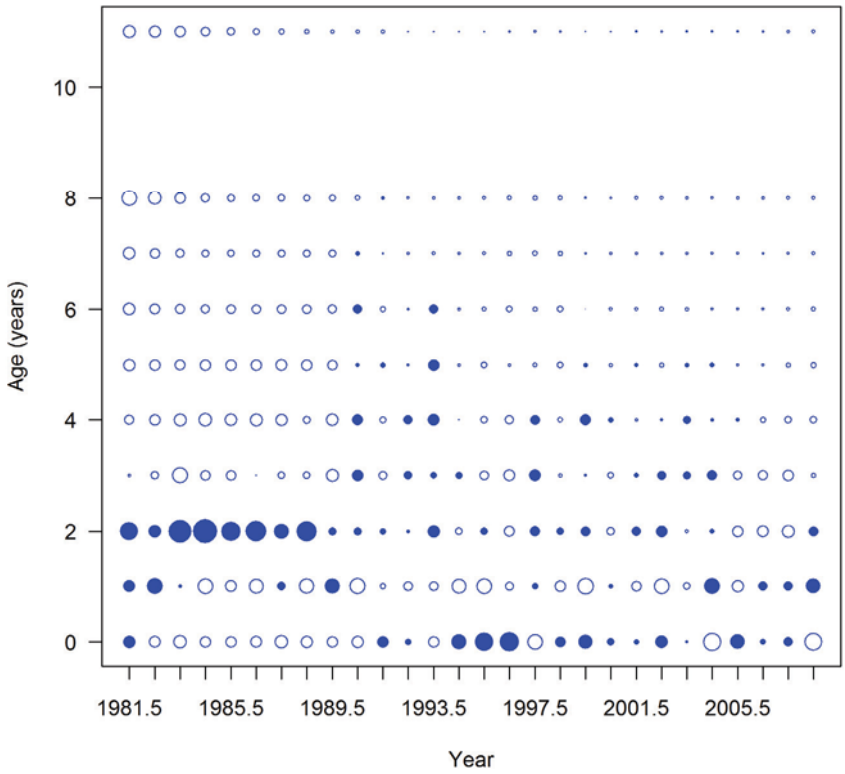


Figure 20c. Pearson residuals (max=1.03) for fit to implied age-frequency data for the SCA_S2 fishery.

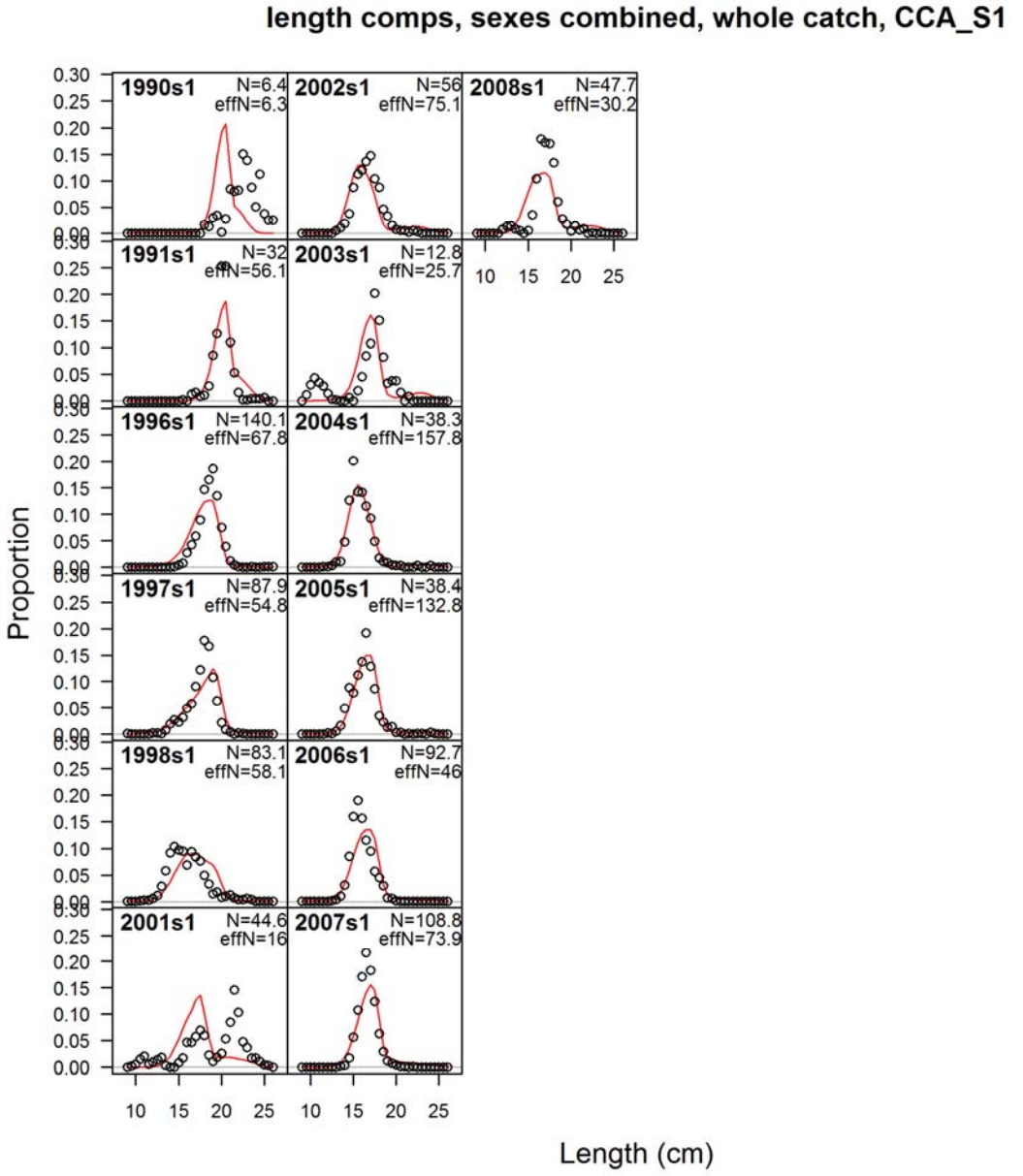


Figure 21a. Base model fits to length-frequency data for the CCA_S1 fishery.

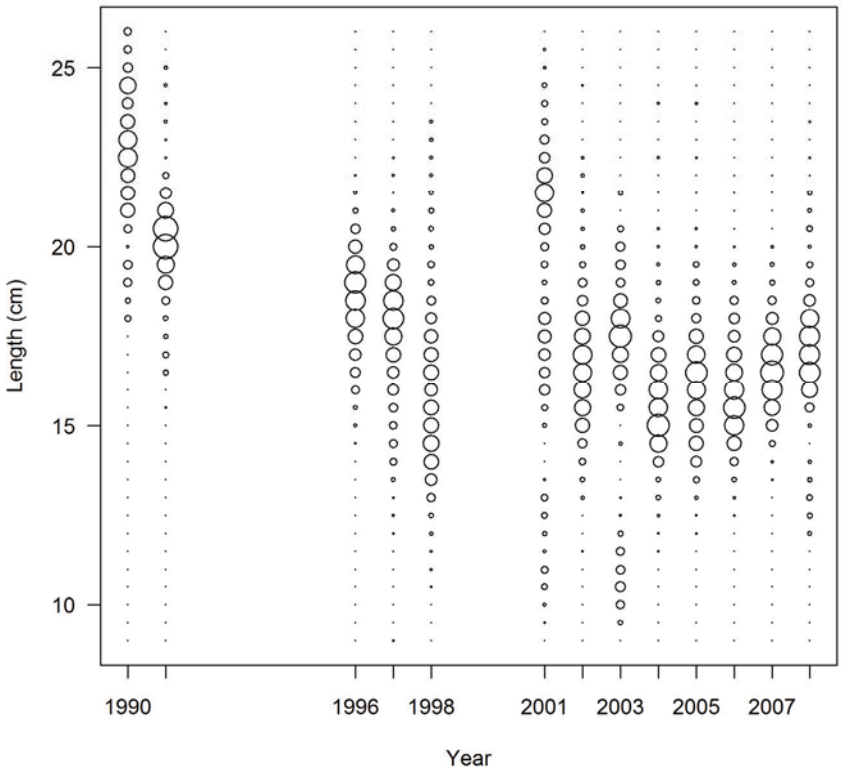


Figure 21b. Bubble plot of length-frequency data for the CCA_S1 fishery.

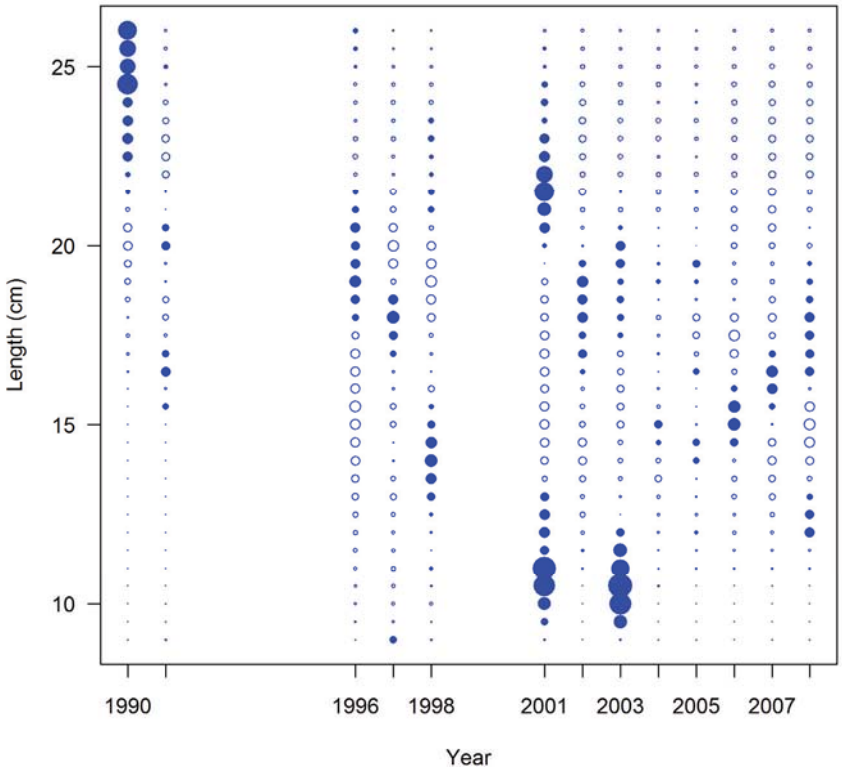


Figure 21c. Pearson residuals (max=9.73) for fit to length-frequency data for the CCA_S1 fishery.

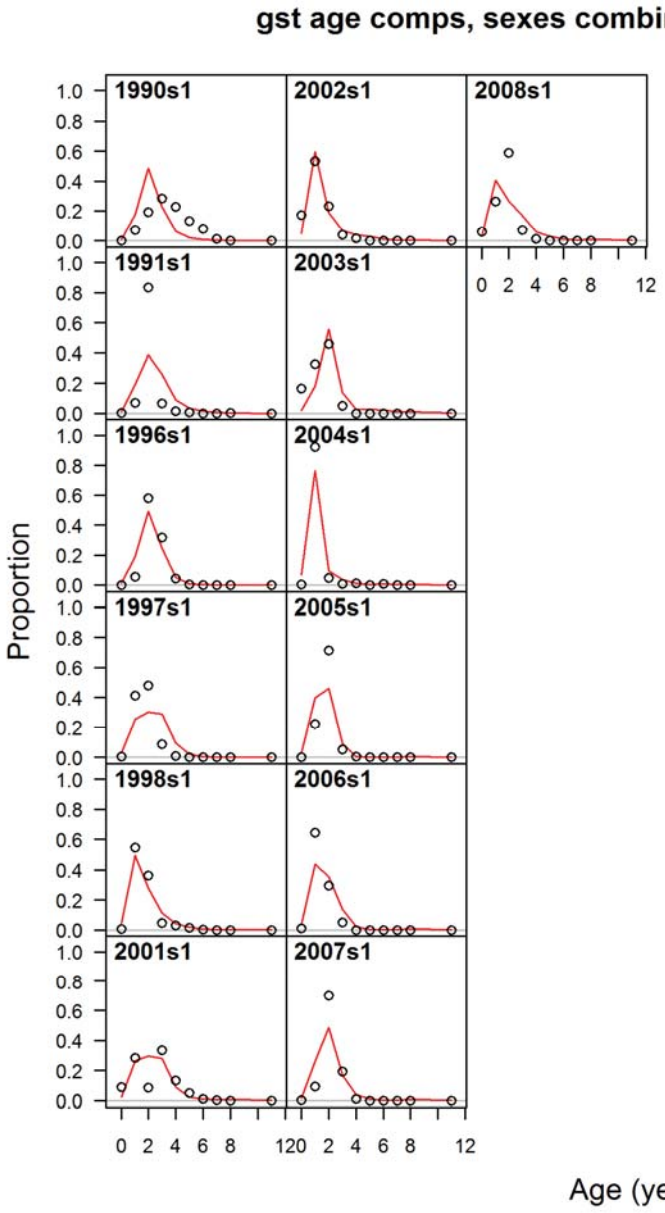


Figure 22a. Base model fits to implied age-frequency data for the CCA_S1 fishery.

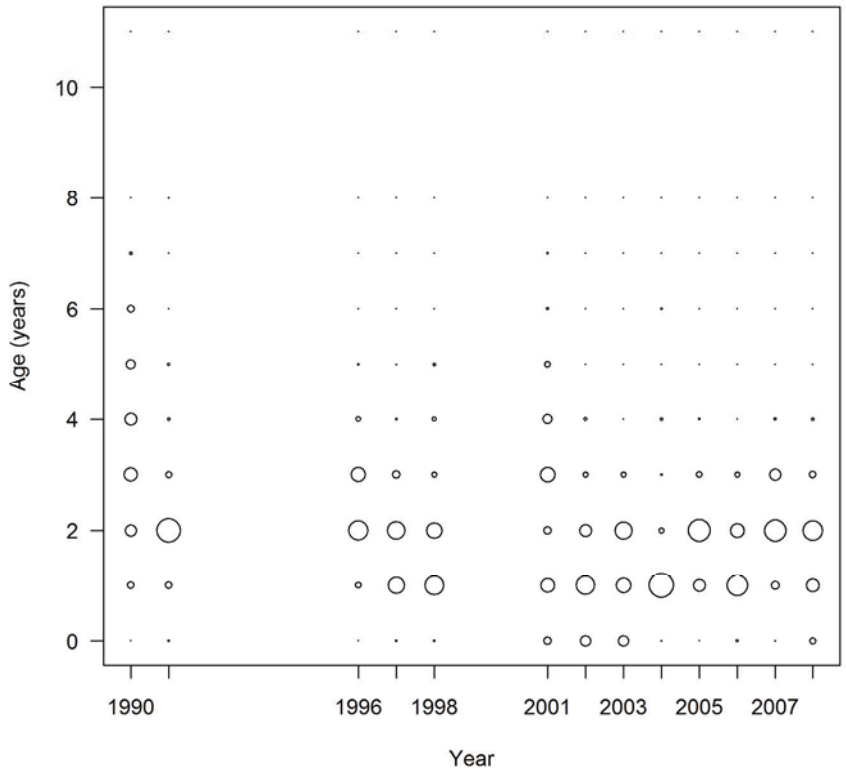


Figure 22b. Bubble plot of implied age-frequency data for the CCA_S1 fishery.

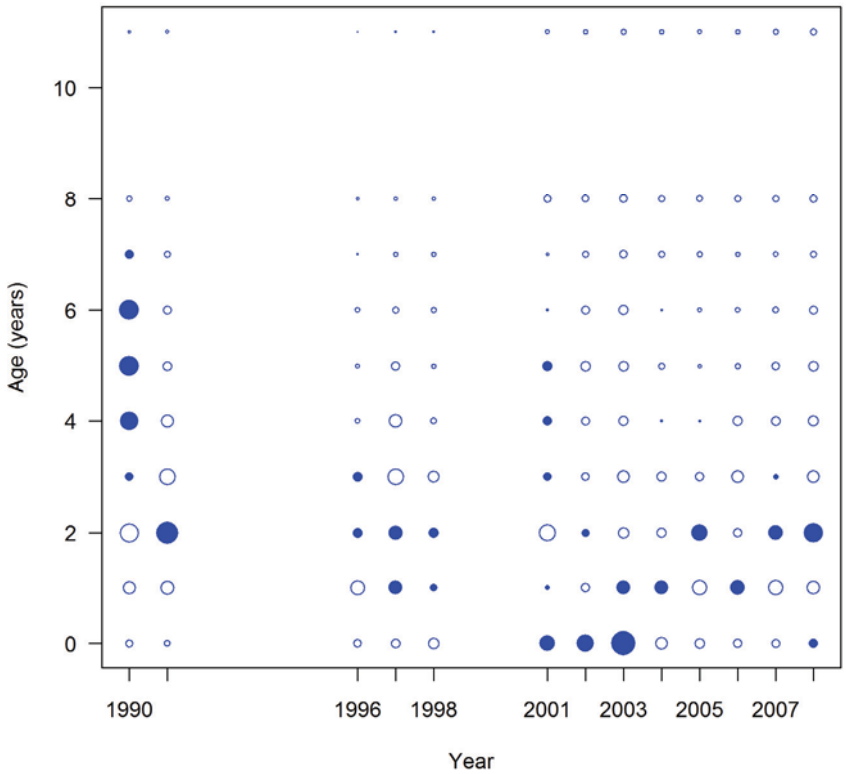


Figure 22c. Pearson residuals (max=1.1) for fit to implied age-frequency data for the CCA_S1 fishery.

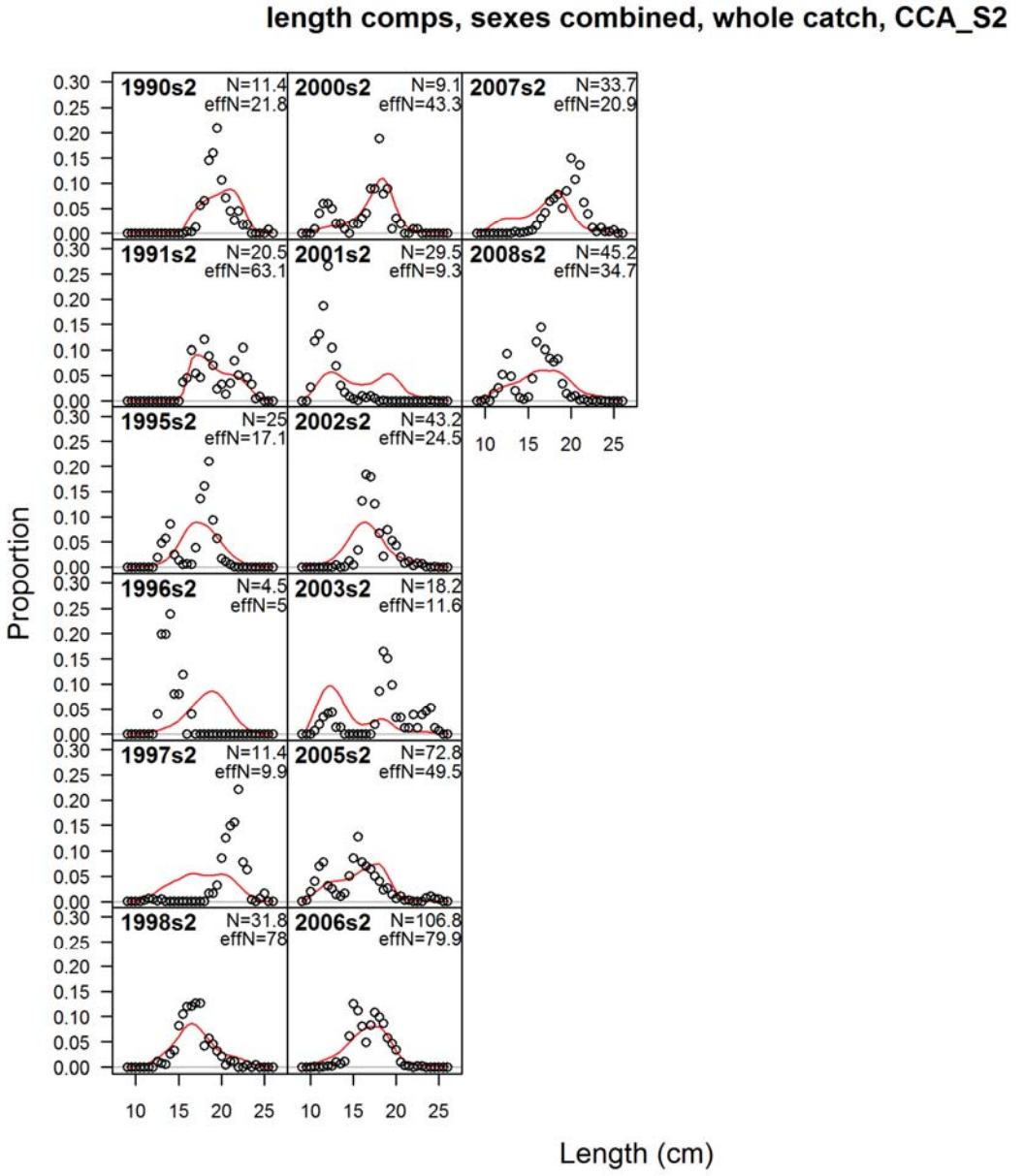


Figure 23a. Base model fits to length-frequency data for the CCA_S2 fishery.

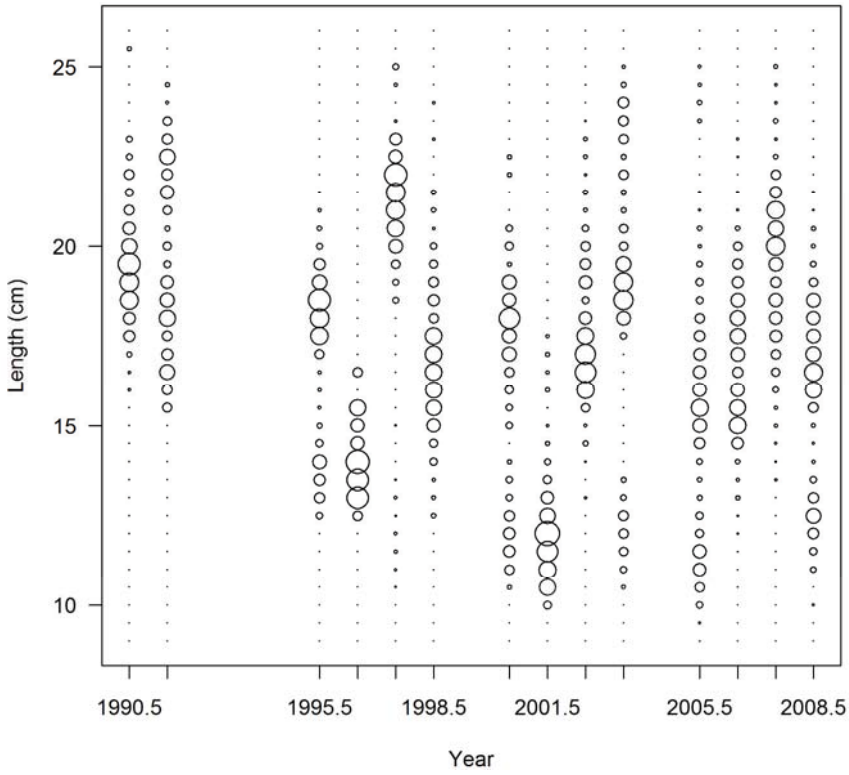


Figure 23b. Bubble plot of length-frequency data for the CCA_S2 fishery.

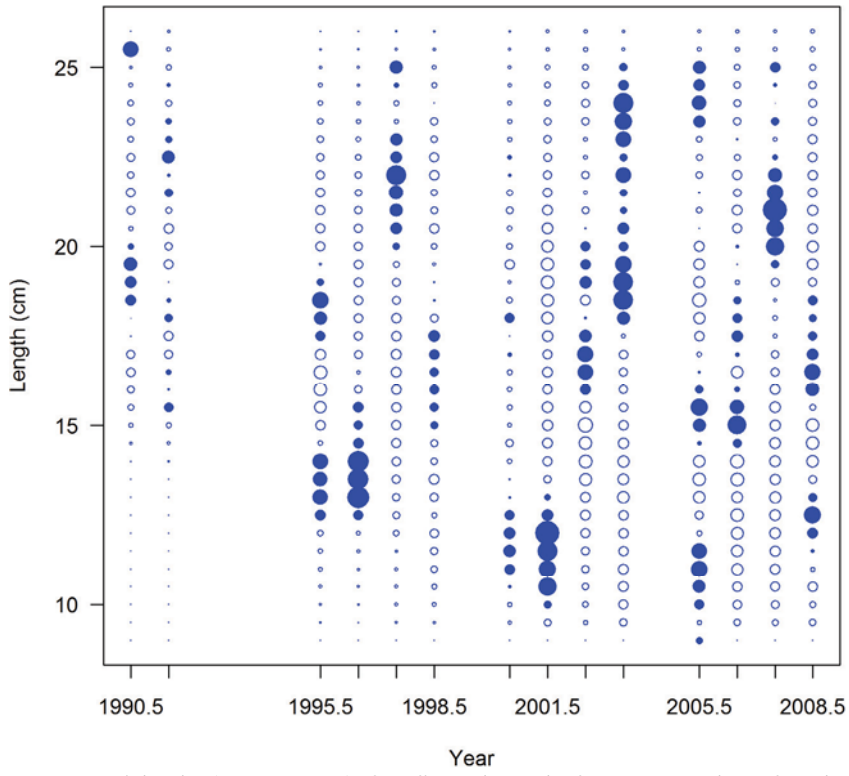


Figure 23c. Pearson residuals (max=4.97) for fit to length-frequency data for the CCA_S2 fishery.

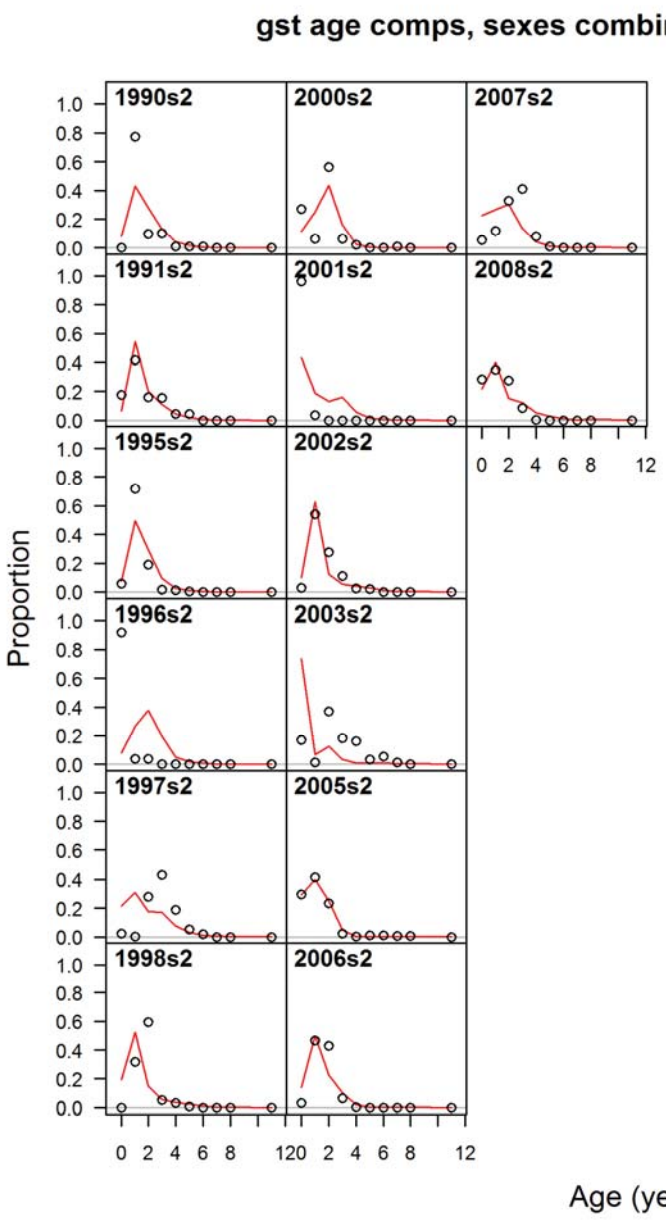


Figure 24a. Base model fits to implied age-frequency data for the CCA_S2 fishery.

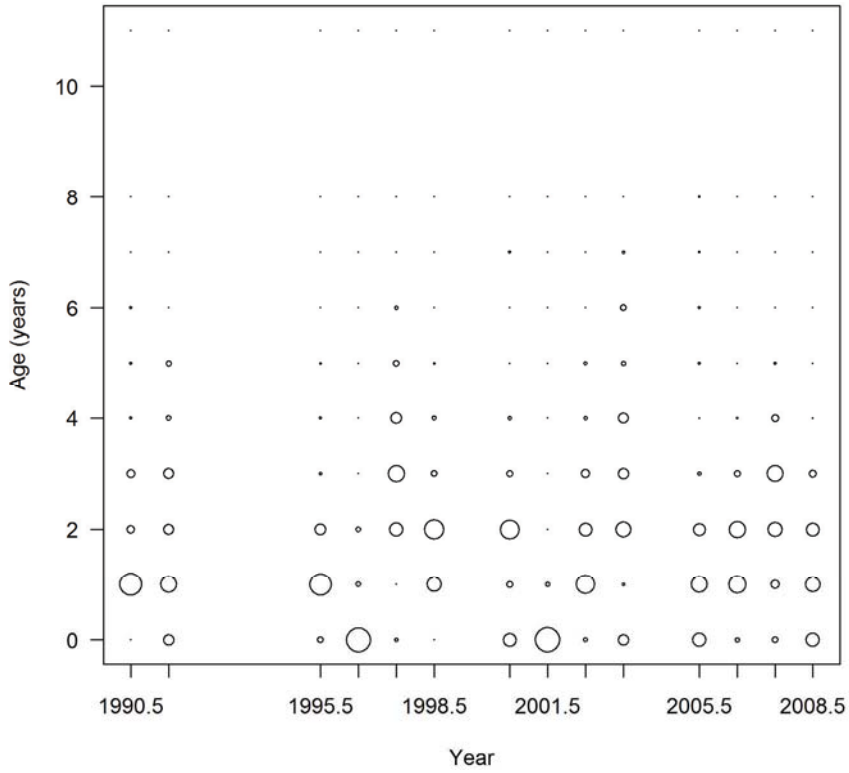


Figure 24b. Bubble plot of implied age-frequency data for the CCA_S2 fishery.

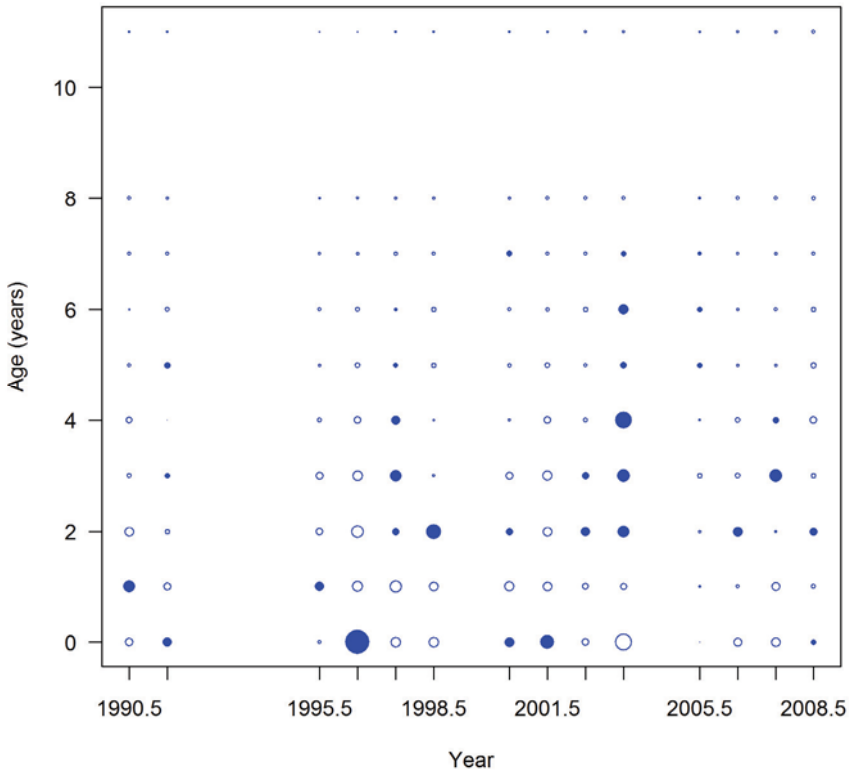


Figure 24c. Pearson residuals (max=3.11) for fit to implied age-frequency data for the CCA_S2 fishery.

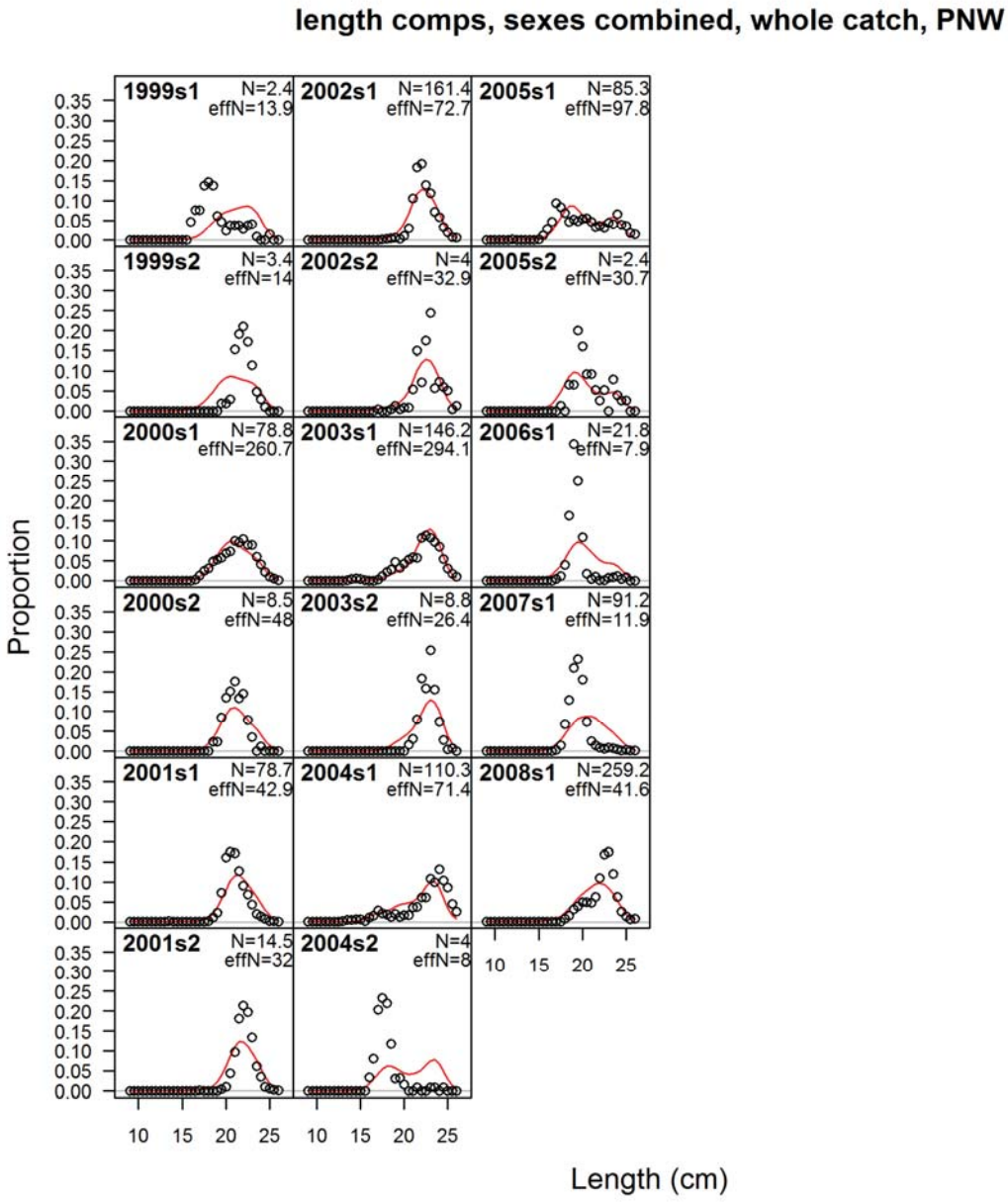


Figure 25a. Base model fits to length-frequency data for the PNW fishery.

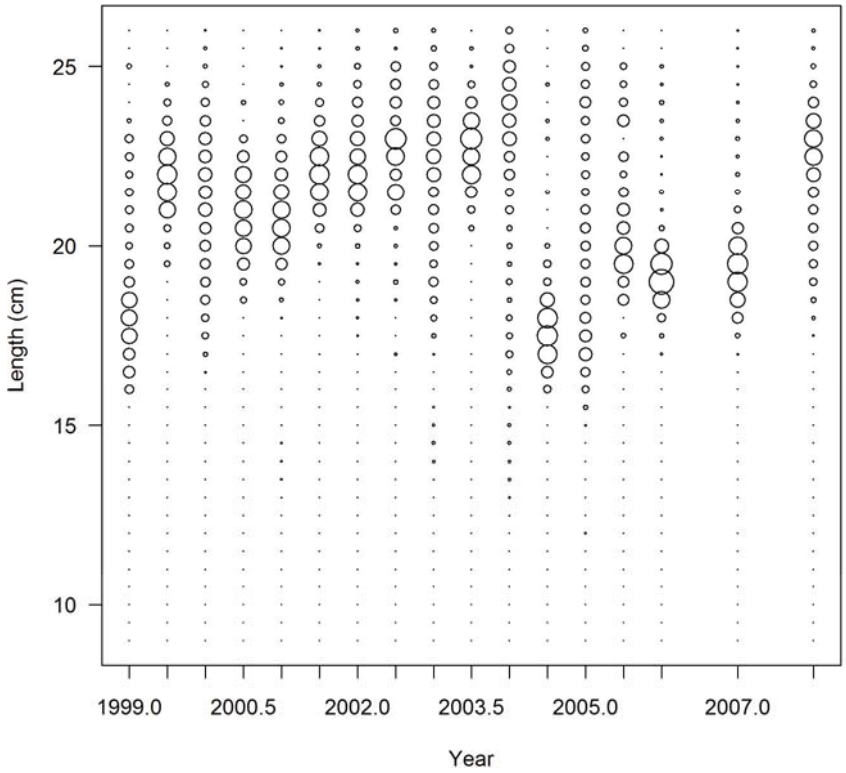


Figure 25b. Bubble plot of length-frequency data for the PNW fishery.

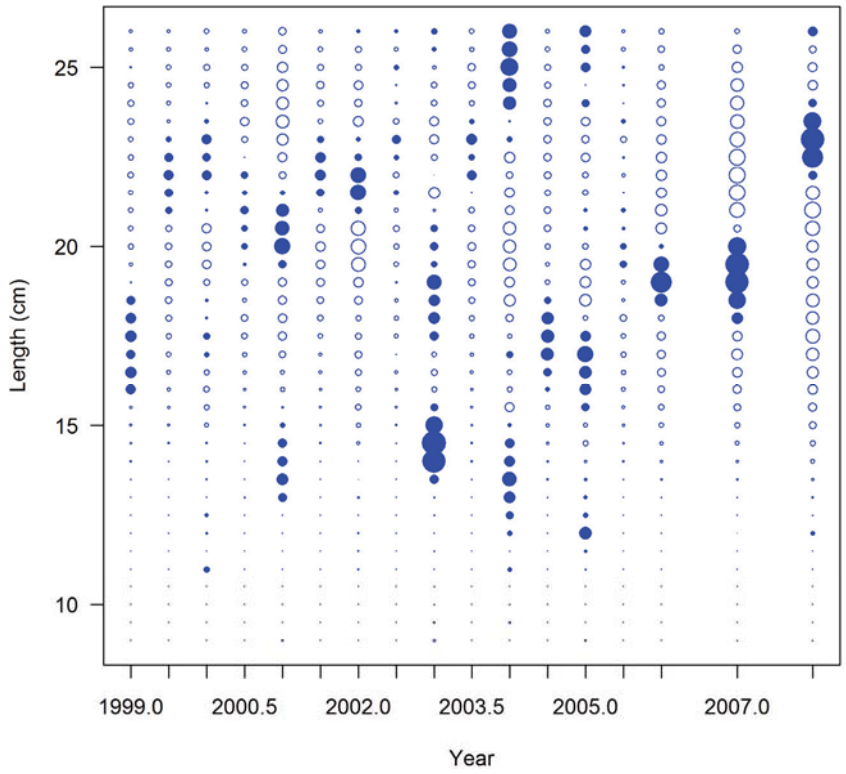


Figure 25c. Pearson residuals (max=5.51) for fit to length-frequency data for the PNW fishery.

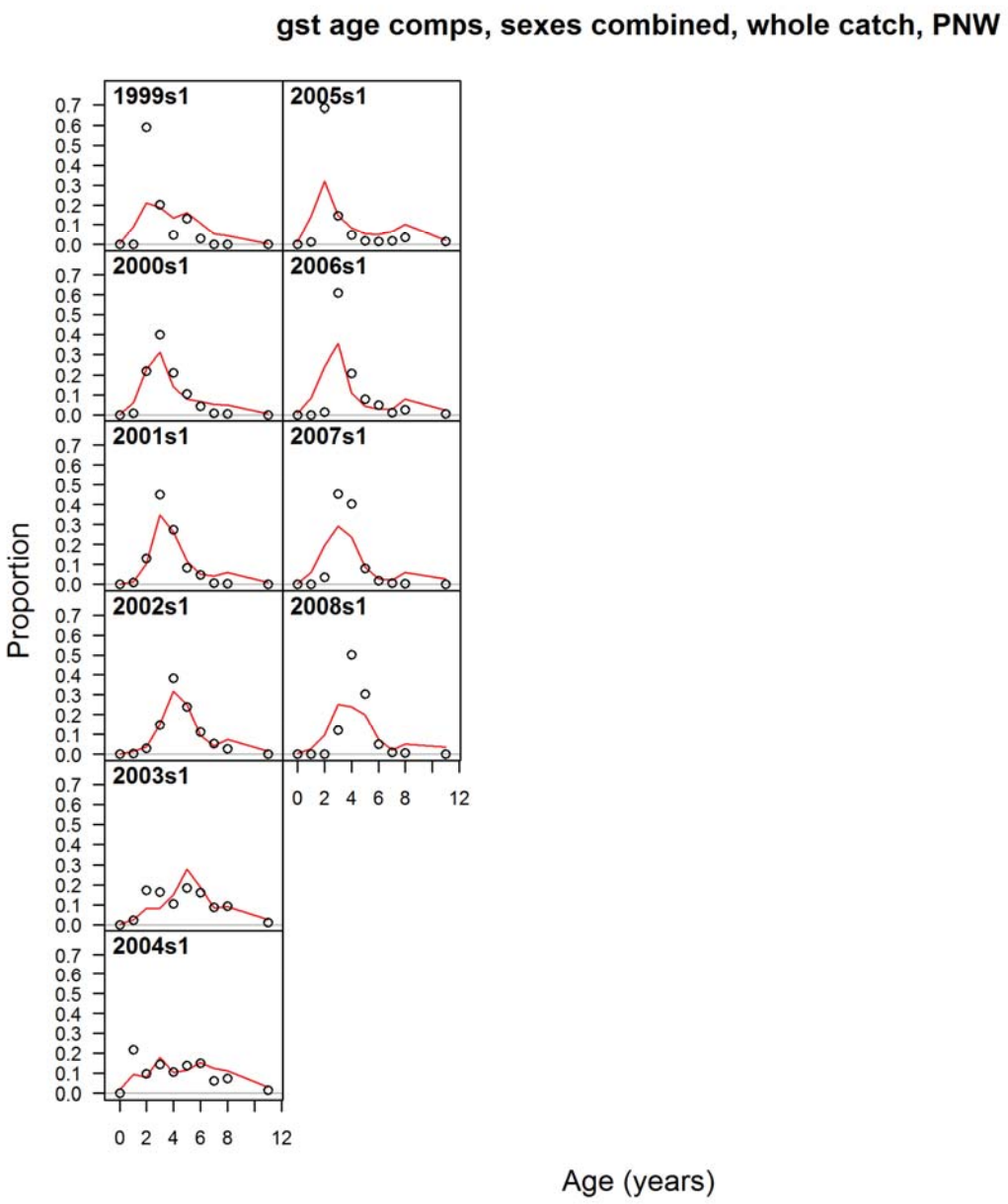


Figure 26a. Base model fits to implied age-frequency data for the PNW fishery.

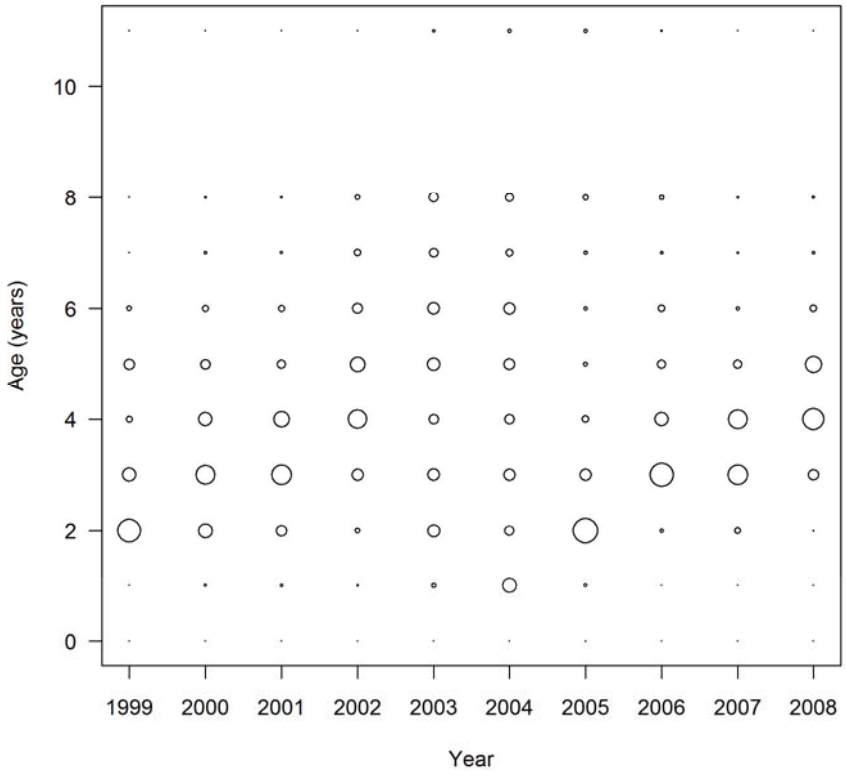


Figure 26b. Bubble plot of implied age-frequency data for the PNW fishery.

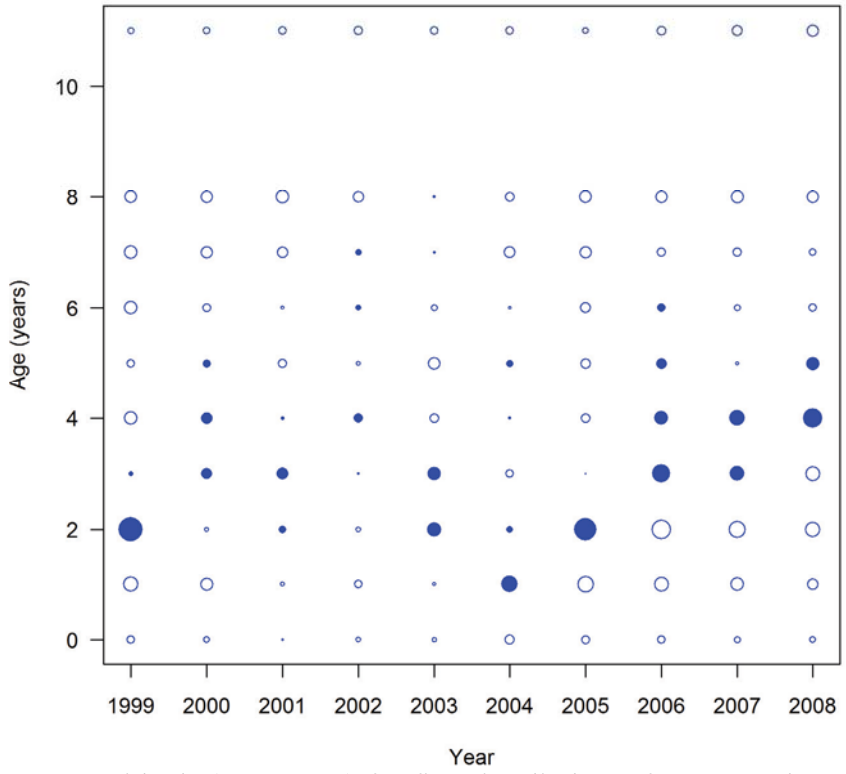


Figure 26c. Pearson residuals (max=0.94) for fit to implied age-frequency data for the PNW fishery.

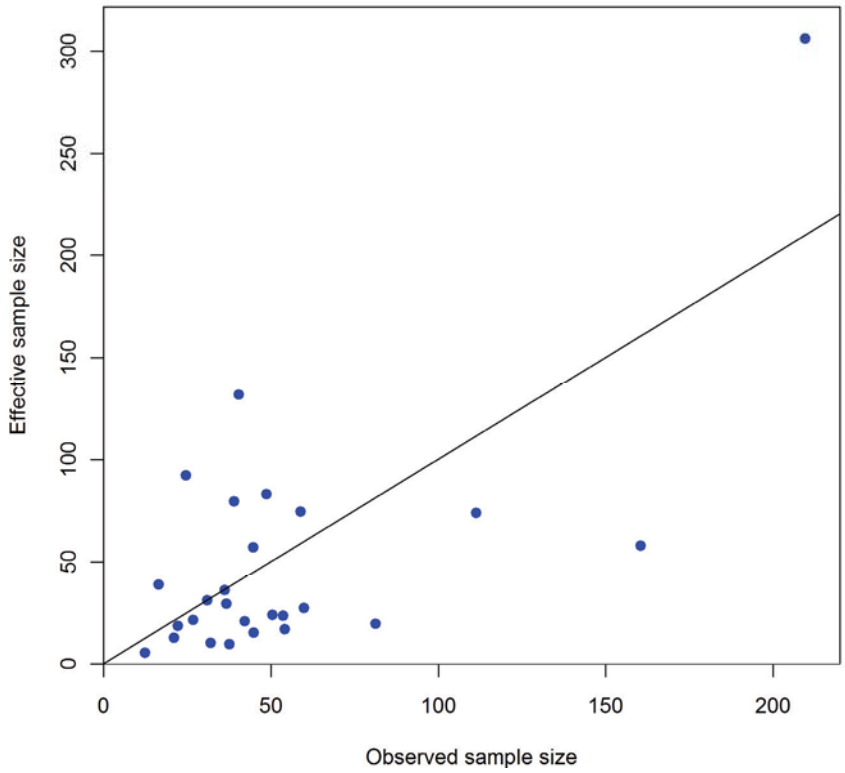


Figure 27a. Observed and effective sample sizes for the ENS fishery length-frequency data.

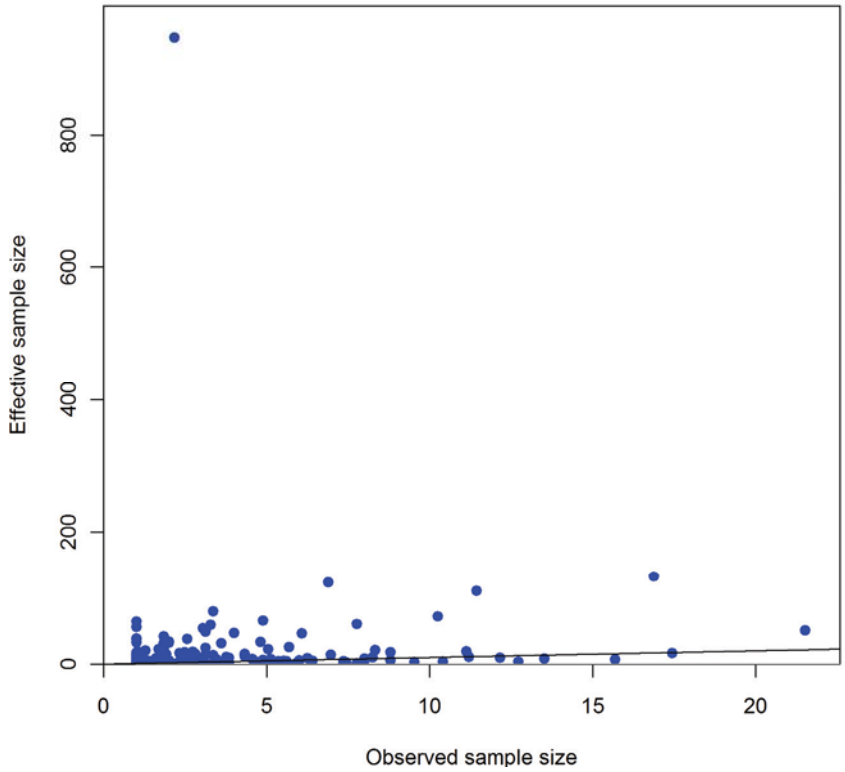


Figure 27b. Observed and effective sample sizes for the ENS fishery conditional age-at-length data.

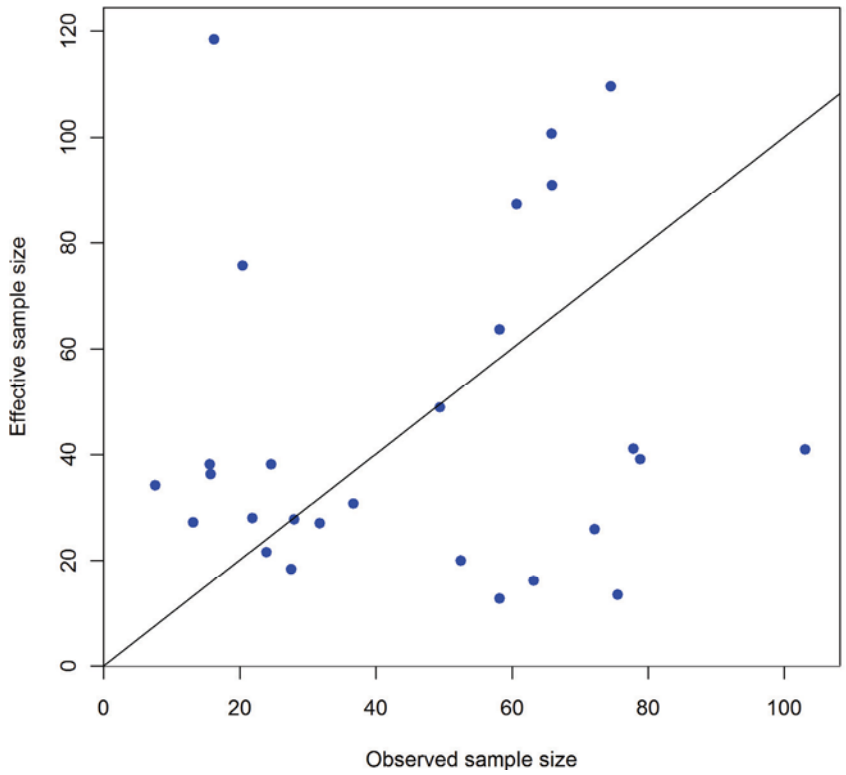


Figure 28a. Observed and effective sample sizes for the SCA_S1 fishery length-frequency data.

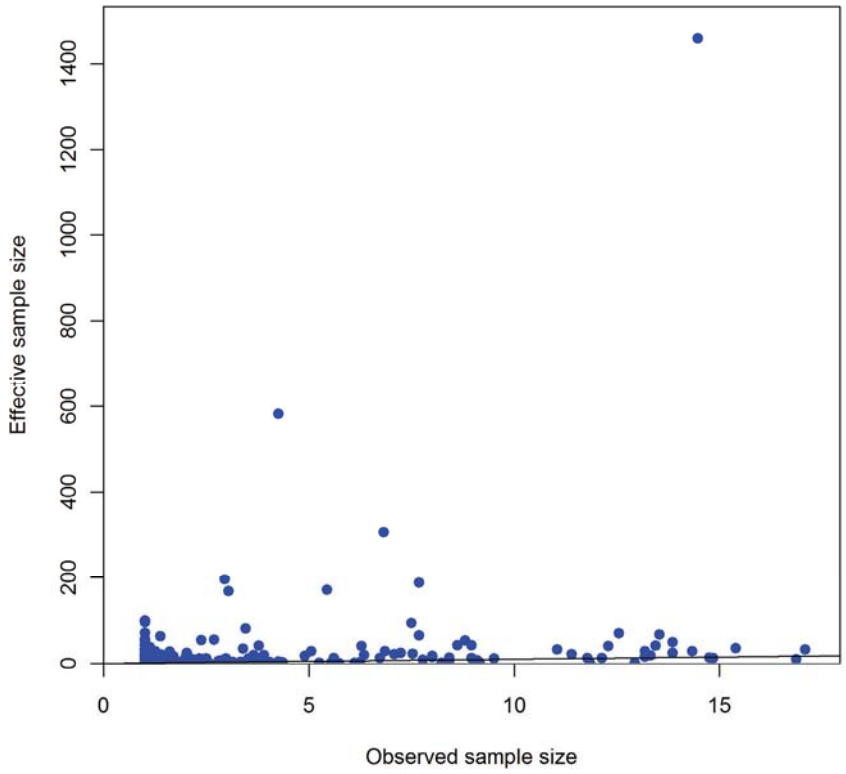


Figure 28b. Observed and effective sample sizes for the SCA_S1 fishery conditional age-at-length data.

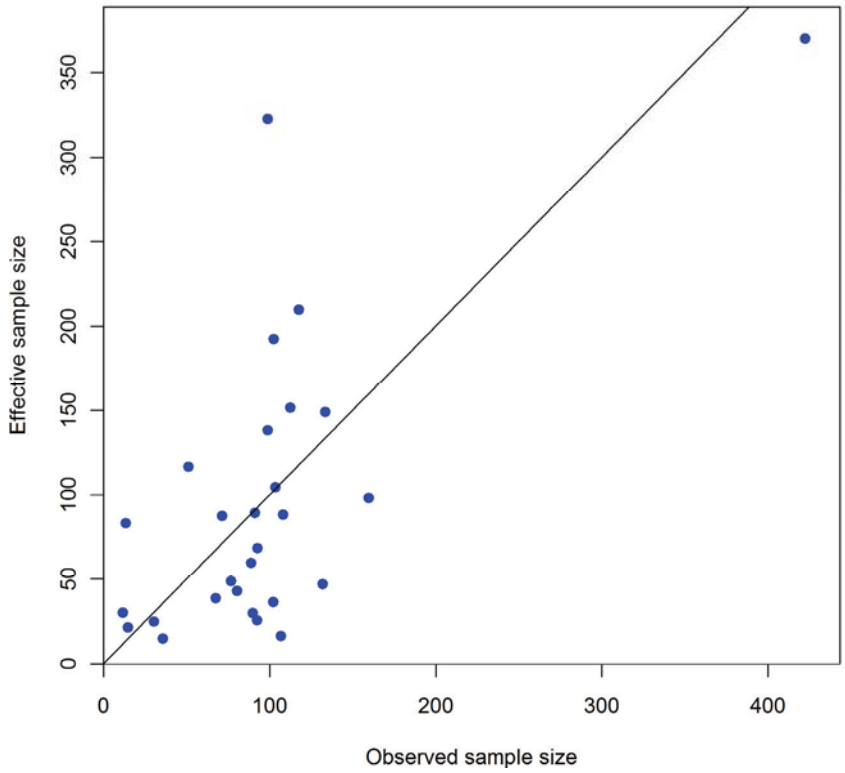


Figure 29a. Observed and effective sample sizes for the SCA_S2 fishery length-frequency data.

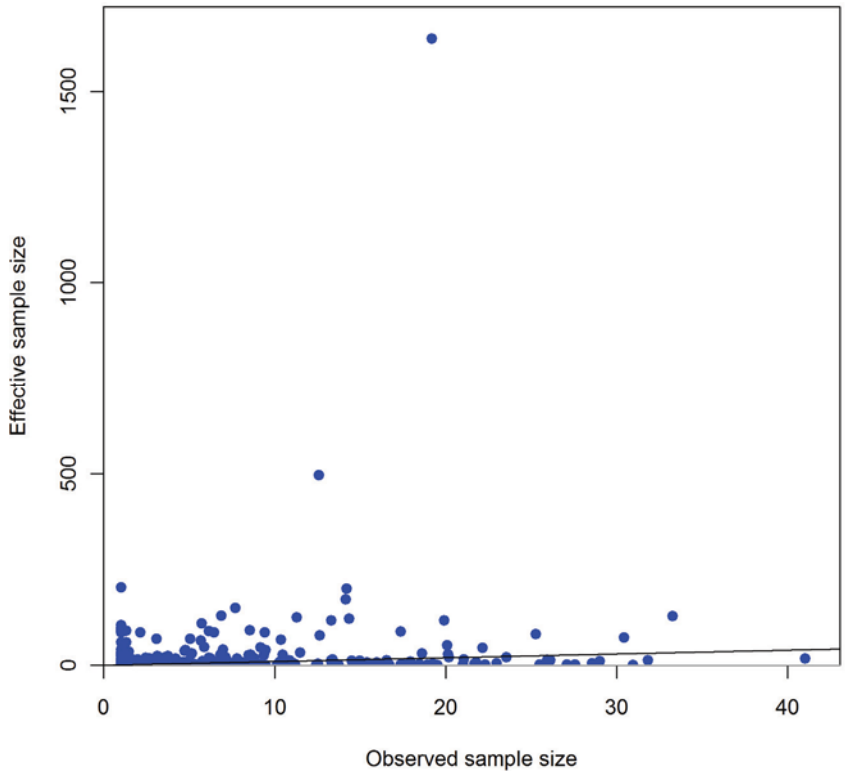


Figure 29b. Observed and effective sample sizes for the SCA_S2 fishery conditional age-at-length data.

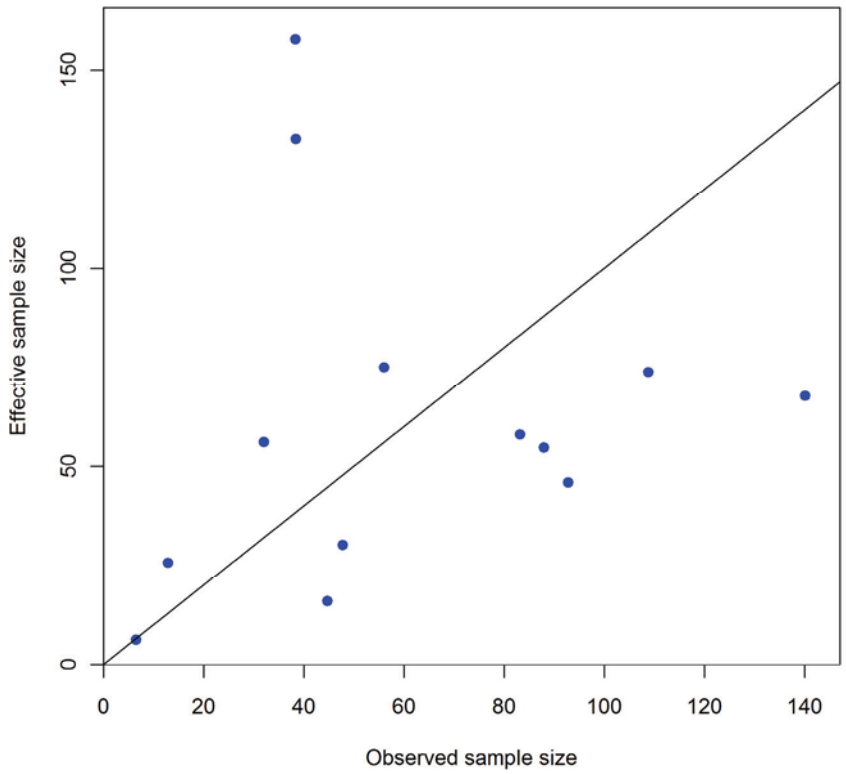


Figure 30a. Observed and effective sample sizes for the CCA_S1 fishery length-frequency data.

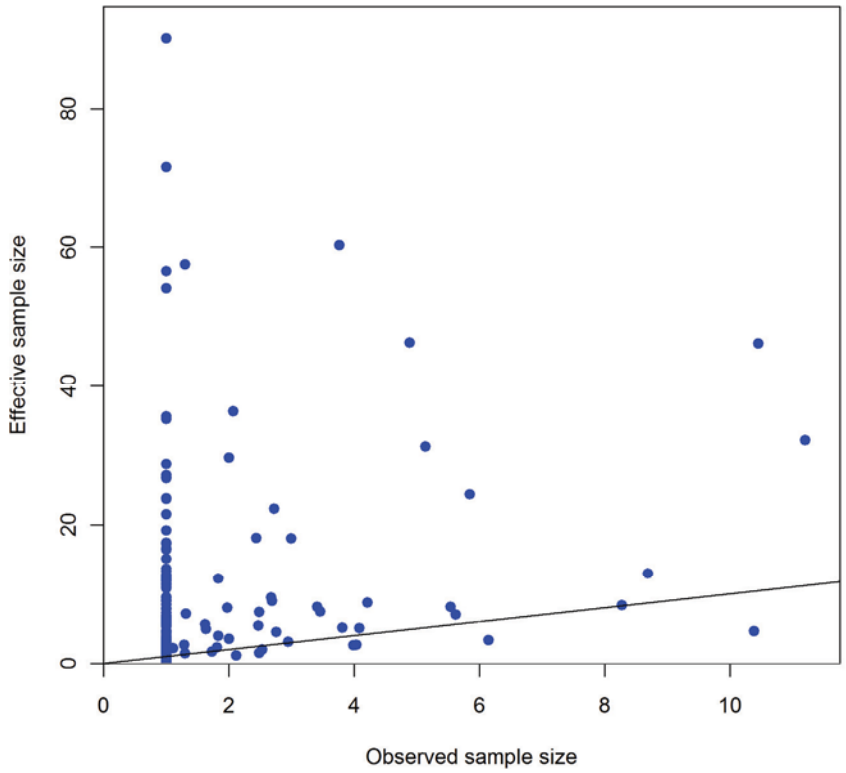


Figure 30b. Observed and effective sample sizes for the CCA_S1 fishery conditional age-at-length data.

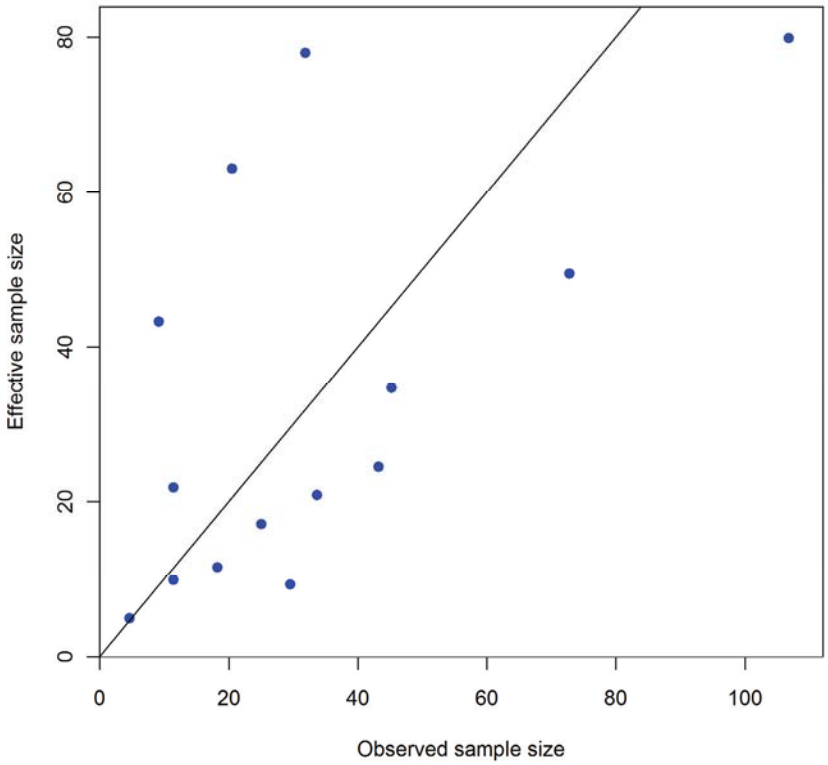


Figure 31a. Observed and effective sample sizes for the CCA_S2 fishery length-frequency data.

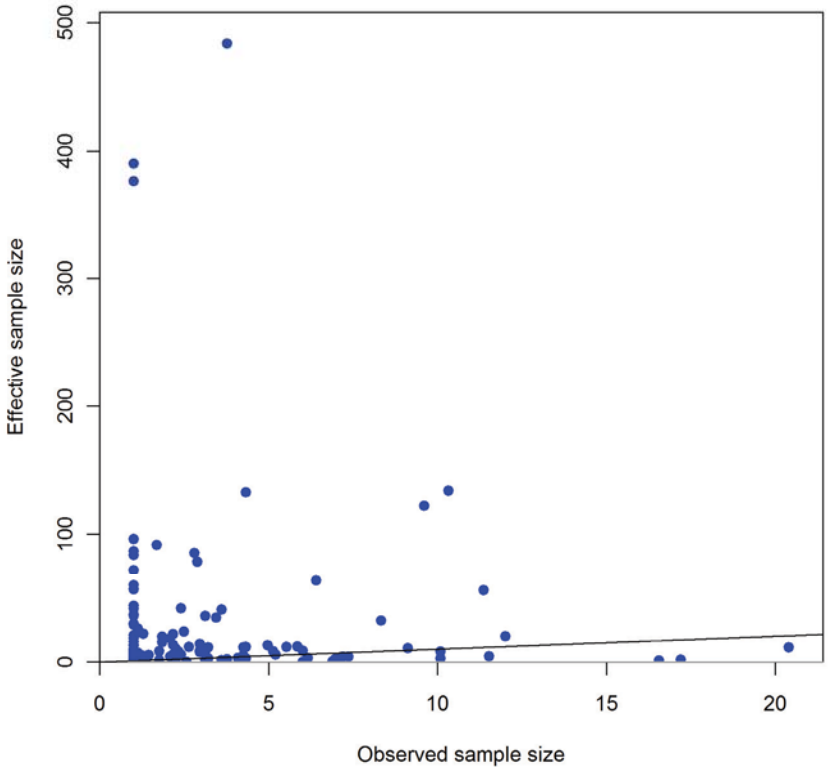


Figure 31b. Observed and effective sample sizes for the CCA_S2 fishery conditional age-at-length data.

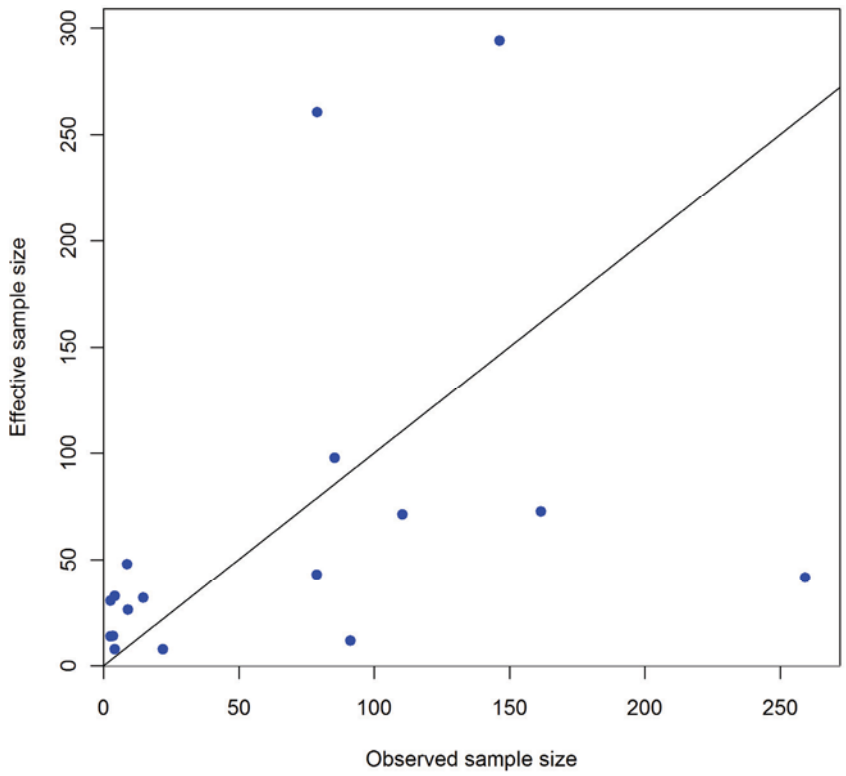


Figure 32a. Observed and effective sample sizes for the PNW fishery length-frequency data.

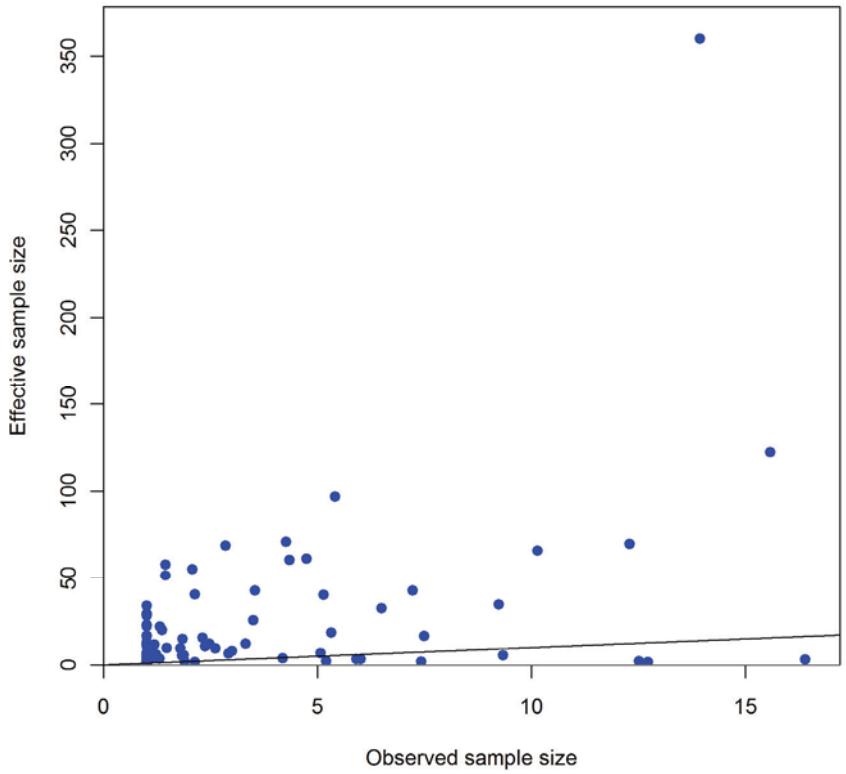


Figure 32b. Observed and effective sample sizes for the PNW fishery conditional age-at-length data.

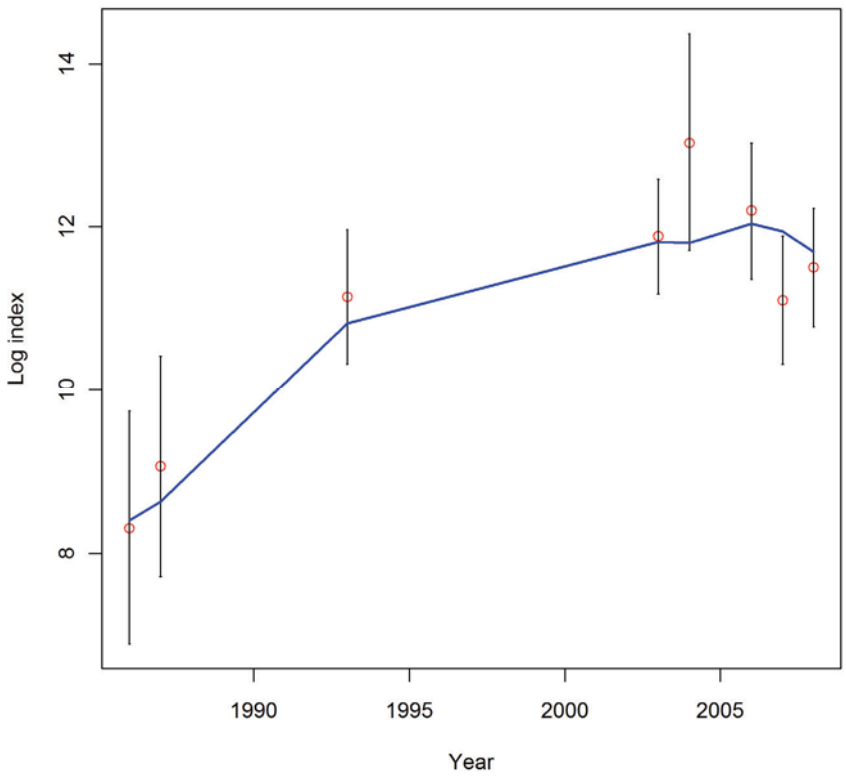


Figure 33a. Base model fit to the Daily Egg Production Method (DEPM) series of female spawning biomass (q=0.1645).

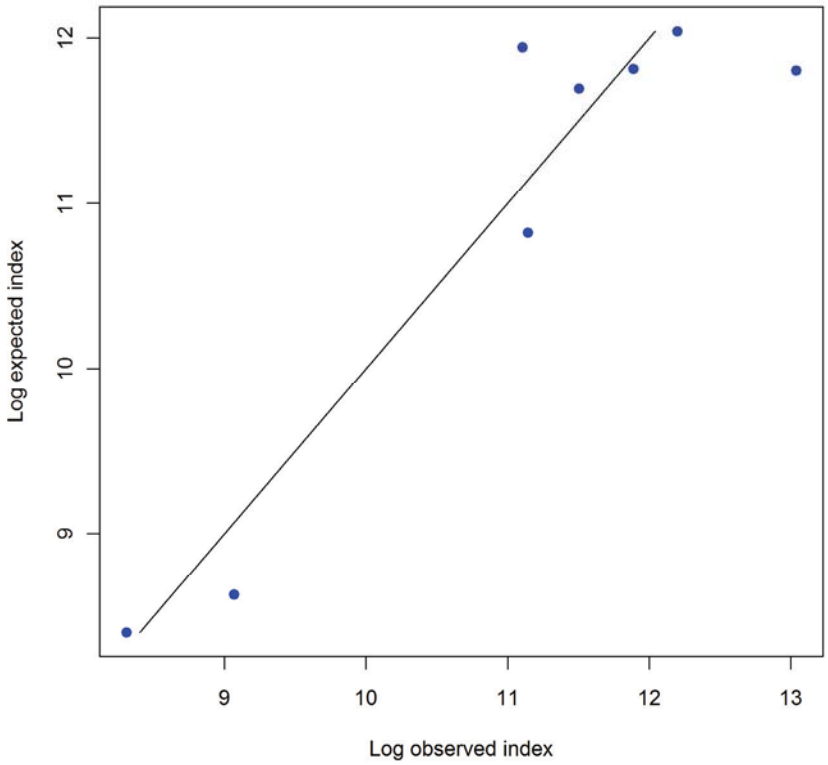


Figure 33b. Relationship between observed and expected values (log scale) for the DEPM survey (base model). Straight line is 1 to 1 relationship.

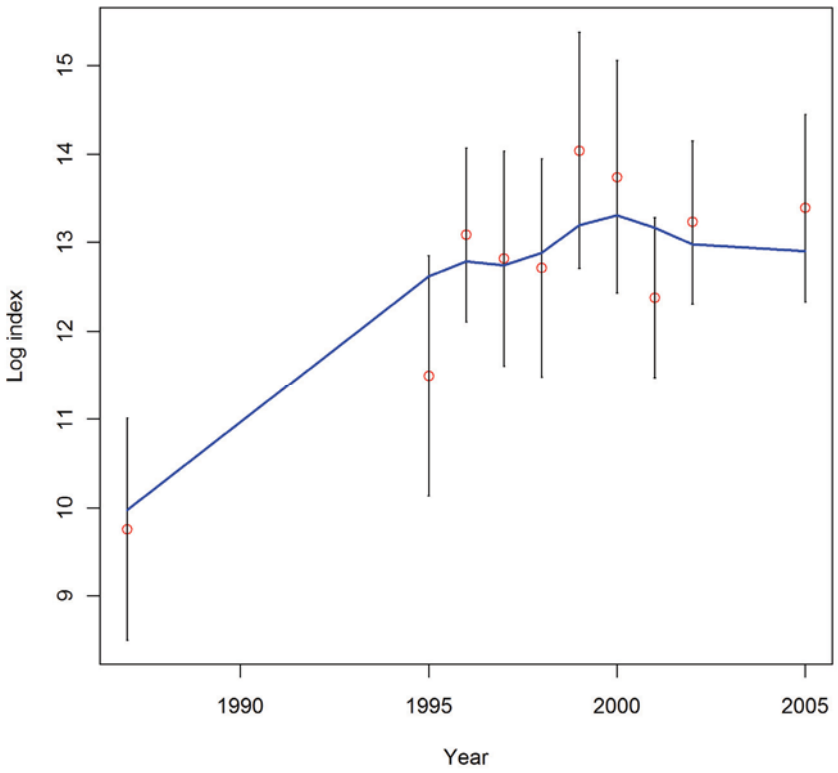


Figure 34a. Base model fit to the Total Egg Production (TEP) series of total spawning biomass (Q=0.4195).

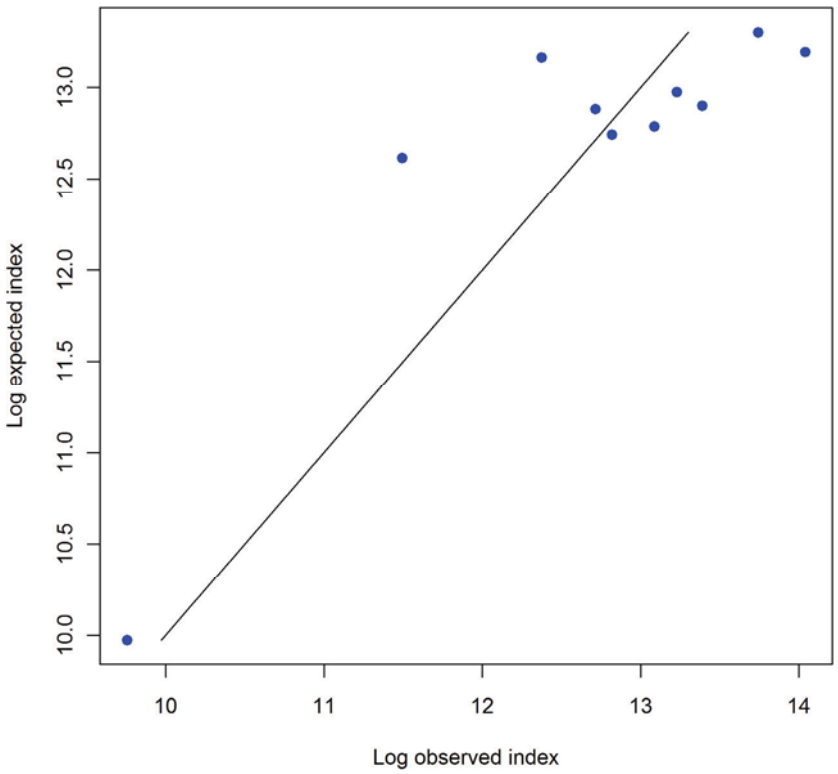


Figure 34b. Relationship between observed and expected values (log scale) for the TEP survey (base model). Straight line is 1 to 1 relationship.

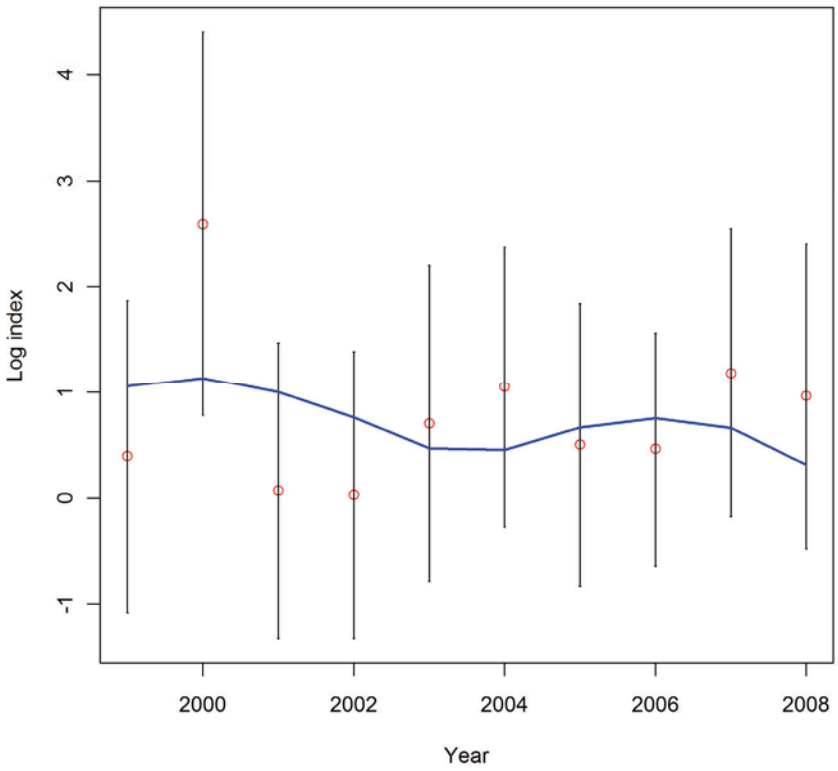


Figure 35a. Model fit (pre-STAR base model) to the Predator Forage Fish Survey (PFFS) series.

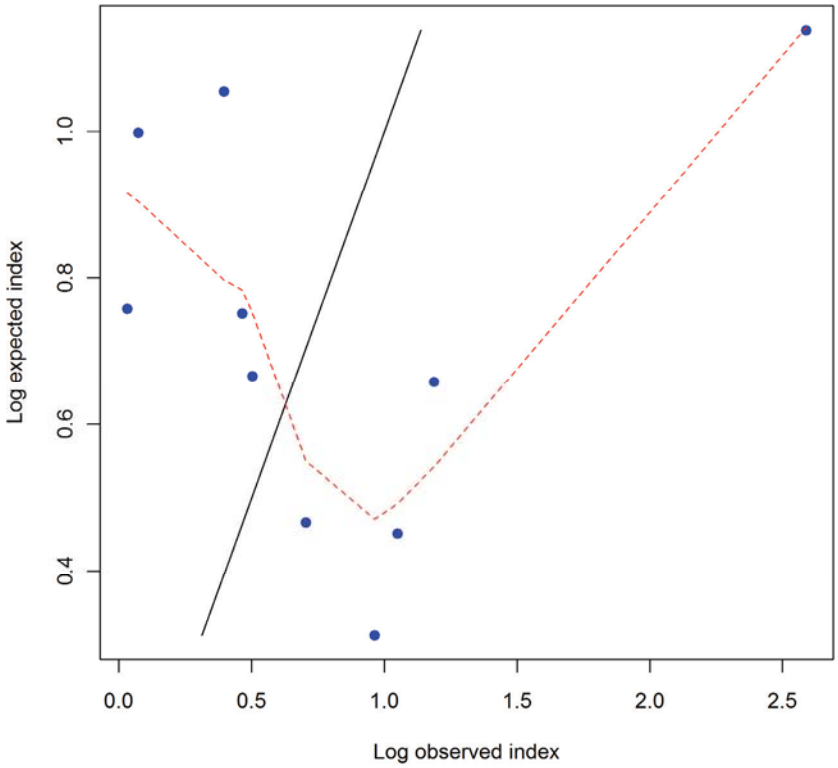


Figure 35b. Relationship between observed and expected values (log scale) for the PFFS survey (pre-STAR base model). Straight line is 1 to 1 relationship; dashed is LOESS fit.

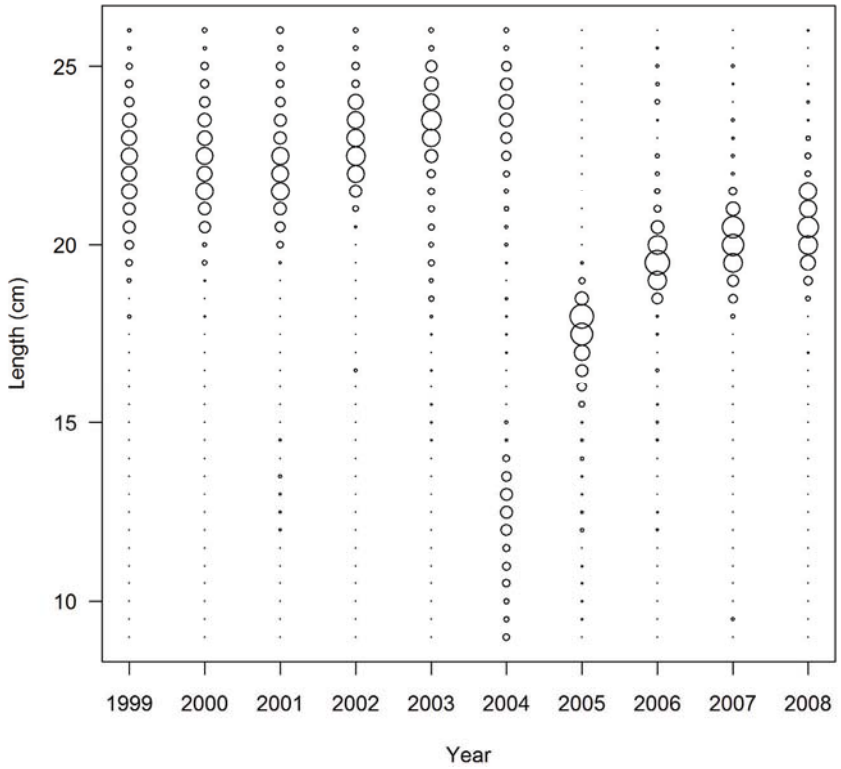


Figure 36a. Bubble plot of length-frequency data for the PFFS survey.

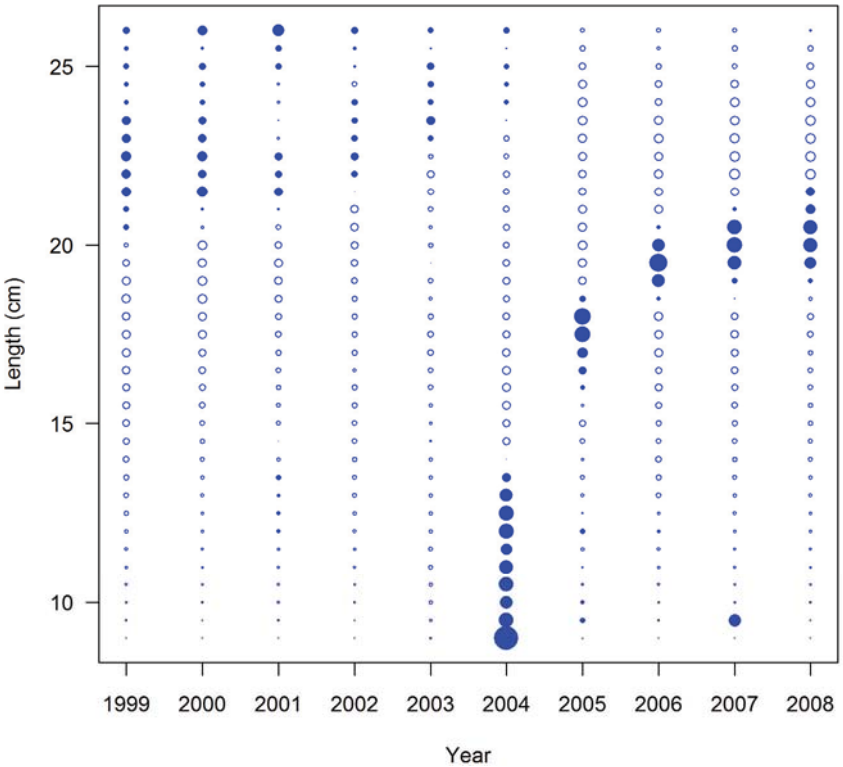


Figure 36b. Pearson residuals (max=9.52) for fit to length-frequency data for the PFFS survey (pre-STAR base model).

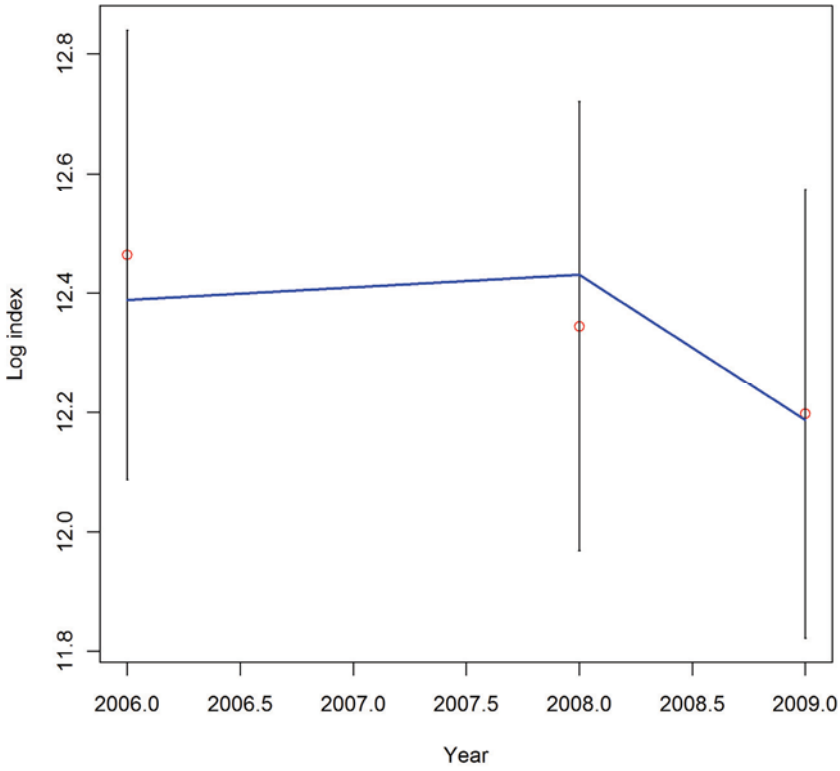


Figure 37a. Model fit to the West Coast Vancouver Island (WCVI) series (Q=0.2815).

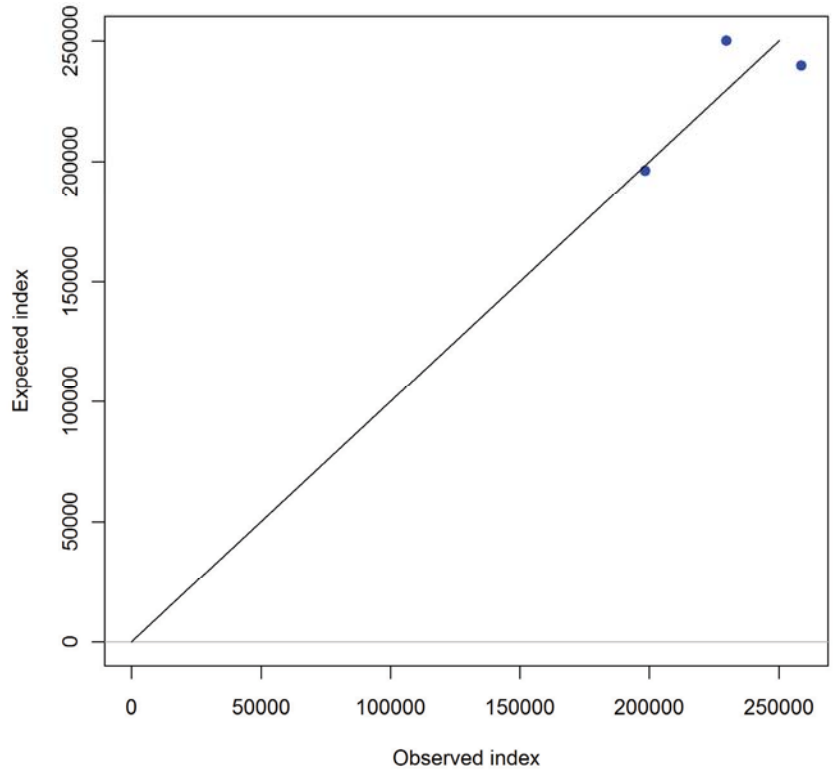


Figure 37b. Relationship between observed and expected values (log scale) for the WCVI survey. Straight line is 1 to 1 relationship.

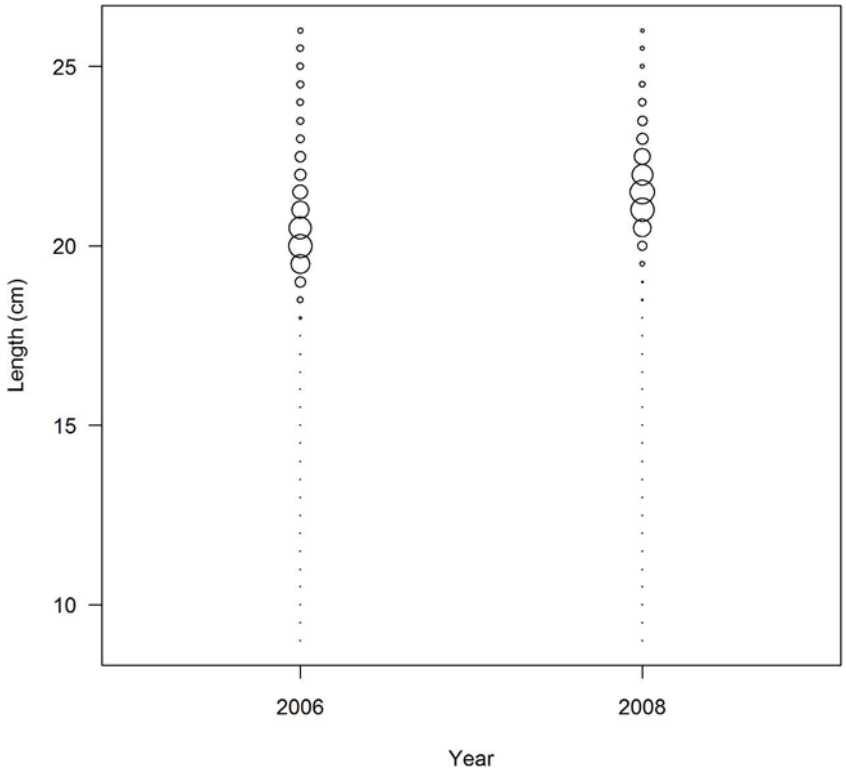


Figure 38a. Bubble plot of length-frequency data for the WCVI survey.

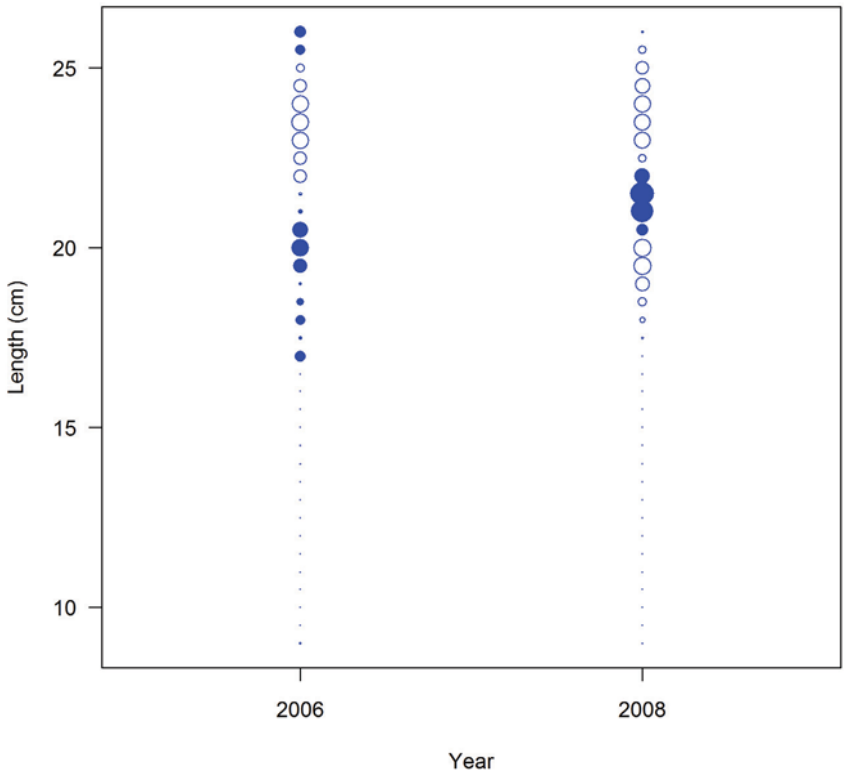


Figure 38b. Pearson residuals (max=2.65) for fit to length-frequency data for the WCVI survey.

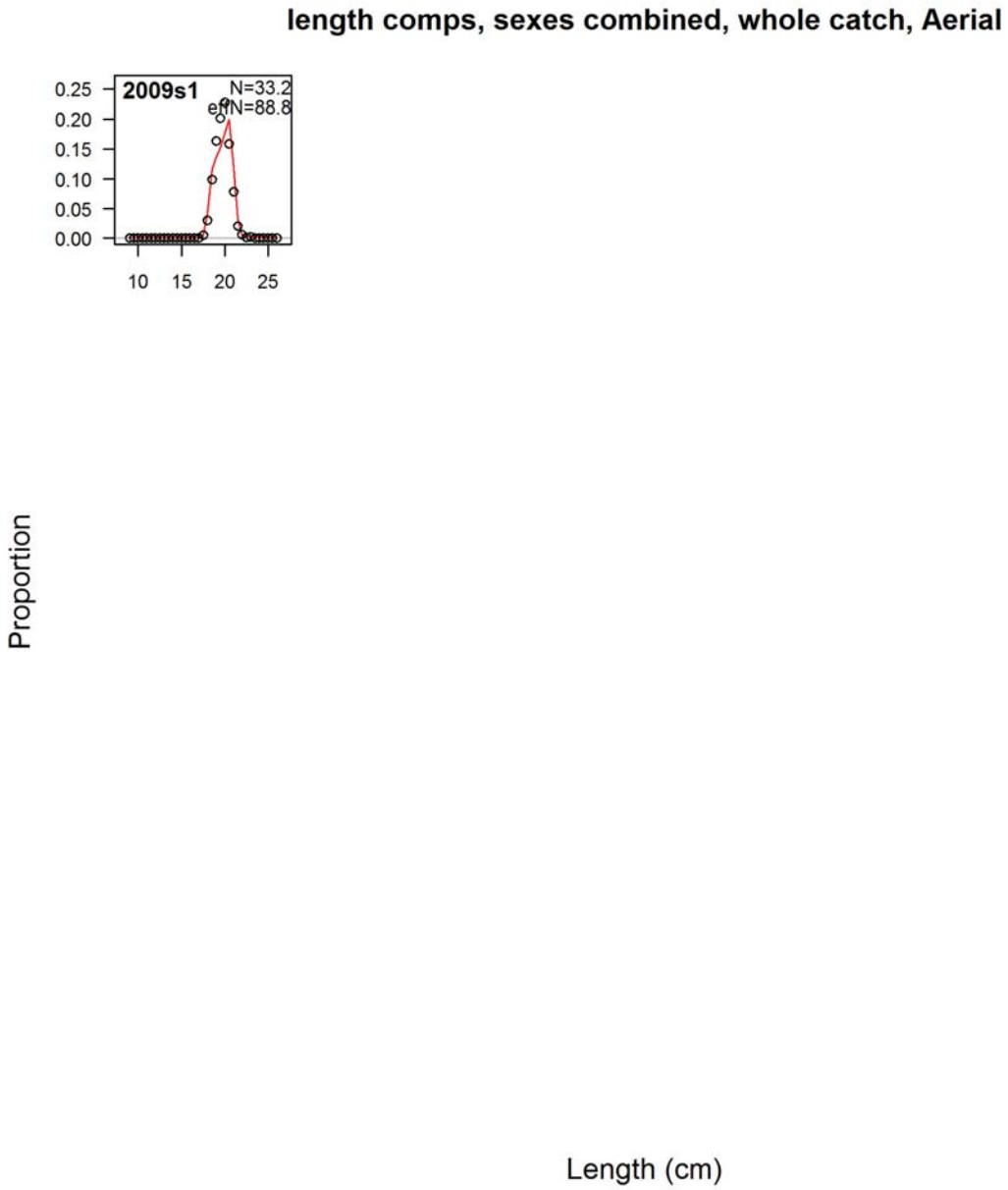


Figure 39. Base model fit to length-frequency data from the 2009 aerial survey.

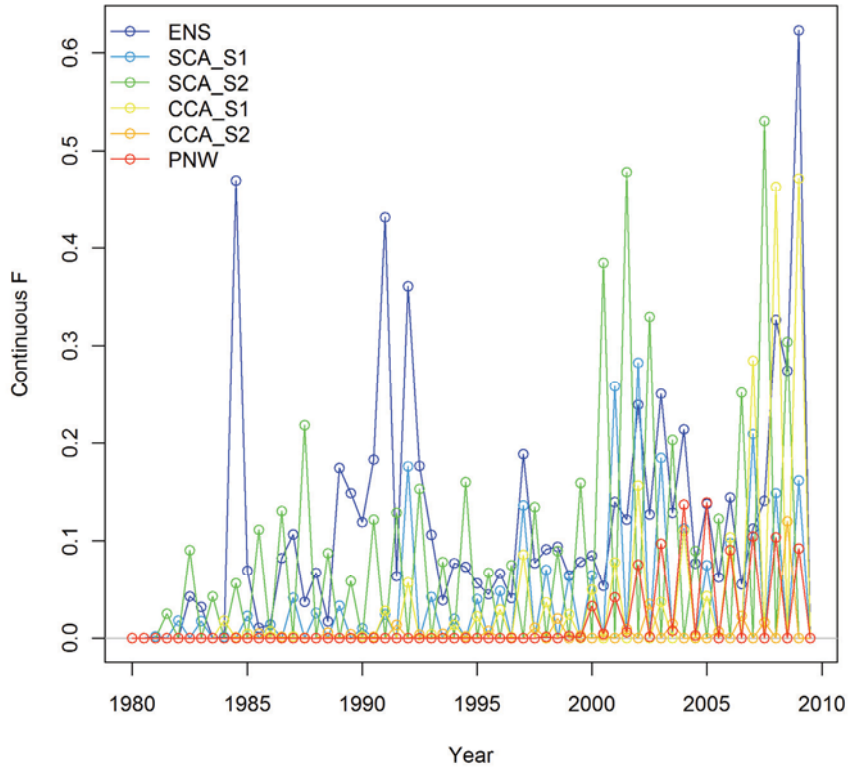


Figure 40a. Harvest rate (Hybrid F-method) from the base model including the Aerial '09 estimate.

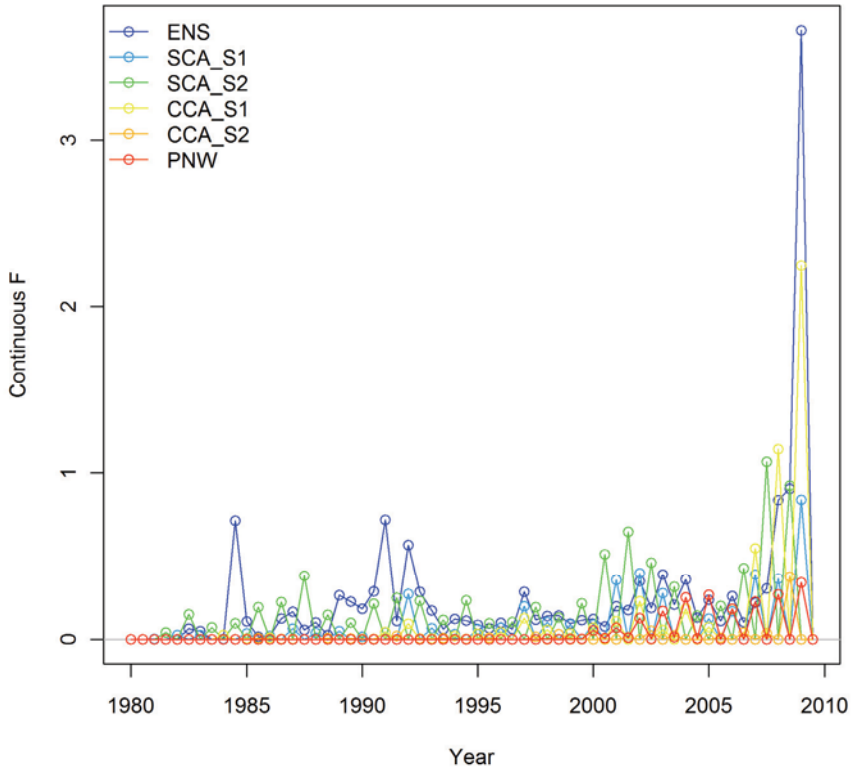


Figure 40b. Harvest rate (Hybrid F-method) from the base model excluding the Aerial '09 estimate.

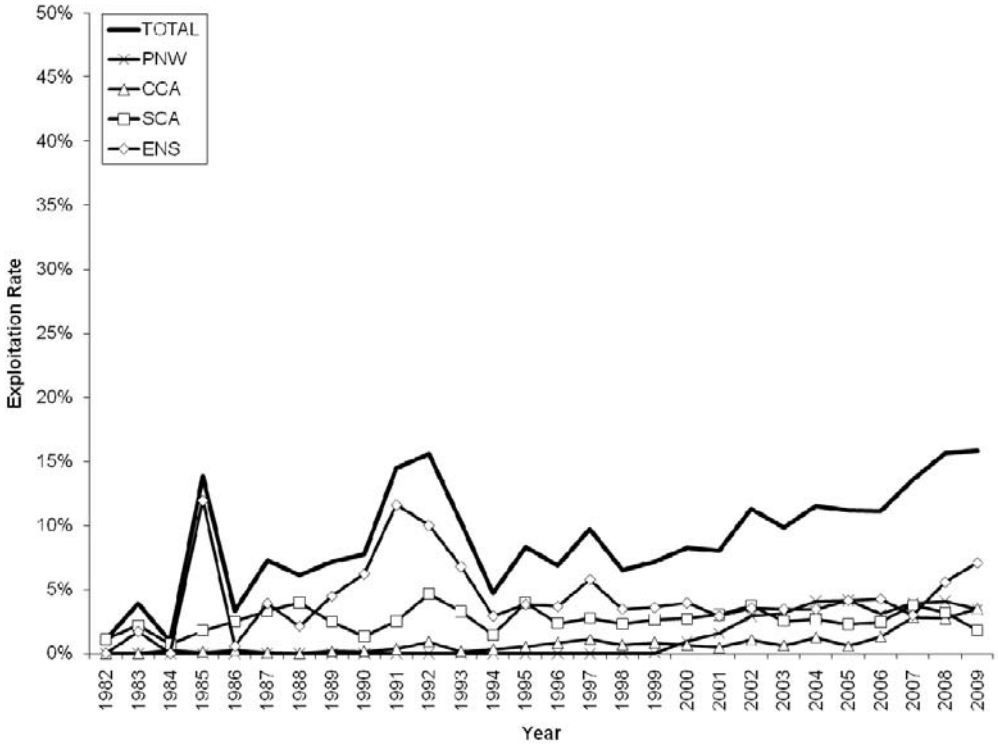


Figure 41a. Exploitation rate (CY landings / July total biomass) by fishery for the final base model.

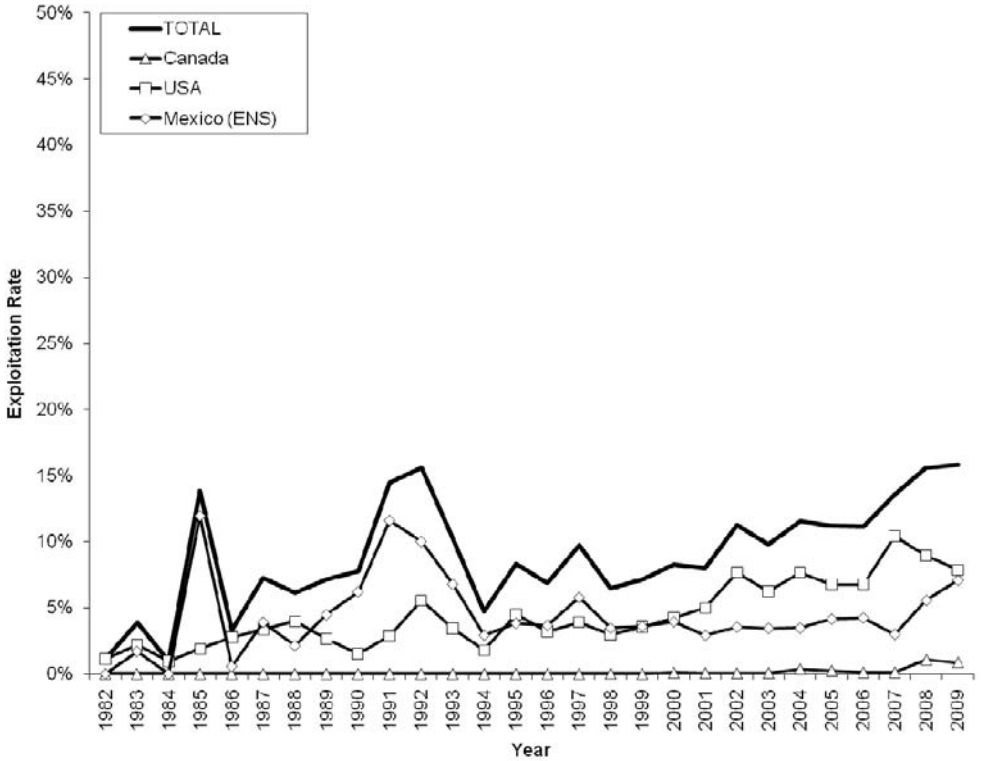


Figure 41a. Exploitation rate (CY landings / July total biomass) by country for the final base model.

BLANK PAGE

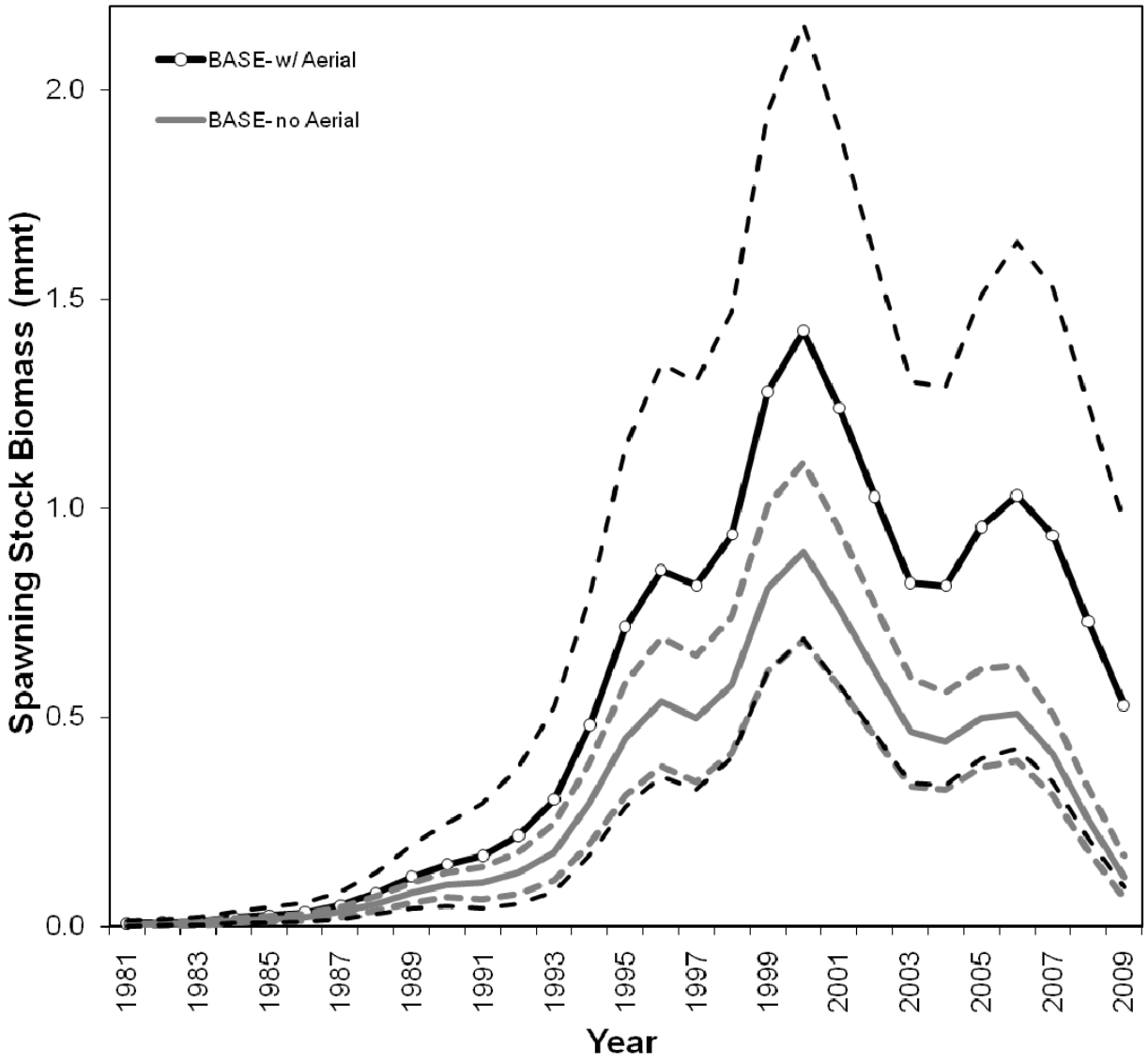


Figure 42a. Spawning stock biomass with ~95% asymptotic confidence intervals from the base model with the aerial survey (black line) and without the survey (gray line).

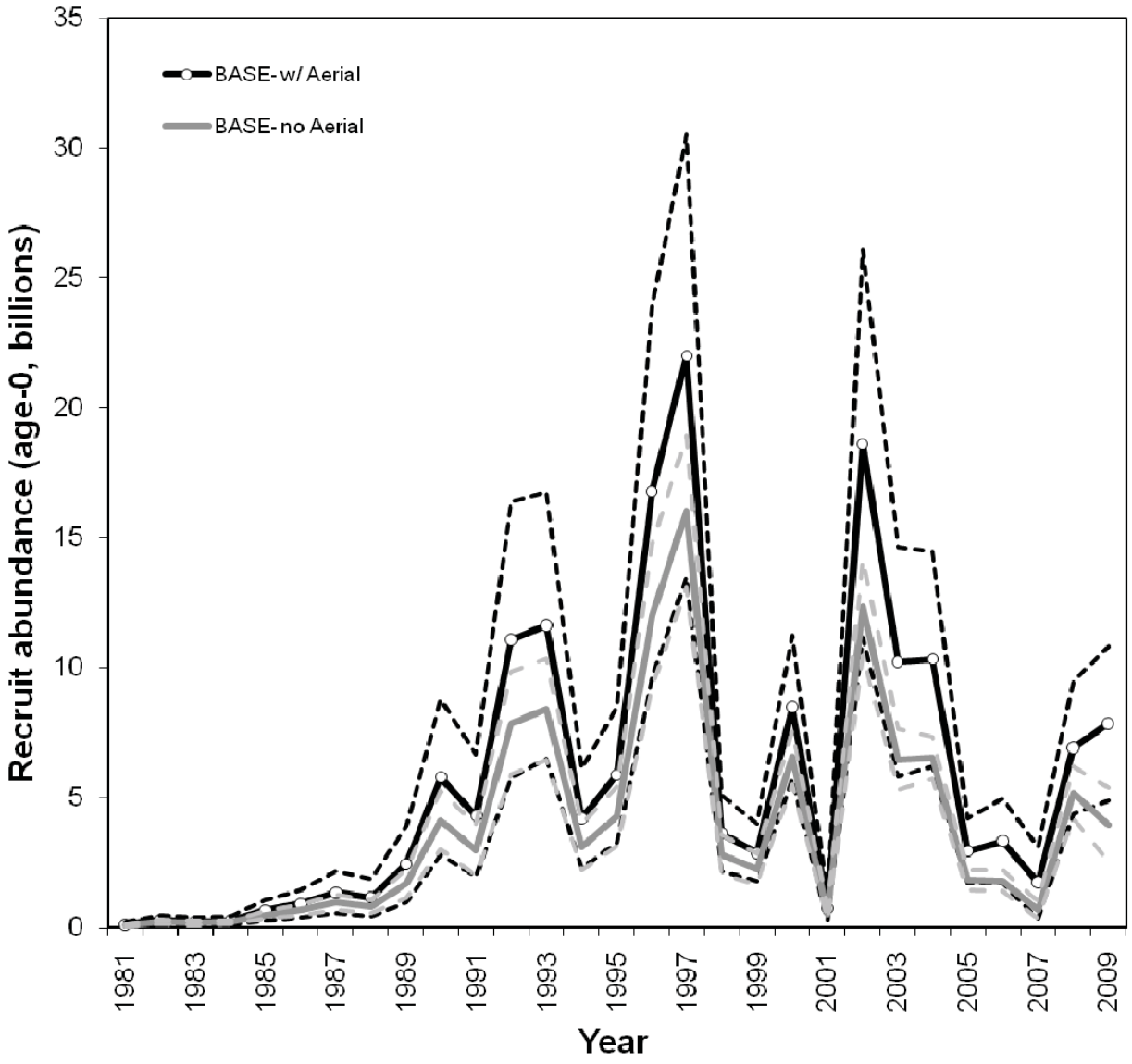


Figure 42b. Recruitments and ~95% asymptotic confidence intervals from the base model with the aerial survey (black line) and without the survey (gray line).

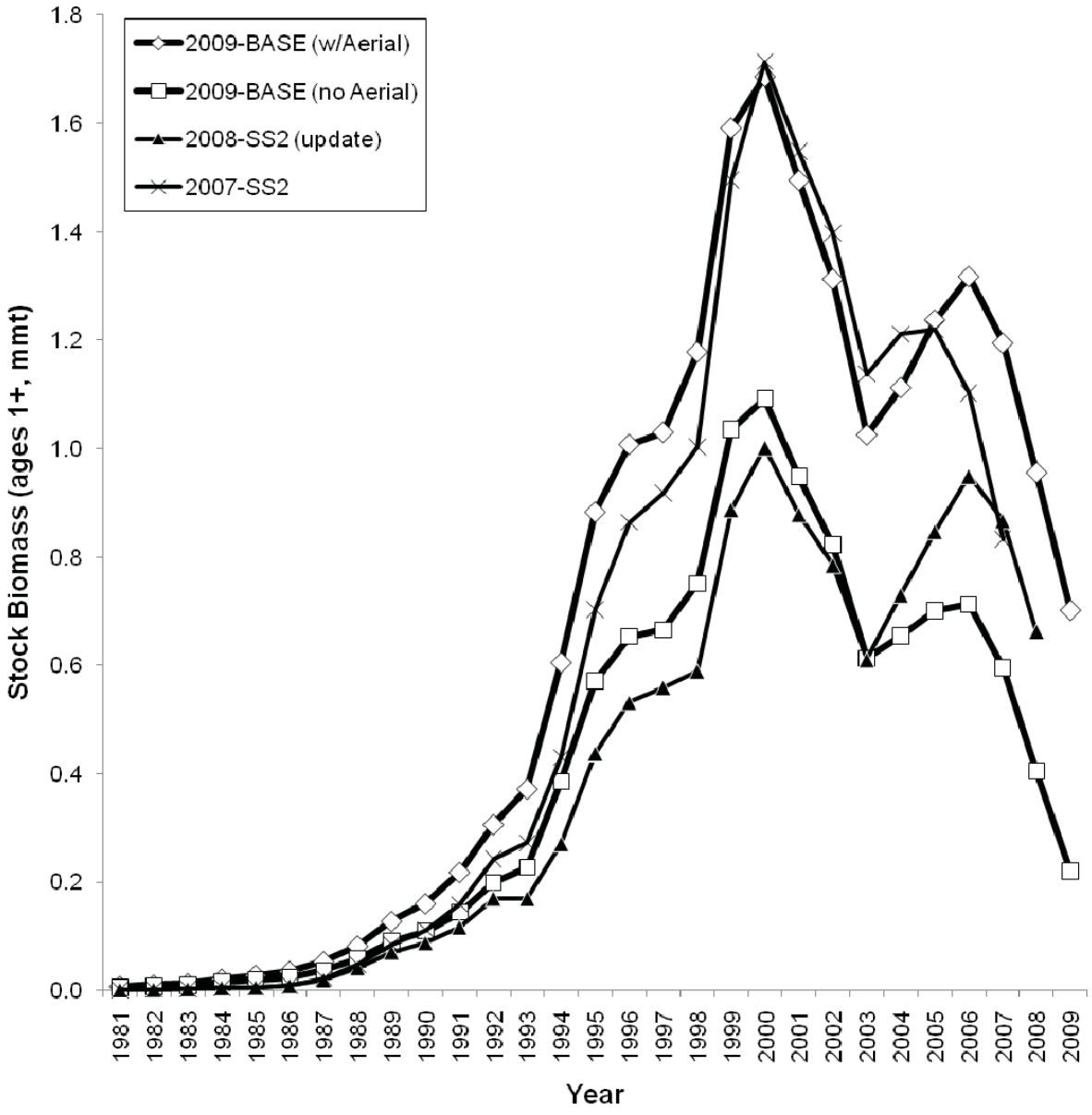


Figure 43a. Pacific sardine stock biomass (ages 1+) from the 2009 base model (with and without the 2009 aerial survey) compared to the 2008 update and 2007 final models.

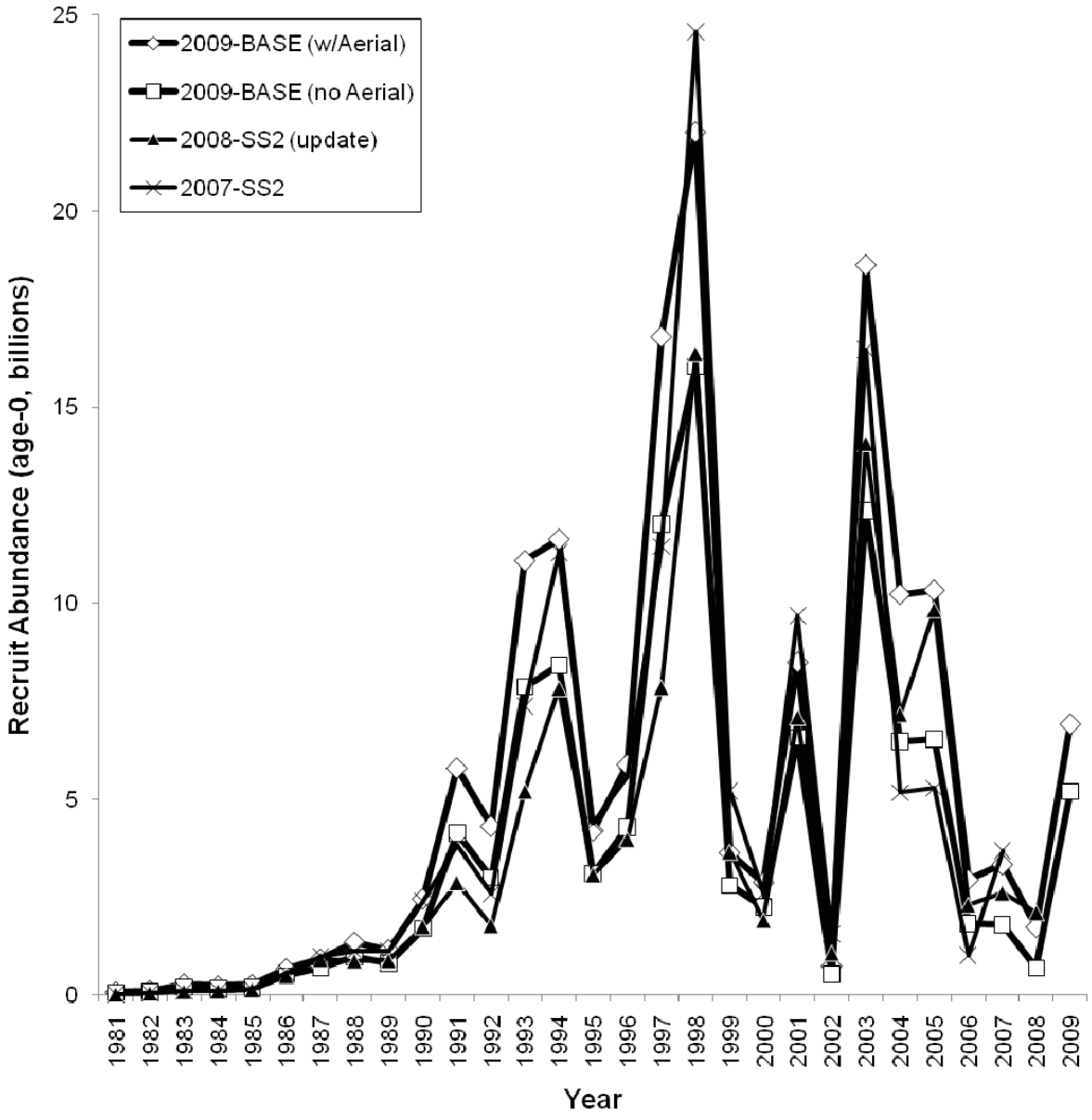


Figure 43b. Pacific sardine recruit (age-0) abundance from the 2009 base model (with and without the 2009 aerial survey) compared to the 2008 update and 2007 final models.

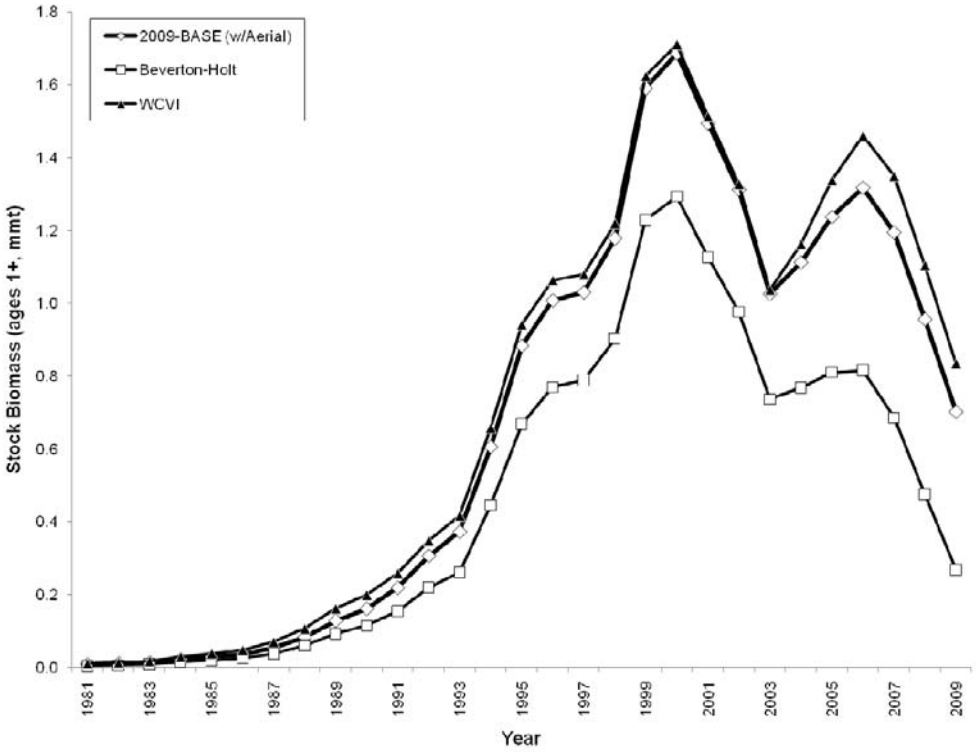


Figure 44a. Stock biomass (ages 1+) from the 2009 base model (w/ Aerial) compared to models fit with a Beverton-Holt S-R function and the WCVI survey.

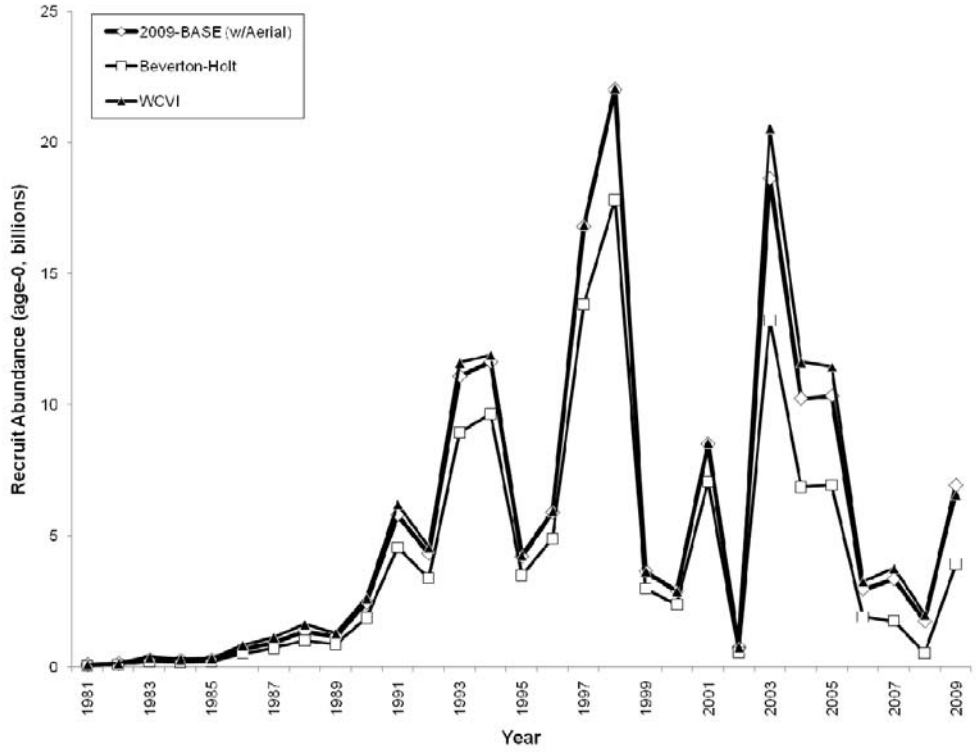


Figure 44b. Recruitment (age-0) from the 2009 base model (w/ Aerial) compared to models fit with a Beverton-Holt S-R function and the WCVI survey..

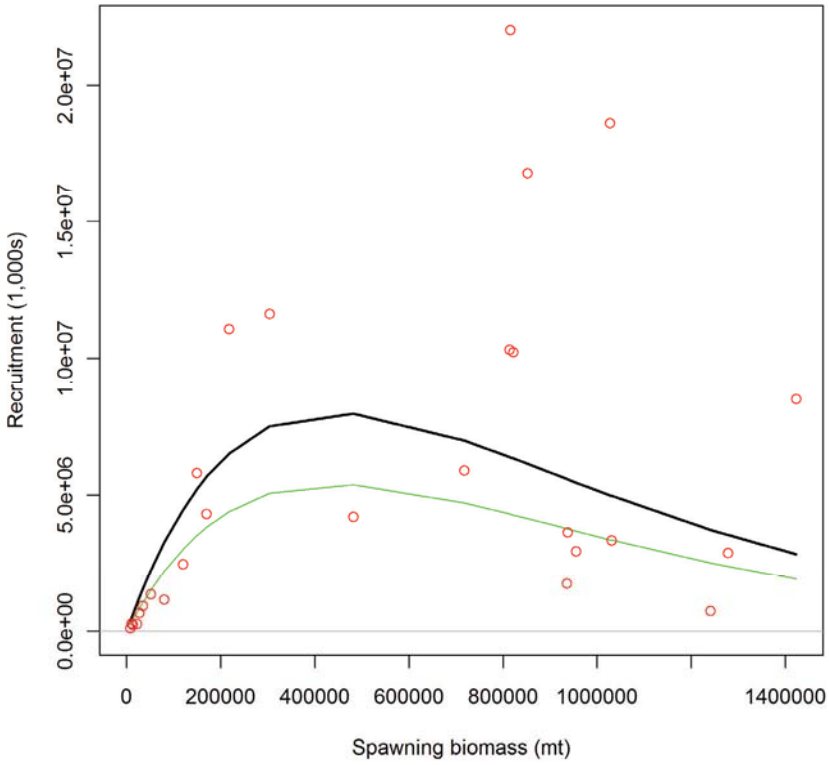


Figure 45a. Spawner-recruitment relationship for the base model, showing Ricker function fit with bias correction. Steepness (h) = 2.32462.

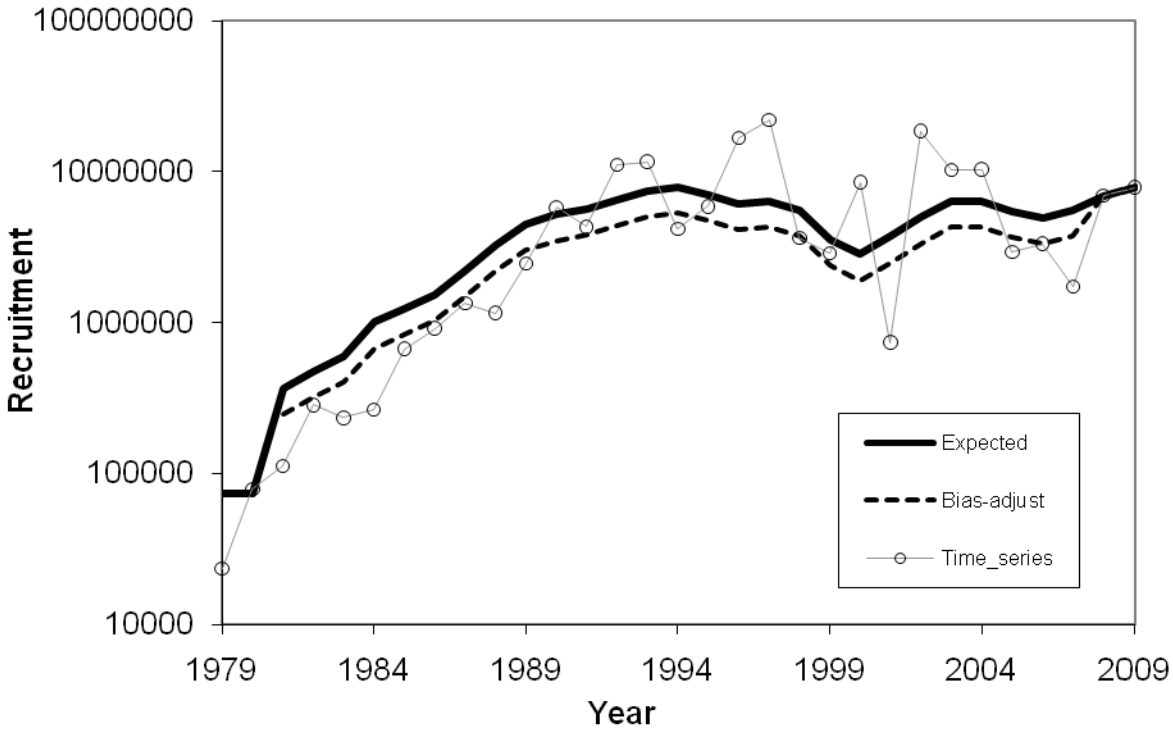


Figure 45b. Ricker model fit to the recruitment time series (base model).

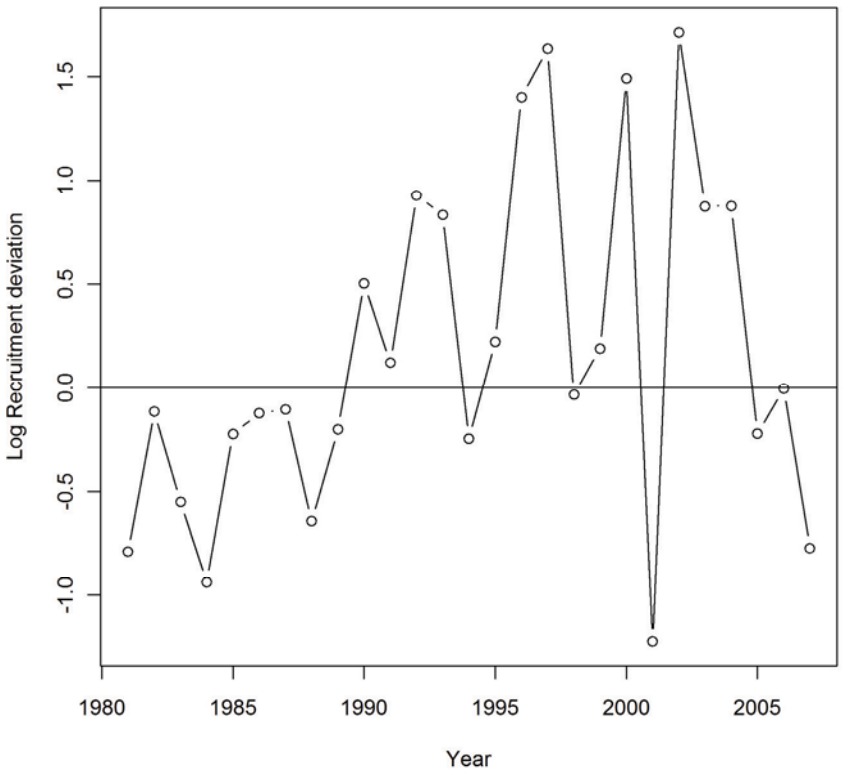


Figure 46a. Recruitment deviations estimated in the base model.

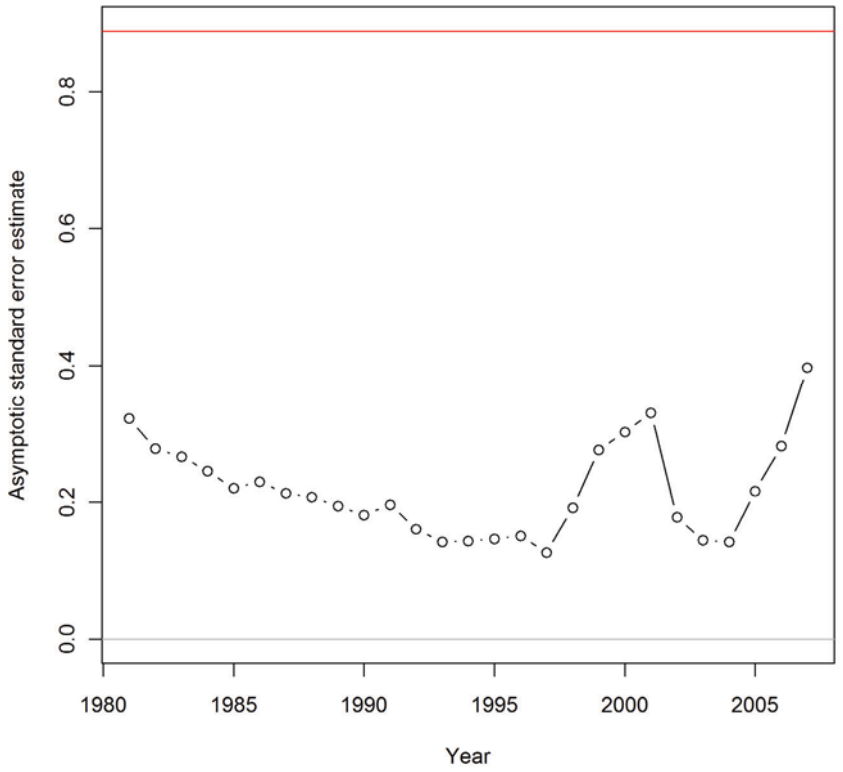


Figure 46b. Asymptotic standard errors for estimated recruitment deviations in the base model.

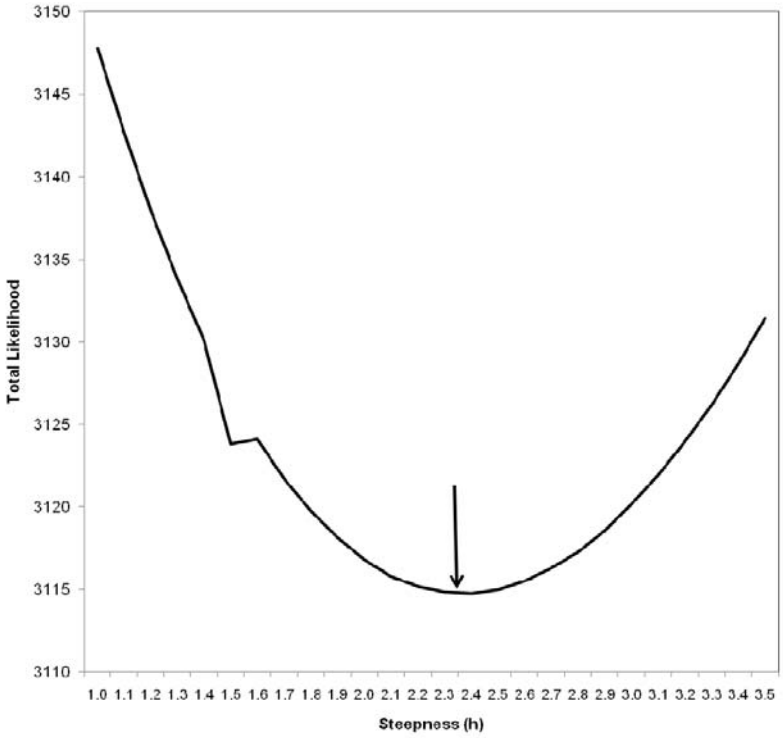


Figure 47a. Likelihood profile over a range of steepness values fixed in the base model. Arrow indicates base model estimate (2.32462).

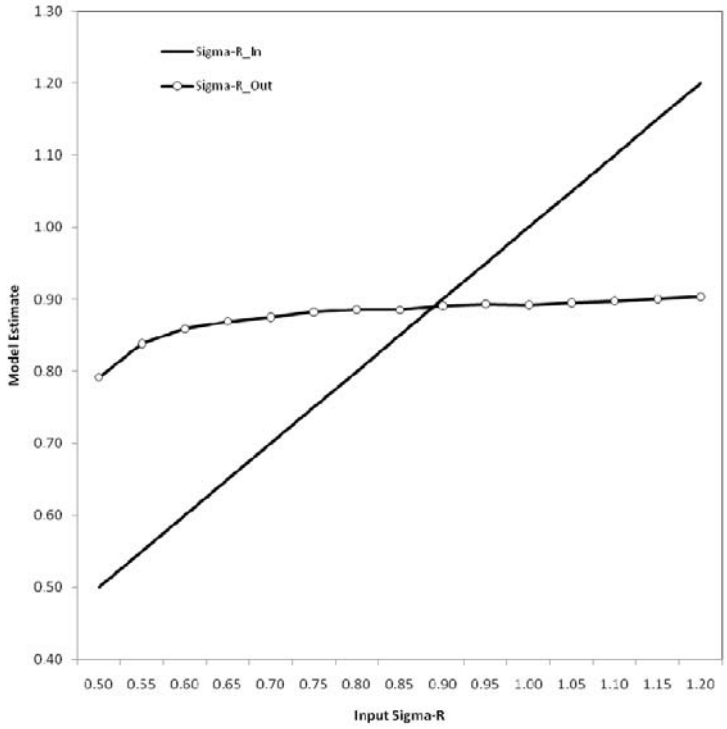


Figure 47b. Root mean square error estimates for recruitment deviations for a range of σ_R inputs in the base model (σ_R = 0.88789 in base model).

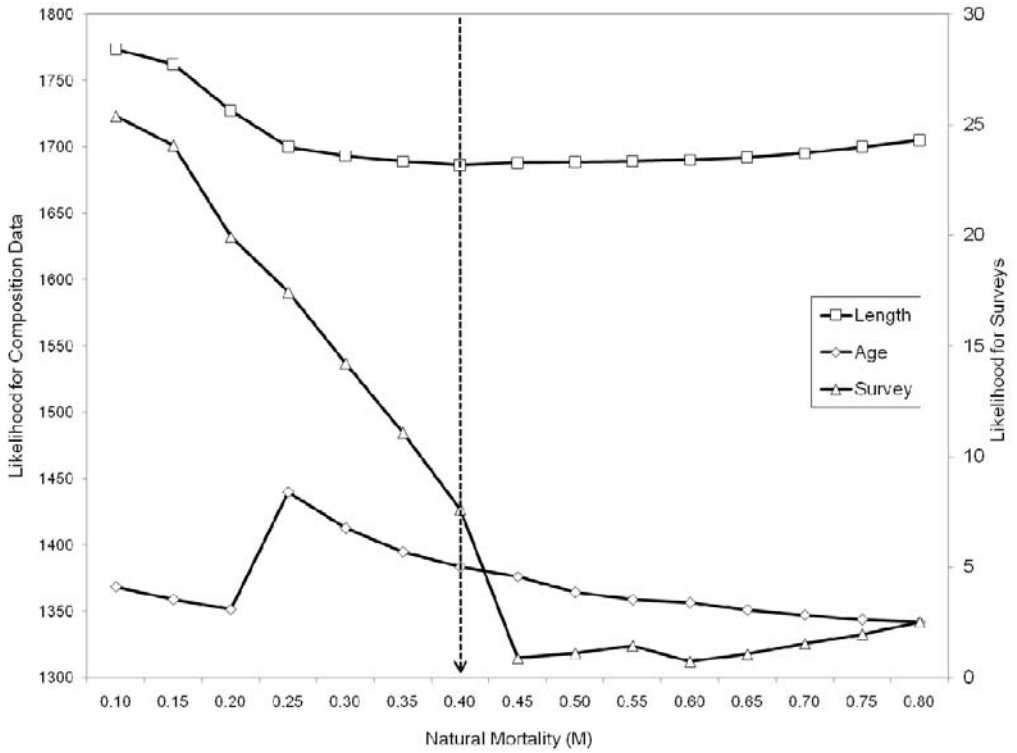


Figure 48a. Component likelihood profiles over a range of natural mortality rates fixed in the base model including the aerial survey.

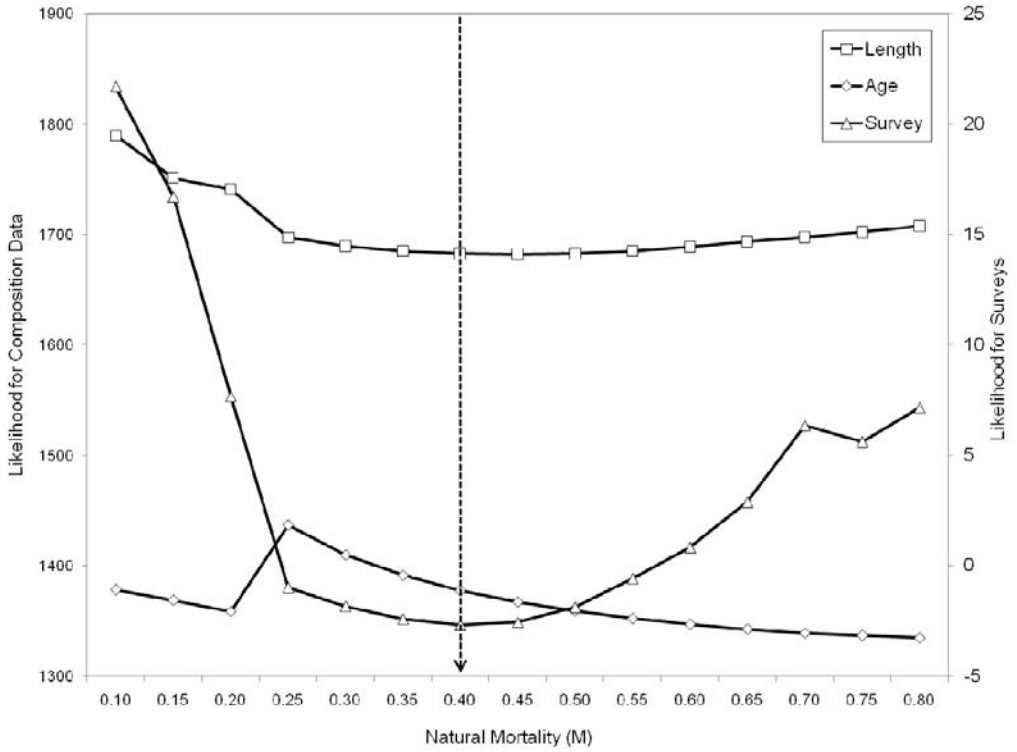


Figure 48b. Component likelihood profiles over a range of natural mortality rates fixed in the base model excluding the aerial survey.

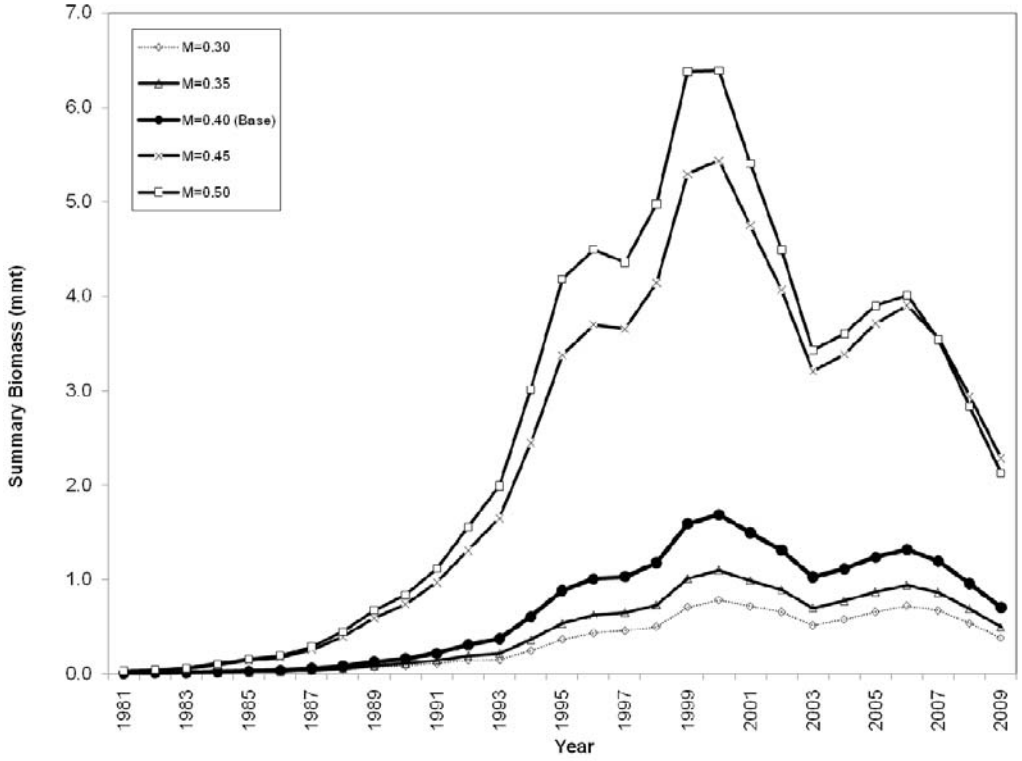


Figure 49a. Uncertainty around stock biomass (age 1+) estimates based on natural mortalities ranging 0.3-0.5 for the base model including Aerial-'09.

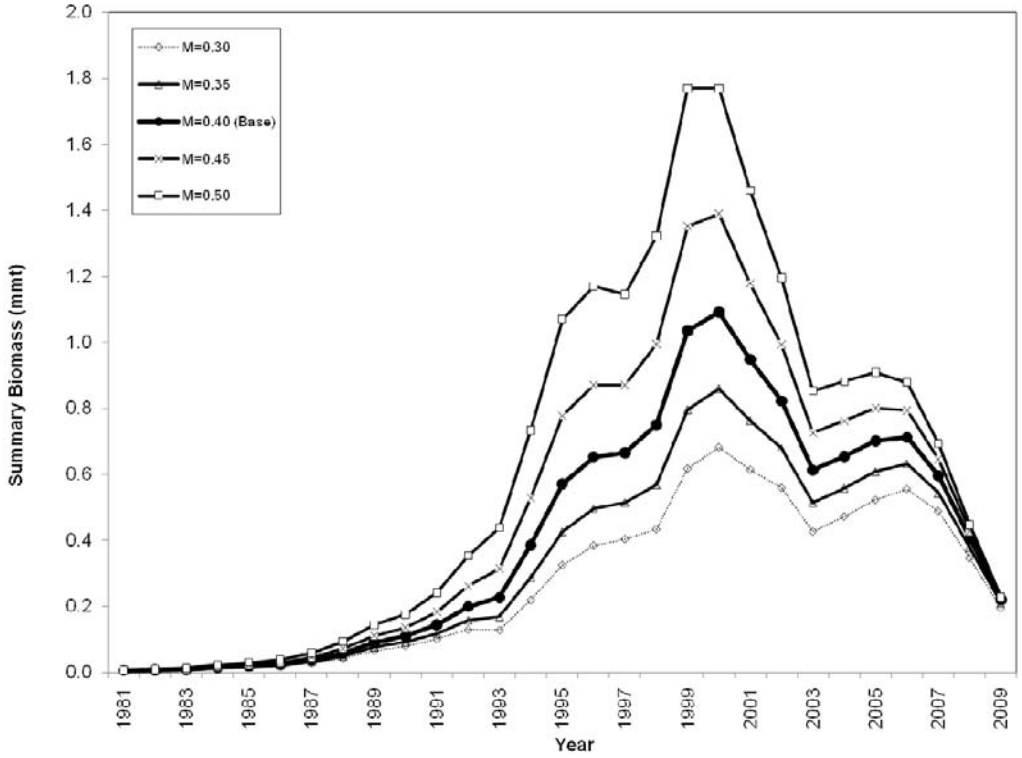


Figure 49b. Uncertainty around stock biomass (age 1+) estimates based on natural mortalities ranging 0.3-0.5 for the base model excluding Aerial-'09.

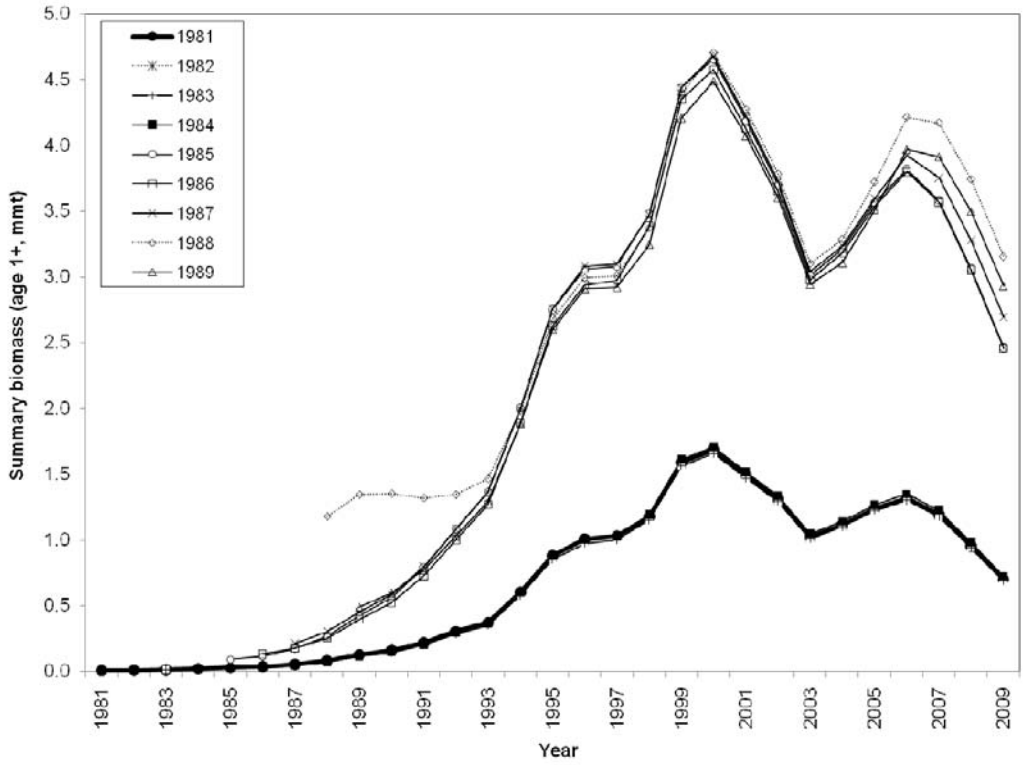


Figure 50a. Prospective analysis of biomass from the base model including the aerial survey.

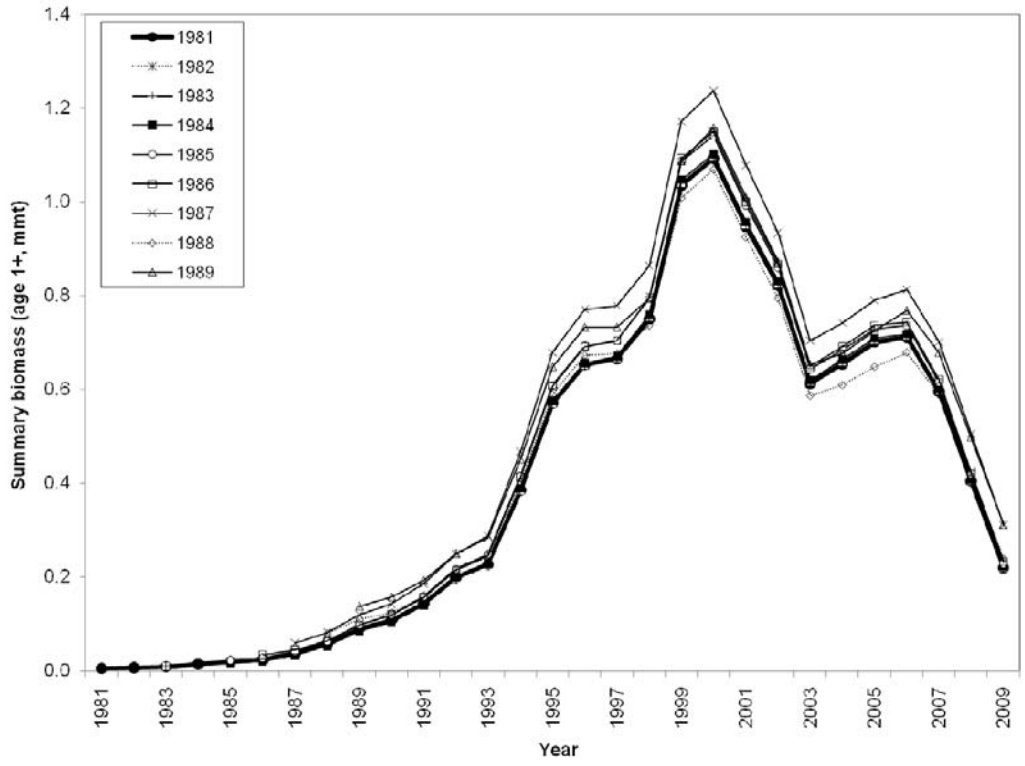


Figure 50b. Prospective analysis of biomass from the base model excluding the aerial survey.

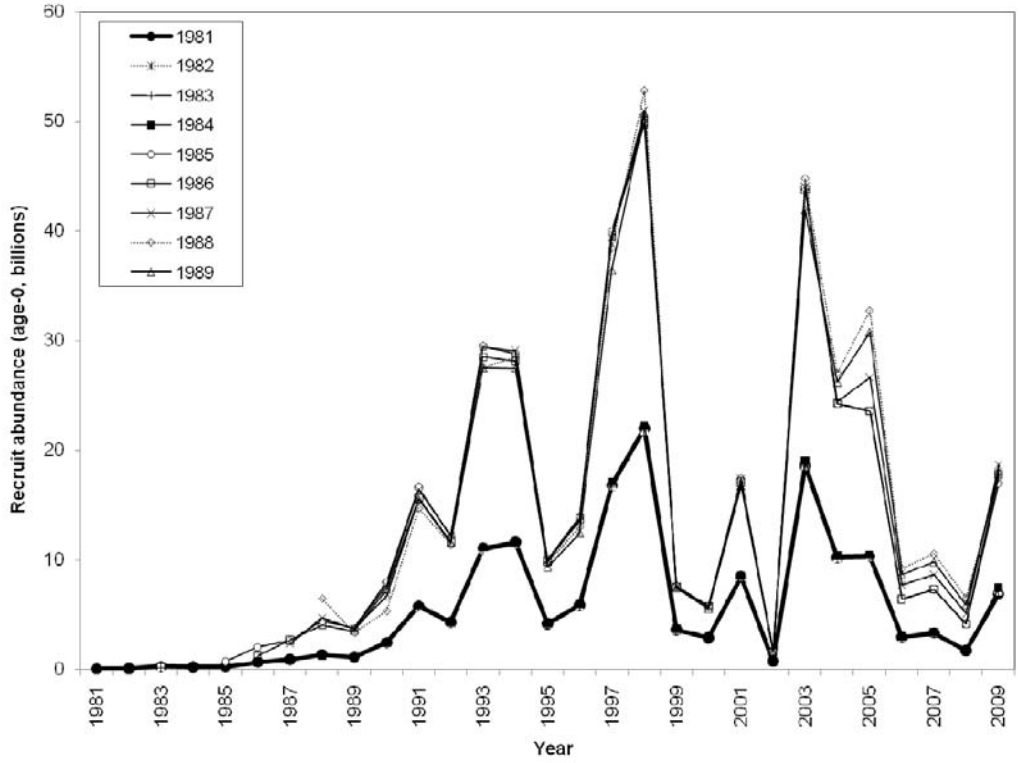


Figure 51a. Prospective analysis of recruitments from the base model including the aerial survey.

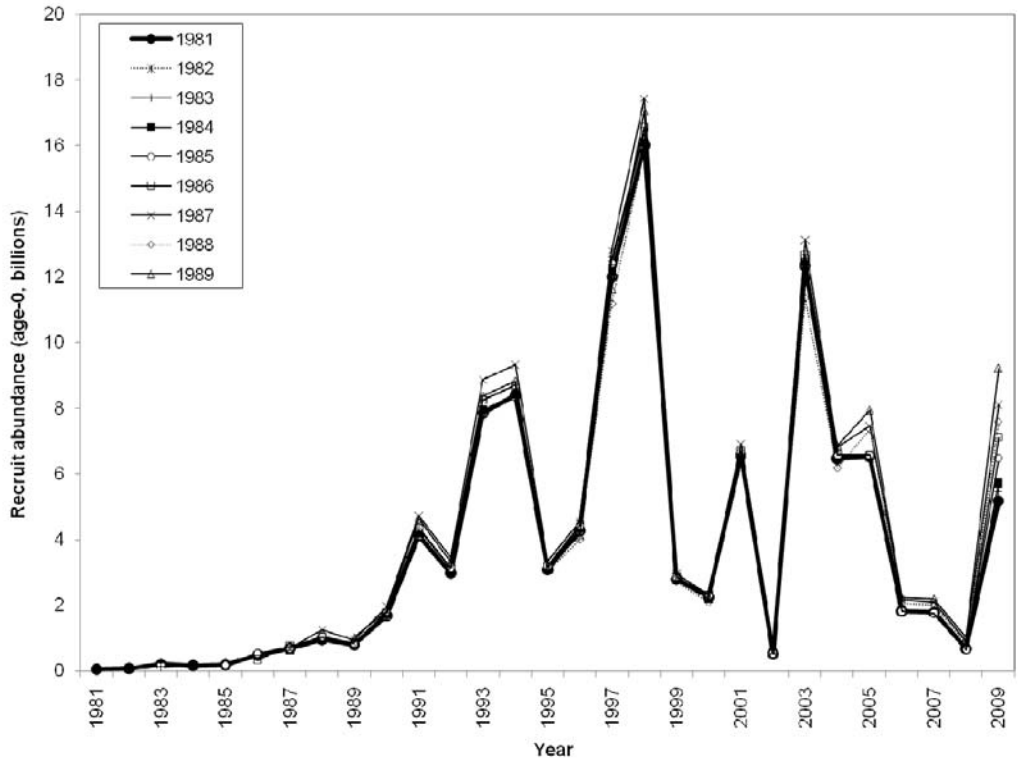


Figure 51b. Prospective analysis of recruitments from the base model excluding the aerial survey.

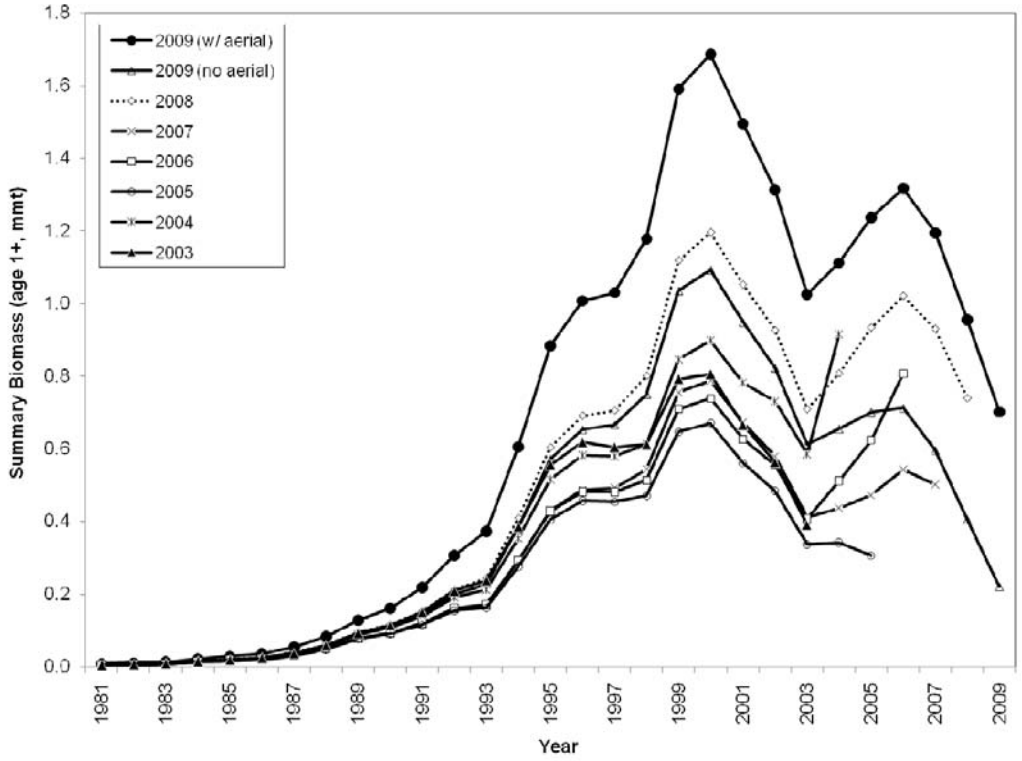


Figure 52a. Retrospective analysis of biomass from the base model.

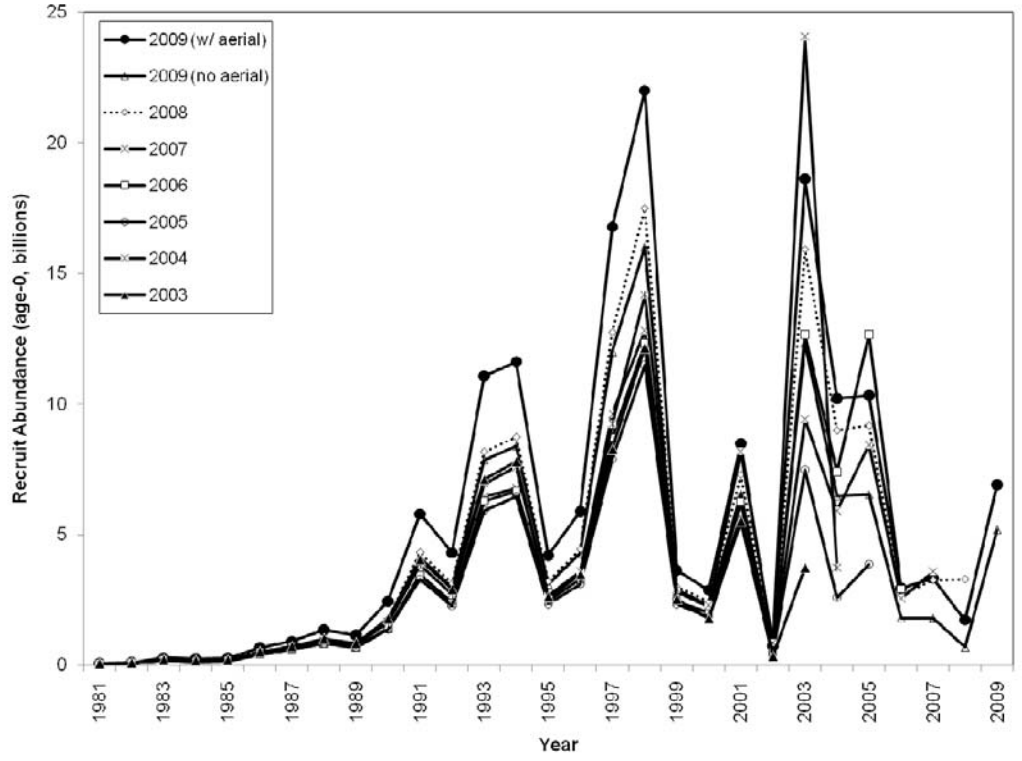


Figure 52b. Retrospective analysis of recruitments from the base model.

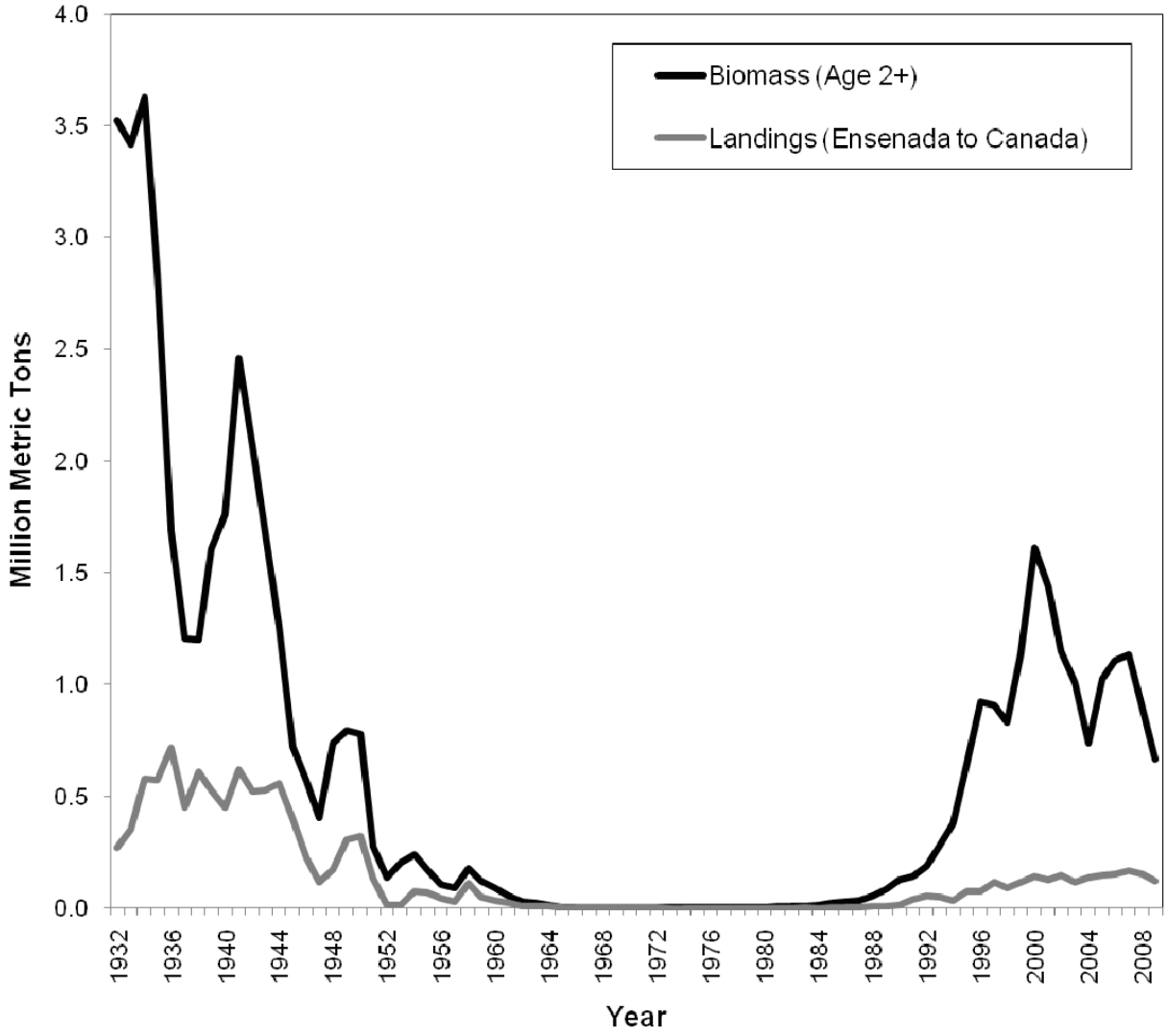


Figure 53. Historic sardine biomass (age 2+) from Murphy (1966) and the base model.

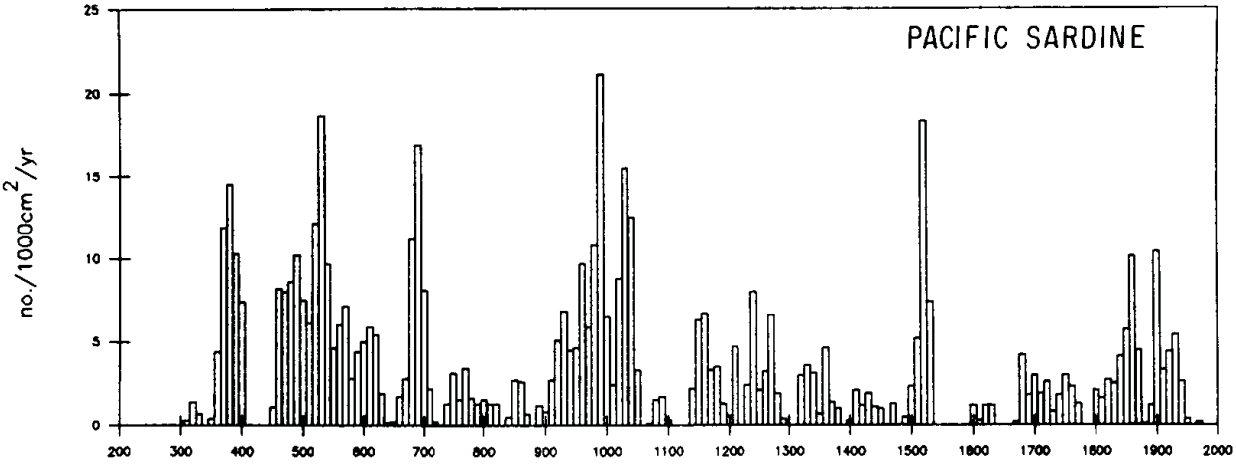


Figure 54. Sardine scale-deposition rates in the Santa Barbara Basin from approximately 300 to 1970 AD. Bars represent decades (reproduced from Baumgartner et al. 1992).

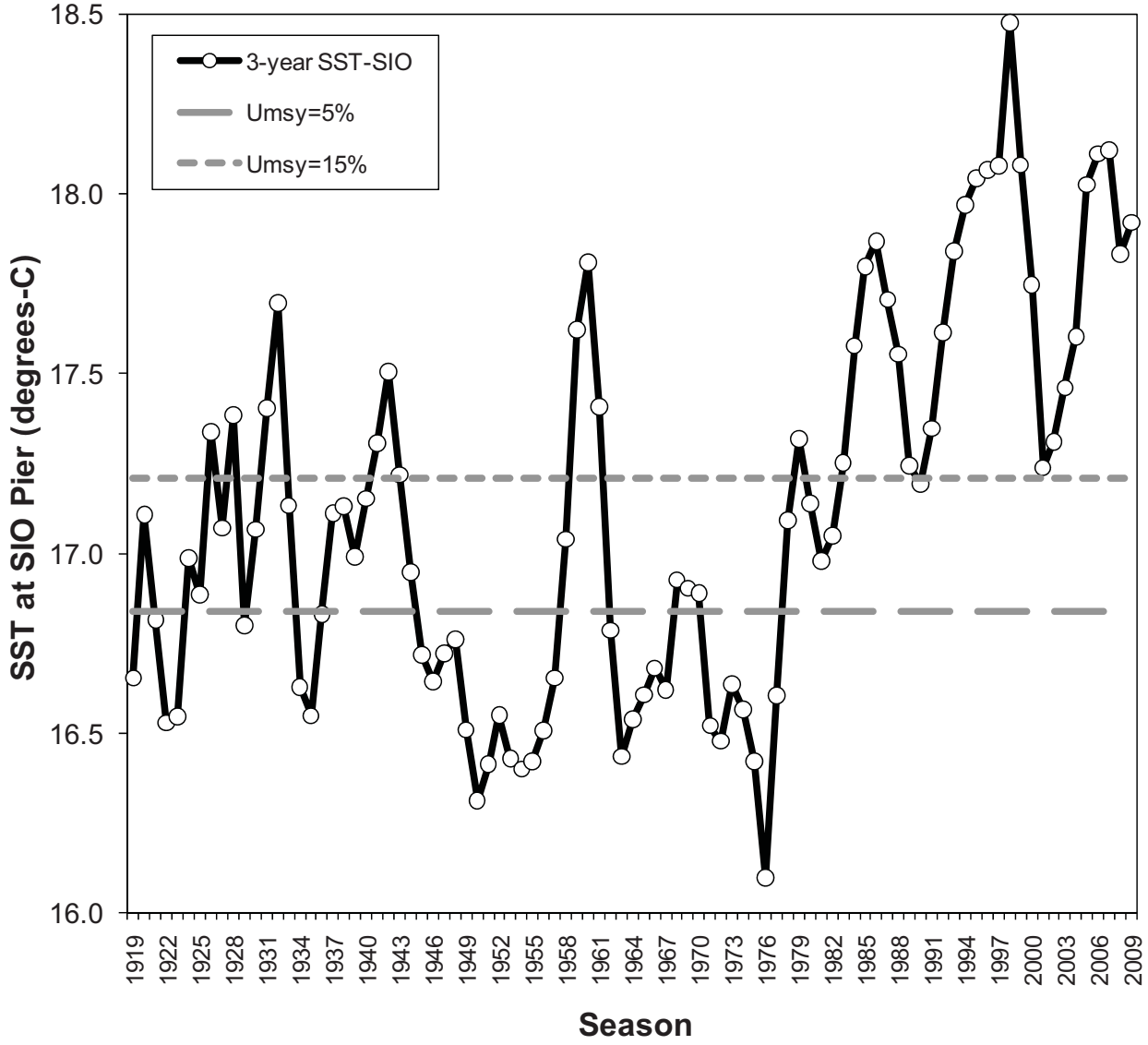


Figure 55. Three-season running average of sea surface temperature (SST) data collected daily at Scripps Institution of Oceanography pier since 1916. For any given season, SST is the running average temperature during the preceding three seasons (July-June), e.g. the 2009 estimate is the average from July 1, 2006 through June 30, 2009. The 2009 value used for management in 2010 was calculated to be 17.92 °C, so a 15% exploitation fraction (F_{msy}) should be applied in the harvest control rule.

APPENDICES

APPENDIX I

Revised estimation of spawning biomass of Pacific sardine (*Sardinops sagax*) using the Daily Egg Production Method

Nancy Lo, Beverly Macewicz, and Kevin Hill
NOAA Fisheries
Southwest Fisheries Science Center
8604 La Jolla Shores Dr.
La Jolla CA 92037
USA

Abstract

Per requests of the 2009 May STAR panel, we examined the estimates of spawning biomass based on the weighted average for each of the parameters: P_0 and four adult parameters: female weight (W), sex ratio (R), batch fecundity (F) and daily spawning fraction (S), where the weight was the estimated spawning biomass in each of two regions. The resulting estimates of spawning biomass were imprecise. Our exercise indicated that the total spawning biomass was best estimated by the sum of the two regional spawning biomasses. We revised the estimate of the daily spawning fraction (S) by using the average of females spawning the night before capture (day-1) and those spawning two nights before capture (day-2) for the number of spawning females to replace females spawning the night of capture (day-0) with the total number of mature females adjusted accordingly. We computed the female spawning biomass (or the population egg production) for years when adequate adult samples were available: 1986, 1987, 1994, 2004, 2005, and 2007-2009. Estimates of spawning biomass and the female spawning biomass (fs. biomass) were recalculated for 1986, and 1987 using the recent estimation procedure. In addition, we also provided a time series of total egg production for years when not all the adult parameter estimates were available or few trawls were taken: 1988, 1996-2003, and 2006. Two time series were summarized in two separate tables similar to Table 4 in Lo et al. (2007 and 2008). The year of 1995 was excluded from the stock assessment because the survey area was the quarterly CalCOFI area (CalCOFI lines 77-95) and not the standard daily egg production method survey area (CalCOFI lines 60-95).

Introduction

The 2009 May STAR panel made suggestions to revise the original estimation procedure of computing the spawning biomass of Pacific sardine for the upcoming Pacific sardine STAR panel meeting in September, 2009 (Punt et al. 2009):
1. Estimate the adult reproductive parameters using the same high and low production regions identified by the pelagic egg sampling survey. The estimates will be weighted by their relative adult abundance in each of two strata (regions 1 and 2). The daily egg production method (DEPM) estimates should be input to the stock assessment in the form of the biomass of spawning females (or the population egg production, i.e. ignore the sex-ratio of mature animals when computing the estimates)

2. The estimates of spawning biomass for 1986-1988 should be re-calculated using a statistical system that is consistent with the more recent DEPM estimates.
3. A complete and annotated table similar to Table 4 in the 2008 report (Lo et a. 2008), including the information from the 1980s CDFG surveys, should be available (and included in the stock assessment report) for the upcoming sardine assessment
And
4. The data for 2006 should be used in the assessment as an estimate of Total Egg Production (TEP) rather than as part of the DEPM series. Estimates of abundance based on the 1995 survey should not be included in the stock assessment at all and re-specify the SS model accordingly.

In this report, we examined four issues of the DEPM spawning biomass (s. biomass) in response to the requests by the May STAR panel: 1. Compare three estimates of s. biomass: stratified estimates with weights being spawning biomass (recommended by the STAR panel) or area size in each region, and the original estimates which were based on unstratified estimates of adult parameters; 2.Reexamine the estimates of spawning fraction (S); 3. Revise the estimates of spawning biomass and estimate female spawning biomass (fs. Biomass) of Pacific sardine for 1994, 2004, 2005, and 2007-2009; and 4.. Revise the spawning biomass and estimate female spawning biomass of Pacific sardine in 1986-1988 to be consistent with the current procedure. We presented two time series from the DEPM surveys for the stock assessment.

Method

The spawning biomass (s. biomass) was computed according to the daily egg production method (DEPM)

$$B_s = \frac{P_0 AC}{RSF / W_f} \qquad [1]$$

where A is the survey area in units of $0.05m^2$, S is the daily spawning fraction (fraction of females spawning per mature female per day), F is the batch fecundity (number of eggs per mature female released per spawning), R is the fraction of mature female fish by weight (sex ratio), W_f is the average weight of mature females (g), and C is the conversion factor from grams (g) to metric tons (mt). P_0A is the total daily egg production in the survey area, and the denominator (RSF/W_f) is the daily specific fecundity (number of eggs/population weight (g)/day).

The variance of the spawning biomass estimate $\left(\hat{B}_s\right)$ was computed from the Taylor expansion in terms of the coefficient of variation (CV) for each parameter estimate and covariance for adult parameter estimates (Parker 1985):

$$VAR\left(\hat{B}_s\right) = \hat{B}_s^{\,2}\left[CV\left(\hat{P}_0\right)^2 + CV\left(\hat{W}_f\right)^2 + CV\left(\hat{S}\right)^2 + CV\left(\hat{R}\right)^2 + CV\left(\hat{F}\right)^2 + \mathbf{2}COVS\right] \qquad [2]$$

The last term, involving the covariance term, on the right-hand side is

$$COVS = \sum_i \sum_{i<j} sign \frac{COV(x_i, x_j)}{x_i x_j}$$

where x's are the adult parameter estimates, and subscripts i and j represent different adult parameters; e.g., $x_i = F$ and $x_j = W_f$. The sign of any two terms is positive if they are both in the numerator of B_S or denominator of B_S (equation 5); otherwise, the sign is negative. The covariance term is

$$\mathrm{cov}(x_{i,} x_j) = \frac{[n/(n-1)] \sum_k m_k (x_{i,k} - x_i) g_k (x_{j,k} - x_j)}{\left(\sum_k m_k\right)\left(\sum_k g_k\right)}$$

where k refers to k^{th} tow, and $k = 1,\ldots,n$. The terms of m_k and g_k are sample sizes and $x_{i,k}$ and $x_{j,k}$ are sample means from the k^{th} tow for x_i and x_j respectively.

For each survey, the area was post-stratified into two regions based on the presence of sardine eggs: region 1 (high density area) and region 2 (low density area). Equation (1) can be applied to the whole survey area or to each of the two regions depending on the availability of data. For the female spawning biomass (fs. biomass), the sex ratio (R) was excluded from equations (1) and (2). For details of the post-stratification and estimation procedures for each parameters, please see Lo et al (1996) and Lo et al. (2001)

Results

1. Three estimators of the spawning biomass using 2007 and 2008 data

Method 1.The estimate of spawning biomass (s. biomass) was based on estimates of P_0 and adult parameters, each of which was a weighted mean with the weight being the estimate of s. biomass in each of two regions.
Method 2. The estimate of s. biomass was the sum of the estimate of the s. biomass in each region
Method 3. The original estimate, which was based on a weighted estimate of P_0 with weights being the area size and unstratified estimates of adult parameters.

The analysis indicated that the estimates of the spawning biomass based on Method 1 had the highest cv (Table 1). The estimates from Method 2 have cvs slightly lower than those of the original estimates. The reason for the large cv from Method 1 was because the variance of weighted mean for the ith adult parameter, $\mathrm{var}(x_{iw})=\mathrm{var}(x_{i1}*a_1+x_{i2}*a_2)$, is a function of the $\mathrm{var}(x_{i1})$,$\mathrm{var}(a_1)$,$\mathrm{var}(a_2)$, $\mathrm{var}(x_{i2})$ and $\mathrm{cov}(a_1,a_2)$where $a_j = sb_i/(sb_1 + sb_2)$ and sb_j is the estimate of the spawning biomass in the jth region for j = 1,2. The variance of s. biomass is a function of $\mathrm{var}(P_{0w})$, and $\mathrm{var}(x_{iw})$, i = 1..,4 , for the ith adult parameter: mature female weight (W_f), sex ratio

(R), batch fecundity (F) and daily spawning fraction (S), and cov(x_{iw}, $x_{i'w}$).The cov(x_{iw}, $x_{i'w}$) is a function of cov(x_i, $x_{i'}$) within each region, var(a_1),var(a_2) , cov(a_1,a_2), and estimates of each adult parameter (appendix 1). For this exercise, the spawning fraction (S) was based on the original method following Northern anchovy procedures based on day-1 mature females (Picquelle and Hewitt, 1983). The estimates of adult parameters based on Method 1 for 2007 were given in Appendix 2.

The point estimates of P_0 using Method 1 in 2007 and 2008 were higher than those using area sizes as the weights, so were the estimates for the s. biomass (Table 1). Method 1 produced estimates with highest cv, while Method 2 produced estimates with the lowest cv. We chose to use method 2 to recalculate the spawning biomass and female spawning biomass for years when both P_0 and adult parameter estimates within each region were available. Otherwise, Method 3 would be used, e.g. 2004

2. The spawning fraction (S)

The daily spawning fraction (S) is the fraction of females spawning per mature female per day and day is a 24h time-period and not a calendar day. Sardine spawn and were collected at night, and our 'day' used the 24 hours from 18:01-18:00. For these exercises, females spawning the night of capture were categorized as day-0, those spawning the night before capture (about 24 hours ago) as day-1, those spawning two nights before capture (about 48 hours ago) as day-2, and remaining mature females as mature-non-spawners. When we estimated daily spawning fraction in the past, we used the number of day-1 females and followed the procedure set up for Northern anchovy to replace the number of day-0 females with that of day-1 females to adjust the number of total mature females (m.females$_1$); and S_1 is the daily spawning fraction by this original method (Picquelle and Hewitt, 1983). In recent years much data on Pacific sardine spawning rates have been accumulated, and we compared the mean number of day-0, day-1, and day-2 spawning females based on data from 2005, 2007 and 2008. The number observed in the trawls was analyzed with possible effect of region, year, with region nested within year. The analysis of variance indicated that there was no significant difference among all three day groups while the region and year effect were significant (Table 2). The overall mean number of each day category in the trawl samples was 1.68 (cv = 0.80), 1.86 (cv = 0.46), and 1.82 (cv = 0.39) for day-0, day-1 and day-2 females respectively (Figure 1). Thus, the variance of the number of day-0 fish is much greater than those of other two day categories. As suggested by the STAR panel, we examined an alternative estimator of daily spawning fraction (S_{12}) using the mean number of day-1 and day-2 spawning females for each trawl and replacing day-0 females by this mean to adjust the number of total mature females, which was termed the adjusted total number of mature females (m.female$_{12}$).
We compared these two estimates: S_{12} and S_1 without stratification of regions using data from four years: 2004, 2005, 2007 and 2008 (Table 3). The results indicated that S_{12} was more precise than S_1 . Thus, we opt to use S_{12} in computing the spawning biomass and female spawning biomass. This pooled estimate of spawning fraction based on day-1 and day-2 mature females was used for Peruvian anchovy (Alheit et al. 1984), sardine off Spain (Garcia et al. 1992) and Portugal (Cunha et al. 1992).

3. Estimates of spawning biomass and female spawning biomass of Pacific sardine for 1994, 2004, 2005, and 2007-2009.

We recalculated spawning biomass and the female spawning biomass of Pacific sardine for 1994 (Lo et al. 1996), 2004, 2005, 2007-2009 as the sum of biomass in each region (Fig 2-7). Egg production, adult parameters including the new estimates of daily spawning fraction, S_{12}, the spawning biomass and the female spawning biomass (the population egg production) were estimated for each region. The total spawning biomass was the sum of the spawning biomass in each of the two regions (Table 4). For 1994, the original estimation procedure S_1 based on day-1 females was used because data on day-2 females was not available. Region 1 was the area where sardine eggs were caught with embedded zero and the rest of the survey area was region 2. Because most adult collections were in region 1, the spawning biomass of 1994 was based on data from region 1 only. Since 1996, the CUFES egg density was used to post stratify the survey area. For 2004, because trawls were taken only in stratum 1, Method 3 was used to estimate spawning biomass and female spawning biomass where P_0 was weighted by the area in each region and the adult parameters were unstratified. Since 2005, trawls were taken in each region and Method 2 was used for both the spawning biomass and female spawning biomass.

4. Estimates of spawning biomass and female spawning biomass of Pacific sardine for 1986, 87 and 88 based on CDFG DEPM surveys and CalCOFI surveys.

The California Department of Fish and Game (CDFG) conducted annual ichthyoplanton-adult fish surveys for Pacific sardine in 1985-1988 (Wolf and Smith, 1985; Wolf 1988a and 1988b; Scannel et al. 1996). Sample sizes were small in 1985(Wolf and Smith 1986). Here we reexamined CDFG surveys in 1986-1988 (Fig 8-10). Surveys in these three years were conducted in different months: August, July and May in each year respectively (8608, 8707 and 8805). The area occupied was small compared to recent DEPM surveys: from US-Mexico boarder to Point Conception for 1986 and 1987, and to Monterey in 1988. Survey area extended west to 28 nautical miles (nm), 75 nm, and 120 nm off shore respectively for each of the three years. For all surveys adult sardine were caught by purse-seine and only CalVET net tows were taken as the CUFES was not launched off California till 1996. We included data of yolk-sac larvae (larvae $\leq$ 5 mm in preserved length) from CalCOFI cruises closest to the CDFG surveys together with egg data from CDFG surveys to model the embryonic mortality curve. We were able to do so for 1987 and 1988 but not for 1986 as no larvae were caught by the closest CalCOFI surveys in 1986 (8605). Therefore the embryonic mortality curve for 1986 was based on CalVET egg data only.

For each survey, the whole area was stratified: region 1 where one or more sardine eggs were caught (with embedded zero tows) and region 2 was the rest of the survey area. For 1988, two vessels were employed (Fig 10): one vessel, *Shana Rae*, surveyed the area north of CalCOFI line 75 (~35.3^{0}N) and the other vessel, *Yellowfin*, surveyed the southern area. Because no eggs were observed in the north aboard *Shana Rae*, the analyses were carried out only for data collected aboard the *Yellowfin* in the area south of CalCOFI line 81.5 (~34.3^{0}N).

1986 (8608)

Only egg data from the CDFG-cruise CalVET tows were used to estimate the daily egg production because no larvae were caught by bongo and CalVET net tows during CalCOFI cruises, 8605 and 8609. The nonlinear regression on the individual egg data points could not run well, so we obtained the mean egg production for five half-day group up to 2.5 day old.

The survey area was post-stratified into a north and south area due to the difference in egg densities and the spatial distribution of eggs: the dividing line was CalCOFI line 85.4 (~33.8^{0}N)in the Santa Monica Bay (Scannell et al. 1996) (Fig 8). Within each of the two areas, we further stratified into region 1 and 2. As the number of tows were small (133 in the north and 197 in the south) and no larvae data were available, the nonlinear regression produced poor estimate of P_0, in particular for the north with positive mortality rate (Z). Therefore, for the northern area, an average of egg production in three egg day categories (day-1, 2, and 3) were used as the estimate of P_0. The estimates of P_0, were different between the south and north: 1.48 (cv = 1) and 0.32 (cv = 0.25) with 1.74 (cv = 1) and 0.38 (cv = 0.25) in region 1 within each area. For the entire survey area, the area for region 1 was 10141.55 km^2 out of the total area of 11811.73 km^2 (Table 4). The estimate of P_0, and z for the region 1 were 0.56 (cv = 0.66) and -0.18 (2.17). The weighted P_0, was 0.95 (cv = 0.84), where the weights were the area size for northern and southern area. All the above regression estimates were corrected from bias from the weighed group data: $P_{0,c} = P_0$ (1+0.14) =(Lo 2001).

1987 (8707)

Egg data from CDFG 8706 (Wolf 1988a, Fig 9) and yolk-sac larval data from bongo and CalVET from CalCOFI cruises: 8705 and 8709 were used to model the embryonic mortality curve. The daily egg production (P_0) and the instantaneous mortality rate (z) for region 1 were 1.11 (cv = 0.5) and 0.66 (cv = 0.4) for an area of 22259.94 km^2 out of the entire survey area of 37702.26 km^2. The overall P_0 was 0.66 (cv = 0.5). All adult sardines were caught by purse-seine gear in region 1.

1988 (8805)

Because no eggs were observed north of CalCOFI line 81.5, egg data from CDFG 8805 survey south of CalCOFI line 81.5 (~34.2^{0}N) (Wolf 1988b,Fig 10) and yolk-sac larval data from CalVET and Bongo tows of CalCOFI 8805 surveys were used to model the embryonic mortality curve. Estimates of P_0 and z were 0.55 (cv = 0.36) and 0.39 (cv = 0.25) for region 1 of 31788.18 km^2 out of the southern survey area of 44040.73 km^2. Because few eggs and non adult samples were taken in the region 2, we prorated P_0 from region 1 to the whole southern survey area after the correction of relative bias: $P_{0c.w}=P_{0c}$ *A1/A where P_{0c} is the bias corrected P_0 in region 1, A1 and A are area sizes of region 1 and the whole southern survey area. The relative bias (RB) is -0.04 and -0.14 for the weighted nonlinear regression based on individual data points and the group data respectively and $P_{0c}= P_0$ (1-RB) (Lo 2001).
The P_0 for the southern survey area and the entire survey area (71940 km^2) was 0.39 (cv = 0.36) and 0.24 respectively. For the past spawning biomass estimation, the batch fecundity-fish weight relationship for 1988 was based on 1986 and 1987 data because no batch fecundity data was available for 1988 and females in 1988 were similar in size to those in 1986 and 1987; For the 2009 stock assessment, P_0 from 1988 was included in the total egg production (TEP) time series

and spawning biomass was not included due to this lack of an 1988 batch fecundity-fish weight relationship.

5. **Two time series from DEPM surveys for the stock assessment**

We constructed two time series for the stock assessment. The first time series includes the estimates of female spawning biomass (fs. biomass) for 1986, 1987, 1994, 2004, 2005, and 2007-2009 as described in the previous sections (Table 4). For the batch fecundity estimates (F), the mean fecundity for a given fish weight: F=a+bW was used in the past. Because the fecundity was estimated for each individual female, to account for the variation among individual fish, we added an error term to the fecundity-fish weight equation as F = a + bW + e where e, the error term, follows a normal distribution with mean 0 and variance of the residual from the equation. Therefore we expect an increase of variance of the batch fecundity estimate for the fs. biomass and s. biomass. The second time series includes the total egg production (TEP) for years when not all adult parameters were estimated primarily due to lack of adults collections, no spawning fraction (S), and/or the lack of fecundity-fish weight equations: 1988, 1996-2003 and 2006(Table 5; Lo et al. 2008)). The TEP is proportional to P_0* A where P_0 is the egg production/0.05m^2, and A is the survey area in km^2. The year of 1995 was excluded from either time series because data of that year came from CalCOFI survey only.

Discussions

All the exercises provided slightly more precise estimates of spawning biomass and the female spawning biomass using new estimates of spawning fraction (S_{12}), the average of day-1 and day-2 females. We only provided survey maps for years when the female spawning biomass was obtained. For years when only the total egg production was provided, readers can go to Southwest Fisheries Science Center website (http://swfsc.noaa.gov/) for most of the survey maps.

The point estimates of spawning biomass are similar to the original estimates. One drawback of using females spawning two nights before capture (day-2 females) is that at high temperatures, e.g. >16^{o}C, postovulatory follicles degenerate faster than at cool temperatures. It is important to establish temperature-dependent identification criteria to obtain an unbiased estimate of spawning fraction. Otherwise at high temperature fish may be misclassified as mature non-spawner (did not spawn in previous 60 hours) and the spawning fraction may be underestimated and vice versa for low temperature. Even though we had not encountered extreme temperature in the most years, in 1994 and 1987, sardine females spawning more than 48 hours before capture were recorded as 'day-2' and we restricted spawning fraction to only sardine females categorized as day-1 spawners.

References

Alheit, J., Alarcon, V.H. and Macewicz, B.J. (1984). Spawning frequency and sex ratio in the Peruvian anchovy, Engraulis ringens. California Cooperative Oceanic Fisheries Investigations Report 25, 43–52.

Cunha, E.M., Figueiredo, I., Farinha, A. and Santos, M. (1992) Estimation of sardine spawning biomass off Portugal by the daily egg production method. Boletin del Instituto Espanol de Oceanografia 8, 139–153.

Garcia, A., Perez, N., Lo, N.C.H., Lago de Lanzos, A. and Sola, A. (1992) The Egg Production Method applied to the spawning biomass estimation of sardine, Sardina pilchardus (Walb.) on the North Atlantic Spanish coast. Boletin del Instituto Espanol de Oceanografia 8, 123–138.

Goodman, L.A. 1960. On the exact variance of products. JASA, 55(292):708-713
.

Lo, N. C. H. 2001. Daily egg production and spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2001. Southwest Fisheries Science Center, National Marine Fisheries Service, SWFSC Admin. Rep. La Jolla, LJ-01-08. 32 pp.

Lo, N. C. H., Y. A. Green Ruiz, M. J. Cervantes, H. G. Moser, R. J. Lynn. 1996. Egg production and spawning biomass of Pacific sardine (*Sardinops sagax*) in 1994, determined by the daily egg production method. Calif. Coop. Oceanic. Invest. Rep. 37:160-174.

Lo, N.C.H., J. R. Hunter, and R. Charter. 2001. Use of a continuous egg sampler for ichthyoplankton survey: application to the estimation of daily egg production of Pacific sardine (*Sardinops sagax*) off California. Fish. Bull. 99:554-571.

Lo, N. C. H. and B. J. Macewicz, and R. L. Charter. 2007. Spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2007. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-411. 31 pp.

Lo, N. C. H. and B. J. Macewicz, D. A. Griffith and R. L. Charter. 2008. Spawning biomass of Pacific sardine (*Sardinops sagax*) off California in 2008. U.S. Dep. Commer., NOAA Tech. Memo., NOAA-TM-NMFS-SWFSC-430. 33 pp.

Parker, K. 1985. Biomass model for egg production method. *In* An egg production method for estimating spawning biomass of pelagic fish: application to the northern anchovy, *Engraulis mordax*, R. Lasker, ed. U.S. Dep. Commer., NOAA Tech. Rep. NMFS 36, pp. 5-6.

Picquelle, S.J. and R. P. Hewitt 1983: The northern anchovy spawning biomass for the 1982-83 California fishing season. CalCOFI Rep., Vol. 24:16-28.

Punt, A. , O. Hamer, G. Melvin, A. MacCall, and K. Burham. 2009. Daily egg production methods for Pacific Sardine, Report of STAR Panel Meeting. Agenda Item H.2.a Attachment 4. 9pp.

Scannel, C. L., T. Dickerson, P. Wolf, and K. Worcester. 1996. Application of an egg production method to estimate the spawning biomass of Pacific sardines off southern California in

1986. Southwest Fisheries Science Center, National Marine Fisheries Service, SWFSC Admin. Rep. La Jolla, LJ-96-01. 37 pp.

Wolf, P. 1988a. S. Status of the spawning biomass of the Pacific sardine, 1987-88. Calif. Dep. Fish Game, Mar. Res. Div., Rep. to the legislature, 9 pp.

Wolf, P. 1988b. Status of the spawning biomass of the Pacific sardine,1988-1989. Calif. Dep. Fish Game, Mar. Res. Div., Rep. to the legislature, 8 pp.

Wolf, P and P.E. Smith. 1985. An inverse egg production method for determining the relative magnitude of Pacific sardine spawning biomass of California. Calif. Coop. Oceanic Fish Invest. Rep. 26:130-138.

Table 1 Estimates of daily egg production (P_0/0.05m^2) and spawning biomass based on three methods (see text), and their cv in parentheses for 2007 and 2008 of the standard DEPM area off California. Method 1a provided estimates of spawning biomass assuming the cv of the estimates of regional spawning biomass is zero for comparison purposes.

***P_0*/0.05m^2**

Year	Method	Whole (cv)	region 1 (cv)	region 2 (cv)
2007	1	1.14**(0.29)**	1.32(0.2)	0.56(0.46)
	2		1.32(0.2)	0.56(0.46)
	3	0.86(0.26)	1.32(0.2)	0.56(0.46)
Area (km^2)		356,159	142,403	213,756
2008	1	0.54**(0.64)**	1.45(0.18)	0.202(0.32)
	2		1.45(0.18)	0.202(0.32)
	3	0.43(0.21)	1.45(0.18)	0.202(0.32)
Area(km^2)		297,949	53,514	53,514

Spawning biomass

Year	Method	Whole (cv)	Region 1 (cv)	Region 2 (cv)
2007	1	539852 (**0.64**)	311774 (0.45)	96819 (0.82)
	1a	539852 (0.41)	311774 (0)	96819 (0)
	2	408593 (0.39)	311774 (0.45)	96819 (0.82)
	3	392,492 (0.45)		
2008	1	137310 (**1.26**)	27037 (0.23)	71323 (0.49)
	1a	137310 (0.24)	27037 (0)	71323 (0)
	2	98360 (0.36)	27037 (0.23)	71323 (0.49)
	3	117426 (0.43)		

Table 2. Analysis of variance of mean number of spawning day-0, day-1 and day-2 mature female fish based on data from region 1 and region 2 in 2005, 2007 and 2008.

Coefficients:

	Value	Std. Error	t value	Pr(>|t|)	Note
(Intercept)	0.1614	0.4361	0.3700	0.7123	
day.group.factor1	0.123	0.0975	1.2664	0.2090	**compare day-0 and day-1**
day.group.factor2	0.0611	0.0563	1.0862	0.2806	**compare (day-0 and day-1) with day-2**
years	0.0017	0.0008	2.2705	0.0258	
reg %in% years	-0.0006	0.0002	-2.6871	0.0087	

Residual standard error: 0.7425 on 82 degrees of freedom
Multiple R-Squared: 0.1171
F-statistic: 2.718 on 4 and 82 degrees of freedom, the p-value is 0.03517

Correlation of Coefficients:

	(Intercept)	day.group.factor1	day.group.factor2	years	
day.group.factor1	0.0				
day.group.factor2	0.0	0.0			
years	-0.8	0.0	0.0		
reg %in% years	0.1	0.0	0.0	-0.56	

Table 3. Unstratified estimates of daily spawning fraction: (S_1) by the original and (S_{12}) by alternative criteria with cv in the parenthesis for 2004,2005,2007 and 2008.

Survey Year	S_1	S_{12}
Numerator	day-1 females	(day-1 + day-2)females/2
Denominator	$m.female_1$	$m.female_{12}$
2004	0.13 (0.17)	0.13 (0.11)
2005	0.12 (0.31)	0.10 (0.28)
2007	0.11 (0.33)	0.12 (0.25)
2008	0.12 (0.31)	0.11 (0.29)

$m.female_1$ = the adjusted total number of mature females with day-0 by replaced by day-1 females.
$m.female_{12}$ = the adjusted total number of mature females with day-0 replaced by the average number of day-1 and day2 females

Table 4. The spawning biomass related parameters: daily egg production/0.05m^2 (P_0),daily mortality rate (z), survey area (km^2), two daily specific fecundities: (RSF/W), and (SF/W); s. biomass, female spawning biomass, total egg production (TEP) and sea surface temperature for 1986, 1987, 1994,2005 and 2007-2009

Calendar year	Season	Region	[1]P_0/0.05m^2 (cv)	Z (CV)	[2]RSF/W based on S_1	[3]RSF/W based on S_{12}	[3]FS/W based on S_{12}	[4]Area (km^2)	[5]S. biomass (cv)	S. biomass females (cv)	S. biomass females (Sum of R1andR2) (cv)	Total egg production (TEP)	Mean temperature (°C) for positive eggs	Mean temperature (°C) from Calvet
1986(Aug)	1986	[6]S	1.48(1)	1.59(0.5)	38.31	43.96	72.84	6478	4362 (1.00)	2632 (1)		9587.44		
		N	0.32(0.25)		8.9	13.34	23.89	5333	2558 (0.33)	1429 (0.28)		1706.56		
		whole	0.95(0.84)		23.61	29.89	49.97	11811	7767 (0.87)	4491 (0.86)	4061 (0.66)	11220.45	18.7	18.5
1987(July)	1987	1	1.11(0.51)	0.66(0.4)	38.79	37.86	57.05	22259	13050 (0.58)	8661 (0.56)		24707.49		
		2	0					15443	0	0		0		
		whole	0.66(0.51)		38.79	37.86	57.05	37702	13143 (0.58)	8723 (0.56)	8661 (0.56)	25637.36	18.9	18.1
1994	1993	1	0.42(0.21)	0.12(0.91)	11.57	11.42	21.27	174880	128664 (0.30)	69065 (0.30)		73449.6		
		2	0(0)	-				205295	0	0		0		
		whole	0.193(0.21)		11.57	11.42	21.27	380175	128531 (0.31)	68994 (0.30)	69065 (0.30)	73373.775	14.3	14.7
2004	2003	1	3.92(0.23)	0.25(0.04)	27.03	26.2	42.37	68204	204118 (0.27)	126209 (0.26)		267359.68		
		2	0.16(0.43)		-	-	-	252416	30833 (0.45)	19065 (0.44)		40386.56		
		whole	0.96(0.24)		27.03	26.2	42.37	320620	234958 (0.28)	145297 (0.27)	145274 (0.23)	307795.2	13.4	13.7
2005	2004	1	8.14(0.4)	0.58(0.2)	31.49	25.6	46.52	46203	293863 (0.45)	161685 (0.42)		376092.42		
		2	0.53(0.69)		3.76	3.2	7.37	207417	686168 (0.86)	298258 (0.89)		109931.01		
		whole	1.92(0.42)		15.67	12.89	27.11	253620	755657 (0.52)	359209 (0.50)	459943 (0.60)	486950.4	14.21	14.1
2007	2006	1	1.32(0.2)	0.13(0.36)	12.06	13.37	27.54	142403	281128 (0.42)	136485 (0.36)		187971.96		
		2	0.56(0.46)		24.48	23.41	38.94	213756	102998 (0.67)	61919 (0.62)		119703.36		
		whole	0.86(0.26)		15.68	16.17	31.52	356159	380601 (0.39)	195279 (0.36)	198404 (0.31)	306296.74	13.7	13.6
2008	2007	1	1.45(0.18)	0.13(0.29)	57.4	53.89	68.54	53514	29798 (0.20)	22642 (0.19)		77595.3		
		2	0.202(0.32)		13.84	12.6	22.57	244435	78359 (0.45)	43753 (0.42)		49375.87		
		whole	0.43(0.21)		21.82	20.31	32.2	297949	126148 (0.40)	79576 (0.35)	66395 (0.28)	128118.07	13.1	13.1
2009	2008	1	1.76(0.22)	0.25(0.19)	19.50	20.37	36.12	74966	129520 (0.31)	73048 (0.29)		131940.16		
		2	0.15(0.27)		14.25	16.26	22.97	199929	36884 (0.38)	26114 (0.38)		29989.35		
		whole	0.59(0.22)		17.01	17.53	29.11	274895	185084 (0.28)	111444 (0.27)	99162 (0.24)	162188.05	13.6	13.5

1: P_0 for the whole is the weighted average with area as the weight.

2. The estimates of adult parameters for the whole area were unstratified and RSF/W was based on original S_1 data of day-1 spawning females. For 2004, 27.03 was based on sex ratio= 0.618 while past biomass used RSF/W of 21.86 based on sex ratio = 0.5.(Lo et al. 2008)

3. The estimates of adult parameters for the whole area were unstratified. Batch fecundity was estimated with error term. For 1987 and 1994, estimates were based on S_1 using data of day-1 spawning females. For 2004, all trawls were in region 1 and value was applied to region 2,

4. Region 1, since 1997, is the area where the eggs/min from CUFES ≥1 and prior to 1997, is the area where the eggs/0.05m^2 >0 from CalVET tows

5: For the spawning biomasses, the estimates for the whole area uses unstratified adult parameters

6. 1986: Within southern and northern area, the survey area was stratified as region1 (eggs/0.05m2>0 with embedded zeros) and region 2 (zero catch)

Table 5 Time series of total egg production (TEP) for years when not all estimates of adult parameter were available for 1988,1996-2003 and 2006.

Calendar year	Season	P_0/0.05m2	CV(P_0)	Z(CV)	Area(km2)	Total egg production (TEP)	Mean temperature for positive eggs(^oC)	Mean temperature from Calvet (^oC)
1988	1987	0.240	0.36	0.390 (0.25)	71,940	17,266	14.81	13.8
1996	1995	0.415	0.42	0.105 (4.15)	235,960	97,923	14.50	15.0
1997	1996	2.770	0.21	0.350 (0.14)	174,096	482,246	13.70	13.9
1998	1997	1.280	0.34	0.255 (0.37)	288,311	369,038	14.38	14.6
1999	1998	1.092	0.35	0.100 (0.60)	304,191	332,177	12.50	12.6
2000	1999	4.235	0.40	0.420 (0.73)	295,759	1,252,539	14.10	14.4
2001	2000	2.890	0.39	0.370 (0.21)	321,386	928,806	13.30	13.2
2002	2001	0.728	0.17	0.400 (0.15)	325,082	236,660	13.60	13.6
2003	2002	1.520	0.18	0.480 (0.08)	365,906	556,177	13.70	13.8
2006	2005	1.936	0.256	0.310 (0.25)	336,774	651,994	14.95	14.5

P_0 is the weighted average from P_0 in region 1 and region 2 (See Table 4)

TEP= P_0 * area

No adult samples were taken in 1996. For 1988, 1997-2003, fecundity-fish weight equation was not available for each year .

In 1997, 2001, and 2002, few opportunistic trawl samples were taken

For 2006, TEP was used because trawl samples and egg samples were not synchronized during the survey. Thus adult data collected in 1997, 2004, 2005, and 2007 were used to compute spawn fraction in the original analysis.

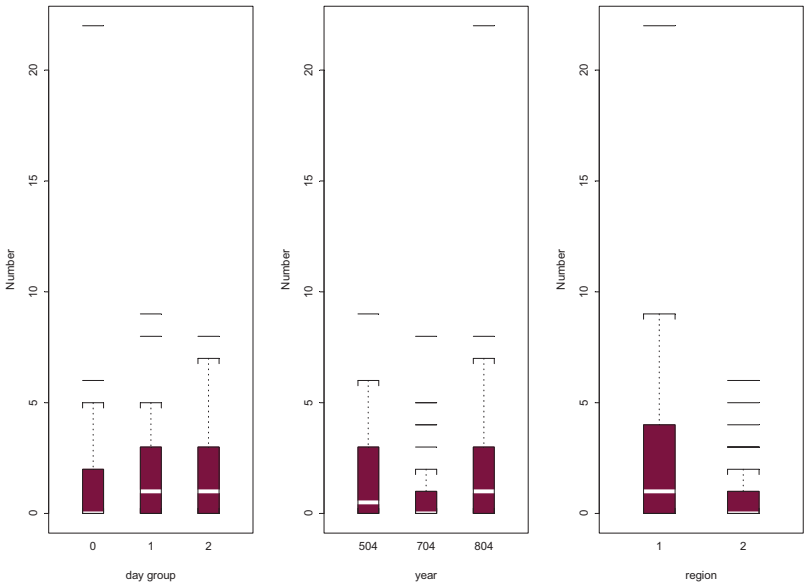


Figure 1. Box plot for the number of mature female fish of day-0,day-1 and day-2 by day group, year, and region.

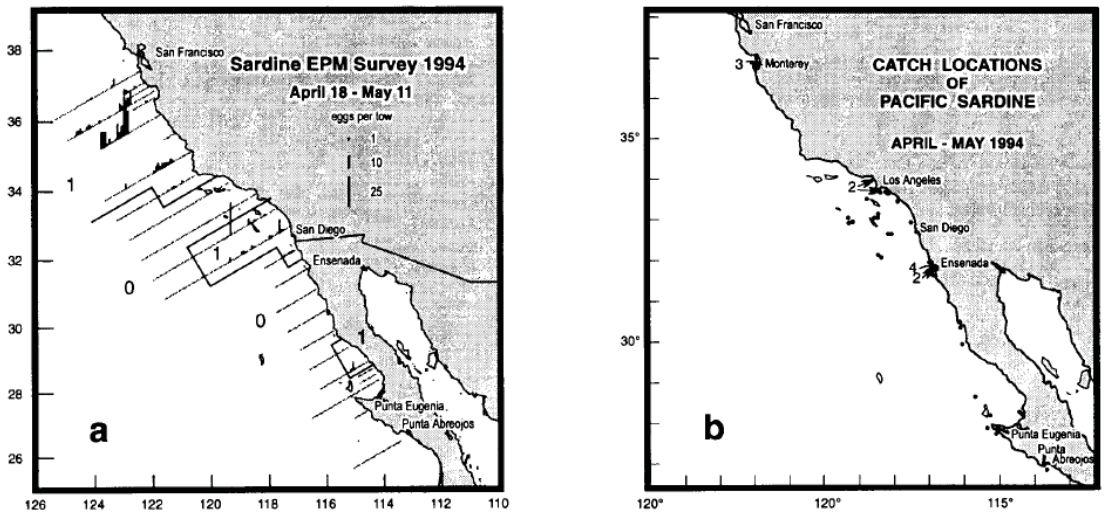


Figure 2 Area sampled during April-May 1994 daily egg production survey for Pacific sarine. Calvet stations and egg catches (left graph) and locations for adult samples (right graph) (Lo et al. 1996)

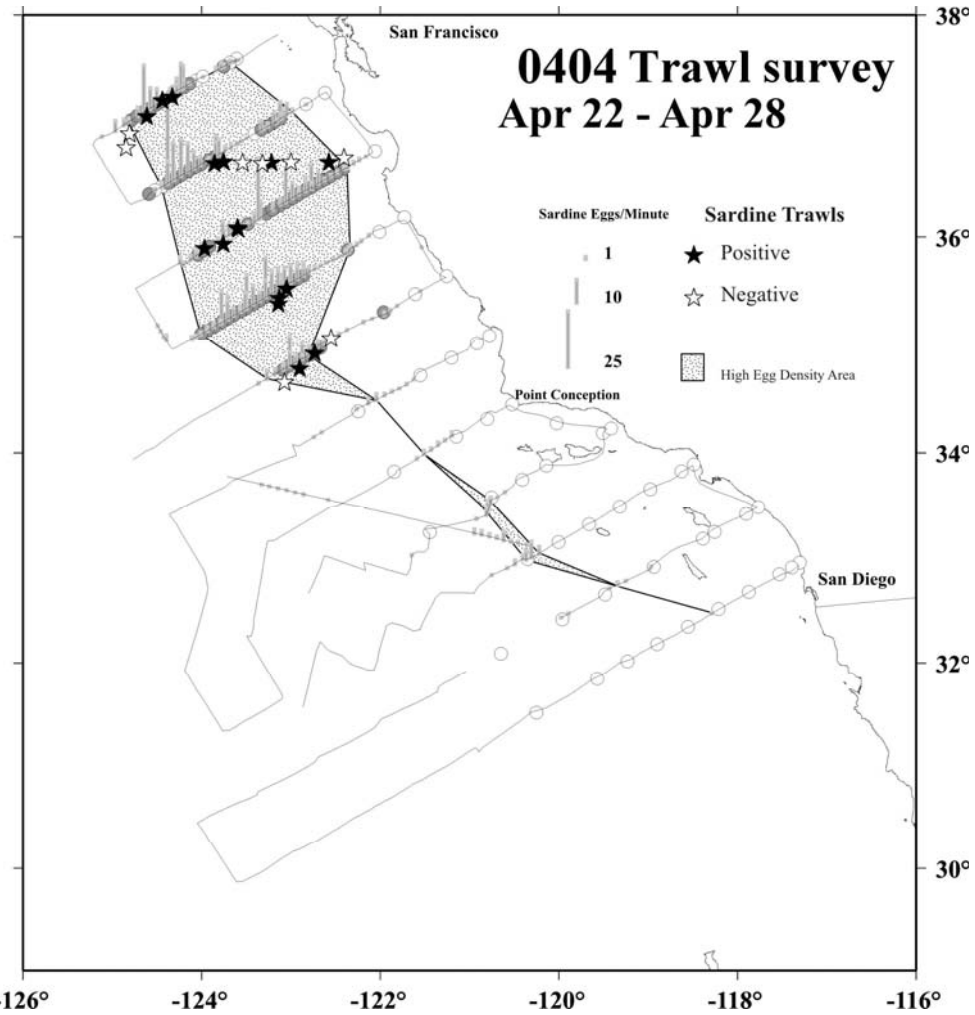


Figure 3: April 2004 trawl start locations. Solid stars are trawls that contained at least one sardine. Background is CUFES track lines and sardine egg abundance, pairovet tows (circles: solid are positive for sardine eggs; open are negative). The high egg density area is Region 1.

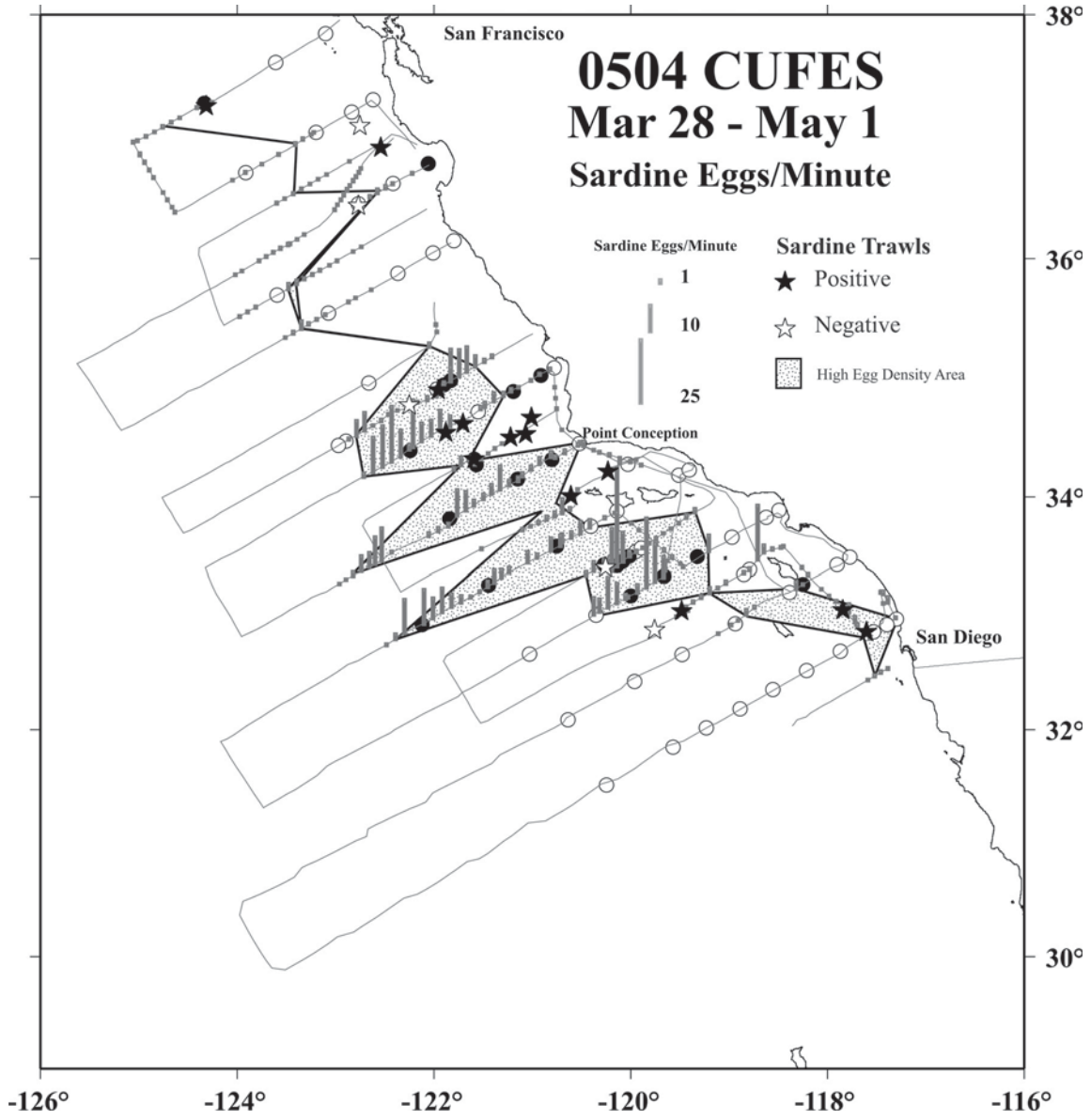


Figure 4. March-April 2005 trawl start locations. Solid stars are trawls that contained at least one sardine. Background is CUFES track lines and sardine egg abundance, pairovet tows (circles: solid are positive for sardine eggs; open are negative). The high egg density area is Region 1.

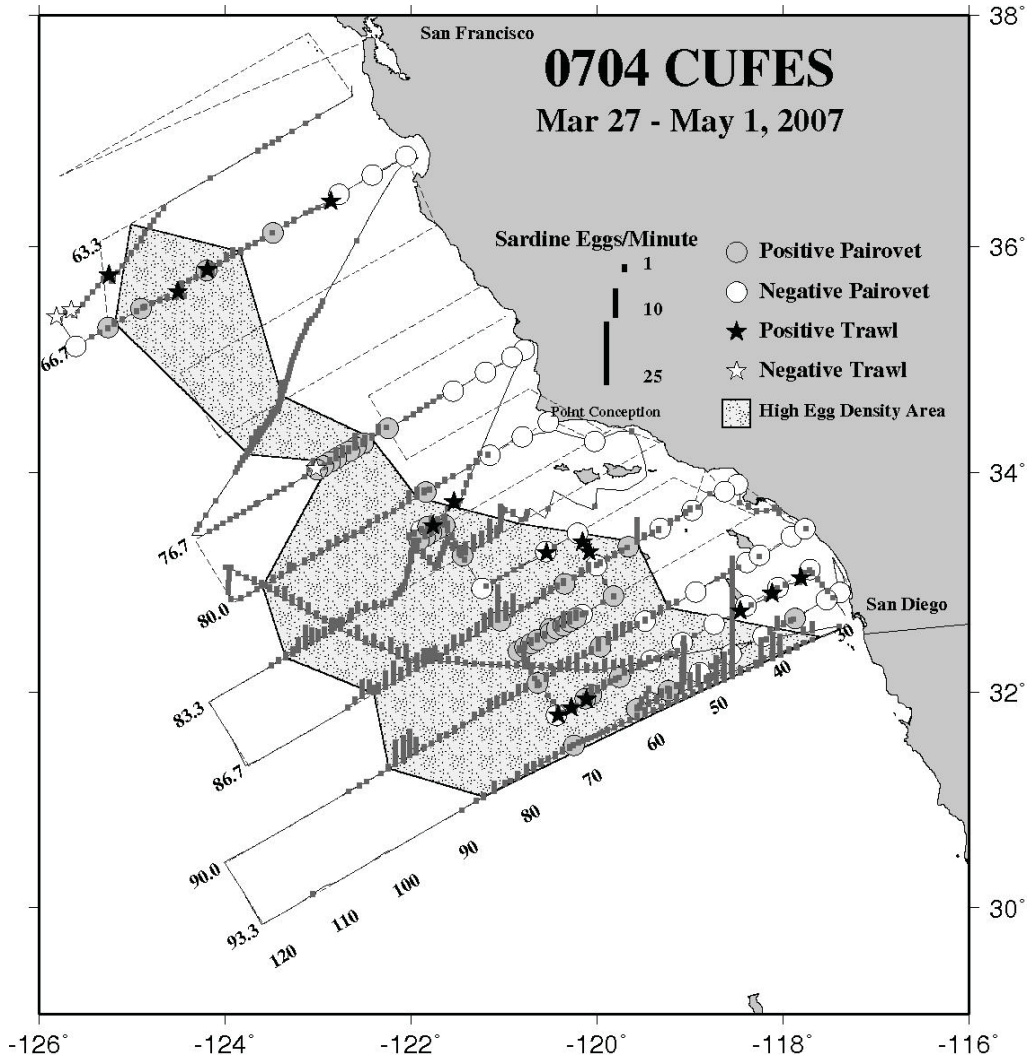


Figure 5. March-April 2007 trawl start locations. Solid stars are trawls that contained at least one sardine. Background is CUFES track lines and sardine egg abundance, pairovet tows (circles: solid are positive for sardine eggs; open are negative). The high egg density area is Region 1.

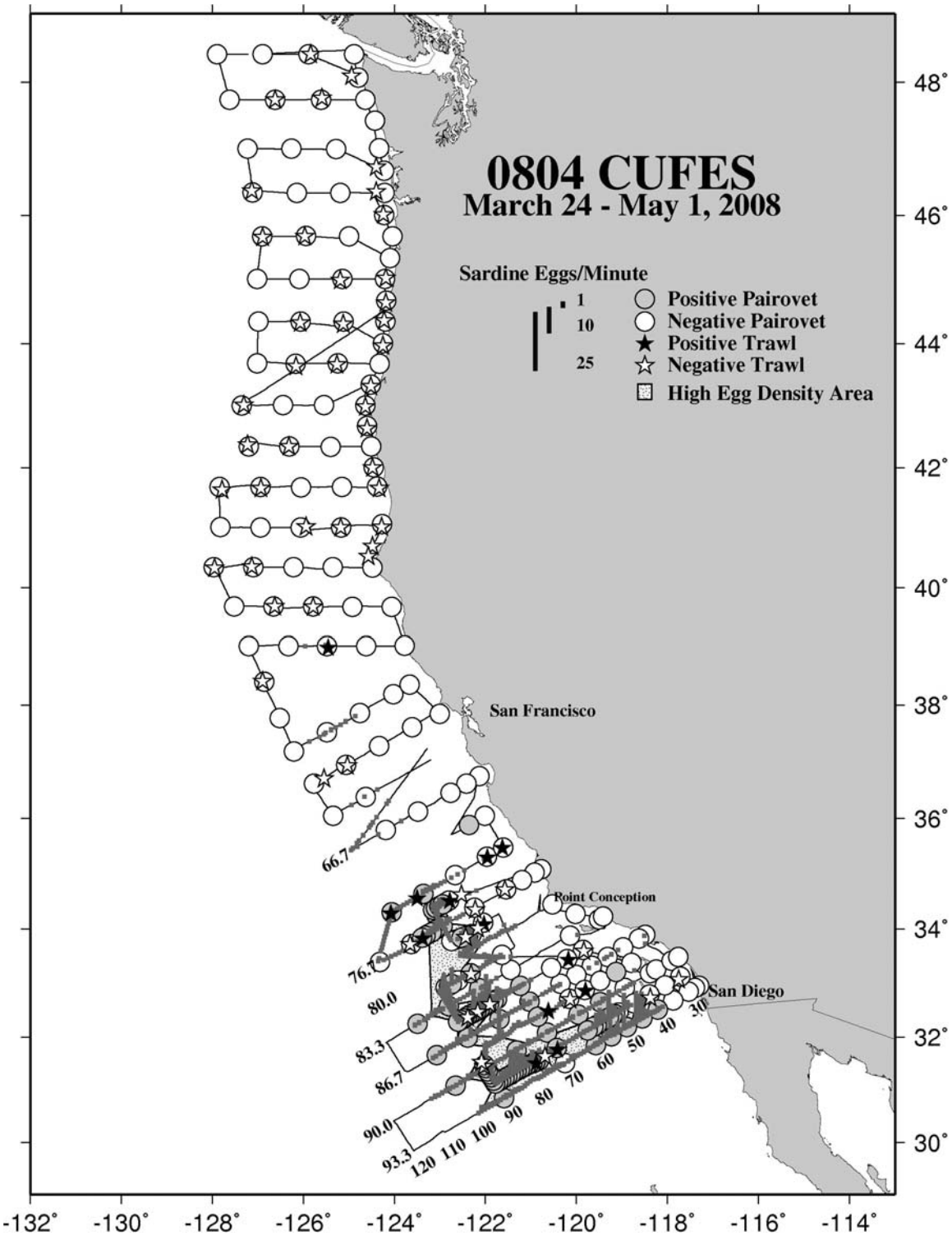


Figure 6. Location of sardine eggs collected from CalVET, a.k.a. Pairovet; (solid circle is a positive catch and open circle is zero catch) and from CUFES (stick denotes positive collection), and trawl locations (solid star is catch with sardine adults and open star is catch without sardines) during the 2008 survey. Region 1 is high density area. Dates of cruises refer to the first and last tow.

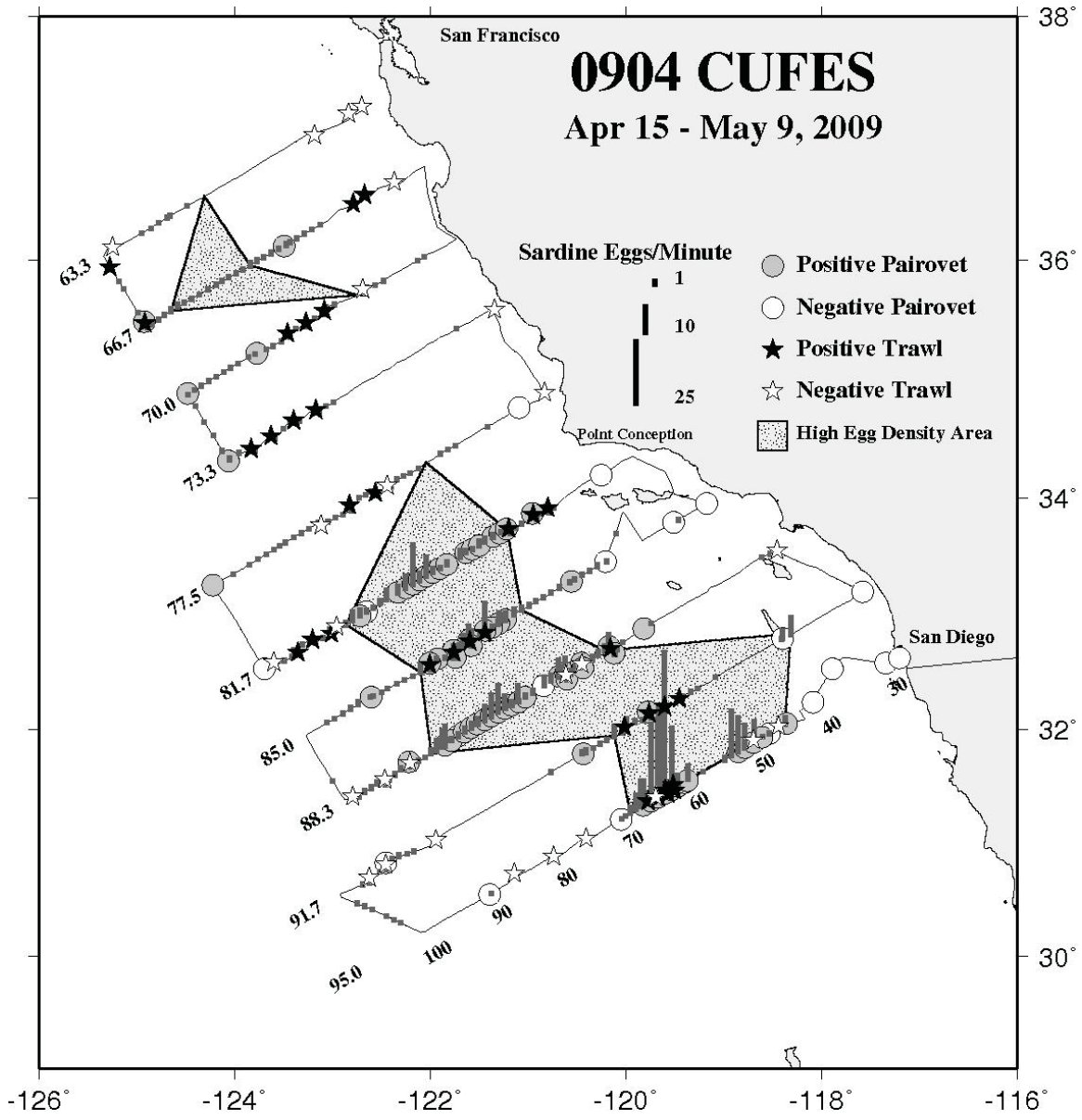


Figure 7. April-May 2009 trawl start locations. Solid stars are trawls that contained at least one sardine. Background is CUFES track lines and sardine egg abundance, pairovet tows (circles: solid are positive for sardine eggs; open are negative). The high egg density area is Region 1.

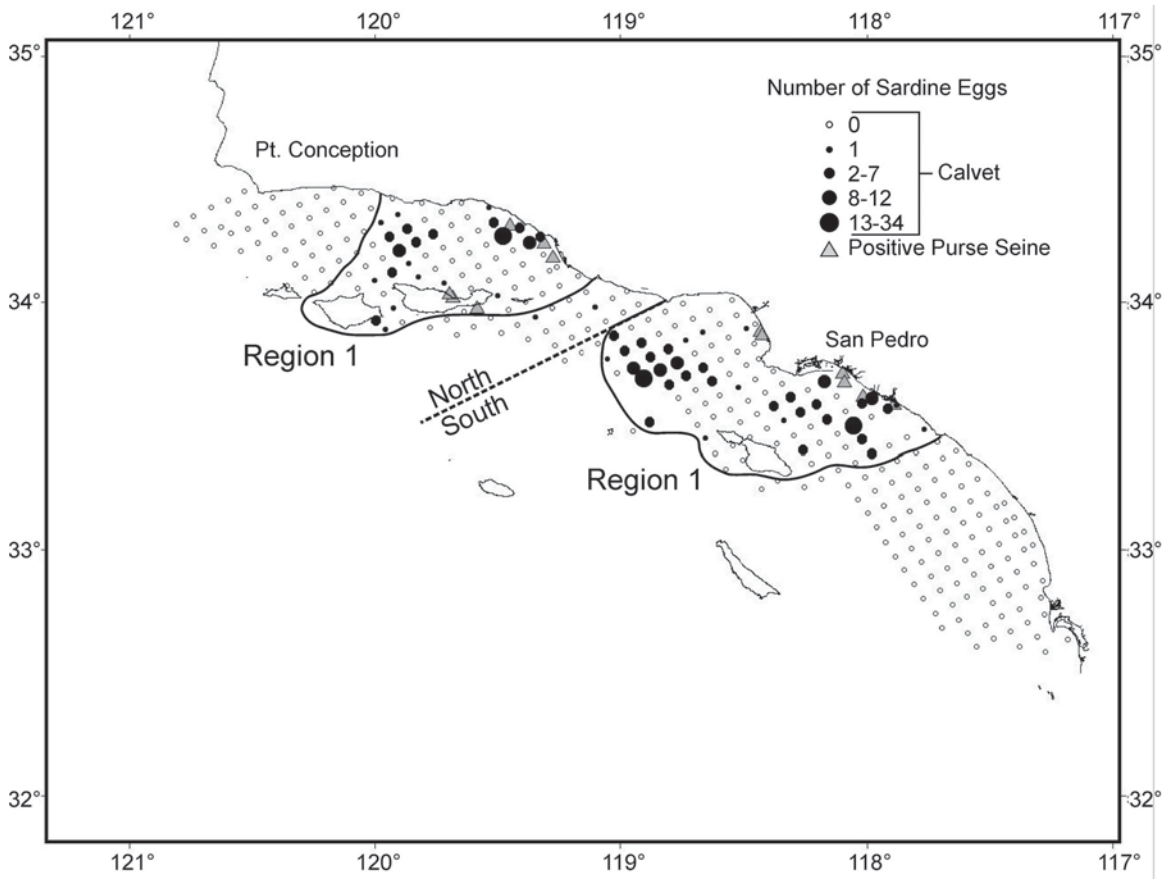


Figure 8. California Department of Fish and Game Pacific sardine ichthyoplankton-purse-seine surveys in August, 1986. Area in side the contours is region 1.Adult collections were purse seine sets (only 1 trawl)

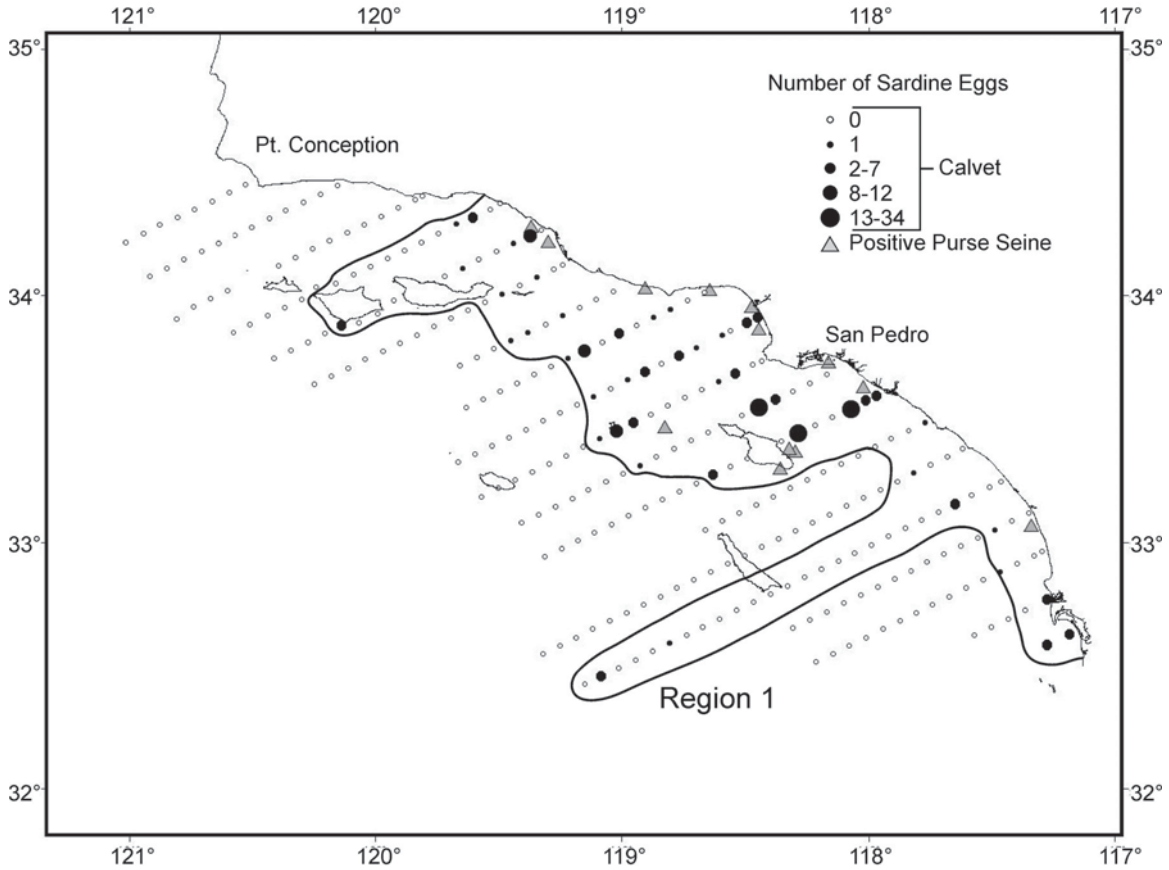


Figure 9. California Department of Fish and Game Pacific sardine ichthyoplankton-purse-seine surveys in July, 1987. Area inside the contour is region 1.

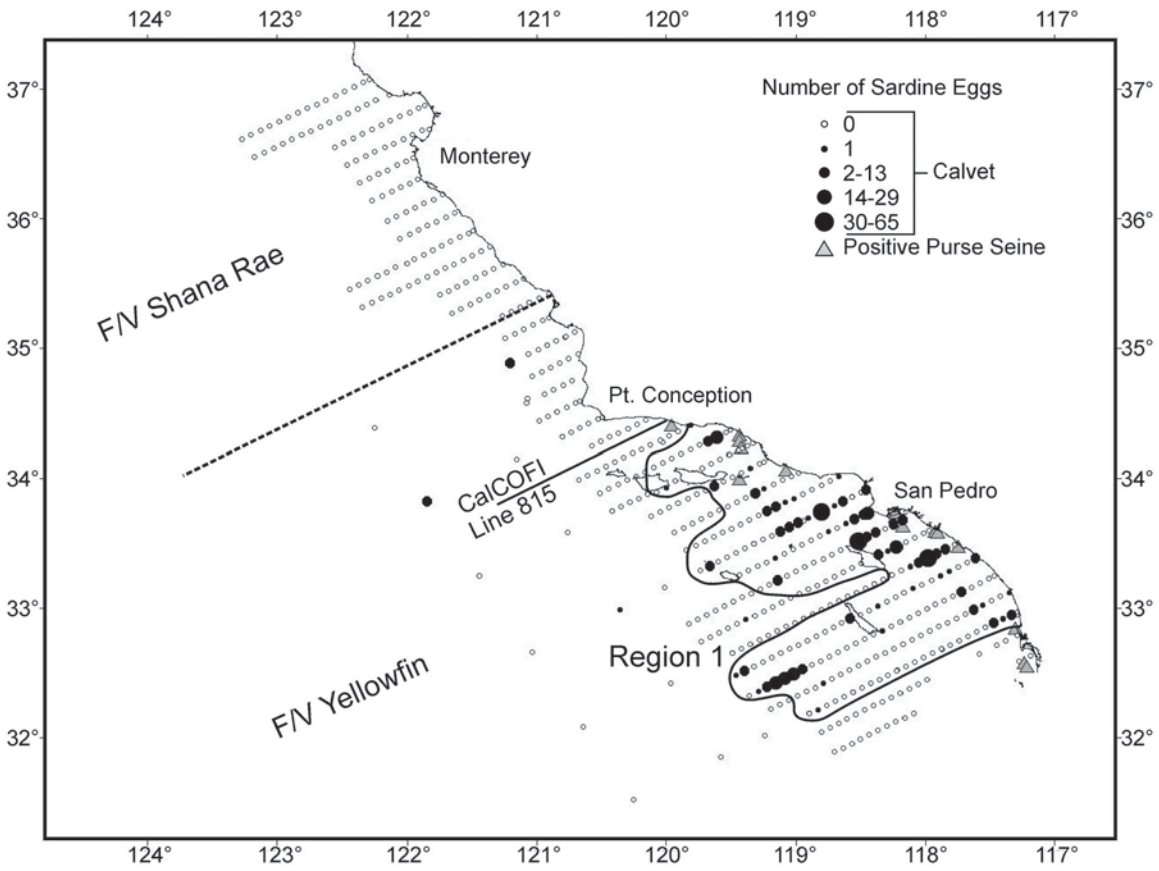


Figure 10. California Department of Fish and Game Pacific sardine ichthyoplankton-purse-seine surveys in May, 1988. Area inside the contour is region 1.Adult collections were purse seine and hook-n-line. Offshore stations south of Point Conception were occupied by CalCOFI survey.

Adjunct 1

Estimates of variance of each adult parameter and the covariance of any two adult parameters where each adult parameter was weighted by s. biomass in each area

1. Estimate of variance of estimate of the ith adult parameter weighted by relative s. biomass:

$\bar{x}_{iw} = \bar{x}_{i1} a_1 + \bar{x}_{i2} a_2$ i=1,…4 $a_1+a_2=1$

$$\mathrm{var}(\bar{x}_{iw}) = \mathrm{var}(\bar{x}_{i1} a_1 + \bar{x}_{i2} a_2) = \mathrm{var}(\bar{x}_{i1} a_1) + \mathrm{var}(\bar{x}_{i2} a_2) + 2\,\mathrm{cov}(\bar{x}_{i1} a_1 \bar{x}_{i2}(1-a_1))$$

$$= \mathrm{var}(\bar{x}_{i1} a_1) + \mathrm{var}(\bar{x}_{i2} a_2) - 2\,\bar{x}_{i1}\,\bar{x}_{i2}\,\mathrm{var}(a_1)$$

assuming the covariance of the ith adult parameter in each region is zero.

$$\mathrm{var}(\bar{x}_{ij}\, a_j) = \bar{x}_{ij}^{\,2}\,\mathrm{var}(a_j) + a_j^{\,2}\,\mathrm{var}(\bar{x}_{ij}) - \mathrm{var}(\bar{x}_{ij})\,\mathrm{var}(a_j)$$

(Goodman,1960)

where x_{ij} is the ith adult parameter and

a_i=(s.biomass in the jth region)/total s. biomass, i=1,…4 and j=1,2.

2. Estimate of covariance of the two weighted adult parameters estimated by ratio estimates: $\bar{x}_{1w}, \bar{x}_{2w}$:

$$\bar{x}_{1w} = \bar{x}_{11} a_1 + \bar{x}_{12} a_2, \bar{x}_{2w} = \bar{x}_{21} a_1 + \bar{x}_{22} a_2$$

$$\mathrm{cov}(\bar{x}_{1w}\,\bar{x}_{2w}) = E(\bar{x}_{1w}\,\bar{x}_{2w}) - E\,\bar{x}_{1w}\,E\bar{x}_{2w}$$

$$E(\bar{x}_{1w}\,\bar{x}_{2w}) = E(\bar{x}_{11} a_1 + \bar{x}_{12} a_2)(\bar{x}_{21} a_1 + \bar{x}_{22} a_2)$$

$$= [\mathrm{cov}(\bar{x}_{11}\,\bar{x}_{21}) + E\,\bar{x}_{11}\,E\,\bar{x}_{21}][\mathrm{var}(a_1) + (Ea_1)^2] +$$

$$(E\,\bar{x}_{11}\,E\,\bar{x}_{22} + E\,\bar{x}_{12}\,E\,\bar{x}_{21})[Ea_1 - (Ea_1)^2(1 + cv(a_1)^2)$$

$$+ [\mathrm{cov}(\bar{x}_{12}\,\bar{x}_{22}) + E\,\bar{x}_{12}\,E\,\bar{x}_{22}][\mathrm{var}(a_2) + (Ea_2)^2]$$

$$Note: \mathrm{cov}(x, y) = E(xy) - ExEy$$

$$and\ \mathrm{var}(x) = Ex^2 - (Ex)^2$$

where

x_{11} and x_{21} are estimates of any two adult parameters, say, sex ratio and batch fecundity in region 1 and x_{12} and x_{22} are sex ratio and batch fecundity estimates in region 2. a_j is the weighting factor for region j and is the s. biomass estimate in each region.

Adjunct 2

Variance and covariance of the adult parameter estimates based on method 1 estimate of each adult parameter as the weighted mean for 2007 data.

Weighted mean:

	Estimate	variance	CV
Sex ratio (R)	0.51	6.780021e-002	0.098
Fish weight (W)	81.72	1.748073e+003	0.082
Fecundity (F)	21764.96	1.237309e+008	0.081
Spawning fraction (S)	0.11	5.068447e-003	0.316

Covariance of weighted means

	Fish weight (W)	Fecundity (F)	Spawning fraction (S)
Sex ratio (R)	0.095	24.84	0.098
Fish weight (W)		13440.88	-0.0219
Fecundity (F)			-6.082

APPENDIX II - SS3 INPUT FILES FOR THE BASE MODEL

STARTER.SS

```
#C - Sardine 2009 Model 'FINAL_S2S_CA' (semester seasons, one selectivity per fishery)
S2S_CA_DAT.SS
S2S_CA_CTL.SS
0 # 0=use init values in control file; 1=use ss3.par
1 # run display detail (0,1,2)
1 # detailed age-structured reports in REPORT.SSO (0,1)
0 # write detailed checkup.sso file (0,1)
0 # write parm values to ParmTrace.sso (0=no,1=good,active; 2=good,all; 3=every_iter,all_parms; 4=every,active)
0 # write to cumreport.sso (0=no,1=like&timeseries; 2=add survey fits)
0 # Include prior_like for non-estimated parameters (0,1)
1 # Use Soft Boundaries to aid convergence (0,1) (recommended)
1 # Number of bootstrap datafiles to produce
20 # Turn off estimation for parameters entering after this phase
10 # MCMC burn interval
2 # MCMC thin interval
0.02 # jitter initial parm value by this fraction
-1 # min yr for sdreport outputs (-1 for styr)
-1 # max yr for sdreport outputs (-1 for endyr; -2 for endyr+Nforecastyrs
0 # N individual STD years
#vector of year values

0.0001 # final convergence criteria (e.g. 1.0e-04)
0 # retrospective year relative to end year (e.g. -4)
1 # min age for calc of summary biomass
1 # Depletion basis:  denom is: 0=skip; 1=rel X*B0; 2=rel X*Bmsy; 3=rel X*B_styr
0.4 # Fraction (X) for Depletion denominator (e.g. 0.4)
1 # SPR_report_basis:  0=skip; 1=(1-SPR)/(1-SPR_tgt); 2=(1-SPR)/(1-SPR_MSY); 3=(1-SPR)/(1-SPR_Btarget); 4=rawSPR
1 # F_report_units: 0=skip; 1=exploitation(Bio); 2=exploitation(Num); 3=sum(Frates)
1 # F_report_basis: 0=raw; 1=F/Fspr; 2=F/Fmsy ; 3=F/Fbtgt
999 # check value for end of file
```

S1S_CTL.SS:

```
#C - Sardine 2009 Model 'S1S'
#_data_and_control_files: S2S_CA_DAT.SS // S2S_CA_CTL.SS
#_SS-V3.03a-safe;_05/11/09;_Stock_Synthesis_by_Richard_Methot_(NOAA);_using_ADMB_7.0.1
1  #_N_Growth_Patterns
1 #_N_Morphs_Within_GrowthPattern
#_Cond 1 #_Morph_between/within_stdev_ratio (no read if N_morphs=1)
#_Cond  1 #vector_Morphdist_(-1_in_first_val_gives_normal_approx)
#
1 #  number of recruitment assignments (overrides GP*area*seas parameter values)
0 # recruitment interaction requested
#GP seas area for each recruitment assignment
 1 1 1
#
#_Cond 0 # N_movement_definitions goes here if N_areas > 1
#_Cond 1.0 # first age that moves (real age at begin of season, not integer) also cond on do_migration>0
#_Cond 1 1 1 2 4 10 # example move definition for seas=1, morph=1, source=1 dest=2, age1=4, age2=10
#
4 #_Nblock_Patterns
 3 2 2 3 #_blocks_per_pattern
# begin and end years of blocks
 1981 1991 1992 1998 1999 2009
 1981 2003 2004 2009
 1981 1990 1991 2009
 1981 1992 1993 1998 1999 2009
#
0.5 #_fracfemale
0 #_natM_type:_0=1Parm; 1=N_breakpoints;_2=Lorenzen;_3=agespecific;_4=agespec_withseasinterpolate
  #_no additional input for selected M option; read 1P per morph
1 # GrowthModel: 1=vonBert with L1&L2; 2=Richards with L1&L2; 3=not implemented; 4=not implemented
0.5 #_Growth_Age_for_L1
15 #_Growth_Age_for_L2 (999 to use as Linf)
0.1 #_SD_add_to_LAA (set to 0.1 for SS2 V1.x compatibility)
0 #_CV_Growth_Pattern:  0 CV=f(LAA); 1 CV=F(A); 2 SD=F(LAA); 3 SD=F(A)
1 #_maturity_option:  1=length logistic; 2=age logistic; 3=read age-maturity matrix by growth_pattern; 4=read
age-fecundity
#_placeholder for empirical age-maturity by growth pattern
0 #_First_Mature_Age
1 #_fecundity option:(1)eggs=Wt*(a+b*Wt);(2)eggs=a*L^b;(3)eggs=a*Wt^b
0 #_hermaphroditism option:  0=none; 1=age-specific fxn
```

```
1 #_parameter_offset_approach (1=none, 2= M, G, CV_G as offset from female-GP1, 3=like SS2 V1.x)
1 #_env/block/dev_adjust_method (1=standard; 2=logistic transform keeps in base parm bounds; 3=standard w/ no
bound check)
#
#_growth_parms
#_LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn
 0.3 0.7 0.4 0 -1 99 -3 0 0 0 0 0 0 0 # NatM_p_1_Fem_GP_1
 3 15 9.8 0 -1 99 -3 0 0 0 0 0 3 0 # L_at_Amin_Fem_GP_1
 20 30 24 0 -1 99 -3 0 0 0 0 0 3 0 # L_at_Amax_Fem_GP_1
 0.05 0.99 0.5 0 -1 99 -3 0 0 0 0 0 3 0 # VonBert_K_Fem_GP_1
 0.05 0.3 0.171502 0 -1 99 3 0 0 0 0 0 0 0 # CV_young_Fem_GP_1
 0.01 0.1 0.032336 0 -1 99 3 0 0 0 0 0 0 0 # CV_old_Fem_GP_1
 -3 3 9.47212e-006 0 -1 99 -3 0 0 0 0 0 0 0 # Wtlen_1_Fem
 -3 5 3.14752 0 -1 99 -3 0 0 0 0 0 0 0 # Wtlen_2_Fem
 9 19 16 0 -1 99 -3 0 0 0 0 0 0 0 # Mat50%_Fem
 -20 3 -0.7571 0 -1 99 -3 0 0 0 0 0 0 0 # Mat_slope_Fem
 0 10 1 0 -1 99 -3 0 0 0 0 0 0 0 # Eg/gm_inter_Fem
 -1 5 0 0 -1 99 -3 0 0 0 0 0 0 0 # Eg/gm_slope_wt_Fem
 -4 4 0 0 -1 99 -3 0 0 0 0 0 0 0 # RecrDist_GP_1
 -4 4 1 0 -1 99 -3 0 0 0 0 0 0 0 # RecrDist_Area_1
 -4 4 1 0 -1 99 -3 0 0 0 0 0 0 0 # RecrDist_Seas_1
 -4 4 0 0 -1 99 -3 0 0 0 0 0 0 0 # RecrDist_Seas_2
 1 1 1 0 -1 99 -3 0 0 0 0 0 0 0 # CohortGrowDev
#
#_Cond 0  #custom_MG-env_setup (0/1)
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no MG-environ parameters
#
1 #_custom_MG-block_setup (0/1)
 -2 2 0.00215292 0 -1 99 3 # L_at_Amin_Fem_GP_1_BLK_mult1981
 -2 2 -0.00305681 0 -1 99 3 # L_at_Amin_Fem_GP_1_BLK_mult1991
 -2 2 -0.0463661 0 -1 99 3 # L_at_Amax_Fem_GP_1_BLK_mult1981
 -2 2 0.0201076 0 -1 99 3 # L_at_Amax_Fem_GP_1_BLK_mult1991
 -2 2 0.572263 0 -1 99 3 # VonBert_K_Fem_GP_1_BLK_mult1981
 -2 2 -0.106793 0 -1 99 3 # VonBert_K_Fem_GP_1_BLK_mult1991
#_Cond No MG parm trends
#
#_seasonal_effects_on_biology_parms
 0 0 0 0 0 0 0 0 0 0 #_femwtlen1,femwtlen2,mat1,mat2,fec1,fec2,Malewtlen1,malewtlen2,L1,K
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no seasonal MG parameters
#
#_Cond -4 #_MGparm_Dev_Phase
#
#_Spawner-Recruitment
2 #_SR_function
#_LO HI INIT PRIOR PR_type SD PHASE
 3 25 16 0 -1 99 1 # SR_R0
 0.2 3 2.36989 0 -1 99 6 # SR_steep
 0 2 0.88789 0 -1 99 -3 # SR_sigmaR
 -5 5 0 0 -1 99 -3 # SR_envlink
 -15 15 -4.15911 0 -1 99 2 # SR_R1_offset
 0 0 0 0 -1 99 -3 # SR_autocorr
0 #_SR_env_link
0 #_SR_env_target_0=none;1=devs;_2=R0;_3=steepness
1 #do_recdev:  0=none; 1=devvector; 2=simple deviations
1975 # first year of main recr_devs; early devs can preceed this era
2007 # last year of main recr_devs; forecast devs start in following year
1 #_recdev phase
1 # (0/1) to read 13 advanced options
 0 #_recdev_early_start (0=none; neg value makes relative to recdev_start)
 -4 #_recdev_early_phase
 0 #_forecast_recruitment phase (incl. late recr) (0 value resets to maxphase+1)
 1 #_lambda for prior_fore_recr occurring before endyr+1
 -1000 #_last_early_yr_nobias_adj_in_MPD
 1975 #_first_yr_fullbias_adj_in_MPD
 2007 #_last_yr_fullbias_adj_in_MPD
 2008 #_first_recent_yr_nobias_adj_in_MPD
 1 #_max_bias_adj_in_MPD (1.0 to mimic pre-2009 models)
 0 #_placeholder
 -5 #min rec_dev
 5 #max rec_dev
 0 #_read_recdevs
#_end of advanced SR options
#
# read specified recr devs
#_Yr Input_value
#
```

```
#Fishing Mortality info
0.1 # F ballpark for tuning early phases
-2006 # F ballpark year (neg value to disable)
3 # F_Method:  1=Pope; 2=instan. F; 3=hybrid (hybrid is recommended)
4 # max F or harvest rate, depends on F_Method
# no additional F input needed for Fmethod 1
# if Fmethod=2; read overall start F value; overall phase; N detailed inputs to read
# if Fmethod=3; read N iterations for tuning for Fmethod 3
10  # N iterations for tuning F in hybrid method (recommend 3 to 7)
#
#_initial_F_parms
#_LO HI INIT PRIOR PR_type SD PHASE
 0 1 0 0 -1 99 -1 # InitF_1ENS
 0 1 0 0 -1 99 -1 # InitF_2SCA_S1
 0 1 0 0 -1 99 -1 # InitF_3SCA_S2
 0 1 0 0 -1 99 -1 # InitF_4CCA_S1
 0 1 0 0 -1 99 -1 # InitF_5CCA_S2
 0 1 0 0 -1 99 -1 # InitF_6PNW
#
#_Q_setup
 # A=do power, B=env-var, C=extra SD, D=devtype(<0=mirror, 0/1=none, 2=cons, 3=rand, 4=randwalk);
E:0=num/1=bio/2=F, F:-1=norm/0=lognorm/>0=T
 #_A  B  C  D  E  F
 0 0 0 0 1 0 # 1 ENS
 0 0 0 0 1 0 # 2 SCA_S1
 0 0 0 0 1 0 # 3 SCA_S2
 0 0 0 0 1 0 # 4 CCA_S1
 0 0 0 0 1 0 # 5 CCA_S2
 0 0 0 0 1 0 # 6 PNW
 0 0 0 2 1 0 # 7 DEPM
 0 0 0 2 1 0 # 8 TEP
 0 0 0 0 0 0 # 9 PFFS
 0 0 0 2 1 0 # 10 WCVI
 0 0 0 2 1 0 # 11 TEP_all
 0 0 0 2 1 0 # 12 Aerial

#_Cond 0 #_If q has random component, then 0=read one parm for each fleet with random q; 1=read a parm for each
year of index
#_Q_parms(if_any)
# LO HI INIT PRIOR PR_type SD PHASE
 -3 3 -1.10601 0 -1 99 5 # Q_base_7_DEPM
 -3 3 -0.374949 0 -1 99 5 # Q_base_8_TEP
 -5 3 -2.00863 0 -1 99 5 # Q_base_10_WCVI
 -3 3 -0.375611 0 -1 99 5 # Q_base_11_TEP_all
 -3 3 0 0 -1 99 -5 # Q_base_12_Aerial
#
#_size_selex_types
#_Pattern Discard Male Special
 24 0 0 0 # 1 ENS
 24 0 0 0 # 2 SCA_S1
 24 0 0 0 # 3 SCA_S2
 24 0 0 0 # 4 CCA_S1
 24 0 0 0 # 5 CCA_S2
 24 0 0 0 # 6 PNW
 30 0 0 0 # 7 DEPM
 30 0 0 0 # 8 TEP
 24 0 0 0 # 9 PFFS
 24 0 0 0 # 10 WCVI
 30 0 0 0 # 11 TEP_all
 24 0 0 0 # 12 Aerial
#
#_age_selex_types
#_Pattern ___ Male Special
 11 0 0 0 # 1 ENS
 11 0 0 0 # 2 SCA_S1
 11 0 0 0 # 3 SCA_S2
 11 0 0 0 # 4 CCA_S1
 11 0 0 0 # 5 CCA_S2
 11 0 0 0 # 6 PNW
 11 0 0 0 # 7 DEPM
 11 0 0 0 # 8 TEP
 11 0 0 0 # 9 PFFS
 11 0 0 0 # 10 WCVI
 11 0 0 0 # 11 TEP_all
 11 0 0 0 # 12 Aerial
```

```
#_LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn
 10 26 16.4 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_1P_1_ENS
 -5 3 -0.5 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_1P_2_ENS
 -1 9 0.85 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_1P_3_ENS
 -1 9 0.65 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_1P_4_ENS
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_1P_5_ENS
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_1P_6_ENS
 10 26 16.8 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_2P_1_SCA_S1
 -5 3 -5 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_2P_2_SCA_S1
 -1 9 1.9 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_2P_3_SCA_S1
 -1 9 2.2 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_2P_4_SCA_S1
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_2P_5_SCA_S1
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_2P_6_SCA_S1
 10 26 16.8 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_3P_1_SCA_S2
 -5 3 -5 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_3P_2_SCA_S2
 -1 9 1.9 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_3P_3_SCA_S2
 -1 9 2.2 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_3P_4_SCA_S2
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_3P_5_SCA_S2
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 1 2 # SizeSel_3P_6_SCA_S2
 10 26 18.6 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_4P_1_CCA_S1
 -5 3 -5 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_4P_2_CCA_S1
 -1 9 2.5 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_4P_3_CCA_S1
 -1 9 2.1 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_4P_4_CCA_S1
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_4P_5_CCA_S1
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_4P_6_CCA_S1
 10 26 18.6 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_5P_1_CCA_S2
 -5 3 -5 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_5P_2_CCA_S2
 -1 9 2.5 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_5P_3_CCA_S2
 -1 9 2.1 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_5P_4_CCA_S2
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_5P_5_CCA_S2
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 4 2 # SizeSel_5P_6_CCA_S2
 10 26 22.1 0 -1 99 -4 0 0 0 0 0 2 2 # SizeSel_6P_1_PNW
 -5 3 1 0 -1 99 -4 0 0 0 0 0 2 2 # SizeSel_6P_2_PNW
 -1 9 2.2 0 -1 99 -4 0 0 0 0 0 2 2 # SizeSel_6P_3_PNW
 -1 9 1.6 0 -1 99 -4 0 0 0 0 0 2 2 # SizeSel_6P_4_PNW
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 2 2 # SizeSel_6P_5_PNW
 -10 10 10 0 -1 99 -4 0 0 0 0 0 2 2 # SizeSel_6P_6_PNW
 10 26 18 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_9P_1_PFFS
 -5 3 -1 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_9P_2_PFFS
 -1 9 4 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_9P_3_PFFS
 -1 9 4.00001 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_9P_4_PFFS
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 0 0 # SizeSel_9P_5_PFFS
 -10 10 -1.18678e-005 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_9P_6_PFFS
 10 26 18 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_10P_1_WCVI
 -5 3 -1 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_10P_2_WCVI
 -1 9 3.99999 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_10P_3_WCVI
 -1 9 4 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_10P_4_WCVI
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 0 0 # SizeSel_10P_5_WCVI
 -10 10 -3.5161e-006 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_10P_6_WCVI
 10 26 18.0002 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_12P_1_Aerial
 -5 3 -0.999933 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_12P_2_Aerial
 -1 9 4.00004 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_12P_3_Aerial
 -1 9 3.99994 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_12P_4_Aerial
 -10 10 -10 0 -1 99 -4 0 0 0 0 0 0 0 # SizeSel_12P_5_Aerial
 -10 10 -0.000129392 0 -1 99 4 0 0 0 0 0 0 0 # SizeSel_12P_6_Aerial
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_1P_1_ENS
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_1P_2_ENS
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_2P_1_SCA_S1
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_2P_2_SCA_S1
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_3P_1_SCA_S2
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_3P_2_SCA_S2
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_4P_1_CCA_S1
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_4P_2_CCA_S1
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_5P_1_CCA_S2
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_5P_2_CCA_S2
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_6P_1_PNW
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_6P_2_PNW
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_7P_1_DEPM
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_7P_2_DEPM
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_8P_1_TEP
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_8P_2_TEP
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_9P_1_PFFS
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_9P_2_PFFS
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_10P_1_WCVI
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_10P_2_WCVI
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_11P_1_TEP_all
```

```
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_11P_2_TEP_all
 0 15 0 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_12P_1_Aerial
 0 15 15 0 -1 99 -4 0 0 0 0 0 0 0 # AgeSel_12P_2_Aerial
#_Cond 0 #_custom_sel-env_setup (0/1)
#_Cond -2 2 0 0 -1 99 -2 #_placeholder when no enviro fxns
1 #_custom_sel-blk_setup (0/1)
 10 26 23.8106 0 -1 99 4 # SizeSel_1P_1_ENS_BLK_repl1981
 10 26 16.5277 0 -1 99 4 # SizeSel_1P_1_ENS_BLK_repl1992
 10 26 16.9992 0 -1 99 4 # SizeSel_1P_1_ENS_BLK_repl1999
 -5 3 -4.9 0 -1 99 -4 # SizeSel_1P_2_ENS_BLK_repl1981
 -5 3 -0.51709 0 -1 99 4 # SizeSel_1P_2_ENS_BLK_repl1992
 -5 3 -1.68387 0 -1 99 4 # SizeSel_1P_2_ENS_BLK_repl1999
 -1 9 3.01542 0 -1 99 4 # SizeSel_1P_3_ENS_BLK_repl1981
 -1 9 0.940063 0 -1 99 4 # SizeSel_1P_3_ENS_BLK_repl1992
 -1 9 1.44534 0 -1 99 4 # SizeSel_1P_3_ENS_BLK_repl1999
 -4 9 -3.99421 0 -1 99 4 # SizeSel_1P_4_ENS_BLK_repl1981
 -1 9 0.145243 0 -1 99 4 # SizeSel_1P_4_ENS_BLK_repl1992
 -1 9 0.928352 0 -1 99 4 # SizeSel_1P_4_ENS_BLK_repl1999
 -10 10 -10 0 -1 99 -4 # SizeSel_1P_5_ENS_BLK_repl1981
 -10 10 -10 0 -1 99 -4 # SizeSel_1P_5_ENS_BLK_repl1992
 -10 10 -10 0 -1 99 -4 # SizeSel_1P_5_ENS_BLK_repl1999
 -10 10 -0.630716 0 -1 99 4 # SizeSel_1P_6_ENS_BLK_repl1981
 -10 10 -3.06322 0 -1 99 4 # SizeSel_1P_6_ENS_BLK_repl1992
 -10 10 -5.80902 0 -1 99 4 # SizeSel_1P_6_ENS_BLK_repl1999
 10 26 21.3865 0 -1 99 4 # SizeSel_2P_1_SCA_S1_BLK_repl1981
 10 26 18.2913 0 -1 99 4 # SizeSel_2P_1_SCA_S1_BLK_repl1992
 10 26 16.269 0 -1 99 4 # SizeSel_2P_1_SCA_S1_BLK_repl1999
 -5 3 0.913317 0 -1 99 4 # SizeSel_2P_2_SCA_S1_BLK_repl1981
 -5 3 -5 0 -1 99 -4 # SizeSel_2P_2_SCA_S1_BLK_repl1992
 -5 3 -5 0 -1 99 -4 # SizeSel_2P_2_SCA_S1_BLK_repl1999
 -1 9 2.55337 0 -1 99 4 # SizeSel_2P_3_SCA_S1_BLK_repl1981
 -1 9 2.20117 0 -1 99 4 # SizeSel_2P_3_SCA_S1_BLK_repl1992
 -1 9 2.09147 0 -1 99 4 # SizeSel_2P_3_SCA_S1_BLK_repl1999
 -1 9 3.99209 0 -1 99 4 # SizeSel_2P_4_SCA_S1_BLK_repl1981
 -1 9 0.812195 0 -1 99 4 # SizeSel_2P_4_SCA_S1_BLK_repl1992
 -1 9 1.02159 0 -1 99 4 # SizeSel_2P_4_SCA_S1_BLK_repl1999
 -10 10 -10 0 -1 99 -4 # SizeSel_2P_5_SCA_S1_BLK_repl1981
 -10 10 -10 0 -1 99 -4 # SizeSel_2P_5_SCA_S1_BLK_repl1992
 -10 10 -10 0 -1 99 -4 # SizeSel_2P_5_SCA_S1_BLK_repl1999
 -10 10 -1.10102 0 -1 99 4 # SizeSel_2P_6_SCA_S1_BLK_repl1981
 -10 10 -2.91214 0 -1 99 4 # SizeSel_2P_6_SCA_S1_BLK_repl1992
 -10 10 -6.07771 0 -1 99 4 # SizeSel_2P_6_SCA_S1_BLK_repl1999
 10 26 25.9884 0 -1 99 4 # SizeSel_3P_1_SCA_S2_BLK_repl1981
 10 26 16.4992 0 -1 99 4 # SizeSel_3P_1_SCA_S2_BLK_repl1992
 10 26 14.5503 0 -1 99 4 # SizeSel_3P_1_SCA_S2_BLK_repl1999
 -5 3 -1.33524 0 -1 99 4 # SizeSel_3P_2_SCA_S2_BLK_repl1981
 -5 3 -5 0 -1 99 -4 # SizeSel_3P_2_SCA_S2_BLK_repl1992
 -5 3 -5 0 -1 99 -4 # SizeSel_3P_2_SCA_S2_BLK_repl1999
 -1 9 3.46286 0 -1 99 4 # SizeSel_3P_3_SCA_S2_BLK_repl1981
 -1 9 1.80316 0 -1 99 4 # SizeSel_3P_3_SCA_S2_BLK_repl1992
 -1 9 1.38232 0 -1 99 4 # SizeSel_3P_3_SCA_S2_BLK_repl1999
 -1 9 3.98324 0 -1 99 4 # SizeSel_3P_4_SCA_S2_BLK_repl1981
 -1 9 1.55826 0 -1 99 4 # SizeSel_3P_4_SCA_S2_BLK_repl1992
 -1 9 1.77072 0 -1 99 4 # SizeSel_3P_4_SCA_S2_BLK_repl1999
 -10 10 -10 0 -1 99 -4 # SizeSel_3P_5_SCA_S2_BLK_repl1981
 -10 10 -10 0 -1 99 -4 # SizeSel_3P_5_SCA_S2_BLK_repl1992
 -10 10 -10 0 -1 99 -4 # SizeSel_3P_5_SCA_S2_BLK_repl1999
 -10 10 -1.32541 0 -1 99 4 # SizeSel_3P_6_SCA_S2_BLK_repl1981
 -10 10 -2.29699 0 -1 99 4 # SizeSel_3P_6_SCA_S2_BLK_repl1992
 -10 10 -5.58708 0 -1 99 4 # SizeSel_3P_6_SCA_S2_BLK_repl1999
 10 26 20.5704 0 -1 99 4 # SizeSel_4P_1_CCA_S1_BLK_repl1981
 10 26 18.7071 0 -1 99 4 # SizeSel_4P_1_CCA_S1_BLK_repl1993
 10 26 16.7855 0 -1 99 4 # SizeSel_4P_1_CCA_S1_BLK_repl1999
 -5 3 -5 0 -1 99 -4 # SizeSel_4P_2_CCA_S1_BLK_repl1981
 -5 3 -5 0 -1 99 -4 # SizeSel_4P_2_CCA_S1_BLK_repl1993
 -5 3 -5 0 -1 99 -4 # SizeSel_4P_2_CCA_S1_BLK_repl1999
 -1 9 1.00548 0 -1 99 4 # SizeSel_4P_3_CCA_S1_BLK_repl1981
 -1 9 2.3574 0 -1 99 4 # SizeSel_4P_3_CCA_S1_BLK_repl1993
 -1 9 1.39614 0 -1 99 4 # SizeSel_4P_3_CCA_S1_BLK_repl1999
 -4 9 -3.98895 0 -1 99 4 # SizeSel_4P_4_CCA_S1_BLK_repl1981
 -1 9 0.256433 0 -1 99 4 # SizeSel_4P_4_CCA_S1_BLK_repl1993
 -1 9 0.160941 0 -1 99 4 # SizeSel_4P_4_CCA_S1_BLK_repl1999
 -10 10 -10 0 -1 99 -4 # SizeSel_4P_5_CCA_S1_BLK_repl1981
 -10 10 -10 0 -1 99 -4 # SizeSel_4P_5_CCA_S1_BLK_repl1993
 -10 10 -10 0 -1 99 -4 # SizeSel_4P_5_CCA_S1_BLK_repl1999
 -10 10 -0.965405 0 -1 99 4 # SizeSel_4P_6_CCA_S1_BLK_repl1981
```

```
 -10 10 -3.52512 0 -1 99 4 # SizeSel_4P_6_CCA_S1_BLK_repl1993
 -10 10 -3.01732 0 -1 99 4 # SizeSel_4P_6_CCA_S1_BLK_repl1999
 10 26 17.0497 0 -1 99 4 # SizeSel_5P_1_CCA_S2_BLK_repl1981
 10 26 17.7861 0 -1 99 4 # SizeSel_5P_1_CCA_S2_BLK_repl1993
 10 26 17.7112 0 -1 99 4 # SizeSel_5P_1_CCA_S2_BLK_repl1999
 -5 3 -5 0 -1 99 -4 # SizeSel_5P_2_CCA_S2_BLK_repl1981
 -5 3 -5 0 -1 99 -4 # SizeSel_5P_2_CCA_S2_BLK_repl1993
 -5 3 -5 0 -1 99 -4 # SizeSel_5P_2_CCA_S2_BLK_repl1999
 -1 9 0.0205592 0 -1 99 4 # SizeSel_5P_3_CCA_S2_BLK_repl1981
 -1 9 2.41869 0 -1 99 4 # SizeSel_5P_3_CCA_S2_BLK_repl1993
 -1 9 3.94488 0 -1 99 4 # SizeSel_5P_3_CCA_S2_BLK_repl1999
 -4 9 6.24069 0 -1 99 4 # SizeSel_5P_4_CCA_S2_BLK_repl1981
 -1 9 2.93323 0 -1 99 4 # SizeSel_5P_4_CCA_S2_BLK_repl1993
 -1 9 1.3935 0 -1 99 4 # SizeSel_5P_4_CCA_S2_BLK_repl1999
 -10 10 -10 0 -1 99 -4 # SizeSel_5P_5_CCA_S2_BLK_repl1981
 -10 10 -10 0 -1 99 -4 # SizeSel_5P_5_CCA_S2_BLK_repl1993
 -10 10 -10 0 -1 99 -4 # SizeSel_5P_5_CCA_S2_BLK_repl1999
 -10 10 0.814964 0 -1 99 4 # SizeSel_5P_6_CCA_S2_BLK_repl1981
 -10 10 -2.98473 0 -1 99 4 # SizeSel_5P_6_CCA_S2_BLK_repl1993
 -10 10 -2.73732 0 -1 99 4 # SizeSel_5P_6_CCA_S2_BLK_repl1999
 10 26 22.2464 0 -1 99 4 # SizeSel_6P_1_PNW_BLK_repl1981
 10 26 20.0824 0 -1 99 4 # SizeSel_6P_1_PNW_BLK_repl2004
 -5 3 1 0 -1 99 -4 # SizeSel_6P_2_PNW_BLK_repl1981
 -5 3 1 0 -1 99 -4 # SizeSel_6P_2_PNW_BLK_repl2004
 -1 9 2.16289 0 -1 99 4 # SizeSel_6P_3_PNW_BLK_repl1981
 -1 9 1.77802 0 -1 99 4 # SizeSel_6P_3_PNW_BLK_repl2004
 -1 9 1.6 0 -1 99 -4 # SizeSel_6P_4_PNW_BLK_repl1981
 -1 9 1.6 0 -1 99 -4 # SizeSel_6P_4_PNW_BLK_repl2004
 -10 10 -10 0 -1 99 -4 # SizeSel_6P_5_PNW_BLK_repl1981
 -10 10 -10 0 -1 99 -4 # SizeSel_6P_5_PNW_BLK_repl2004
 -10 10 10 0 -1 99 -4 # SizeSel_6P_6_PNW_BLK_repl1981
 -10 10 10 0 -1 99 -4 # SizeSel_6P_6_PNW_BLK_repl2004
#_Cond No selex parm trends
#_Cond -4 # placeholder for selparm_Dev_Phase
1 #_env/block/dev_adjust_method (1=standard; 2=logistic trans to keep in base parm bounds; 3=standard w/ no
bound check)

# Tag loss and Tag reporting parameters go next
0  # TG_custom:  0=no read; 1=read if tags exist
#_Cond -6 6 1 1 2 0.01 -4 0 0 0 0 0 0 0  #_placeholder if no parameters

1 #_Variance_adjustments_to_input_values
#_1 2 3 4 5 6 7 8 9 10 11 12
  0 0 0 0 0 0 0.128967 0.29049 0 0 0 0 #_add_to_survey_CV
  0 0 0 0 0 0 0 0 0 0 0 0 #_add_to_discard_stddev
  0 0 0 0 0 0 0 0 0 0 0 0 #_add_to_bodywt_CV
  4.22286 1.07941 1.52198 1.59896 2.27399 0.80854 1 1 1 1 1 1 #_mult_by_lencomp_N
  2 0.8 1.3 0.4 2 0.4 1 1 1 1 1 1 #_mult_by_agecomp_N
  1 1 1 1 1 1 1 1 1 1 1 1 #_mult_by_size-at-age_N
0 #_DF_for_discard_like
0 #_DF_for_meanbodywt_like

1 #_maxlambdaphase
1 #_sd_offset

9 # number of changes to make to default Lambdas (default value is 1.0)
# Like_comp codes:  1=surv; 2=disc; 3=mnwt; 4=length; 5=age; 6=SizeFreq; 7=sizeage; 8=catch;
# 9=init_equ_catch; 10=recrdev; 11=parm_prior; 12=parm_dev; 13=CrashPen; 14=Morphcomp; 15=Tag-comp; 16=Tag-
negbin
#like_comp fleet/survey  phase  value  sizefreq_method
 1 7 1 1 1
 1 8 1 1 1
 1 9 1 0 1
 1 10 1 0 1
 1 11 1 0 1
 1 12 1 1 1
 4 9 1 0 1
 4 10 1 0 1
 4 12 1 1 1

0 # (0/1) read specs for more stddev reporting
999
```

S1S DAT.SS:

```
#C - Sardine 2009 Model 'S1S'
#_Number_of_datafiles: 1
#_observed data:
1981 #_styr
2009 #_endyr
2 #_nseas
6 6 #_months/season
2 #_spawn_seas
6 #_Nfleet
6 #_Nsurveys
1 #_N_areas
ENS%SCA_S1%SCA_S2%CCA_S1%CCA_S2%PNW%DEPM%TEP%PFFS%WCVI%TEP_all%Aerial
0.5 0.5 0.5 0.5 0.5 0.5 0.58 0.58 0.2 0.2 0.58 0.2 #_surveytiming_in_season
1 1 1 1 1 1 1 1 1 1 1 1 #_area_assignments_for_each_fishery_and_survey
1 1 1 1 1 1 #_units of catch:  1=bio; 2=num
0.01 0.01 0.01 0.01 0.01 0.01 #_se of log(catch) only used for init_eq_catch and for Fmethod 2 and 3
1 #_Ngenders
15 #_Nages
0 0 0 0 0 0 #_init_equil_catch_for_each_fishery
58 #_N_lines_of_catch_to_read
#_catch_biomass(mtons):_columns_are_fisheries,year,season
0.00    5.78    0.00    0.00    0.00    0.00    1981    1
0.00    0.00    57.15   0.00    0.00    0.00    1981    2
0.00    73.94   0.00    0.00    0.00    0.00    1982    1
149.50  0.00    263.26  0.00    0.00    0.00    1982    2
124.10  89.09   0.00    0.00    0.00    0.00    1983    1
0.00    0.00    159.12  0.00    0.00    0.00    1983    2
0.00    11.52   0.00    63.87   0.00    0.00    1984    1
3174.20 0.00    311.71  0.00    9.89    0.00    1984    2
548.10  246.84  0.00    24.49   0.00    0.00    1985    1
99.20   0.00    854.48  0.00    65.32   0.00    1985    2
143.40  196.77  0.00    47.54   0.00    0.00    1986    1
975.00  0.00    1282.21 0.00    21.68   0.00    1986    2
1456.60 773.47  0.00    17.24   0.00    0.00    1987    1
620.20  0.00    3011.94 0.00    7.62    0.00    1987    2
1414.70 762.67  0.00    2.54    0.00    0.00    1988    1
461.00  0.00    1919.15 0.00    234.60  0.00    1988    2
5763.20 1524.16 0.00    3.08    0.00    0.00    1989    1
5900.00 0.00    1886.58 0.00    244.94  0.00    1989    2
5475.30 621.42  0.00    61.69   0.00    0.00    1990    1
9271.00 0.00    5082.23 0.00    90.26   0.00    1990    2
22120.80        1691.81 0.00    885.41  0.00    0.00    1991    1
3326.50 0.00    5883.75 0.00    1113.27 0.00    1991    2
31241.70        10177.24        0.00    2014.37 0.00    3.90    1992    1
18648.10        0.00    11758.91        0.00    369.36  0.18    1992    2
13396.80        3728.81 0.00    335.17  0.00    0.00    1993    1
5711.60 0.00    7738.46 0.00    628.80  0.00    1993    2
15165.40        2607.44 0.00    1730.16 0.00    0.00    1994    1
18227.30        0.00    28122.16        0.00    442.66  0.00    1994    2
17168.90        8439.19 0.00    4485.19 0.00    22.68   1995    1
15665.90        0.00    14409.39        0.00    2485.95 0.00    1995    2
23398.80        10761.52        0.00    6399.16 0.00    0.00    1996    1
13498.42        0.00    11523.50        0.00    342.63  43.54   1996    2
54940.57        21313.27        0.00    13018.20        0.00    27.22   1997    1
20238.80        0.00    19094.13        0.00    2746.74 0.82    1997    2
27573.40        12880.51        0.00    6334.02 0.00    488.25  1998    1
34759.80        0.00    24049.92        0.00    7740.79 74.59   1998    2
23809.60        18813.07        0.00    6143.16 0.00    725.00  1999    1
33933.36        0.00    34119.25        0.00    1284.98 429.59  1999    2
33911.91        12715.51        0.00    10082.36        0.00    15586.46        2000    1
16544.89        0.00    29343.41        0.00    774.36  2336.50 2000    2
29526.39        18318.26        0.00    6467.05 0.00    22546.58        2001    1
17421.73        0.00    26620.58        0.00    1574.80 3136.34 2001    2
29423.55        22745.31        0.00    12503.02        0.00    35526.09        2002    1
15514.34        0.00    20379.58        0.00    5085.68 596.89  2002    2
25827.45        9909.48 0.00    2362.62 0.00    37242.26        2003    1
11212.89        0.00    15231.95        0.00    2145.71 2618.43 2003    2
30684.04        17161.49        0.00    13162.62        0.00    46730.80        2004    1
17323.01        0.00    15419.01        0.00    115.26  1016.32 2004    2
37999.54        14833.58        0.00    7824.88 0.00    54152.62        2005    1
17600.94        0.00    17157.66        0.00    2032.55 101.70  2005    2
39636.01        16128.17        0.00    15710.50        0.00    41220.90        2006    1
13981.36        0.00    26343.64        0.00    6013.25 0.00    2006    2
22865.46        19854.96        0.00    28768.80        0.00    48237.10        2007    1
```

```
20570.88       0.00    24127.22       0.00    2515.28 0.00    2007    2
33642.12       6962.07 0.00    24195.67       0.00    39800.10        2008    1
20570.88       0.00    9146.10 0.00    10638.12       0.00    2008    2
33642.12       4633.76 0.00    16103.98       0.00    26244.26        2009    1
0.00    0.00    0.00    0.00    0.00    0.00    2009    2

50      #_N_cpue_and_surveyabundance_observations (DEPM=8 TEP=10 PFFS=10 WCVI=3 TEPall=18 Aerial=1)

#_year seas index obs se(log)
1986    1       7       4061    0.60    #_DEPM_8608
1987    1       7       8661    0.56    #_DEPM_8707
1993    2       7       69065   0.29    #_DEPM_9404
2003    2       7       145274  0.23    #_DEPM_0404
2004    2       7       459943  0.55    #_DEPM_0504
2006    2       7       198404  0.30    #_DEPM_0704
2007    2       7       66395   0.27    #_DEPM_0804
2008    2       7       99162   0.24    #_DEPM_0905
1987    2       8       17266   0.35    #_TEP_8805
1995    2       8       97923   0.40    #_TEP_9604
1996    2       8       482246  0.21    #_TEP_9704
1997    2       8       369038  0.33    #_TEP_9804
1998    2       8       332177  0.34    #_TEP_9904
1999    2       8       1252539 0.39    #_TEP_0004
2000    2       8       928806  0.38    #_TEP_0104
2001    2       8       236660  0.17    #_TEP_0204
2002    2       8       556177  0.18    #_TEP_0304
2005    2       8       651994  0.25    #_TEP_0604
1999    1       9       1.4849  0.90    #_PFFS_GLM_11
2000    1       9       13.3280 1.07    #_PFFS_GLM_11
2001    1       9       1.0754  0.86    #_PFFS_GLM_11
2002    1       9       1.0327  0.84    #_PFFS_GLM_11
2003    1       9       2.0222  0.91    #_PFFS_GLM_11
2004    1       9       2.8577  0.82    #_PFFS_GLM_11
2005    1       9       1.6536  0.83    #_PFFS_GLM_11
2006    1       9       1.5904  0.71    #_PFFS_GLM_11
2007    1       9       3.2758  0.84    #_PFFS_GLM_11
2008    1       9       2.6221  0.88    #_PFFS_GLM_11
# 1997  1       10      88626   0.50    #_WCVI_trawl
# 1999  1       10      79398   0.50    #_WCVI_trawl
# 2000  1       10      47947   0.50    #_WCVI_trawl
# 2001  1       10      43865   0.50    #_WCVI_trawl
# 2004  1       10      30504   0.50    #_WCVI_trawl
2006    1       10      258702  0.50    #_WCVI_trawl
2008    1       10      229721  0.50    #_WCVI_trawl
2009    1       10      198365  0.50    #_WCVI_trawl
1986    1       11      11220   0.73    #_TEPall_8608
1987    1       11      25637   0.48    #_TEPall_8707
1987    2       11      17266   0.35    #_TEPall_8805
1993    2       11      73374   0.21    #_TEPall_9404
1995    2       11      97923   0.40    #_TEPall_9604
1996    2       11      482246  0.21    #_TEPall_9704
1997    2       11      369038  0.33    #_TEPall_9804
1998    2       11      332177  0.34    #_TEPall_9904
1999    2       11      1252539 0.39    #_TEPall_0004
2000    2       11      928806  0.38    #_TEPall_0104
2001    2       11      236660  0.17    #_TEPall_0204
2002    2       11      556177  0.18    #_TEPall_0304
2003    2       11      307795  0.24    #_TEPall_0404
2004    2       11      486950  0.40    #_TEPall_0504
2005    2       11      651994  0.25    #_TEPall_0604
2006    2       11      306297  0.26    #_TEPall_0704
2007    2       11      128118  0.21    #_TEPall_0804
2008    2       11      162188  0.22    #_TEPall_0905
2009    1       12      1353170 0.55    #_Aerial_0908

1 #_discard_type (1=bio or num; 2=fraction)
0 #_N_discard_obs

0 #_N_meanbodywt_obs

2 # POPULATION length bin method: 1=use databins; 2=generate from binwidth,min,max below; 3=read vector
# no additional input for option 1
0.5 # binwidth for option 2
8  # minsize for option 2
28 # lastbin size for option 2
# read N poplen bins, then vector of bin lower boundaries, for option 3
```

```
-0.0001 #_comp_tail_compression
0.0001 #_add_to_comp
0 #_combine males into females at or below this bin number
35 #_N_LengthBins
 9 9.5 10 10.5 11 11.5 12 12.5 13 13.5 14 14.5 15 15.5 16 16.5 17 17.5 18 18.5 19 19.5 20 20.5 21 21.5 22 22.5
23 23.5 24 24.5 25 25.5 26
138 #_N_Length_obs  (fishery=125 PFFS=10 WCVI=7 Aerial=1)
#Yr Seas Flt/Svy Gender Part Nsamp datavector(female-male)
1989    1       1       0       0       3.88    0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.02784890      0.00000000
        0.04068802      0.04819291      0.10655783      0.13173962      0.17690984      0.07926211      0.06122474
        0.11995942      0.09836329      0.04070220      0.06658782      0.00196328      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1989    2       1       0       0       2.92    0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00975003      0.00000000
        0.01950006      0.00000000      0.00000000      0.06634900      0.18541322      0.46373022      0.09655263
        0.12263493      0.02045360      0.01561631      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1990    1       1       0       0       9.96    0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.02025737      0.00265878
        0.00630059      0.00098304      0.00000000      0.00879930      0.01468935      0.11466989      0.19925519
        0.27233314      0.16789033      0.10374539      0.04785801      0.04055963      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1990    2       1       0       0       26.36   0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00775919
        0.01163878      0.01745817      0.04799255      0.02665479      0.03476230      0.02510247      0.00411123
        0.00290969      0.00391622      0.01716006      0.01941653      0.04166653      0.11247026      0.15820424
        0.15233593      0.10252700      0.09225058      0.07146930      0.03913789      0.00906809      0.00198820
        0.00000000      0.00000000      0.00000000
1991    1       1       0       0       49.64   0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00129015      0.00064507      0.00129015      0.00064507
        0.00578269      0.01475452      0.01493692      0.01587502      0.01418235      0.02085444      0.03141024
        0.04583894      0.03769445      0.05537889      0.06616371      0.08064460      0.08676052      0.11667843
        0.09501953      0.09265984      0.08690223      0.05487371      0.03451025      0.01363804      0.00788752
        0.00227554      0.00113777      0.00026940
1991    2       1       0       0       38.00   0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00016096      0.00016096      0.00016096      0.00058432      0.00265987      0.00159199      0.00483337
        0.00389529      0.00151175      0.00142602      0.00161277      0.00072350      0.00836515      0.00146878
        0.01167297      0.01555765      0.07655067      0.10565403      0.14538650      0.09481208      0.10130994
        0.06717126      0.06483559      0.07933515      0.10084819      0.07243375      0.02591340      0.00552783
        0.00158961      0.00016096      0.00208473
1992    1       1       0       0       19.24   0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00121819      0.02954260
        0.11094267      0.10904873      0.24033313      0.21676462      0.09443555      0.06690189      0.02610181
        0.04589822      0.02694851      0.00972858      0.00586646      0.00417651      0.00356592      0.00482037
        0.00222467      0.00069739      0.00000000      0.00034869      0.00034869      0.00008680      0.00000000
        0.00000000      0.00000000      0.00000000
1992    2       1       0       0       9.56    0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00594600      0.01499398
        0.05349080      0.11776563      0.08396955      0.11605953      0.12328816      0.10266649      0.07085657
        0.07998282      0.06757904      0.07428014      0.03638256      0.01703566      0.00735237      0.01004095
        0.00594600      0.01236377      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1993    1       1       0       0       4.96    0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.01139012      0.01139012      0.01139012      0.06345288      0.18708528      0.21744411      0.25650229
        0.12094162      0.05748874      0.06291472      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1993    2       1       0       0       8.88    0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.01086867      0.03403877
        0.12583554      0.26277150      0.22483142      0.07163022      0.04524191      0.06509108      0.06222556
        0.02746838      0.01516695      0.01884057      0.03598942      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1994    1       1       0       0       10.56   0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00959341
        0.03897521      0.05724362      0.10628311      0.09456414      0.09240532      0.04818796      0.03692131
        0.10683480      0.10929306      0.14087553      0.08102535      0.03032658      0.02231659      0.01573849
        0.00609253      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00332297      0.00000000      0.00000000
```

```
1994    2       1       0       0       9.20    0.00000000      0.00000000      0.00000000      0.00000000
        0.00318434      0.00318434      0.00000000      0.00636868      0.00000000      0.01664840      0.02397871
        0.01761003      0.04702151      0.05613946      0.11688416      0.12150527      0.11611914      0.10057075
        0.12062078      0.11220482      0.07121297      0.04105941      0.01497419      0.01071302      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1995    1       1       0       0       12.68   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00415707      0.01053823      0.04853408      0.10518776      0.17557219      0.14601593
        0.18532252      0.11172270      0.07460193      0.03142865      0.05183663      0.03497872      0.00485674
        0.00815150      0.00487127      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00222409
1995    2       1       0       0       7.32    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00744511      0.02079122      0.02079122      0.03903513
        0.03440282      0.02950502      0.01762176      0.02837712      0.02226104      0.05067758      0.08853277
        0.11590506      0.08905274      0.18955942      0.08319357      0.08666419      0.04336092      0.02489202
        0.00590100      0.00203029      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1996    1       1       0       0       12.80   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00696654      0.02020222      0.02362742      0.03324110      0.02897520      0.01574409
        0.03080119      0.02813907      0.06775481      0.07259685      0.11555752      0.17162804      0.20202066
        0.08752548      0.06657651      0.01775662      0.00643309      0.00000000      0.00445358      0.00000000
        0.00000000      0.00000000      0.00000000
1996    2       1       0       0       6.32    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.01046774      0.01693957
        0.07777343      0.06456984      0.07055149      0.10896530      0.18538315      0.20867050      0.16255142
        0.05095457      0.02021419      0.01719949      0.00000000      0.00000000      0.00000000      0.00000000
        0.00575933      0.00000000      0.00000000
1997    1       1       0       0       14.16   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.01113884      0.02716630      0.02295135      0.03606495
        0.03708985      0.02631187      0.08452762      0.09877386      0.11063741      0.17206816      0.21821797
        0.08928700      0.03905181      0.01765953      0.00905348      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1997    2       1       0       0       5.24    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.01792592
        0.00041184      0.00123553      0.00082369      0.00639707      0.00949939      0.00000000      0.00000000
        0.06973333      0.12324604      0.11006982      0.19939311      0.13098577      0.13860488      0.05960189
        0.05970545      0.03308756      0.00976443      0.01713199      0.00619115      0.00619115      0.00000000
        0.00000000      0.00000000      0.00000000
1998    1       1       0       0       7.56    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00440431      0.00496143      0.01708264      0.00146810      0.03481276      0.02507065
        0.04840970      0.07358032      0.10012103      0.16900204      0.21596750      0.14191379      0.10892496
        0.04151206      0.00780727      0.00000000      0.00496143      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1998    2       1       0       0       13.92   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00792638      0.01454621      0.02440901
        0.04277309      0.08803619      0.08309485      0.17251574      0.12023707      0.14139842      0.09006407
        0.06203577      0.03950742      0.03745167      0.01181801      0.01620560      0.01834638      0.02404209
        0.00279602      0.00000000      0.00279602      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1999    1       1       0       0       10.60   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.01608397      0.06714824      0.13735118      0.30195772      0.19726073      0.09797515
        0.09806693      0.04029630      0.01161398      0.00852420      0.01186080      0.00711648      0.00237216
        0.00000000      0.00237216      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1999    2       1       0       0       11.52   0.00000000      0.00000000      0.00292499      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00292499      0.01003690
        0.01838960      0.05363071      0.11752795      0.14116055      0.15830672      0.13989761      0.11820342
        0.08644490      0.06052803      0.04212035      0.03312896      0.01477431      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2000    1       1       0       0       11.92   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00373432      0.00746863      0.03444271      0.08726968
        0.13808438      0.18065587      0.16836919      0.13559442      0.13163500      0.07795522      0.02432392
        0.01046665      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2000    2       1       0       0       8.56    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00612611      0.04241318      0.04116033      0.02943621      0.02403485      0.00921842      0.02017828
        0.09179484      0.19501098      0.20359393      0.13242405      0.12063177      0.08041515      0.00356190
```

```
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2001  1       1      0       0      5.80   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.01501983     0.03003966     0.03947277     0.02031425     0.07939044     0.05458582
      0.11295866     0.14835957     0.11753480     0.07389695     0.12498806     0.06510782     0.06581864
      0.02102506     0.02519015     0.00629754     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2001  2       1      0       0      8.68   0.00000000     0.00000000     0.00000000     0.00000000
      0.00183755     0.00183755     0.00000000     0.01631503     0.02058598     0.01185993     0.08233049
      0.11673005     0.09353775     0.07972197     0.06359109     0.02444303     0.04473340     0.03025812
      0.05084190     0.07975709     0.12799730     0.05342383     0.06220451     0.03431834     0.00183755
      0.00000000     0.00000000     0.00000000     0.00183755     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1981  1       2      0       0      7.00   0.00000000     0.00000000     0.00376835     0.00000000
      0.00000000     0.01075474     0.02794558     0.07473290     0.07905156     0.03171393     0.00698640
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.03871940
      0.05394457     0.07325036     0.06431116     0.03748070     0.03689681     0.05041053     0.04287383
      0.04287383     0.04553660     0.12359247     0.10263328     0.02457741     0.01397279     0.00698640
      0.00698640     0.00000000     0.00000000
1982  1       2      0       0      14.44  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.02929626
      0.02107766     0.06247351     0.14551868     0.16192081     0.10854351     0.06164664     0.03447696
      0.04939521     0.06554510     0.06436408     0.07884345     0.05378302     0.03365010     0.01481689
      0.00732406     0.00000000     0.00732406
1983  1       2      0       0      12.16  0.00158020     0.00263366     0.00105346     0.00052673
      0.00052673     0.00017558     0.00158020     0.00774881     0.00054822     0.00796737     0.03141089
      0.00779180     0.00035115     0.02459350     0.07705908     0.07311559     0.07569188     0.00845112
      0.06940755     0.05554961     0.08012353     0.07317508     0.09312278     0.11812557     0.11277766
      0.04883564     0.01141829     0.01038382     0.00017558     0.00409892     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1985  1       2      0       0      15.00  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00551492     0.01811125     0.01937734
      0.09389666     0.07578540     0.06549965     0.07103958     0.14212149     0.14101305     0.10906458
      0.08189415     0.06823210     0.05966281     0.01368725     0.01713147     0.00469950     0.00428464
      0.00585115     0.00313300     0.00000000
1986  1       2      0       0      20.20  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00616313     0.01386704     0.01540782     0.00000000     0.00154078     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00021255     0.00154078     0.00234481     0.01417509     0.06784718     0.08371505     0.12675030
      0.16127035     0.22070112     0.13588124     0.07198028     0.04649567     0.01157162     0.01540760
      0.00000000     0.00000000     0.00312759
1987  1       2      0       0      29.40  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00235959     0.00330682     0.01575054     0.02432356
      0.02777470     0.06436425     0.09996834     0.13984439     0.19144865     0.13300410     0.04121332
      0.03241437     0.03758516     0.06964660     0.05157932     0.03856749     0.01563735     0.00829264
      0.00291879     0.00000000     0.00000000
1988  1       2      0       0      22.76  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00395131     0.00000000     0.00195829     0.00590960     0.01762461     0.01910706
      0.03947840     0.03079151     0.02392604     0.02333000     0.07643028     0.11050425     0.16258680
      0.15424512     0.14644944     0.08546717     0.05005023     0.01996970     0.01562267     0.00451948
      0.00355857     0.00451948     0.00000000
1989  1       2      0       0      45.76  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00023514     0.00000000     0.00176808     0.00795601     0.02034496     0.04724764
      0.05583727     0.11395793     0.13299356     0.14836917     0.12756456     0.10213436     0.08195563
      0.07682740     0.04521789     0.02025473     0.01372147     0.00274290     0.00087131     0.00000000
      0.00000000     0.00000000     0.00000000
1990  1       2      0       0      14.56  0.00000000     0.00000000     0.00000000     0.00045150
      0.00135451     0.00135451     0.00203177     0.00158026     0.00270902     0.00962793     0.00827341
      0.03325733     0.00523183     0.03916122     0.03487886     0.04444471     0.01913170     0.03303158
      0.01738776     0.00000000     0.00000000     0.01697752     0.04307980     0.06505542     0.09170318
      0.14374821     0.11479716     0.10899384     0.08476902     0.04174089     0.02642027     0.00880676
      0.00000000     0.00000000     0.00000000
1991  1       2      0       0      18.88  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.01622831     0.04003566     0.03058409     0.00900577     0.02514477     0.04172958     0.07953587
      0.09843901     0.08461833     0.07909006     0.05555132     0.07953657     0.05162873     0.06313001
      0.07400830     0.07213543     0.04725785     0.03111885     0.01569320     0.00552827     0.00000000
      0.00000000     0.00000000     0.00000000
1992  1       2      0       0      95.48  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00064782     0.00000000     0.00000000     0.00000000     0.00000000     0.00182274
```

```
      0.01133424     0.02348972     0.03049836     0.05664728     0.06005899     0.09326521     0.10799850
      0.11246355     0.10783649     0.12139782     0.10046526     0.06485231     0.04211727     0.01410971
      0.01337548     0.00808748     0.00844657     0.00891104     0.00625766     0.00402859     0.00188790
      0.00000000     0.00000000     0.00000000
1993  1       2      0       0      22.12  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00209405     0.00209405     0.00209405     0.01675244     0.04851331     0.11939975     0.21290600
      0.22128847     0.13647613     0.13477075     0.07235084     0.01824921     0.00665153     0.00630148
      0.00001931     0.00000000     0.00001931     0.00001931     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1994  1       2      0       0      25.92  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.01783418     0.02529307     0.03678761     0.10634060     0.15407048     0.18216357
      0.14715970     0.14399582     0.09802711     0.05459132     0.02262368     0.00671273     0.00372620
      0.00033696     0.00000000     0.00033696     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1995  1       2      0       0      58.52  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00031392     0.00000000     0.00441833     0.00954884     0.00713370
      0.01264103     0.04725362     0.10395594     0.20700881     0.22182404     0.18459048     0.11962844
      0.05599027     0.01995711     0.00423077     0.00047859     0.00102610     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1996  1       2      0       0      33.96  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00030079     0.00030079
      0.00090238     0.01283815     0.02227238     0.07526174     0.11565464     0.15169996     0.23028877
      0.17871268     0.11155633     0.05004725     0.03431557     0.00590206     0.00586819     0.00089493
      0.00000000     0.00000000     0.00318338     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1997  1       2      0       0      53.88  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00138849     0.00000000     0.00437448
      0.00696658     0.02235979     0.06978503     0.11959113     0.12200411     0.11435220     0.09445877
      0.07587230     0.06026707     0.07251253     0.08753970     0.07763919     0.03522754     0.02424067
      0.00725407     0.00264748     0.00072375     0.00079514     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1998  1       2      0       0      53.88  0.00000000     0.00000000     0.00000000     0.00000000
      0.00133372     0.00800230     0.03123023     0.07429081     0.11293837     0.13115185     0.12833474
      0.13611421     0.11920509     0.09461068     0.05183656     0.02012165     0.01051988     0.01157256
      0.00957903     0.01829103     0.01344934     0.01066005     0.01432552     0.00061959     0.00172251
      0.00002257     0.00006771     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1999  1       2      0       0      48.60  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00116223     0.00116223     0.00212307     0.02180502     0.06358421     0.14633894
      0.22273367     0.22362558     0.16164649     0.07144217     0.04707867     0.02246604     0.00891355
      0.00115357     0.00000000     0.00000000     0.00149071     0.00094939     0.00000000     0.00000000
      0.00000000     0.00232446     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2000  1       2      0       0      56.20  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00211301     0.00508933     0.00279913     0.01181366     0.01717291
      0.02100897     0.03388762     0.06977171     0.13907010     0.18812000     0.19617192     0.15519083
      0.08878951     0.03643265     0.01452090     0.00612946     0.00505799     0.00405848     0.00158862
      0.00000000     0.00000000     0.00000000     0.00121320     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2001  1       2      0       0      66.80  0.00114739     0.00222606     0.00592073     0.01450301
      0.01754029     0.01602687     0.01191382     0.01447820     0.00839172     0.00302758     0.00306668
      0.00463727     0.00738196     0.03848854     0.06278386     0.09654448     0.13058616     0.21010184
      0.17073640     0.08958682     0.04532118     0.02235519     0.01184378     0.00404771     0.00438361
      0.00082618     0.00169717     0.00043550     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2002  1       2      0       0      69.92  0.00000000     0.00000000     0.00066760     0.00000000
      0.00050434     0.00252172     0.00453909     0.00353040     0.00100869     0.00122406     0.00530869
      0.02130371     0.07164997     0.15795533     0.20206026     0.19288834     0.17469227     0.09885357
      0.04386095     0.01181209     0.00316976     0.00000000     0.00061254     0.00061254     0.00061152
      0.00000000     0.00061254     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2003  1       2      0       0      61.00  0.00000000     0.00000000     0.00000000     0.00364282
      0.02572017     0.04983845     0.03752152     0.02221410     0.02706850     0.01734205     0.00440142
      0.01426081     0.01992168     0.05174924     0.09758143     0.11130327     0.13867101     0.12663296
      0.10911658     0.07722155     0.02646579     0.01613982     0.01567453     0.00636164     0.00000000
      0.00000000     0.00074283     0.00000000     0.00040783     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2004  1       2      0       0      69.00  0.00000000     0.00000000     0.00067995     0.00000000
      0.00000000     0.00069572     0.00060794     0.00530139     0.05426549     0.13816486     0.15395491
      0.10607708     0.10371880     0.11035030     0.10997293     0.07889974     0.04026444     0.02859543
      0.02084622     0.02238010     0.01608305     0.00787804     0.00000000     0.00038944     0.00000000
      0.00087417     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
```

```
2005    1       2       0       0       73.00   0.00040732      0.00081464      0.01168812      0.01101704
        0.01866609      0.02393849      0.03275694      0.02030854      0.04550967      0.09526358      0.11392118
        0.12445910      0.14906980      0.11041272      0.09044143      0.05986850      0.03845734      0.03014254
        0.00939585      0.00518021      0.00546170      0.00213056      0.00068865      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2006    1       2       0       0       60.96   0.00149244      0.00173776      0.00467913      0.00516625
        0.00749344      0.01196063      0.00628611      0.00813945      0.00748120      0.00931242      0.05451162
        0.11254378      0.15873191      0.11061845      0.13953737      0.12992911      0.09208443      0.06463940
        0.03713148      0.02211372      0.01057082      0.00116868      0.00089013      0.00178027      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2007    1       2       0       0       72.08   0.00000000      0.00000000      0.00200385      0.00249180
        0.00531929      0.00854308      0.01379638      0.02631003      0.05439429      0.07533973      0.11741617
        0.09841944      0.11234713      0.10112507      0.12140498      0.10248137      0.09606582      0.03828075
        0.02091027      0.00207530      0.00072861      0.00054664      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2008    1       2       0       0       25.48   0.00000000      0.00000000      0.00000000      0.00038087
        0.00452544      0.00263609      0.00978264      0.02065457      0.01745050      0.02285478      0.12128838
        0.22906872      0.21578443      0.15718734      0.07280555      0.06668616      0.03888840      0.01282041
        0.00245899      0.00226772      0.00001250      0.00000000      0.00001250      0.00000000      0.00243399
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1981    2       3       0       0       9.52    0.00000000      0.00000000      0.00606367      0.02425467
        0.00000000      0.00000000      0.00606367      0.00000000      0.00368576      0.02211456      0.05528639
        0.03317183      0.07080225      0.05644562      0.05249235      0.04090004      0.07710371      0.04708260
        0.02047974      0.01747763      0.00436941      0.01872604      0.04726095      0.08453467      0.06099337
        0.04993609      0.05885325      0.06099337      0.03504444      0.01863686      0.01411884      0.00000000
        0.00436941      0.00436941      0.00436941
1982    2       3       0       0       23.32   0.00000000      0.00000000      0.00000000      0.00393489
        0.00000000      0.00393489      0.00393489      0.00000000      0.00000000      0.00393489      0.00000000
        0.00000000      0.00000000      0.00000000      0.00786978      0.00000000      0.00000000      0.00000000
        0.00000000      0.00567751      0.03154179      0.08999555      0.18771542      0.22467716      0.19362188
        0.08360123      0.05287586      0.04065799      0.03577425      0.01106387      0.01314369      0.00210956
        0.00393489      0.00000000      0.00000000
1983    2       3       0       0       7.52    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00842831      0.01685662      0.02528493      0.01685662      0.01316522      0.00000000      0.02940664
        0.00842831      0.02876048      0.04746268      0.05416835      0.09809378      0.14872302      0.19677016
        0.14681479      0.08831027      0.03494293      0.02805307      0.00473691      0.00473691      0.00000000
        0.00000000      0.00000000      0.00000000
1984    2       3       0       0       8.64    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00188630      0.00000000      0.00000000      0.00113912      0.00284779      0.01170975      0.01287440
        0.01878369      0.04161195      0.04000155      0.05235745      0.10612598      0.12213463      0.14012787
        0.13814328      0.14695143      0.08283316      0.07364807      0.00682356      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1985    2       3       0       0       33.40   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00059631      0.00000000      0.00292961      0.00000000      0.00131840      0.00010163
        0.00669388      0.01710975      0.02415533      0.03268657      0.08781359      0.12626185      0.15221717
        0.14386139      0.13393473      0.14408914      0.07590716      0.02481579      0.01449698      0.00792752
        0.00308319      0.00000000      0.00000000
1986    2       3       0       0       44.20   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00402614      0.01583460
        0.02531737      0.00948276      0.01566198      0.01414887      0.00278066      0.00000000      0.00063677
        0.00295973      0.00239355      0.00354305      0.00464214      0.01704127      0.04022927      0.09036300
        0.16859683      0.19318574      0.19154494      0.11081708      0.05785848      0.01626072      0.00825395
        0.00216649      0.00116285      0.00109174
1987    2       3       0       0       87.68   0.00000000      0.00000000      0.00000000      0.00000000
        0.00161142      0.00241713      0.01853134      0.02819986      0.00563997      0.00080571      0.00450840
        0.00000000      0.00000000      0.00017547      0.00017547      0.00035093      0.00205212      0.00509042
        0.01986922      0.06491839      0.08427359      0.06827079      0.09481518      0.10254507      0.12949080
        0.10427579      0.08847805      0.06970283      0.04872839      0.02925274      0.01584863      0.00537957
        0.00188410      0.00252884      0.00017978
1988    2       3       0       0       46.80   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00019520      0.00078079
        0.00348993      0.00558490      0.01094955      0.01183021      0.02361299      0.02408992      0.00958245
        0.01283679      0.01615761      0.04130164      0.02460793      0.05520461      0.08278055      0.10323603
        0.14070264      0.14736675      0.13313655      0.05418899      0.05216054      0.02646659      0.01715723
        0.00257962      0.00000000      0.00000000
1989    2       3       0       0       50.28   0.00000000      0.00000000      0.00000000      0.00214338
        0.00643014      0.00643014      0.00964521      0.00803768      0.01478264      0.01232444      0.00482261
        0.00352989      0.00330887      0.00031482      0.00031482      0.00000000      0.00000000      0.00101314
        0.00132816      0.00967006      0.05774243      0.11466466      0.15375875      0.12066605      0.13802944
```

```
      0.14132649     0.09647401     0.03338884     0.03224398     0.01539393     0.00813491     0.00408052
      0.00000000     0.00000000     0.00000000
1990  2       3      0       0      86.60  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00014118     0.00062202     0.00067849
      0.00031452     0.00064155     0.00374830     0.01147825     0.01181122     0.00432896     0.00323081
      0.00651022     0.00682027     0.01499659     0.01738201     0.07937294     0.14889376     0.18507585
      0.19006648     0.14860840     0.09359381     0.04017853     0.01690443     0.01024766     0.00290250
      0.00072562     0.00072562     0.00000000
1991  2       3      0       0      77.08  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00408059     0.00725439
      0.00781592     0.01484332     0.01239258     0.01771839     0.01044578     0.01382307     0.02233176
      0.04911226     0.05144541     0.06062857     0.04794135     0.05985438     0.05891146     0.07480485
      0.10281677     0.12879252     0.11044486     0.08130121     0.04018562     0.01211252     0.00580490
      0.00202919     0.00132015     0.00178817
1992  2       3      0       0      64.84  0.00000000     0.00000000     0.00062233     0.00000000
      0.00062233     0.00186700     0.00321440     0.00787302     0.00487001     0.02361907     0.03369753
      0.04647558     0.08745199     0.10296224     0.13956444     0.11417501     0.10041129     0.09987334
      0.05711558     0.04583381     0.02767874     0.02172439     0.02100553     0.01763574     0.01311341
      0.00625476     0.00656354     0.00697464     0.00272720     0.00200213     0.00117298     0.00000000
      0.00117298     0.00000000     0.00172497
1993  2       3      0       0      104.84 0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00080215     0.00488676     0.02267216     0.04571914
      0.07539734     0.08503621     0.06518595     0.06581823     0.08755966     0.11394221     0.12691500
      0.11561914     0.06011035     0.04489916     0.02916139     0.01553854     0.00952882     0.00907162
      0.00410656     0.00297777     0.00255200     0.00412174     0.00371320     0.00160430     0.00025729
      0.00152497     0.00111099     0.00016732
1994  2       3      0       0      277.56 0.00000000     0.00000000     0.00000000     0.00000000
      0.00117678     0.00311564     0.00470444     0.00586867     0.01404604     0.02310938     0.04344837
      0.06935235     0.10500217     0.11742592     0.14217075     0.13514895     0.10996179     0.08517589
      0.05843207     0.03732582     0.02154649     0.01185100     0.00388069     0.00320906     0.00082945
      0.00114815     0.00033102     0.00000000     0.00014990     0.00000000     0.00036225     0.00086471
      0.00000000     0.00000000     0.00036225
1995  2       3      0       0      60.88  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00067113     0.00130016     0.00696733     0.01093368     0.01880732
      0.03793463     0.08092845     0.11544376     0.15697483     0.18114040     0.16304839     0.11853619
      0.07087117     0.01641911     0.01064394     0.00210554     0.00153557     0.00062902     0.00149346
      0.00149346     0.00086444     0.00000000     0.00062902     0.00000000     0.00000000     0.00000000
      0.00062902     0.00000000     0.00000000
1996  2       3      0       0      59.00  0.00000000     0.00000000     0.00000000     0.00000000
      0.00328495     0.00645260     0.01994570     0.03700242     0.07182980     0.08082591     0.08965806
      0.11449590     0.09918900     0.04868455     0.03292516     0.04025048     0.05372765     0.04579312
      0.04345071     0.05650368     0.06023197     0.04223237     0.02476051     0.00985703     0.00812243
      0.00416134     0.00415600     0.00151206     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00094663     0.00000000
1997  2       3      0       0      59.80  0.00110167     0.00110167     0.01211842     0.01101674
      0.01801283     0.00931990     0.00431803     0.00811787     0.02014258     0.01412528     0.03878854
      0.04267056     0.05460126     0.07562701     0.08551310     0.06567582     0.06292290     0.08419328
      0.05821707     0.03947713     0.03433747     0.02992458     0.04976637     0.05088174     0.04429624
      0.03733244     0.02783571     0.00908316     0.00597596     0.00271221     0.00079247     0.00000000
      0.00000000     0.00000000     0.00000000
1998  2       3      0       0      60.56  0.00000000     0.00118266     0.00660245     0.01199621
      0.01824431     0.02015048     0.03262878     0.08011445     0.09381695     0.10264631     0.11657677
      0.12106550     0.07416917     0.06237424     0.04441005     0.04153872     0.05466022     0.02246753
      0.01831674     0.01921148     0.02253135     0.01554131     0.00733928     0.00382856     0.00402262
      0.00185135     0.00271250     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1999  2       3      0       0      58.28  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00548895     0.02732831     0.08545193     0.13573877
      0.16290068     0.20109972     0.14945412     0.11145747     0.06235141     0.02716184     0.01407561
      0.00716315     0.00672010     0.00277052     0.00000000     0.00062837     0.00020904     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2000  2       3      0       0      67.96  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00669427     0.00930096     0.02331699     0.04239514     0.05647364     0.09650996
      0.12888482     0.13262519     0.09751635     0.06733457     0.06585510     0.08989003     0.08310265
      0.04927003     0.03151300     0.00974911     0.00610688     0.00085527     0.00163009     0.00000000
      0.00000000     0.00081504     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00016089
2001  2       3      0       0      64.84  0.00000000     0.00000000     0.00061359     0.00940404
      0.02806762     0.05496173     0.08071915     0.11591580     0.13613856     0.13484560     0.08224955
      0.05688190     0.05327392     0.04275814     0.01974823     0.02153157     0.01941291     0.02277960
      0.03314189     0.02463584     0.01397087     0.01209631     0.01338243     0.01058187     0.00795897
      0.00295794     0.00098598     0.00098598     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2002  2       3      0       0      70.00  0.00000000     0.00000000     0.00000000     0.00059696
      0.00179088     0.00298479     0.00415519     0.00594607     0.00820122     0.00766638     0.00956278
```

```
      0.02552120     0.06921881     0.12255476     0.16843436     0.17839884     0.17505522     0.12155957
      0.05023633     0.02198943     0.00960968     0.00759288     0.00379762     0.00257571     0.00141429
      0.00024390     0.00000000     0.00089313     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2003  2       3      0       0      67.28  0.00000000     0.00000000     0.00000000     0.00802428
      0.04246449     0.07064072     0.06817939     0.09791471     0.15746494     0.18508142     0.12897781
      0.08091451     0.04369843     0.01739195     0.00899976     0.01408230     0.01057422     0.01210267
      0.00975911     0.01271644     0.00516421     0.01009763     0.00362416     0.00027783     0.00134657
      0.00703441     0.00191252     0.00155553     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2004  2       3      0       0      70.96  0.00000000     0.00000000     0.00000000     0.00000000
      0.00091254     0.00203997     0.00595292     0.01262558     0.04060428     0.05647315     0.09400835
      0.15544189     0.15578772     0.15792948     0.12769061     0.07442887     0.04306611     0.02310967
      0.01699616     0.01183029     0.00663232     0.00617830     0.00229362     0.00052358     0.00052358
      0.00130082     0.00273763     0.00000000     0.00091254     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2005  2       3      0       0      67.00  0.00000000     0.00000000     0.00112724     0.00699394
      0.03111461     0.04338467     0.06077320     0.07198416     0.12788172     0.14555042     0.15540175
      0.12569168     0.11883009     0.06181135     0.03133396     0.00809581     0.00484578     0.00177568
      0.00072554     0.00267839     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2006  2       3      0       0      73.84  0.00000000     0.00000000     0.00000000     0.00000000
      0.00276181     0.00629985     0.01210245     0.01660108     0.03107684     0.03609447     0.08137956
      0.11220711     0.13192369     0.14418306     0.13974778     0.13530489     0.08811312     0.03645183
      0.01604048     0.00491613     0.00371504     0.00108081     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2007  2       3      0       0      52.64  0.00000000     0.00000000     0.00084848     0.00683220
      0.02270619     0.02324498     0.05368274     0.10349929     0.13463206     0.14521496     0.15387261
      0.07920438     0.07490183     0.07067462     0.05197394     0.03461139     0.02213494     0.00801023
      0.00648101     0.00522929     0.00104798     0.00119687     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2008  2       3      0       0      19.88  0.00000000     0.00000000     0.00000000     0.00000000
      0.00844354     0.01125805     0.00844354     0.00643945     0.02413696     0.03458458     0.03177007
      0.05757185     0.10145437     0.20743206     0.18244070     0.14891786     0.06239045     0.03987435
      0.02737867     0.02132245     0.00844354     0.00362494     0.00562903     0.00281451     0.00562903
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1990  1       4      0       0      4.00   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.01699648     0.01318732     0.02959718     0.03399296     0.00219789     0.02739930     0.08439577
      0.08000000     0.08219789     0.15120845     0.13860775     0.08820493     0.05040282     0.11340634
      0.03780211     0.02520141     0.02520141
1991  1       4      0       0      20.00  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00187348     0.00000000     0.01250610     0.01646392     0.00833740
      0.01021087     0.02749390     0.08643954     0.12599341     0.25372257     0.25440395     0.11002438
      0.05334959     0.01646392     0.00208435     0.00208435     0.00416870     0.00395783     0.00416870
      0.00625305     0.00000000     0.00000000
1996  1       4      0       0      87.64  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00129681     0.00425761     0.00749789     0.02745464     0.04261013     0.05859599     0.08949553
      0.14700342     0.16570403     0.18675983     0.13515273     0.07554264     0.03963187     0.01162763
      0.00463699     0.00087599     0.00000000     0.00000000     0.00043799     0.00000000     0.00000000
      0.00047276     0.00047276     0.00047276
1997  1       4      0       0      54.96  0.00161047     0.00000000     0.00000000     0.00000000
      0.00000000     0.00070613     0.00190931     0.00249531     0.00157254     0.00740264     0.02034422
      0.02746041     0.02356657     0.03226502     0.04920364     0.05812807     0.09131547     0.12217437
      0.17851369     0.16690609     0.10823880     0.06410378     0.02256286     0.00874199     0.00479242
      0.00070613     0.00249531     0.00176969     0.00030895     0.00070613     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1998  1       4      0       0      52.00  0.00000000     0.00034887     0.00000000     0.00137318
      0.00270181     0.00248726     0.00591400     0.01126019     0.02899629     0.05805032     0.09199311
      0.10474214     0.09814052     0.09568145     0.06905034     0.09485873     0.08457000     0.07699409
      0.04979765     0.03329338     0.01459303     0.01792085     0.00864189     0.01083796     0.01225454
      0.00708289     0.00424973     0.00424973     0.00566631     0.00424973     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2001  1       4      0       0      27.92  0.00000000     0.00161547     0.00484641     0.01453924
      0.02100113     0.00474165     0.00948329     0.01401541     0.01854752     0.00302141     0.00000000
      0.00000000     0.00797259     0.01766542     0.04710571     0.04720694     0.05762692     0.06951278
      0.06034025     0.02266765     0.01047370     0.01777019     0.02626040     0.05319604     0.08487238
      0.14598634     0.10332127     0.04731076     0.03652630     0.01740743     0.01745761     0.01099486
      0.00401182     0.00250111     0.00000000
```

```
2002    1       4       0       0       35.00   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00085584      0.00000000      0.00000000      0.00624475      0.01097148      0.01868728
        0.03750168      0.08807442      0.11269280      0.12060978      0.13690916      0.14742611      0.10449264
        0.08725266      0.04593567      0.03360023      0.01557490      0.00828526      0.00628887      0.00615380
        0.00214131      0.00615380      0.00329172      0.00000000      0.00000000      0.00000000      0.00085584
        0.00000000      0.00000000      0.00000000
2003    1       4       0       0       8.00    0.00000000      0.01135094      0.03029252      0.04355863
        0.03412286      0.02844739      0.01326611      0.00287276      0.00191517      0.00000000      0.00000000
        0.00567547      0.00000000      0.01953262      0.04553302      0.08459826      0.10822172      0.20254064
        0.15137012      0.08302878      0.03336694      0.03831090      0.03751858      0.01631771      0.00000000
        0.00815886      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2004    1       4       0       0       23.96   0.00000000      0.00000000      0.00000000      0.00030395
        0.00030395      0.00091186      0.00091186      0.00350382      0.01020687      0.01127401      0.04794632
        0.12643082      0.20197666      0.14344433      0.14203993      0.11592603      0.09330117      0.04923449
        0.01751606      0.01108608      0.00831456      0.00428114      0.00277152      0.00277152      0.00000000
        0.00000000      0.00000000      0.00277152      0.00000000      0.00000000      0.00277152      0.00000000
        0.00000000      0.00000000      0.00000000
2005    1       4       0       0       24.00   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00212137      0.00110232      0.00562369      0.01636823      0.04899982
        0.08819200      0.07923191      0.11221745      0.13792181      0.19198195      0.12933252      0.08621162
        0.03538646      0.02362144      0.01367963      0.01457503      0.00293326      0.00293326      0.00000000
        0.00077216      0.00000000      0.00154432      0.00077216      0.00000000      0.00370542      0.00077216
        0.00000000      0.00000000      0.00000000
2006    1       4       0       0       58.00   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00001079      0.00184421      0.00382211      0.01067859      0.03096719
        0.08538269      0.16050822      0.19016058      0.15622426      0.11646645      0.09507163      0.05683049
        0.04545111      0.03021452      0.00697611      0.00588669      0.00175219      0.00043805      0.00043805
        0.00043805      0.00043805      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2007    1       4       0       0       68.04   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00175663      0.00344986
        0.01767662      0.05683327      0.10783370      0.17134769      0.21759152      0.18290765      0.12467257
        0.06276645      0.02866725      0.01205854      0.00751019      0.00394691      0.00028891      0.00028891
        0.00000000      0.00040331      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2008    1       4       0       0       29.84   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00789417      0.01304289      0.01455329      0.00909581      0.00545748
        0.00000000      0.00576625      0.03578913      0.10459187      0.17947626      0.17343037      0.17086600
        0.13515201      0.06029936      0.02786654      0.01766671      0.00452787      0.01406845      0.00727665
        0.00909581      0.00044477      0.00181916      0.00000000      0.00181916      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1990    2       5       0       0       5.00    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00423844      0.00423844      0.01271533      0.05649028
        0.06589417      0.14635767      0.16046350      0.20986739      0.10728467      0.07152311      0.04470194
        0.02682117      0.04470194      0.01788078      0.01788078      0.00000000      0.00000000      0.00000000
        0.00000000      0.00894039      0.00000000
1991    2       5       0       0       9.00    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.03712631      0.04515987      0.10035013      0.05519026      0.04659672
        0.12116623      0.08878889      0.07028651      0.02325135      0.03240487      0.01378095      0.03540011
        0.08000000      0.05158877      0.10561281      0.04686734      0.03296485      0.00443208      0.00903197
        0.00000000      0.00000000      0.00000000
1995    2       5       0       0       11.00   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.01950857      0.04798041      0.05769349      0.08554857
        0.02490539      0.01320899      0.00504723      0.00641380      0.00573299      0.03901186      0.13647272
        0.16125025      0.21100162      0.09357344      0.05732992      0.01719898      0.01146598      0.00573299
        0.00092278      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1996    2       5       0       0       2.00    0.00000000      0.00000000      0.00001400      0.00014000
        0.00007000      0.00002800      0.00001400      0.03998600      0.19998600      0.19994400      0.23991600
        0.07998600      0.07997200      0.11995800      0.00000000      0.03998600      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
1997    2       5       0       0       5.00    0.00000000      0.00000000      0.00000000      0.00097606
        0.00292817      0.00683240      0.00488029      0.00195212      0.00488029      0.00097606      0.00000000
        0.00000000      0.00097606      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.01644648      0.01644648      0.03289296      0.08630575      0.12726249      0.14990920
        0.15622060      0.22175686      0.07804788      0.06360345      0.00412893      0.00000000      0.00613098
        0.01644648      0.00000000      0.00000000
1998    2       5       0       0       14.00   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.01141937      0.00761291      0.00596310      0.02660122
        0.03254966      0.08205847      0.10486790      0.12013326      0.12173332      0.12745034      0.12746500
        0.04181239      0.05706753      0.04566282      0.03234755      0.02092818      0.00380646      0.01141937
```

```
      0.01148822     0.00000000     0.00000000     0.00380646     0.00000000     0.00380646     0.00000000
      0.00000000     0.00000000     0.00000000
2000  2       5      0       0      4.00   0.00000000     0.00000000     0.00000000     0.01000000
      0.04000000     0.06000000     0.06000000     0.05000000     0.02000000     0.02000000     0.01000000
      0.00000000     0.02000000     0.02000000     0.03000000     0.04000000     0.09000000     0.09000000
      0.19000000     0.08000000     0.09000000     0.01000000     0.03000000     0.02000000     0.00000000
      0.00000000     0.01000000     0.01000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2001  2       5      0       0      12.96  0.00000000     0.00000000     0.02731855     0.11820557
      0.13160264     0.18732720     0.26708343     0.10542782     0.06974799     0.03014786     0.01674374
      0.00893138     0.00390265     0.00056304     0.01005745     0.00615480     0.01006451     0.00559529
      0.00000000     0.00056304     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00056304     0.00000000
      0.00000000     0.00000000     0.00000000
2002  2       5      0       0      19.00  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00410100     0.00000000     0.00093685
      0.01277141     0.00503784     0.03421324     0.13222702     0.18489104     0.17972179     0.12632830
      0.06801920     0.02219360     0.07416698     0.05280569     0.04298364     0.02025135     0.00784097
      0.01089772     0.00363257     0.00802148     0.00726515     0.00122476     0.00000000     0.00046842
      0.00000000     0.00000000     0.00000000
2003  2       5      0       0      8.00   0.00000000     0.00000000     0.00037979     0.00699937
      0.01985875     0.03465598     0.04123665     0.04347645     0.01437853     0.01395982     0.00003892
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.01980038
      0.08580164     0.16500315     0.15180290     0.09900189     0.03300063     0.03300063     0.01320025
      0.01320025     0.03960076     0.01320025     0.03960076     0.04620088     0.05280101     0.01320025
      0.00660013     0.00000000     0.00000000
2005  2       5      0       0      32.00  0.00054014     0.00270071     0.01978392     0.04063269
      0.07096782     0.07827001     0.03189432     0.02583896     0.01394701     0.01030808     0.01619426
      0.05094623     0.08655313     0.12870254     0.07852154     0.07029113     0.06460918     0.05134865
      0.04084789     0.02365863     0.02639729     0.01427999     0.00631013     0.01075765     0.00316436
      0.00288499     0.00000000     0.00000000     0.00026077     0.00787266     0.01049688     0.00576999
      0.00524844     0.00000000     0.00000000
2006  2       5      0       0      46.96  0.00000000     0.00000000     0.00000000     0.00051226
      0.00000000     0.00051226     0.00171235     0.00209045     0.01001581     0.00671531     0.01090625
      0.06120951     0.12614686     0.11166181     0.08116696     0.04896328     0.08400098     0.10841972
      0.09948965     0.08715687     0.05790459     0.04674466     0.03440975     0.01058517     0.00310010
      0.00254644     0.00000000     0.00148250     0.00254644     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
2007  2       5      0       0      14.80  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00416028     0.00138676
      0.00277352     0.00554703     0.00693379     0.01631432     0.03018190     0.04160276     0.06485087
      0.07055713     0.07830371     0.05048893     0.08572351     0.15089282     0.10872444     0.13694562
      0.06272258     0.03972165     0.01150047     0.00383349     0.01150047     0.00383349     0.00383349
      0.00766698     0.00000000     0.00000000
2008  2       5      0       0      19.88  0.00000000     0.00000000     0.00291272     0.00000000
      0.01456360     0.02621448     0.05191043     0.09401524     0.04888328     0.02053387     0.00622954
      0.00291272     0.00715217     0.04409490     0.11679848     0.14500305     0.10116741     0.08475855
      0.07801048     0.08383592     0.03377075     0.01496770     0.00715217     0.00980562     0.00132673
      0.00265345     0.00000000     0.00066336     0.00000000     0.00066336     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000
1999  1       6      0       0      2.96   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.04594725     0.07657876     0.07657876     0.13784176
      0.14735901     0.13784176     0.06126301     0.04594725     0.02483300     0.03806899     0.03806899
      0.03806899     0.02855174     0.03806899     0.04014875     0.00951725     0.00000000     0.00000000
      0.01531575     0.00000000     0.00000000
1999  2       6      0       0      4.16   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.01923077     0.01923077     0.02884615     0.15384615
      0.19230769     0.21153846     0.17307692     0.11538462     0.04807692     0.02884615     0.00961538
      0.00000000     0.00000000     0.00000000
2000  1       6      0       0      97.49  0.00000000     0.00000000     0.00000000     0.00000000
      0.00044007     0.00000000     0.00008945     0.00017185     0.00000000     0.00008945     0.00000000
      0.00008945     0.00000000     0.00000000     0.00051685     0.00250747     0.01275034     0.02454676
      0.03164326     0.04836751     0.05362987     0.05746678     0.06963150     0.07358363     0.10087544
      0.09574785     0.10545028     0.09047766     0.08976461     0.06078447     0.04135068     0.02233641
      0.01025975     0.00561604     0.00181257
2000  2       6      0       0      10.56  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00012687     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.02393793     0.02419168     0.08467086     0.13419606     0.15100766     0.17596057
      0.13318109     0.14565754     0.07855951     0.03641439     0.00000000     0.01209584     0.00000000
      0.00000000     0.00000000     0.00000000
2001  1       6      0       0      97.38  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00085222     0.00153399     0.00119311
```

```
      0.00113514     0.00059604     0.00045471     0.00000000     0.00045471     0.00000000     0.00003266
      0.00256454     0.01048513     0.02270522     0.07322574     0.16135249     0.17501729     0.17158628
      0.12789514     0.09139077     0.06854099     0.04419799     0.01988224     0.01356034     0.00755174
      0.00212651     0.00152588     0.00013913
2001  2       6      0       0      17.92  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00058692     0.00000000
      0.00000000     0.00000000     0.00000000     0.00387737     0.00951549     0.04405594     0.09727152
      0.18163080     0.21346772     0.19737134     0.13392857     0.06132616     0.03535844     0.01068933
      0.00622504     0.00293460     0.00176076
2002  1       6      0       0      199.67 0.00000000     0.00000000     0.00000000     0.00002395
      0.00004789     0.00004789     0.00004789     0.00002395     0.00007184     0.00004789     0.00010437
      0.00002395     0.00000594     0.00000000     0.00049115     0.00047723     0.00057800     0.00204847
      0.00399015     0.00438025     0.00678425     0.00391012     0.01123168     0.02957384     0.10562164
      0.18406749     0.19236779     0.13900016     0.11920807     0.07195523     0.05814180     0.03240284
      0.01956375     0.00767391     0.00608665
2002  2       6      0       0      4.96   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00429310     0.00000000
      0.00000000     0.00429310     0.01287930     0.00429310     0.00858620     0.00858620     0.05458485
      0.15087527     0.07175725     0.17510003     0.24563185     0.05734412     0.07298268     0.06010338
      0.05151719     0.00429310     0.01287930
2003  1       6      0       0      180.87 0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00004049     0.00000000     0.00004049     0.00004049     0.00068305     0.00449794
      0.00557915     0.00386513     0.00133049     0.00020246     0.00048186     0.00265833     0.01217700
      0.02206910     0.02856029     0.04761161     0.03195229     0.04251140     0.05296583     0.05968367
      0.05702463     0.10792606     0.11449130     0.10769719     0.09759621     0.08502517     0.05443555
      0.03165418     0.01713251     0.01006611
2003  2       6      0       0      10.92  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.01669106     0.03184588
      0.07989499     0.18444250     0.15922940     0.25504733     0.15559635     0.07493325     0.02821283
      0.00537683     0.00796147     0.00076812
2004  1       6      0       0      136.37 0.00008226     0.00008226     0.00000000     0.00000000
      0.00018791     0.00000000     0.00032294     0.00070925     0.00205579     0.00484473     0.00472354
      0.00662960     0.00604760     0.00200999     0.01042354     0.01477097     0.02825649     0.02127997
      0.01903128     0.01259905     0.02017016     0.01296612     0.01717938     0.01725126     0.03624374
      0.03705378     0.06094929     0.06082207     0.10893555     0.09996509     0.13167762     0.10461369
      0.08713590     0.04484759     0.02613158
2004  2       6      0       0      5.00   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.03327201     0.08105797     0.20421721     0.23326712
      0.22020842     0.11788406     0.03115363     0.03220915     0.01557681     0.00000000     0.00000000
      0.00778841     0.00000000     0.00000000     0.00778841     0.00778841     0.00000000     0.00778841
      0.00000000     0.00000000     0.00000000
2005  1       6      0       0      105.47 0.00000000     0.00000000     0.00000000     0.00000000
      0.00005916     0.00014486     0.00160172     0.00033291     0.00028972     0.00043459     0.00028972
      0.00023665     0.00205015     0.01203710     0.02841310     0.04665028     0.09384141     0.08350768
      0.06824747     0.04660513     0.05266671     0.04785497     0.05449036     0.05553151     0.04706413
      0.03364737     0.03543674     0.03119570     0.04285660     0.04004946     0.06565787     0.03872486
      0.03626501     0.01872635     0.01509068
2005  2       6      0       0      3.00   0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.01333333
      0.00000000     0.06666667     0.06666667     0.20000000     0.16000000     0.09333333     0.09333333
      0.05333333     0.02666667     0.05333333     0.00000000     0.08000000     0.04000000     0.02666667
      0.02666667     0.00000000     0.00000000
2006  1       6      0       0      26.96  0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00386957     0.01155870
      0.04052558     0.16343882     0.34448732     0.25118147     0.10912906     0.01744158     0.00467980
      0.00998057     0.00193746     0.00123065     0.00689366     0.00829427     0.01139421     0.00488803
      0.00868176     0.00000000     0.00038749
2007  1       6      0       0      112.76 0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000975     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00002168     0.00061608     0.00252153     0.01445847
      0.06876691     0.12967443     0.20985488     0.23303838     0.18150734     0.07361576     0.02522647
      0.01471405     0.00926859     0.00602256     0.00913344     0.00813108     0.00494119     0.00245299
      0.00258896     0.00132522     0.00211026
2008  1       6      0       0      320.54 0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00012459     0.00000000     0.00000000     0.00000000     0.00000000
      0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00015619     0.00123381
      0.00855194     0.01621734     0.03128149     0.03974274     0.04997679     0.04879471     0.04745589
      0.06241934     0.11030761     0.16911663     0.17546273     0.12098902     0.06333711     0.02631149
      0.01354661     0.00662101     0.00835296
```

```
1999    1       9       0       0       15.40   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00779221      0.00000000      0.01038961      0.02337662      0.04415584      0.08311688      0.08311688
        0.13246753      0.12727273      0.14545455      0.12207792      0.10389610      0.04935065      0.03116883
        0.02077922      0.00779221      0.00779221
2000    1       9       0       0       17.24   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00232019      0.00000000      0.00232019      0.01392111      0.00928074      0.06960557      0.08584687
        0.16937355      0.12761021      0.15081206      0.11832947      0.09976798      0.06032483      0.03944316
        0.03016241      0.00696056      0.01392111
2001    1       9       0       0       14.20   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00281690      0.00281690      0.00281690      0.00563380      0.00000000
        0.00281690      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00281690      0.02535211      0.05633803      0.08732394
        0.17464789      0.15211268      0.16338028      0.08450704      0.07887324      0.05070423      0.03098592
        0.03380282      0.01690141      0.02535211
2002    1       9       0       0       13.48   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00593472      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00296736      0.01780415
        0.08902077      0.15727003      0.18991098      0.17210682      0.15133531      0.12166172      0.03264095
        0.02967359      0.01483680      0.01483680
2003    1       9       0       0       15.80   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00253165      0.00253165      0.00253165      0.00000000      0.00253165      0.00000000      0.00253165
        0.00506329      0.01518987      0.01012658      0.02278481      0.01265823      0.02278481      0.02278481
        0.02784810      0.03797468      0.09113924      0.16708861      0.21265823      0.13924051      0.10126582
        0.07088608      0.01518987      0.01265823
2004    1       9       0       0       18.96   0.02320675      0.01687764      0.01687764      0.02953586
        0.03375527      0.02742616      0.06329114      0.08016878      0.07805907      0.05063291      0.02531646
        0.00421941      0.00632911      0.00000000      0.00000000      0.00000000      0.00210970      0.00210970
        0.00210970      0.00421941      0.00000000      0.00210970      0.00632911      0.00632911      0.01054852
        0.01476793      0.02109705      0.04641350      0.06540084      0.09915612      0.10970464      0.07805907
        0.04852321      0.01265823      0.01265823
2005    1       9       0       0       16.20   0.00000000      0.00246914      0.00246914      0.00246914
        0.00246914      0.00000000      0.00740741      0.00493827      0.00246914      0.00246914      0.00740741
        0.00493827      0.00246914      0.01975309      0.04444444      0.07901235      0.12839506      0.26172840
        0.29876543      0.09876543      0.02222222      0.00493827      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000
2006    1       9       0       0       20.60   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00388350      0.00194175      0.00000000      0.00000000      0.00000000
        0.00388350      0.00388350      0.00194175      0.00000000      0.00582524      0.00000000      0.00388350
        0.00388350      0.06407767      0.18640777      0.32815534      0.19805825      0.09320388      0.02912621
        0.01941748      0.00970874      0.00970874      0.00000000      0.00194175      0.01359223      0.00776699
        0.00582524      0.00388350      0.00000000
2007    1       9       0       0       19.76   0.00000000      0.00607287      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.01012146      0.04048583      0.07085020      0.19635628      0.25101215      0.25303644      0.10323887
        0.03846154      0.00607287      0.00607287      0.00404858      0.00607287      0.00000000      0.00202429
        0.00607287      0.00000000      0.00000000
2008    1       9       0       0       16.36   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00244499      0.00000000
        0.00000000      0.01466993      0.04156479      0.12224939      0.19559902      0.22982885      0.15892421
        0.17114914      0.01955990      0.01955990      0.01222494      0.00244499      0.00488998      0.00244499
        0.00000000      0.00000000      0.00244499
# 1997  1       10      0       0       47.02   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00021268      0.00021268      0.00021268      0.00000000
        0.00000000      0.00000000      0.00191408      0.00085070      0.00276478      0.00148873      0.00361548
        0.00085070      0.01573798      0.00276478      0.02743513      0.01105912      0.08294343      0.05784772
        0.18290089      0.13100808      0.20565717      0.08230540      0.08570821      0.02722246      0.02849851
        0.01531263      0.01488728      0.01658869
# 1999  1       10      0       0       41.00   0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00024390      0.00024390      0.00292683      0.00682927      0.01097561
        0.02219512      0.02073171      0.02195122      0.01439024      0.01756098      0.02073171      0.05195122
        0.01756098      0.01658537      0.00365854      0.01024390      0.00219512      0.05341463      0.02951220
        0.14463415      0.06975610      0.18560976      0.08268293      0.11682927      0.03707317      0.02463415
        0.00658537      0.00341463      0.00487805
# 2000  1       10      0       0       6.60    0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
        0.00151515      0.00000000      0.00151515      0.00000000      0.00000000      0.00303030      0.01363636
```

```
       0.02424242     0.08636364     0.16818182     0.18333333     0.20303030     0.14090909     0.09696970
       0.04090909     0.01515152     0.02121212
# 2001 1       10     0       0      4.80   0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00833333     0.00833333     0.00208333
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00208333     0.00208333     0.01875000     0.02916667
       0.09375000     0.06250000     0.16458333     0.20416667     0.18750000     0.10000000     0.06458333
       0.03125000     0.02083333     0.00000000
# 2005 1       10     0       0      51.45  0.00019436     0.00000000     0.00000000     0.00000000
       0.00019436     0.00000000     0.00038873     0.00000000     0.00019436     0.00000000     0.00000000
       0.00000000     0.00019436     0.00077745     0.00544218     0.01710398     0.03129252     0.02915452
       0.04314869     0.08396501     0.11020408     0.08649174     0.05597668     0.02896016     0.01982507
       0.01846453     0.01516035     0.02157434     0.03479106     0.04528669     0.07463557     0.10456754
       0.07774538     0.05908649     0.03517979
2006   1       10     0       0      42.01  0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00071412     0.00023804
       0.00333254     0.01261604     0.04118067     0.13639610     0.20542728     0.17995715     0.11283028
       0.08783623     0.05046418     0.04356106     0.02475601     0.01904308     0.01666270     0.01951916
       0.01690074     0.01690074     0.01166389
2008   1       10     0       0      35.91  0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00083542     0.00167084     0.00918964     0.03313840     0.12141465     0.20328599
       0.23085492     0.16374269     0.09635199     0.05012531     0.03648009     0.02060707     0.01280980
       0.00724032     0.00668338     0.00556948
2009   1       12     0       0      33.20  0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00052810     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00057622     0.00495836
       0.03103000     0.09960013     0.16374495     0.20219759     0.22838807     0.15886180     0.07916015
       0.02095343     0.00615335     0.00086496     0.00258641     0.00000000     0.00039648     0.00000000
       0.00000000     0.00000000     0.00000000

10 #_N_age_bins
0 1 2 3 4 5 6 7 8 11
3 #_N_ageerror_definitions
0.5    1.5    2.5    3.5    4.5    5.5    6.5    7.5    8.5    9.5    10.5   11.5   12.5   13.5   14.5
       15.5   #EN AGE
0.121  0.433  0.594  0.577  0.814  0.967  1.120  1.273  1.426  1.579  1.732  1.885  2.038  2.191  2.344
       2.497  #EN STD DEV
0.5    1.5    2.5    3.5    4.5    5.5    6.5    7.5    8.5    9.5    10.5   11.5   12.5   13.5   14.5
       15.5   #CA AGE
0.218  0.344  0.468  0.542  0.894  0.972  1.122  1.279  1.436  1.593  1.750  1.907  2.064  2.221  2.377
       2.534  #CA STD DEV
0.5    1.5    2.5    3.5    4.5    5.5    6.5    7.5    8.5    9.5    10.5   11.5   12.5   13.5   14.5
       15.5   #NW AGE
0.310  0.471  0.621  0.552  0.659  0.688  0.945  1.064  1.234  1.249  1.353  1.457  1.561  1.666  1.770
       1.874  #NW STD DEV

1430 #_N_Agecomp_obs
3 #_Lbin_method: 1=poplenbins; 2=datalenbins; 3=lengths
-1 #_combine males into females at or below this bin number
#Yr Seas Flt/Svy Gender Part Ageerr Lbin_lo Lbin_hi Nsamp datavector(female-male)
1989   1      1      0      0      1      17     17.5   0.04   0.00000000     1.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   1      1      0      0      1      18     18.5   0.28   0.00000000     1.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   1      1      0      0      1      19     19.5   0.52   0.00000000     0.75507536     0.12805850
       0.11686614     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   1      1      0      0      1      20     20.5   0.96   0.00000000     0.84947647     0.10801295
       0.04251058     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   1      1      0      0      1      21     21.5   1.44   0.00000000     0.27289931     0.39409670
       0.08668681     0.23548134     0.01083585     0.00000000     0.00000000     0.00000000     0.00000000
1989   1      1      0      0      1      22     22.5   0.44   0.00000000     0.20025745     0.77150715
       0.01411770     0.01411770     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   1      1      0      0      1      23     23.5   0.20   0.00000000     0.02863972     0.53647034
       0.43488994     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   2      1      0      0      1      17     17.5   0.04   1.00000000     0.00000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   2      1      0      0      1      18     18.5   0.08   0.50000000     0.50000000     0.00000000
       0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   2      1      0      0      1      19     19.5   0.20   0.00000000     0.76463377     0.00000000
       0.23536623     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
1989   2      1      0      0      1      20     20.5   1.80   0.04811360     0.61875695     0.27903298
       0.03003967     0.02405680     0.00000000     0.00000000     0.00000000     0.00000000     0.00000000
```

```
1989    2       1       0       0       1       21      21.5    0.68    0.00000000      0.72440378      0.06655176
        0.18697528      0.02206918      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1989    2       1       0       0       1       22      22.5    0.12    0.00000000      0.00000000      0.56705436
        0.00000000      0.43294564      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       17      17.5    0.16    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       18      18.5    0.16    0.00000000      0.26993019      0.00000000
        0.73006981      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       19      19.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       20      20.5    1.24    0.02055345      0.29128098      0.53562945
        0.08327652      0.06925961      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       21      21.5    4.16    0.01146984      0.16779061      0.50280585
        0.20684981      0.04799975      0.05161429      0.01146984      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       22      22.5    2.84    0.00000000      0.11377358      0.38694640
        0.32135397      0.12850215      0.02965434      0.01976956      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       23      23.5    1.16    0.00000000      0.13191720      0.15501479
        0.46504436      0.12401183      0.06200591      0.06200591      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       14      14.5    0.80    0.85000000      0.15000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       15      15.5    2.44    0.82217493      0.17782507      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       16      16.5    1.84    0.85533456      0.12887344      0.01579199
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       17      17.5    0.84    0.70787167      0.29212833      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       18      18.5    0.28    0.56836200      0.28418100      0.14745700
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       19      19.5    0.76    0.05823671      0.91172755      0.03003575
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       20      20.5    3.48    0.04074390      0.61407739      0.30873274
        0.03644597      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       21      21.5    6.76    0.00000000      0.47627902      0.39779920
        0.09296835      0.00973978      0.01324360      0.00997006      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       22      22.5    5.60    0.00000000      0.29146939      0.44228969
        0.17344438      0.03050176      0.02607384      0.03622094      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       23      23.5    3.12    0.00000000      0.12692954      0.49167697
        0.20711712      0.12033853      0.05393785      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       24      24.5    0.36    0.00000000      0.00000000      0.44962294
        0.45934024      0.00000000      0.09103682      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       12      12.5    0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       13      13.5    0.12    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       14      14.5    0.24    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       15      15.5    1.32    0.87719634      0.12280366      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       16      16.5    1.12    0.59193134      0.40806866      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       17      17.5    2.44    0.06556289      0.91825406      0.00384062
        0.01234243      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       18      18.5    4.76    0.00772234      0.91521309      0.05495024
        0.02211433      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       19      19.5    6.36    0.01074664      0.71985315      0.23672633
        0.03267389      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       20      20.5    8.72    0.00000000      0.35443124      0.43983122
        0.15605251      0.04968503      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       21      21.5    10.76   0.00000000      0.12841088      0.42874078
        0.30068037      0.09302259      0.03626176      0.00845818      0.00314735      0.00127809      0.00000000
1991    1       1       0       0       1       22      22.5    8.44    0.00000000      0.03720725      0.29076002
        0.38913491      0.20652702      0.04407192      0.02394012      0.00835875      0.00000000      0.00000000
1991    1       1       0       0       1       23      23.5    3.88    0.00000000      0.00000000      0.14761797
        0.45657092      0.22257993      0.11936713      0.04321343      0.01065062      0.00000000      0.00000000
1991    1       1       0       0       1       24      24.5    0.92    0.00000000      0.00000000      0.12214195
        0.40170121      0.35401488      0.12214195      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       1       25      25.5    0.12    0.00000000      0.00000000      0.00000000
        0.33333333      0.00000000      0.33333333      0.00000000      0.33333333      0.00000000      0.00000000
1991    1       1       0       0       1       26      26.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       11      11.5    0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       12      12.5    0.12    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       13      13.5    0.28    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1991    2       1       0       0       1       14      14.5    0.84    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       15      15.5    0.96    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       16      16.5    0.76    0.69031696      0.24078843      0.06889461
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       17      17.5    0.72    0.39417038      0.60582962      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       18      18.5    1.36    0.00000000      0.99592962      0.00407038
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       19      19.5    6.08    0.00756448      0.82518361      0.15472757
        0.01252434      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       20      20.5    7.84    0.00000000      0.68791082      0.25056525
        0.03149156      0.03003237      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       21      21.5    5.56    0.00000000      0.37771287      0.25128087
        0.22827734      0.10802743      0.00812699      0.01328725      0.01328725      0.00000000      0.00000000
1991    2       1       0       0       1       22      22.5    5.72    0.00000000      0.08135471      0.30837491
        0.41174062      0.13621620      0.04222052      0.01897661      0.00111643      0.00000000      0.00000000
1991    2       1       0       0       1       23      23.5    5.12    0.00000000      0.02172106      0.19659048
        0.37831674      0.29023263      0.08494022      0.02709212      0.00110675      0.00000000      0.00000000
1991    2       1       0       0       1       24      24.5    1.56    0.00000000      0.00000000      0.12066172
        0.38099630      0.22043336      0.11976010      0.15814852      0.00000000      0.00000000      0.00000000
1991    2       1       0       0       1       25      25.5    0.16    0.00000000      0.00000000      0.00000000
        0.78142306      0.09194521      0.06331586      0.00000000      0.06331586      0.00000000      0.00000000
1991    2       1       0       0       1       26      26.5    0.68    0.00000000      0.00000000      0.00000000
        0.07720733      0.28987523      0.42024954      0.10633395      0.10633395      0.00000000      0.00000000
1992    1       1       0       0       1       13      13.5    0.32    0.07125307      0.92874693      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       14      14.5    3.20    0.02541402      0.97458598      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       15      15.5    5.20    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       16      16.5    4.76    0.01147267      0.97705467      0.01147267
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       17      17.5    2.68    0.00000000      0.83155566      0.16469508
        0.00374926      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       18      18.5    1.68    0.00000000      0.81557406      0.18442594
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       19      19.5    0.56    0.00000000      0.28530513      0.71469487
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       20      20.5    0.32    0.00000000      0.04716085      0.95283915
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       21      21.5    0.28    0.00000000      0.17806137      0.77244354
        0.00000000      0.04949508      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       22      22.5    0.08    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       23      23.5    0.08    0.00000000      0.00000000      0.00000000
        0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       1       0       0       1       24      24.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       13      13.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       14      14.5    0.56    0.30576101      0.47530015      0.21893884
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       15      15.5    1.64    0.19866359      0.71297104      0.08836537
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       16      16.5    2.16    0.00000000      0.78629305      0.19414295
        0.01956400      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       17      17.5    1.68    0.00000000      0.84066880      0.15933120
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       18      18.5    1.44    0.00000000      0.95978358      0.01919484
        0.02102158      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       19      19.5    1.32    0.05373081      0.73676880      0.19094609
        0.01855430      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       20      20.5    0.32    0.12719286      0.21138452      0.66142262
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       21      21.5    0.20    0.00000000      0.32246639      0.50036238
        0.17717122      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       1       22      22.5    0.20    0.00000000      0.16607137      0.50178590
        0.33214273      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       1       0       0       1       14      14.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       1       0       0       1       15      15.5    0.08    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       1       0       0       1       16      16.5    1.28    0.02380530      0.07141591      0.83336289
        0.07141591      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1993    1       1       0       0       1       17      17.5    2.56    0.02403250      0.18648888      0.70479713
        0.08468149      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       1       0       0       1       18      18.5    0.76    0.00000000      0.06383508      0.90273935
        0.03342557      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       1       0       0       1       19      19.5    0.24    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       13      13.5    0.08    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       14      14.5    1.20    0.00896180      0.99103820      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       15      15.5    3.88    0.00000000      0.99706162      0.00293838
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       16      16.5    1.40    0.07852136      0.73759026      0.17162916
        0.01225923      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       17      17.5    1.44    0.07207980      0.75683792      0.14857522
        0.02250706      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       18      18.5    0.52    0.00000000      0.54344822      0.45655178
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       1       19      19.5    0.36    0.00000000      0.11453930      0.77092139
        0.11453930      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       14      14.5    0.60    0.06841807      0.93158193      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       15      15.5    1.80    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       16      16.5    1.92    0.00000000      0.98222720      0.00000000
        0.01777280      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       17      17.5    0.80    0.06587946      0.77941685      0.11566010
        0.03904359      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       18      18.5    2.16    0.00000000      0.15098454      0.38765683
        0.39803977      0.06331886      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       19      19.5    2.40    0.08724595      0.09868843      0.35906390
        0.44002670      0.01497503      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       20      20.5    0.60    0.00000000      0.03900828      0.19245680
        0.69181066      0.07672426      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       21      21.5    0.24    0.00000000      0.00000000      0.18812861
        0.81187139      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       1       25      25.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       11      11.5    0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       12      12.5    0.08    0.50000000      0.50000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       13      13.5    0.20    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       14      14.5    0.40    0.49435124      0.50564876      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       15      15.5    1.08    0.28727737      0.62149034      0.09123229
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       16      16.5    2.28    0.35247662      0.52083701      0.12668637
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       17      17.5    1.88    0.30771656      0.47384309      0.16900093
        0.04943943      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       18      18.5    2.00    0.01347448      0.54955980      0.33669853
        0.10026719      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       19      19.5    0.96    0.02794279      0.28346467      0.50384589
        0.18474664      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       1       20      20.5    0.24    0.00000000      0.00000000      0.46772057
        0.27520190      0.00000000      0.25707753      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       15      15.5    0.16    0.28288443      0.28288443      0.28288443
        0.15134672      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       16      16.5    1.68    0.06981480      0.57673485      0.28489645
        0.06855389      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       17      17.5    4.00    0.12179071      0.58112007      0.27123583
        0.02585339      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       18      18.5    4.12    0.13895314      0.34185397      0.50519815
        0.01399474      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       19      19.5    1.40    0.26184687      0.29905639      0.33788009
        0.05527455      0.04594209      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       20      20.5    1.00    0.00000000      0.05611066      0.49387342
        0.30001061      0.15000531      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       21      21.5    0.24    0.00000000      0.00000000      0.75761373
        0.12119314      0.12119314      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       22      22.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       1       26      26.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1995   2      1      0      0      1      12     12.5   0.04   1.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      13     13.5   0.24   1.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      14     14.5   0.56   0.62555322   0.37444678   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      15     15.5   0.44   0.62607760   0.37392240   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      16     16.5   0.60   0.38969237   0.61030763   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      17     17.5   1.00   0.13825924   0.86174076   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      18     18.5   1.28   0.12603936   0.48872749   0.38523315
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      19     19.5   1.88   0.00000000   0.33493953   0.62853811
       0.03652236   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      20     20.5   0.92   0.00000000   0.16229605   0.54434103
       0.14668146   0.14668146   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      21     21.5   0.32   0.00000000   0.21386770   0.31469676
       0.06593340   0.40550214   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1995   2      1      0      0      1      22     22.5   0.04   0.00000000   0.00000000   0.00000000
       1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      15     15.5   0.36   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      16     16.5   0.68   0.18375397   0.64435857   0.17188746
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      17     17.5   0.56   0.00000000   0.92210807   0.07789193
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      18     18.5   0.76   0.08982433   0.62750174   0.22357559
       0.05909834   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      19     19.5   1.72   0.03173157   0.32192234   0.44252744
       0.14035553   0.06346313   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      20     20.5   3.72   0.01027148   0.07954452   0.68630015
       0.12149016   0.07903306   0.02336062   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      21     21.5   3.68   0.00000000   0.04962986   0.55516974
       0.27120999   0.12399042   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      22     22.5   1.20   0.00000000   0.08778756   0.47969018
       0.17812017   0.23211541   0.02228668   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      23     23.5   0.08   0.00000000   0.00000000   1.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   1      1      0      0      1      24     24.5   0.04   0.00000000   0.00000000   0.00000000
       0.00000000   1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      17     17.5   0.16   0.00000000   0.11806766   0.88193234
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      18     18.5   0.80   0.00000000   0.69879585   0.30120415
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      19     19.5   1.20   0.00000000   0.34708424   0.53908015
       0.09580990   0.00000000   0.01802570   0.00000000   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      20     20.5   2.44   0.00000000   0.15130244   0.32733591
       0.33709124   0.13241097   0.05185944   0.00000000   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      21     21.5   1.36   0.00000000   0.02697502   0.22665107
       0.49706969   0.07600285   0.14632635   0.02697502   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      22     22.5   0.32   0.00000000   0.27310074   0.27310074
       0.26718800   0.18661052   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1996   2      1      0      0      1      25     25.5   0.04   0.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   1.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      16     16.5   0.56   0.19070481   0.71833960   0.09095559
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      17     17.5   0.84   0.12377890   0.68177182   0.19444928
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      18     18.5   0.88   0.00000000   0.60636092   0.33337403
       0.00000000   0.06026504   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      19     19.5   2.56   0.00000000   0.12039966   0.65584484
       0.17496763   0.04878787   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      20     20.5   4.00   0.00000000   0.04007482   0.43017560
       0.32979574   0.13079197   0.03895989   0.03020198   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      21     21.5   4.40   0.00000000   0.03684290   0.24573939
       0.49928737   0.16491396   0.05321638   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      22     22.5   0.80   0.00000000   0.07690250   0.28587149
       0.38665768   0.17702564   0.07354269   0.00000000   0.00000000   0.00000000   0.00000000
1997   1      1      0      0      1      23     23.5   0.12   0.00000000   0.00000000   0.61516849
       0.38483151   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   2      1      0      0      1      14     14.5   0.08   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
1997   2      1      0      0      1      15     15.5   0.20   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
```

```
1997    2       1       0       0       1       16      16.5    0.28    0.00000000      0.94818420      0.02590790
        0.02590790      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       18      18.5    0.60    0.00000000      0.39617377      0.57784037
        0.02598585      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       19      19.5    1.16    0.00000000      0.17377770      0.68741426
        0.12345986      0.01534818      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       20      20.5    1.56    0.00000000      0.01761817      0.26641392
        0.55035035      0.16561756      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       21      21.5    0.84    0.00000000      0.00000000      0.16146379
        0.56797329      0.27056292      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       22      22.5    0.32    0.00000000      0.00000000      0.00000000
        0.40597946      0.48318102      0.11083951      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       23      23.5    0.16    0.00000000      0.00000000      0.26545090
        0.73454910      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       1       24      24.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       15      15.5    0.16    0.00000000      0.47025774      0.52974226
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       16      16.5    0.16    0.00000000      0.07913995      0.92086005
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       17      17.5    0.56    0.00000000      0.00000000      0.70241339
        0.13188360      0.16570301      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       18      18.5    1.16    0.00000000      0.01203463      0.56249589
        0.38479868      0.04067080      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       19      19.5    1.92    0.00000000      0.00000000      0.30337935
        0.40209236      0.26551826      0.02901002      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       20      20.5    2.52    0.00000000      0.00410221      0.15656838
        0.44789918      0.30029828      0.04954192      0.04159003      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       21      21.5    1.00    0.00000000      0.00000000      0.10618837
        0.39377847      0.29244421      0.10379448      0.05189724      0.05189724      0.00000000      0.00000000
1998    1       1       0       0       1       22      22.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       1       23      23.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       13      13.5    0.28    0.17635663      0.71430463      0.00000000
        0.10933874      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       14      14.5    1.00    0.10033287      0.74374814      0.08277077
        0.07314822      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       15      15.5    2.80    0.04631762      0.55690596      0.30873871
        0.05678379      0.00000000      0.03125392      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       16      16.5    4.00    0.01353767      0.57401133      0.34850346
        0.03621369      0.02300179      0.00473206      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       17      17.5    2.96    0.00000000      0.36794573      0.53127795
        0.08417557      0.00598509      0.01061565      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       18      18.5    1.32    0.00000000      0.24419614      0.61534689
        0.14045697      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       19      19.5    0.64    0.00000000      0.08043876      0.57664361
        0.34291763      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       20      20.5    0.48    0.00000000      0.00000000      0.76445393
        0.12084376      0.11470231      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       21      21.5    0.36    0.00000000      0.00000000      0.42186433
        0.19976076      0.37837491      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    2       1       0       0       1       22      22.5    0.08    0.00000000      0.00000000      0.00000000
        0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       15      15.5    0.92    0.00000000      0.28736548      0.32911570
        0.33810510      0.04541371      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       16      16.5    4.40    0.01023766      0.29158243      0.37197386
        0.23441335      0.05382030      0.02581248      0.01215991      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       17      17.5    3.04    0.00000000      0.31156741      0.41295511
        0.17010061      0.07734037      0.01523357      0.01280293      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       18      18.5    1.56    0.00000000      0.22809273      0.47380569
        0.07712327      0.18847331      0.03250499      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       19      19.5    0.28    0.00000000      0.00000000      0.76441167
        0.00000000      0.23558833      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       20      20.5    0.32    0.00000000      0.00000000      0.50000000
        0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       21      21.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       1       22      22.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       10      10.5    0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       13      13.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       14      14.5    0.32    0.79420679      0.10289660      0.10289660
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1999    2       1       0       0       1       15      15.5    1.92    0.53815660      0.44671659      0.01512682
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       16      16.5    3.44    0.16407646      0.65292588      0.18299766
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       17      17.5    3.00    0.02448261      0.48069640      0.49482099
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       18      18.5    1.72    0.00000000      0.34689600      0.55201034
        0.07800100      0.02309266      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       19      19.5    0.88    0.00000000      0.36117795      0.59192287
        0.04689918      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       1       20      20.5    0.16    0.00000000      0.47773881      0.52226119
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       1       16      16.5    0.12    0.00000000      0.66666667      0.33333333
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       1       17      17.5    1.36    0.00000000      0.90367532      0.09632468
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       1       18      18.5    3.96    0.00000000      0.79311382      0.17173860
        0.02343172      0.01171586      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       1       19      19.5    3.68    0.00000000      0.57115664      0.30956563
        0.10527843      0.01399930      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       1       20      20.5    2.40    0.00000000      0.57635925      0.23147104
        0.12333482      0.05265754      0.01617735      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       1       21      21.5    0.40    0.00000000      0.41525287      0.29237357
        0.29237357      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       14      14.5    0.08    0.70928515      0.00000000      0.29071485
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       15      15.5    0.92    0.12529412      0.51054854      0.26322627
        0.10093107      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       16      16.5    0.52    0.00000000      0.93338635      0.06661365
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       17      17.5    0.28    0.06058336      0.93941664      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       18      18.5    2.36    0.01515018      0.59034372      0.36052310
        0.01699150      0.01699150      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       19      19.5    2.76    0.03040348      0.46322286      0.39801421
        0.09385647      0.01450298      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       20      20.5    1.56    0.01771677      0.63706871      0.24825683
        0.07271827      0.02423942      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       1       21      21.5    0.08    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       15      15.5    0.24    0.27952102      0.33333333      0.38714565
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       16      16.5    0.32    0.21066571      0.64344488      0.14588941
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       17      17.5    0.76    0.14632016      0.68658068      0.11478874
        0.05231042      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       18      18.5    1.48    0.00000000      0.67071904      0.30246172
        0.02681923      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       19      19.5    1.12    0.00000000      0.50262004      0.42787272
        0.03289703      0.03661020      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       20      20.5    1.16    0.00000000      0.10127388      0.79186296
        0.10686316      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       21      21.5    0.52    0.00000000      0.00000000      0.84678346
        0.15321654      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       1       22      22.5    0.20    0.00000000      0.20000000      0.60000000
        0.20000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       11      11.5    0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       12      12.5    0.20    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       13      13.5    0.40    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       14      14.5    1.92    0.53900310      0.43954136      0.02145554
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       15      15.5    1.52    0.47240237      0.50294706      0.02465057
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       16      16.5    0.60    0.43260136      0.51888392      0.04851472
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       17      17.5    0.64    0.08463998      0.65592080      0.18741523
        0.07202399      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       18      18.5    1.00    0.10005248      0.40610205      0.49384547
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       19      19.5    1.52    0.07202442      0.54850766      0.34969637
        0.02977155      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       1       20      20.5    0.72    0.20306207      0.38005438      0.35112421
        0.06575935      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
2001  2     1     0     0     1     21    21.5  0.04  0.00000000  0.00000000  1.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  2     1     0     0     1     23    23.5  0.04  0.00000000  0.00000000  0.00000000
      1.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     17    17.5  0.32  0.00000000  0.00000000  1.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     18    18.5  1.08  0.00000000  0.07069299  0.92930701
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     19    19.5  4.24  0.00000000  0.06153205  0.85865723
      0.07349847  0.00631224  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     20    20.5  2.92  0.00000000  0.03391161  0.76420432
      0.20188408  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     21    21.5  1.48  0.00000000  0.00000000  0.33098127
      0.59859631  0.07042242  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     22    22.5  1.76  0.00000000  0.02818917  0.00000000
      0.77058950  0.11665380  0.05637835  0.02818917  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     23    23.5  1.88  0.00000000  0.00000000  0.00000000
      0.58926127  0.35551548  0.02761162  0.02761162  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     24    24.5  0.60  0.00000000  0.00000000  0.00000000
      0.27019396  0.57869153  0.15111452  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     25    25.5  0.08  0.00000000  0.00000000  0.00000000
      0.00000000  1.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1982  1     2     0     0     2     26    26.5  0.08  0.00000000  0.00000000  0.00000000
      0.00000000  0.50000000  0.50000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     9     9.5   0.96  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     10    10.5  0.36  0.44444444  0.55555556  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     11    11.5  0.16  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     12    12.5  0.40  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     13    13.5  0.32  0.97685790  0.02314210  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     14    14.5  0.48  0.59407734  0.40592266  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     15    15.5  0.32  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     16    16.5  1.52  0.00000000  0.97027141  0.02972859
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     17    17.5  0.96  0.00000000  0.90373568  0.09626432
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     18    18.5  1.04  0.00000000  0.83630042  0.16369958
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     19    19.5  1.36  0.00000000  0.57690290  0.42309710
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     20    20.5  2.08  0.00000000  0.18904164  0.81095836
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     21    21.5  1.76  0.00000000  0.12838091  0.74118410
      0.13043499  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     22    22.5  0.24  0.00000000  0.00000000  0.51567079
      0.48432921  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1983  1     2     0     0     2     23    23.5  0.08  0.00000000  0.00000000  0.00000000
      1.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     16    16.5  0.08  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     17    17.5  0.56  0.00000000  0.78935373  0.21064627
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     18    18.5  2.28  0.00000000  0.86518855  0.13481145
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     19    19.5  2.40  0.00000000  0.57408299  0.38429634
      0.04162067  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     20    20.5  3.48  0.00000000  0.40699674  0.59300326
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     21    21.5  2.64  0.00000000  0.06638286  0.87987775
      0.05373939  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     22    22.5  2.12  0.00000000  0.03394619  0.85201343
      0.10492387  0.00911651  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     23    23.5  0.80  0.00000000  0.00000000  0.31820794
      0.64442381  0.03736824  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     24    24.5  0.24  0.00000000  0.00000000  0.17436281
      0.69745123  0.12818596  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1985  1     2     0     0     2     25    25.5  0.24  0.00000000  0.00000000  0.34872561
      0.52308842  0.12818596  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     11    11.5  0.12  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
```

```
1986  1     2     0     0     2     12    12.5  0.72  0.83333333  0.16666667  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     13    13.5  0.04  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     18    18.5  0.08  0.00000000  0.12122764  0.87877236
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     19    19.5  0.24  0.00000000  0.76428217  0.23571783
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     20    20.5  2.48  0.00000000  0.38495347  0.61504653
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     21    21.5  5.44  0.00000000  0.08028763  0.76847033
      0.15124204  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     22    22.5  6.56  0.00000000  0.02493386  0.73259767
      0.24246848  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     23    23.5  2.12  0.00000000  0.00000000  0.39924485
      0.60075515  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1986  1     2     0     0     2     24    24.5  0.64  0.00000000  0.00000000  0.23510574
      0.52978851  0.23510574  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     16    16.5  0.16  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     17    17.5  1.92  0.00000000  0.98744217  0.01255783
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     18    18.5  4.20  0.00519359  0.96789217  0.02691424
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     19    19.5  7.64  0.00000000  0.91466673  0.08533327
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     20    20.5  7.16  0.00000000  0.77509708  0.21757710
      0.00000000  0.00732581  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     21    21.5  1.84  0.00000000  0.25252277  0.69894313
      0.04853411  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     22    22.5  3.04  0.00000000  0.00000000  0.77408665
      0.19780355  0.02810980  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     23    23.5  2.48  0.00000000  0.00000000  0.18340837
      0.81033957  0.00625206  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     24    24.5  0.60  0.00000000  0.00000000  0.26018904
      0.48076499  0.25904597  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1987  1     2     0     0     2     25    25.5  0.08  0.00000000  0.00000000  0.00000000
      0.80841664  0.19158336  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     15    15.5  0.08  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     16    16.5  0.12  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     17    17.5  0.76  0.00000000  0.78580079  0.21419921
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     18    18.5  1.40  0.00000000  0.65091128  0.34908872
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     19    19.5  1.00  0.00000000  0.43423099  0.56576901
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     20    20.5  4.16  0.00000000  0.05313130  0.91203048
      0.03483821  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     21    21.5  7.04  0.00000000  0.02510010  0.87180146
      0.08330622  0.01979222  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     22    22.5  5.32  0.00000000  0.00866820  0.63861370
      0.30936948  0.04334863  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     23    23.5  1.68  0.00000000  0.00000000  0.24458249
      0.56761063  0.16253246  0.02527442  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     24    24.5  0.64  0.00000000  0.00000000  0.00000000
      0.32160253  0.52648318  0.15191429  0.00000000  0.00000000  0.00000000  0.00000000
1988  1     2     0     0     2     25    25.5  0.28  0.00000000  0.00000000  0.00000000
      0.06603427  0.62121055  0.31275518  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     16    16.5  0.20  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     17    17.5  0.52  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     18    18.5  1.88  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     19    19.5  3.20  0.00000000  0.96559411  0.02002882
      0.00000000  0.01437707  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     20    20.5  4.32  0.00000000  0.72473922  0.26235240
      0.01290838  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     21    21.5  3.60  0.00000000  0.12010029  0.84643937
      0.03346034  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     22    22.5  1.72  0.00000000  0.09951942  0.79444083
      0.10603975  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  1     2     0     0     2     23    23.5  0.32  0.00000000  0.00000000  0.15641843
      0.81283685  0.03074472  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
```

```
1989    1       2       0       0       2       24      24.5    0.12    0.00000000      0.00000000      0.00000000
        0.33333333      0.66666667      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       13      13.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       14      14.5    0.24    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       15      15.5    0.56    0.00000000      0.73481750      0.26518250
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       16      16.5    1.56    0.00000000      0.57632291      0.37660186
        0.04707523      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       17      17.5    0.32    0.00000000      0.15513708      0.34486292
        0.34486292      0.15513708      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       18      18.5    0.12    0.00000000      0.44985142      0.44985142
        0.10029716      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       19      19.5    0.32    0.00000000      0.19183790      0.30816210
        0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       20      20.5    1.08    0.00000000      0.07686462      0.45942593
        0.41229711      0.03427489      0.01713744      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       21      21.5    1.76    0.00000000      0.14009038      0.30053637
        0.33658544      0.14376620      0.01795285      0.06106876      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       22      22.5    1.00    0.00000000      0.00000000      0.47128184
        0.35436345      0.10153720      0.07281751      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       23      23.5    0.36    0.00000000      0.00000000      0.00000000
        0.20347117      0.54236126      0.25416757      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       14      14.5    0.56    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       15      15.5    2.12    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       16      16.5    0.64    0.00000000      0.78693207      0.21306793
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       17      17.5    1.68    0.00000000      0.19797476      0.80202524
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       18      18.5    2.80    0.00000000      0.11484290      0.80119188
        0.08396523      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       19      19.5    2.24    0.00000000      0.03204638      0.89075109
        0.05462445      0.02257807      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       20      20.5    2.12    0.00000000      0.02427517      0.58104795
        0.34612034      0.04855654      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       21      21.5    2.04    0.00000000      0.00000306      0.11583491
        0.53899272      0.17760395      0.09575164      0.00000000      0.04787582      0.02393791      0.00000000
1991    1       2       0       0       2       22      22.5    1.48    0.00000000      0.00000000      0.01337862
        0.47324887      0.19958785      0.12242762      0.12757136      0.06378568      0.00000000      0.00000000
1991    1       2       0       0       2       23      23.5    0.72    0.00000000      0.00000000      0.07175911
        0.10185194      0.24537016      0.43750057      0.07175911      0.07175911      0.00000000      0.00000000
1991    1       2       0       0       2       24      24.5    0.08    0.00000000      0.00000000      0.00000000
        0.50000000      0.00000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       14      14.5    1.04    0.05381370      0.80988878      0.13629752
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       15      15.5    4.64    0.00000000      0.67220945      0.32779055
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       16      16.5    10.00   0.00000000      0.68905140      0.30253906
        0.00840954      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       17      17.5    17.92   0.00000000      0.52347939      0.45618372
        0.02033689      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       18      18.5    16.80   0.00000000      0.30966198      0.63311645
        0.04972522      0.00749634      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       19      19.5    17.32   0.00000000      0.07382712      0.68757767
        0.21494908      0.01748601      0.00616013      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       20      20.5    9.40    0.00000000      0.01239999      0.54721728
        0.35018007      0.08171485      0.00848781      0.00000000      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       21      21.5    2.96    0.00000000      0.00000000      0.35428429
        0.38939036      0.14224237      0.10567543      0.00840755      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       22      22.5    2.12    0.00000000      0.00000000      0.04731279
        0.33187376      0.27867138      0.20699908      0.13514298      0.00000000      0.00000000      0.00000000
1992    1       2       0       0       2       23      23.5    1.40    0.00000000      0.00000000      0.00000000
        0.20888605      0.22400780      0.45722569      0.04527779      0.01507802      0.04952466      0.00000000
1992    1       2       0       0       2       24      24.5    0.32    0.00000000      0.00000000      0.00000000
        0.33349427      0.49951719      0.16698854      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       16      16.5    0.56    0.00000000      0.00000000      0.68351845
        0.24053505      0.07594649      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       17      17.5    4.32    0.00000000      0.02056731      0.67230852
        0.30712416      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       18      18.5    4.88    0.00000000      0.02043991      0.34409222
        0.59117121      0.04429666      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       19      19.5    3.88    0.00000000      0.00013007      0.25449556
        0.63251213      0.08229978      0.03056247      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1993    1       2       0       0       2       20      20.5    0.64    0.00000000      0.00000000      0.00626218
        0.48136921      0.51080306      0.00000000      0.00156555      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       21      21.5    0.16    0.00000000      0.00000000      0.00000000
        0.50000000      0.49543070      0.00000000      0.00456930      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       22      22.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       2       0       0       2       23      23.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       15      15.5    1.52    0.03252924      0.89783186      0.06963890
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       16      16.5    4.40    0.00941385      0.83608481      0.13677414
        0.01772720      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       17      17.5    8.52    0.04841811      0.50160140      0.33303622
        0.10477301      0.01217126      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       18      18.5    6.80    0.03160843      0.22204735      0.49132055
        0.22087474      0.02590103      0.00824790      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       19      19.5    3.68    0.00224317      0.11355633      0.43857764
        0.39436006      0.05126280      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       20      20.5    0.68    0.00000000      0.00000000      0.31370474
        0.55927895      0.12701631      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       21      21.5    0.12    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       22      22.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       12      12.5    0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       13      13.5    0.20    0.55373003      0.44626997      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       14      14.5    0.68    0.57874020      0.34964085      0.07161895
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       15      15.5    5.32    0.06476910      0.71278849      0.21648008
        0.00596233      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       16      16.5    14.24   0.01940335      0.67698193      0.29433984
        0.00831612      0.00095876      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       17      17.5    11.00   0.02011838      0.42447178      0.50990817
        0.03823090      0.00727077      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       18      18.5    2.52    0.00000000      0.14817455      0.70994368
        0.13683834      0.00504343      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       19      19.5    0.48    0.00000000      0.00000000      0.25566326
        0.27101502      0.47332172      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       20      20.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       13      13.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       14      14.5    0.16    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       15      15.5    3.04    0.01812593      0.72455510      0.24867789
        0.00000000      0.00864108      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       16      16.5    7.80    0.00496242      0.69279738      0.27086367
        0.03137653      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       17      17.5    11.44   0.00838185      0.52918972      0.33294291
        0.12703223      0.00245330      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       18      18.5    7.84    0.00219781      0.22383926      0.48497928
        0.23602687      0.05190904      0.00104775      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       19      19.5    2.48    0.00000000      0.00000000      0.65437547
        0.32353536      0.02208917      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       20      20.5    0.60    0.00000000      0.00000000      0.65350625
        0.07603360      0.27046015      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       21      21.5    0.08    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       13      13.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       14      14.5    0.44    0.00000000      0.56411264      0.43588736
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       15      15.5    4.72    0.00000000      0.80577990      0.18476365
        0.00000000      0.00945644      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       16      16.5    11.36   0.00000000      0.79359769      0.19791123
        0.00849108      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       17      17.5    10.52   0.00000000      0.64624146      0.30248325
        0.04375901      0.00751628      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       18      18.5    8.40    0.00000000      0.20787705      0.57872855
        0.20094496      0.01244944      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       19      19.5    9.36    0.00000000      0.02789987      0.38620456
        0.42249457      0.13395008      0.02414161      0.00530932      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       20      20.5    6.32    0.00000000      0.00368716      0.11721930
        0.56203536      0.27345364      0.02407492      0.01952961      0.00000000      0.00000000      0.00000000
```

```
1997   1       2       0       0       2       21      21.5    1.56    0.00000000      0.00000000      0.03997467
       0.52899457      0.29736314      0.13366762      0.00000000      0.00000000      0.00000000      0.00000000
1997   1       2       0       0       2       22      22.5    0.20    0.00000000      0.00000000      0.00000000
       0.83688749      0.16311251      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997   1       2       0       0       2       23      23.5    0.08    0.00000000      0.00000000      0.00000000
       0.73713359      0.00000000      0.26286641      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       11      11.5    0.28    0.85714286      0.14285714      0.00000000
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       12      12.5    3.60    0.55004190      0.44995810      0.00000000
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       13      13.5    9.60    0.13616549      0.82111650      0.04271801
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       14      14.5    11.20   0.00752528      0.95092070      0.04155402
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       15      15.5    11.20   0.00000000      0.82263050      0.17736950
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       16      16.5    4.88    0.00000000      0.65878198      0.34121802
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       17      17.5    2.68    0.00000000      0.40187815      0.53692029
       0.04868568      0.01251588      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       18      18.5    3.48    0.00000000      0.02959062      0.50895618
       0.34609755      0.11535564      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       19      19.5    3.56    0.00000000      0.01058850      0.29700997
       0.37629963      0.30551340      0.00000000      0.01058850      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       20      20.5    1.72    0.00000000      0.00303885      0.03563228
       0.40849737      0.53577508      0.00000000      0.01705642      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       21      21.5    0.32    0.00000000      0.00000000      0.01310345
       0.18640394      0.78738916      0.01310345      0.00000000      0.00000000      0.00000000      0.00000000
1998   1       2       0       0       2       22      22.5    0.08    0.00000000      0.50000000      0.00000000
       0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       11      11.5    0.04    1.00000000      0.00000000      0.00000000
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       12      12.5    0.16    0.77312388      0.22687612      0.00000000
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       13      13.5    3.80    0.10487420      0.84196343      0.05316236
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       14      14.5    17.32   0.01119871      0.86170462      0.12709668
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       15      15.5    19.24   0.00000000      0.72924478      0.27075522
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       16      16.5    6.12    0.00000000      0.52787249      0.47212751
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       17      17.5    1.64    0.00000000      0.27691276      0.63524818
       0.06408618      0.02375288      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       18      18.5    0.08    0.00000000      0.50000000      0.00000000
       0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       19      19.5    0.08    0.00000000      0.00000000      0.00000000
       0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       20      20.5    0.04    0.00000000      0.00000000      0.00000000
       0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999   1       2       0       0       2       22      22.5    0.08    0.00000000      0.00000000      0.50000000
       0.00000000      0.00000000      0.00000000      0.50000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       12      12.5    0.28    0.92719170      0.00000000      0.07280830
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       13      13.5    0.72    0.80844636      0.19155364      0.00000000
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       14      14.5    1.48    0.75895378      0.04584254      0.16754911
       0.02765458      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       15      15.5    4.72    0.03377128      0.31745299      0.37634829
       0.26563658      0.00679086      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       16      16.5    21.08   0.00534966      0.17853302      0.48238778
       0.32164930      0.01100451      0.00000000      0.00107573      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       17      17.5    18.44   0.00046236      0.17644909      0.49631513
       0.30959754      0.01617416      0.00100172      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       18      18.5    7.00    0.00000000      0.10054898      0.45997896
       0.38762472      0.04903660      0.00281075      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       19      19.5    1.72    0.00000000      0.16227803      0.51898425
       0.28140881      0.01704416      0.02028475      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       20      20.5    0.60    0.00000000      0.09189690      0.62420701
       0.28389609      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       21      21.5    0.08    0.00000000      0.00000000      0.00000000
       0.00000000      0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000
2000   1       2       0       0       2       23      23.5    0.08    0.00000000      0.00000000      0.00000000
       0.00000000      0.34527580      0.65472420      0.00000000      0.00000000      0.00000000      0.00000000
2001   1       2       0       0       2       9       9.5     0.32    1.00000000      0.00000000      0.00000000
       0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
2001  1  2  0  0  2  10  10.5  2.00  0.91909591  0.08090409  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  11  11.5  3.68  0.99145449  0.00854551  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  12  12.5  2.68  0.94695825  0.05304175  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  13  13.5  1.24  0.96186323  0.03813677  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  14  14.5  0.64  0.51298353  0.43973256  0.04728392
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  15  15.5  3.36  0.07378395  0.59860073  0.29243222
      0.03518310  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  16  16.5  10.00  0.00555658  0.33911245  0.51600648
      0.13042673  0.00889777  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  17  17.5  21.36  0.01014338  0.21402864  0.52655418
      0.22363578  0.02338803  0.00224999  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  18  18.5  15.68  0.00340085  0.13240033  0.33258459
      0.47981372  0.04578371  0.00601680  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  19  19.5  4.32  0.00000000  0.00423853  0.25758928
      0.59621160  0.13119544  0.01076515  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  20  20.5  1.00  0.00000000  0.07003943  0.13062184
      0.52004459  0.09296196  0.18633217  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  21  21.5  0.36  0.00000000  0.00000000  0.08359163
      0.67423418  0.24217419  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2001  1  2  0  0  2  22  22.5  0.16  0.00000000  0.00000000  0.00000000
      0.00000000  0.79579795  0.20420205  0.00000000  0.00000000  0.00000000  0.00000000
2002  1  2  0  0  2  14  14.5  0.68  0.07409647  0.92590353  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2002  1  2  0  0  2  15  15.5  4.56  0.16740060  0.79497371  0.03762569
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2002  1  2  0  0  2  16  16.5  3.72  0.18136036  0.76388936  0.05475028
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2002  1  2  0  0  2  17  17.5  0.88  0.00000000  0.77576495  0.22423505
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2002  1  2  0  0  2  18  18.5  0.08  0.00000000  0.42617794  0.57382206
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  10  10.5  0.24  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  11  11.5  4.24  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  12  12.5  3.12  0.98776491  0.01223509  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  13  13.5  1.88  0.99322069  0.00677931  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  14  14.5  1.48  0.39249691  0.58697183  0.02053126
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  15  15.5  6.92  0.02572623  0.74226027  0.23201350
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  16  16.5  16.16  0.00144932  0.63109947  0.36548795
      0.00196325  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  17  17.5  14.80  0.00630697  0.51884212  0.45841922
      0.01643169  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  18  18.5  8.56  0.00000000  0.22907017  0.68584902
      0.08508081  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  19  19.5  2.12  0.00000000  0.00000000  0.69305534
      0.30694466  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  20  20.5  0.80  0.00000000  0.00000000  0.38997506
      0.39562767  0.21439727  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  22  22.5  0.08  0.00000000  0.00000000  0.00000000
      0.48418779  0.00000000  0.51581221  0.00000000  0.00000000  0.00000000  0.00000000
2003  1  2  0  0  2  23  23.5  0.04  0.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  1.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  10  10.5  0.04  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  11  11.5  0.04  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  12  12.5  0.40  0.10287749  0.77939065  0.11773186
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  13  13.5  11.88  0.00995514  0.94922550  0.04081935
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  14  14.5  16.48  0.00394846  0.94736001  0.04326099
      0.00543054  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  15  15.5  16.48  0.00000000  0.90935946  0.09064054
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
2004  1  2  0  0  2  16  16.5  13.80  0.00000000  0.84631691  0.15162119
      0.00206190  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
```

```
2004  1       2       0       0       2       17      17.5    5.04    0.00000000      0.56198829      0.38596096
      0.05205076      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004  1       2       0       0       2       18      18.5    2.92    0.00000000      0.07674666      0.75053261
      0.14959483      0.02312590      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004  1       2       0       0       2       19      19.5    1.44    0.00000000      0.00000000      0.69893495
      0.27268762      0.02837743      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004  1       2       0       0       2       20      20.5    0.04    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004  1       2       0       0       2       21      21.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       9       9.5     0.12    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       10      10.5    1.64    0.98053005      0.01946995      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       11      11.5    3.52    0.88990543      0.11009457      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       12      12.5    3.88    0.86160088      0.13839912      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       13      13.5    10.52   0.23999171      0.67946462      0.08054367
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       14      14.5    18.08   0.08040900      0.74952026      0.15548761
      0.00874988      0.00583325      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       15      15.5    18.56   0.01178792      0.53661680      0.44085402
      0.01074126      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       16      16.5    10.28   0.00000000      0.14611175      0.80921438
      0.04467386      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       17      17.5    4.32    0.00000000      0.05858360      0.86072648
      0.08068992      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       18      18.5    0.96    0.00000000      0.00000000      0.92481035
      0.07518965      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       19      19.5    0.48    0.00000000      0.09354079      0.90645921
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  1       2       0       0       2       20      20.5    0.04    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       9       9.5     0.64    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       10      10.5    1.40    0.88701431      0.11298569      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       11      11.5    1.32    0.98568177      0.01431823      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       12      12.5    0.68    0.99493440      0.00506560      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       13      13.5    1.04    0.39600067      0.58601395      0.01798538
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       14      14.5    10.76   0.00939060      0.86326112      0.11901431
      0.00833397      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       15      15.5    16.92   0.01160144      0.76826138      0.20802880
      0.01210838      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       16      16.5    15.36   0.00334510      0.62720651      0.34523639
      0.02421200      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       17      17.5    8.84    0.00000000      0.36707579      0.58709828
      0.04404862      0.00177732      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       18      18.5    3.00    0.00000000      0.38304730      0.46909581
      0.14308356      0.00477333      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       19      19.5    0.60    0.00000000      0.24640354      0.42657383
      0.25119882      0.07582380      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       2       0       0       2       20      20.5    0.12    0.00000000      0.00000000      0.00000000
      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       10      10.5    0.32    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       11      11.5    1.32    0.94287187      0.05712813      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       12      12.5    2.92    0.59384758      0.33348498      0.07266744
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       13      13.5    9.60    0.14753397      0.79484504      0.05762099
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       14      14.5    14.72   0.00694828      0.85022033      0.13720414
      0.00562725      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       15      15.5    15.16   0.00256071      0.69609779      0.28104231
      0.02029919      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       16      16.5    16.64   0.00068333      0.27277287      0.67822281
      0.04506663      0.00325436      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       17      17.5    9.72    0.00000000      0.09121190      0.80605890
      0.09459145      0.00813775      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       2       0       0       2       18      18.5    1.60    0.00000000      0.00000000      0.87502318
      0.12497682      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

2007	1	2	0	0	2	19	19.5	0.08	0.00000000	0.00000000	0.57134613
	0.42865387	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	10	10.5	0.04	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	11	11.5	0.36	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	12	12.5	1.04	0.84006466	0.15993534	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	13	13.5	0.92	0.34459235	0.65540765	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	14	14.5	7.92	0.02406000	0.91443588	0.05828565
	0.00000000	0.00321847	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	15	15.5	9.04	0.03262972	0.84917828	0.11819200
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	16	16.5	3.92	0.00273040	0.35467673	0.58751543
	0.05507744	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	17	17.5	1.88	0.00024170	0.22607951	0.65743962
	0.11623917	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	18	18.5	0.24	0.00000000	0.00793226	0.47712364
	0.51494411	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	19	19.5	0.04	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	20	20.5	0.04	0.00000000	0.00000000	1.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2008	1	2	0	0	2	21	21.5	0.04	0.00000000	0.00000000	0.00000000
	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	10	10.5	0.16	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	12	12.5	0.04	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	13	13.5	0.28	0.42857143	0.57142857	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	14	14.5	0.72	0.38888889	0.61111111	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	15	15.5	1.00	0.22198353	0.77801647	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	16	16.5	0.72	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	17	17.5	1.16	0.00000000	0.96941293	0.03058707
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	18	18.5	0.32	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	19	19.5	0.20	0.00000000	0.23333333	0.76666667
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	20	20.5	1.12	0.00000000	0.00000000	0.84464661
	0.15535339	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	21	21.5	0.92	0.00000000	0.00000000	0.81422594
	0.12887029	0.05690377	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	22	22.5	0.92	0.00000000	0.10834671	0.74799358
	0.14365971	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	23	23.5	0.40	0.00000000	0.00000000	0.22023810
	0.68253968	0.09722222	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	24	24.5	0.12	0.00000000	0.00000000	0.00000000
	0.69052632	0.30947368	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	25	25.5	0.04	0.00000000	0.00000000	0.00000000
	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1981	2	3	0	0	2	26	26.5	0.04	0.00000000	0.00000000	0.00000000
	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	10	10.5	0.04	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	11	11.5	0.04	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	12	12.5	0.04	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	13	13.5	0.04	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	16	16.5	0.08	0.00000000	1.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	18	18.5	0.16	0.00000000	0.24635771	0.75364229
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	19	19.5	3.64	0.00000000	0.70323381	0.28808754
	0.00867865	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	20	20.5	10.24	0.00000000	0.67689091	0.30757488
	0.01553421	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
1982	2	3	0	0	2	21	21.5	5.52	0.00000000	0.29096469	0.64576781
	0.06326750	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				

```
1982    2       3       0       0       2       22      22.5    2.04    0.00000000      0.04574610      0.59299210
        0.36126181      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1982    2       3       0       0       2       23      23.5    0.96    0.00000000      0.00000000      0.34613383
        0.65386617      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1982    2       3       0       0       2       24      24.5    0.36    0.00000000      0.00000000      0.25797076
        0.41490727      0.32712197      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1982    2       3       0       0       2       25      25.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       14      14.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       15      15.5    0.20    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       16      16.5    0.16    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       17      17.5    0.16    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       18      18.5    0.24    0.00000000      0.90157160      0.09842840
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       19      19.5    0.72    0.00000000      0.46731445      0.53268555
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       20      20.5    1.80    0.00000000      0.26570016      0.72482790
        0.00947194      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       21      21.5    2.80    0.00000000      0.09409231      0.86759048
        0.02453050      0.01378671      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       22      22.5    1.12    0.00000000      0.03843233      0.94259994
        0.01896773      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       23      23.5    0.24    0.00000000      0.00000000      0.34145960
        0.65854040      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       24      24.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       14      14.5    0.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       16      16.5    0.28    0.00000000      0.85714286      0.14285714
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       17      17.5    0.64    0.27755920      0.72244080      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       18      18.5    1.04    0.00000000      0.75308147      0.24691853
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       19      19.5    0.80    0.00000000      0.58731421      0.39226218
        0.02042360      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       20      20.5    1.52    0.03025239      0.31452206      0.63849962
        0.01672593      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       21      21.5    2.04    0.00000000      0.05916880      0.87483749
        0.06599372      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       22      22.5    1.68    0.00000000      0.07116822      0.85302285
        0.07580893      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       23      23.5    0.52    0.00000000      0.08479459      0.33917834
        0.57602707      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       15      15.5    0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       16      16.5    0.08    0.20354671      0.79645329      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       17      17.5    0.08    0.92843389      0.07156611      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       18      18.5    0.72    0.00000000      0.93323994      0.06676006
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       19      19.5    1.64    0.00000000      0.73704598      0.21255300
        0.05040102      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       20      20.5    7.28    0.00000000      0.44114657      0.51618302
        0.04267040      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       21      21.5    9.64    0.00000000      0.14891157      0.82291396
        0.02817448      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       22      22.5    7.80    0.00000000      0.03064221      0.88380250
        0.08555529      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       23      23.5    3.24    0.00000000      0.03335505      0.48462921
        0.48201574      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       24      24.5    0.60    0.00000000      0.00000000      0.12060857
        0.78234396      0.09704746      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       25      25.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986    2       3       0       0       2       14      14.5    0.64    0.37500000      0.62500000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986    2       3       0       0       2       15      15.5    0.64    0.12994393      0.87005607      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986    2       3       0       0       2       16      16.5    0.60    0.07590847      0.92409153      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1986  2       3       0       0       2       17      17.5    0.08    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       18      18.5    0.28    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       19      19.5    0.40    0.00000000      0.68125154      0.31874846
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       20      20.5    2.96    0.00000000      0.40831098      0.58747531
      0.00421371      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       21      21.5    12.28   0.00000000      0.08215714      0.79523239
      0.11814516      0.00446531      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       22      22.5    16.16   0.00000000      0.03090581      0.79749546
      0.17034075      0.00062899      0.00062899      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       23      23.5    6.96    0.00000000      0.00000000      0.29123092
      0.68753585      0.02123323      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       24      24.5    0.96    0.00000000      0.00000000      0.06895176
      0.64116293      0.28988531      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       25      25.5    0.16    0.00000000      0.00000000      0.24684621
      0.05460697      0.69854681      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986  2       3       0       0       2       26      26.5    0.12    0.00000000      0.00000000      0.00000000
      0.00000000      0.58326375      0.41673625      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       11      11.5    0.16    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       12      12.5    2.16    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       13      13.5    0.32    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       14      14.5    0.20    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       15      15.5    0.04    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       16      16.5    0.08    0.50000000      0.50000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       17      17.5    0.56    0.05695696      0.94304304      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       18      18.5    6.00    0.00000000      0.92227802      0.07772198
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       19      19.5    12.72   0.00000000      0.92599879      0.07400121
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       20      20.5    17.04   0.00000000      0.65930960      0.32334658
      0.01734382      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       21      21.5    19.60   0.00000000      0.12638084      0.79687099
      0.07594739      0.00080078      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       22      22.5    14.20   0.00157500      0.03258990      0.69330996
      0.25157650      0.02094863      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       23      23.5    8.60    0.00000000      0.00000000      0.16066324
      0.71579062      0.12354613      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       24      24.5    2.84    0.00000000      0.00000000      0.04698771
      0.43069403      0.45011679      0.06303248      0.00916899      0.00000000      0.00000000      0.00000000
1987  2       3       0       0       2       25      25.5    0.56    0.00000000      0.00000000      0.00000000
      0.37713168      0.31623182      0.30663650      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       13      13.5    0.08    0.50000000      0.50000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       14      14.5    0.72    0.69304273      0.30695727      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       15      15.5    1.36    0.06542824      0.54903008      0.22235216
      0.16318951      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       16      16.5    1.92    0.05719534      0.92116025      0.00000000
      0.02164440      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       17      17.5    1.88    0.02166514      0.90375484      0.05315839
      0.02142163      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       18      18.5    1.52    0.00000000      0.96261132      0.03738868
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       19      19.5    2.36    0.00755098      0.79550962      0.18125813
      0.01568128      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       20      20.5    5.40    0.02078678      0.24995675      0.72284050
      0.00000000      0.00641597      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       21      21.5    9.56    0.00000000      0.05727555      0.90829190
      0.02434289      0.01008966      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       22      22.5    10.56   0.00000000      0.00845274      0.89852274
      0.07673325      0.01397334      0.00231791      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       23      23.5    5.00    0.00000000      0.00180168      0.49111738
      0.44087627      0.06440300      0.00090084      0.00090084      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       24      24.5    2.28    0.00000000      0.00199506      0.11114688
      0.49199268      0.39262809      0.00223729      0.00000000      0.00000000      0.00000000      0.00000000
1988  2       3       0       0       2       25      25.5    0.24    0.00000000      0.03373835      0.00000000
      0.43922084      0.27369203      0.03373835      0.21961042      0.00000000      0.00000000      0.00000000
```

```
1989  2  3  0  0  2  12  12.5  0.04  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  13  13.5  0.44  0.33884432  0.66115568  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  14  14.5  0.40  0.37418654  0.62581346  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  15  15.5  0.32  0.55638132  0.44361868  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  16  16.5  0.04  0.00000000  0.00000000  1.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  17  17.5  0.12  0.29828716  0.70171284  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  18  18.5  1.48  0.00000000  0.95767066  0.04232934
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  19  19.5  8.36  0.00000000  0.89669500  0.10330500
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  20  20.5  12.72  0.00000000  0.85401441  0.13393537
      0.01205022  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  21  21.5  11.52  0.00000000  0.33323928  0.60556933
      0.06119139  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  22  22.5  5.96  0.00000000  0.18064516  0.68295149
      0.12070510  0.01569825  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  23  23.5  1.88  0.00000000  0.00000000  0.30480945
      0.69519055  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1989  2  3  0  0  2  24  24.5  0.28  0.00000000  0.00000000  0.33296659
      0.50055011  0.16648330  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  13  13.5  1.00  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  14  14.5  1.12  0.69100852  0.30899148  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  15  15.5  1.72  0.06543211  0.93456789  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  16  16.5  7.00  0.01517701  0.98224010  0.00258289
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  17  17.5  2.20  0.07737794  0.83056189  0.09206017
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  18  18.5  1.28  0.06289373  0.59402385  0.23172300
      0.11135942  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  19  19.5  2.64  0.00000000  0.34773097  0.49915342
      0.13135796  0.00401341  0.00000000  0.01774423  0.00000000  0.00000000  0.00000000
1990  2  3  0  0  2  20  20.5  16.68  0.00167942  0.12495657  0.53868070
      0.21748487  0.05129897  0.04063294  0.01931939  0.00594715  0.00000000  0.00000000
1990  2  3  0  0  2  21  21.5  24.48  0.00000000  0.05065245  0.42048674
      0.31904378  0.12101517  0.04373037  0.03092708  0.01203733  0.00210707  0.00000000
1990  2  3  0  0  2  22  22.5  15.52  0.00000000  0.00390740  0.31131491
      0.39619614  0.21015498  0.03795125  0.03134695  0.00576348  0.00336489  0.00000000
1990  2  3  0  0  2  23  23.5  3.68  0.00000000  0.00234153  0.10886298
      0.25220425  0.40854187  0.05392140  0.11819523  0.04140976  0.01452299  0.00000000
1990  2  3  0  0  2  24  24.5  0.80  0.00000000  0.00000000  0.01010125
      0.40257723  0.22472405  0.12530295  0.19263459  0.04465993  0.00000000  0.00000000
1990  2  3  0  0  2  25  25.5  0.08  0.00000000  0.00000000  0.50000000
      0.00000000  0.50000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  13  13.5  0.16  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  14  14.5  0.48  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  15  15.5  1.48  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  16  16.5  1.60  0.94594443  0.05405557  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  17  17.5  2.36  0.26974522  0.55647579  0.15299154
      0.02078746  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  18  18.5  5.08  0.08305925  0.65227134  0.25265672
      0.01201268  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  19  19.5  5.48  0.01134873  0.62108882  0.33300804
      0.02667183  0.00788258  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  20  20.5  5.28  0.00000000  0.35117256  0.51877051
      0.09607820  0.02144906  0.01252966  0.00000000  0.00000000  0.00000000  0.00000000
1991  2  3  0  0  2  21  21.5  4.72  0.00000000  0.06734102  0.46092382
      0.33138080  0.07673472  0.01832384  0.02697196  0.00000000  0.01832384  0.00000000
1991  2  3  0  0  2  22  22.5  5.24  0.00000000  0.00000000  0.26540336
      0.31409130  0.23454151  0.10746687  0.03345944  0.02630729  0.01873022  0.00000000
1991  2  3  0  0  2  23  23.5  3.84  0.00000000  0.01058240  0.08423080
      0.44629336  0.15470459  0.24171632  0.02615927  0.03631326  0.00000000  0.00000000
1991  2  3  0  0  2  24  24.5  0.60  0.00000000  0.00000000  0.21192994
      0.11760897  0.34339768  0.21650846  0.03376588  0.00000000  0.07678908  0.00000000
```

```
1991    2       3       0       0       2       25      25.5    0.08    0.00000000      0.11940522      0.00000000
        0.00000000      0.00000000      0.88059478      0.00000000      0.00000000      0.00000000      0.00000000
1991    2       3       0       0       2       26      26.5    0.08    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.59546271      0.00000000      0.00000000      0.40453729      0.00000000
1992    2       3       0       0       2       10      10.5    0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       11      11.5    0.16    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       12      12.5    0.64    0.93460440      0.06539560      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       13      13.5    1.56    0.86942289      0.13057711      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       14      14.5    4.44    0.60437520      0.38609677      0.00952803
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       15      15.5    11.16   0.35860501      0.63748720      0.00390780
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       16      16.5    15.48   0.19797004      0.76814008      0.03388988
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       17      17.5    13.36   0.04002752      0.78840411      0.16464741
        0.00692095      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       18      18.5    7.24    0.00708571      0.75025797      0.20651997
        0.03613636      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       19      19.5    3.56    0.00000000      0.35035481      0.56857935
        0.08106584      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       20      20.5    2.88    0.00000000      0.18595600      0.59955650
        0.16417761      0.05030989      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       21      21.5    1.28    0.00000000      0.00000000      0.49719355
        0.36721367      0.09815666      0.03743612      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       22      22.5    1.04    0.00000000      0.00000000      0.00022658
        0.66329724      0.24973435      0.00000000      0.08674183      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       23      23.5    0.28    0.00000000      0.15331324      0.00000000
        0.11671690      0.57665662      0.15331324      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       24      24.5    0.08    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       25      25.5    0.08    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       3       0       0       2       26      26.5    0.12    0.00000000      0.00000000      0.00000000
        0.00000000      0.35999755      0.64000245      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       13      13.5    0.20    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       14      14.5    1.40    0.97049221      0.02950779      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       15      15.5    2.24    0.87653117      0.12346883      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       16      16.5    5.64    0.38732095      0.51300838      0.09967067
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       17      17.5    9.68    0.07211954      0.61155819      0.29392879
        0.01953002      0.00286347      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       18      18.5    6.52    0.01232970      0.40887063      0.55278697
        0.02601270      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       19      19.5    2.68    0.00000000      0.10545805      0.68571362
        0.14435700      0.02149044      0.02149044      0.02149044      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       20      20.5    1.04    0.00000000      0.06147634      0.42885428
        0.41036431      0.05459515      0.04470992      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       21      21.5    0.56    0.00000000      0.00000000      0.24819643
        0.54255236      0.20925120      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       22      22.5    0.52    0.00000000      0.00000000      0.19223056
        0.33135769      0.26109646      0.07177176      0.14354353      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       23      23.5    0.52    0.00000000      0.00000000      0.12733201
        0.27876567      0.42428317      0.16961915      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       24      24.5    0.16    0.00000000      0.00000000      0.00000000
        0.40564331      0.59435669      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       25      25.5    0.20    0.00000000      0.00000000      0.00000000
        0.26700500      0.00000000      0.46598999      0.26700500      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       26      26.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       11      11.5    0.72    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       12      12.5    1.88    0.98302973      0.01697027      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       13      13.5    6.64    0.86880561      0.12761125      0.00358315
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       14      14.5    15.00   0.87264589      0.12512599      0.00222812
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       15      15.5    23.80   0.64265504      0.33692582      0.01875050
        0.00166863      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1994    2       3       0       0       2       16      16.5    31.56   0.23602009      0.70894433      0.04969618
        0.00367082      0.00000000      0.00166858      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       17      17.5    23.40   0.08662464      0.67844162      0.16526082
        0.06184184      0.00783109      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       18      18.5    11.84   0.04546867      0.40515272      0.33567341
        0.19105666      0.02083700      0.00181155      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       19      19.5    4.60    0.01420067      0.14104731      0.44919582
        0.32473849      0.06329571      0.00752201      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       20      20.5    1.08    0.00000000      0.11300204      0.44817926
        0.43881870      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       21      21.5    0.36    0.00000000      0.16665558      0.23680924
        0.41616224      0.07015366      0.00000000      0.11021929      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       23      23.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       24      24.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       12      12.5    0.12    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       13      13.5    1.00    0.73597056      0.22653807      0.03749137
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       14      14.5    3.64    0.82277219      0.15523377      0.02199404
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       15      15.5    11.48   0.53914847      0.29497603      0.16233469
        0.00354081      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       16      16.5    20.84   0.26925225      0.46939143      0.24414043
        0.01721590      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       17      17.5    16.20   0.06349886      0.53170498      0.37675013
        0.02804603      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       18      18.5    5.28    0.01675193      0.49685736      0.43821726
        0.04817345      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       19      19.5    0.72    0.00000000      0.35286607      0.59449382
        0.05264010      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       20      20.5    0.12    0.00000000      0.00000000      0.70940406
        0.00000000      0.29059594      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       21      21.5    0.16    0.00000000      0.00000000      0.21059232
        0.57881537      0.21059232      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       22      22.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       23      23.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       3       0       0       2       25      25.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       11      11.5    0.36    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       12      12.5    3.24    0.87098596      0.10564544      0.02336861
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       13      13.5    8.68    0.77607561      0.18344910      0.04047529
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       14      14.5    10.92   0.53335222      0.44248127      0.02416651
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       15      15.5    7.92    0.45720043      0.50909191      0.03370766
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       16      16.5    4.36    0.10104701      0.55648406      0.31622038
        0.02624855      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       17      17.5    5.92    0.00660608      0.51485720      0.40373288
        0.07480384      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       18      18.5    6.04    0.00000000      0.19195910      0.72691628
        0.08060702      0.00051760      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       19      19.5    6.60    0.00737846      0.08885043      0.63864243
        0.21383875      0.00787771      0.04341223      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       20      20.5    2.52    0.00000000      0.03952639      0.74897768
        0.17188076      0.01433445      0.02528072      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       21      21.5    0.68    0.00000000      0.06154696      0.65603304
        0.22087305      0.06154696      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       22      22.5    0.36    0.00000000      0.16701051      0.34529011
        0.34529011      0.14240926      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       25      25.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       3       0       0       2       9       9.5     0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       3       0       0       2       10      10.5    0.84    0.95238095      0.04761905      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       3       0       0       2       11      11.5    1.00    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       3       0       0       2       12      12.5    1.32    0.90988555      0.09011445      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1997  2       3       0       0       2       13      13.5    4.04    0.76180766      0.23819234      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       14      14.5    4.32    0.51929514      0.46243728      0.01826759
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       15      15.5    5.48    0.10924359      0.84073939      0.04908912
      0.00092790      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       16      16.5    6.40    0.00093148      0.86546269      0.13360583
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       17      17.5    7.96    0.01854236      0.71103496      0.22883760
      0.03894499      0.00264009      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       18      18.5    7.20    0.03793872      0.44344192      0.44416362
      0.06614926      0.00830648      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       19      19.5    5.28    0.01724771      0.10843961      0.43143200
      0.33382582      0.09664804      0.01240682      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       20      20.5    7.04    0.00000000      0.01990407      0.37656491
      0.41503795      0.17928477      0.00920830      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       21      21.5    5.36    0.00000000      0.01436392      0.20752975
      0.55151846      0.18486914      0.04171874      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       22      22.5    2.40    0.00000000      0.02984041      0.24473410
      0.44117950      0.20180382      0.05260176      0.02984041      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       23      23.5    0.48    0.00000000      0.00000000      0.00000000
      0.30011105      0.57308740      0.00000000      0.12680155      0.00000000      0.00000000      0.00000000
1997  2       3       0       0       2       24      24.5    0.08    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       9       9.5     0.08    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       10      10.5    1.00    0.93302790      0.06697210      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       11      11.5    2.76    0.93937149      0.06062851      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       12      12.5    7.08    0.72105631      0.26366742      0.01527627
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       13      13.5    11.20   0.45939655      0.48067326      0.05993019
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       14      14.5    14.56   0.26309881      0.69595417      0.04094702
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       15      15.5    10.28   0.13737916      0.75887872      0.10374212
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       16      16.5    5.16    0.04797390      0.63609881      0.29588865
      0.02003864      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       17      17.5    4.08    0.03462075      0.42596041      0.52825362
      0.01116522      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       18      18.5    1.80    0.04761282      0.26622455      0.56283193
      0.12333070      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       19      19.5    1.68    0.02431342      0.21538895      0.51720552
      0.17015186      0.04862683      0.02431342      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       20      20.5    0.48    0.00000000      0.17141001      0.17141001
      0.49718267      0.15999732      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       21      21.5    0.28    0.00000000      0.31517893      0.00000000
      0.31517893      0.15758947      0.21205267      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       3       0       0       2       22      22.5    0.12    0.00000000      0.34126306      0.31747387
      0.00000000      0.34126306      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       12      12.5    0.20    0.40000000      0.60000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       13      13.5    4.96    0.32014251      0.59185887      0.07961228
      0.00838634      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       14      14.5    14.80   0.38158986      0.53773943      0.05849186
      0.01108942      0.00792235      0.00316708      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       15      15.5    21.20   0.29111227      0.50088401      0.18330434
      0.01617169      0.00852770      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       16      16.5    12.84   0.09684686      0.50758113      0.36392092
      0.02396931      0.00768178      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       17      17.5    2.92    0.01013855      0.50417041      0.38396751
      0.09665426      0.00506927      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       18      18.5    1.04    0.00000000      0.29643132      0.68851141
      0.01505727      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       19      19.5    0.24    0.00000000      0.13206752      0.86793248
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  2       3       0       0       2       20      20.5    0.08    0.00000000      0.00000000      0.75036903
      0.00000000      0.00000000      0.00000000      0.24963097      0.00000000      0.00000000      0.00000000
2000  2       3       0       0       2       11      11.5    0.32    0.71709792      0.28290208      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       3       0       0       2       12      12.5    1.84    0.68755117      0.28743846      0.00000000
      0.02501037      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       3       0       0       2       13      13.5    6.40    0.54813892      0.38633570      0.05727417
      0.00825121      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

2000	2	3	0	0	2	14	14.5	15.44	0.38210440	0.57741664	0.03685959
	0.00361937	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	15	15.5	16.76	0.39214868	0.49747769	0.09612135
	0.01239413	0.00185815	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	16	16.5	10.32	0.06807221	0.27091415	0.52068235
	0.11190447	0.02842682	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	17	17.5	11.04	0.00837040	0.29366284	0.57454541
	0.10776680	0.01565455	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	18	18.5	4.72	0.00597492	0.28183284	0.57610697
	0.11590670	0.02017858	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	19	19.5	0.88	0.00000000	0.16294855	0.49546143
	0.29018713	0.05140289	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	20	20.5	0.16	0.00000000	0.00000000	0.34412494
	0.65587506	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	22	22.5	0.04	0.00000000	0.00000000	0.00000000
	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2000	2	3	0	0	2	26	26.5	0.04	0.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	10	10.5	0.60	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	11	11.5	4.40	0.97089455	0.02910545	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	12	12.5	10.24	0.91739011	0.07924645	0.00000000
	0.00336345	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	13	13.5	14.76	0.90563571	0.08948304	0.00488125
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	14	14.5	10.88	0.70904583	0.25292562	0.03327498
	0.00475357	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	15	15.5	10.24	0.40600322	0.47407323	0.11717632
	0.00274724	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	16	16.5	3.88	0.14090402	0.63719233	0.21551256
	0.00639108	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	17	17.5	3.68	0.00625283	0.53413871	0.36556366
	0.07067617	0.02336863	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	18	18.5	3.08	0.00000000	0.29554911	0.54069978
	0.13189161	0.03185950	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	19	19.5	1.24	0.00000000	0.09918802	0.59035523
	0.31045675	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	20	20.5	1.24	0.00000000	0.00000000	0.51529447
	0.37935029	0.07775707	0.02759817	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	21	21.5	0.52	0.00000000	0.00000000	0.09031682
	0.63873274	0.09031682	0.18063363	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2001	2	3	0	0	2	22	22.5	0.08	0.00000000	0.00000000	0.00000000
	0.50000000	0.50000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	10	10.5	0.04	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	11	11.5	0.32	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	12	12.5	0.60	0.94090255	0.05909745	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	13	13.5	1.12	0.90609232	0.09390768	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	14	14.5	2.84	0.51121126	0.46561479	0.02317396
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	15	15.5	13.36	0.32585808	0.62348613	0.05065580
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	16	16.5	22.32	0.17995891	0.69848814	0.11667591
	0.00487704	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	17	17.5	20.08	0.11546858	0.63972206	0.21497890
	0.02707079	0.00275968	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	18	18.5	6.16	0.06016118	0.48504416	0.35348953
	0.08749090	0.01381423	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	19	19.5	1.84	0.00000000	0.08339657	0.55789855
	0.29192994	0.06677494	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	20	20.5	0.68	0.00000000	0.00000000	0.49930060
	0.33671331	0.16398609	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	21	21.5	0.12	0.00000000	0.00000000	0.70582821
	0.14708590	0.14708590	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2002	2	3	0	0	2	22	22.5	0.08	0.00000000	0.00000000	0.00000000
	0.00000000	0.66838855	0.33161145	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2003	2	3	0	0	2	10	10.5	0.36	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2003	2	3	0	0	2	11	11.5	6.56	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
2003	2	3	0	0	2	12	12.5	9.72	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

2003	2	3	0	0	2	13	13.5	25.60	0.99219287	0.00780713	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	14	14.5	15.32	0.97074071	0.02925929	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	15	15.5	3.96	0.76533762	0.21262011	0.02204228
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	16	16.5	1.24	0.08207377	0.51377953	0.40414669
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	17	17.5	1.12	0.03607193	0.36838832	0.55144736
	0.04409240	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	18	18.5	1.16	0.00000000	0.00000000	0.74926027
	0.25073973	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	19	19.5	0.72	0.00000000	0.05359771	0.37300753
	0.57339476	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	20	20.5	0.24	0.00000000	0.00000000	0.25624898
	0.67254966	0.07120136	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	21	21.5	0.48	0.08094918	0.00000000	0.11930326
	0.51654325	0.28320431	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2003	2	3	0	0	2	22	22.5	0.28	0.00000000	0.00000000	0.00000000
	0.00000000	0.48393525	0.51606475	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	11	11.5	0.16	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	12	12.5	1.52	0.76513269	0.23486731	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	13	13.5	7.28	0.34706254	0.65293746	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	14	14.5	17.16	0.05691584	0.93746321	0.00562096
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	15	15.5	21.96	0.03035718	0.95826008	0.01138274
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	16	16.5	14.32	0.02602598	0.88286943	0.09110459
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	17	17.5	4.80	0.00625613	0.79552622	0.17853848
	0.01967917	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	18	18.5	1.88	0.00000000	0.22090734	0.66786968
	0.11122298	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	19	19.5	0.72	0.00000000	0.00000000	0.76369728
	0.23630272	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	20	20.5	0.16	0.00000000	0.00000000	0.62829504
	0.37170496	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	21	21.5	0.12	0.00000000	0.00000000	0.28698932
	0.00000000	0.71301068	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	22	22.5	0.12	0.00000000	0.00000000	0.00000000
	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2004	2	3	0	0	2	23	23.5	0.04	0.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	1.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	10	10.5	0.56	0.91640838	0.08359162	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	11	11.5	4.68	0.97139110	0.02860890	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	12	12.5	8.52	0.80847216	0.19152784	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	13	13.5	17.68	0.59820907	0.37928435	0.02250658
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	14	14.5	19.44	0.43084090	0.51692295	0.05223616
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	15	15.5	12.16	0.43798465	0.39668391	0.16533143
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	16	16.5	2.64	0.27336953	0.31967748	0.38339296
	0.02356003	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	17	17.5	0.44	0.00000000	0.00000000	0.68398214
	0.24830161	0.06771625	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2005	2	3	0	0	2	18	18.5	0.32	0.00000000	0.03864985	0.49671908
	0.26519584	0.19943523	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2006	2	3	0	0	2	11	11.5	0.92	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2006	2	3	0	0	2	12	12.5	2.56	1.00000000	0.00000000	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2006	2	3	0	0	2	13	13.5	5.32	0.82423265	0.17576735	0.00000000
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2006	2	3	0	0	2	14	14.5	13.80	0.42364730	0.57214900	0.00420370
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2006	2	3	0	0	2	15	15.5	18.12	0.11517405	0.87464238	0.01018357
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				
2006	2	3	0	0	2	16	16.5	19.96	0.05750135	0.88508515	0.05741350
	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000				

```
2006  2       3       0       0       2       17      17.5    8.84    0.00247204      0.74593114      0.24535847
      0.00623835      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       3       0       0       2       18      18.5    1.52    0.00000000      0.30311314      0.61614494
      0.08074191      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       3       0       0       2       19      19.5    0.52    0.00000000      0.22536318      0.61300259
      0.16163424      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       10      10.5    0.52    0.81161563      0.18838437      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       11      11.5    3.56    0.81749113      0.16948554      0.01302334
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       12      12.5    7.96    0.80789977      0.18543296      0.00666727
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       13      13.5    13.48   0.58470906      0.40049246      0.01479848
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       14      14.5    12.28   0.35241888      0.57898145      0.06859967
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       15      15.5    8.04    0.13979987      0.67312716      0.18707297
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       16      16.5    4.52    0.04431713      0.60815865      0.34752421
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       17      17.5    1.52    0.16469239      0.48640664      0.28599009
      0.06291089      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       18      18.5    0.64    0.00000000      0.47168979      0.17466331
      0.35364690      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       3       0       0       2       19      19.5    0.12    0.46683529      0.26658236      0.00000000
      0.26658236      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       11      11.5    0.28    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       12      12.5    0.24    0.81089066      0.18910934      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       13      13.5    0.92    0.63688886      0.36311114      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       14      14.5    1.64    0.15751356      0.81098373      0.03150271
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       15      15.5    6.64    0.02084732      0.84758068      0.12894830
      0.00262371      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       16      16.5    6.76    0.01338541      0.87837481      0.10823979
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       17      17.5    2.08    0.00000000      0.63760907      0.34654133
      0.01584960      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       18      18.5    0.92    0.00000000      0.38003098      0.52889577
      0.09107325      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       19      19.5    0.20    0.00000000      0.46642377      0.00000000
      0.53357623      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       20      20.5    0.12    0.00000000      0.33333333      0.33333333
      0.33333333      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       3       0       0       2       21      21.5    0.08    0.00000000      0.50000000      0.00000000
      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       18      18.5    0.32    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       19      19.5    0.40    0.00000000      0.56912665      0.23271834
      0.19815501      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       20      20.5    0.12    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       21      21.5    0.72    0.00000000      0.02673897      0.65329718
      0.09001808      0.22994577      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       22      22.5    0.80    0.00000000      0.00000000      0.07697484
      0.58062346      0.28533476      0.00000000      0.05706695      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       23      23.5    0.68    0.00000000      0.00000000      0.05882353
      0.29411765      0.17647059      0.29411765      0.17647059      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       24      24.5    0.48    0.00000000      0.00000000      0.08333333
      0.25000000      0.33333333      0.25000000      0.08333333      0.00000000      0.00000000      0.00000000
1990  1       4       0       0       2       25      25.5    0.20    0.00000000      0.00000000      0.00000000
      0.00000000      0.20000000      0.40000000      0.20000000      0.20000000      0.00000000      0.00000000
1990  1       4       0       0       2       26      26.5    0.08    0.00000000      0.00000000      0.00000000
      0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991  1       4       0       0       2       15      15.5    0.04    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991  1       4       0       0       2       16      16.5    0.24    0.16666667      0.83333333      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991  1       4       0       0       2       17      17.5    0.48    0.00000000      0.91595813      0.08404187
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991  1       4       0       0       2       18      18.5    0.76    0.00000000      0.38696539      0.61303461
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991  1       4       0       0       2       19      19.5    4.32    0.00989910      0.03759342      0.94360987
      0.00889761      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1991    1       4       0       0       2       20      20.5    10.08   0.00000000      0.01612540      0.90905727
        0.06324632      0.01157101      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       4       0       0       2       21      21.5    3.20    0.00000000      0.02422556      0.82783962
        0.14793482      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       4       0       0       2       22      22.5    0.36    0.00000000      0.00000000      0.66287704
        0.11237432      0.11237432      0.11237432      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       4       0       0       2       23      23.5    0.12    0.00000000      0.00000000      0.33333333
        0.33333333      0.00000000      0.33333333      0.00000000      0.00000000      0.00000000      0.00000000
1991    1       4       0       0       2       24      24.5    0.16    0.00000000      0.00000000      0.00000000
        0.25648718      0.25648718      0.25648718      0.00000000      0.00000000      0.23053846      0.00000000
1991    1       4       0       0       2       25      25.5    0.12    0.00000000      0.00000000      0.00000000
        0.00000000      0.66666667      0.33333333      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       14      14.5    0.12    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       15      15.5    1.28    0.00000000      0.44897307      0.55102693
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       16      16.5    6.20    0.00000000      0.20865887      0.75065368
        0.04068745      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       17      17.5    14.60   0.00000000      0.10351412      0.69626968
        0.18392591      0.01503512      0.00125517      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       18      18.5    28.00   0.00000000      0.03977915      0.65198144
        0.28195488      0.02422757      0.00205697      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       19      19.5    26.12   0.00000000      0.01642412      0.50591943
        0.42176007      0.05095038      0.00494602      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       20      20.5    9.40    0.00000000      0.01501290      0.38937603
        0.49693897      0.08333937      0.01533272      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       21      21.5    1.32    0.00000000      0.00000000      0.24225366
        0.42840207      0.32934427      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       22      22.5    0.08    0.00000000      0.00000000      0.50000000
        0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       23      23.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       25      25.5    0.08    0.00000000      0.00000000      0.00000000
        0.00000000      0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       4       0       0       2       26      26.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      1.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       9       9.5     0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       11      11.5    0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       12      12.5    0.16    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       13      13.5    0.72    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       14      14.5    4.04    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       15      15.5    4.56    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       16      16.5    7.36    0.00000000      0.92361566      0.07638434
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       17      17.5    13.84   0.00000000      0.56076615      0.43632757
        0.00290628      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       18      18.5    15.36   0.00000000      0.20645551      0.74805856
        0.04548592      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       19      19.5    6.88    0.00934460      0.04764680      0.63951375
        0.30349485      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       20      20.5    1.44    0.00000000      0.00000000      0.31385049
        0.54512566      0.14102386      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       21      21.5    0.24    0.00000000      0.00000000      0.29289001
        0.41776573      0.12842148      0.16092278      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       22      22.5    0.16    0.00000000      0.00000000      0.00000000
        0.37760183      0.41493211      0.20746606      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       4       0       0       2       23      23.5    0.08    0.00000000      0.00000000      0.00000000
        0.30435611      0.69564389      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       9       9.5     0.04    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       10      10.5    0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       11      11.5    0.44    0.45773549      0.54226451      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       12      12.5    1.32    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       13      13.5    6.16    0.00400780      0.99599220      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       14      14.5    14.04   0.00000000      0.99653096      0.00346904
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1998  1       4       0       0       2       15      15.5    12.20   0.00404995      0.84543885      0.15051121
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       16      16.5    6.32    0.00000000      0.41350053      0.58649947
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       17      17.5    5.28    0.00000000      0.07253415      0.89176825
      0.03569760      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       18      18.5    2.76    0.00000000      0.00000000      0.89428099
      0.10571901      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       19      19.5    1.08    0.00000000      0.00000000      0.53158126
      0.35730762      0.11111111      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       20      20.5    0.64    0.00000000      0.00000000      0.04001558
      0.33089635      0.41092750      0.21816058      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       21      21.5    0.60    0.00000000      0.00000000      0.00000000
      0.44689938      0.40658910      0.14651153      0.00000000      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       22      22.5    0.24    0.00000000      0.00000000      0.00000000
      0.00000000      0.66666667      0.16666667      0.16666667      0.00000000      0.00000000      0.00000000
1998  1       4       0       0       2       23      23.5    0.28    0.00000000      0.00000000      0.00000000
      0.28571429      0.28571429      0.42857143      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       9       9.5     0.04    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       10      10.5    0.48    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       11      11.5    0.64    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       12      12.5    0.56    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       13      13.5    0.56    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       15      15.5    0.64    0.00000000      0.93698920      0.06301080
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       16      16.5    2.36    0.00000000      0.94884799      0.05115201
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       17      17.5    3.24    0.00000000      0.78763291      0.19950802
      0.00000000      0.01285907      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       18      18.5    2.12    0.00000000      0.70497851      0.19897532
      0.07658451      0.01946166      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       19      19.5    0.72    0.00000000      0.11068503      0.26014575
      0.62916922      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       20      20.5    2.04    0.00000000      0.07235037      0.09895843
      0.70445089      0.10307608      0.02116424      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       21      21.5    6.68    0.00000000      0.01097763      0.04893761
      0.69266882      0.21654643      0.03086951      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       22      22.5    4.56    0.00000000      0.01013071      0.06708936
      0.56915564      0.26557094      0.06115029      0.01677234      0.01013071      0.00000000      0.00000000
2001  1       4       0       0       2       23      23.5    1.80    0.00000000      0.00000000      0.02801038
      0.19328142      0.36134372      0.26859605      0.12075805      0.02801038      0.00000000      0.00000000
2001  1       4       0       0       2       24      24.5    0.96    0.00000000      0.00000000      0.00000000
      0.08790495      0.40295182      0.47433399      0.03480924      0.00000000      0.00000000      0.00000000
2001  1       4       0       0       2       25      25.5    0.20    0.00000000      0.00000000      0.00000000
      0.00000000      0.15206811      0.46390919      0.15206811      0.23195459      0.00000000      0.00000000
2002  1       4       0       0       2       11      11.5    0.04    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       13      13.5    0.64    0.34819706      0.65180294      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       14      14.5    2.16    0.19080584      0.74294705      0.06624712
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       15      15.5    6.08    0.18228921      0.74491858      0.07279221
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       16      16.5    8.64    0.26111984      0.60128358      0.11431911
      0.02327746      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       17      17.5    7.48    0.12851289      0.43163795      0.41301763
      0.02683152      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       18      18.5    3.24    0.10308878      0.30784164      0.40740015
      0.16097789      0.02069153      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       19      19.5    1.12    0.00000000      0.22094743      0.54447045
      0.10340298      0.13117913      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       20      20.5    0.44    0.00000000      0.24521619      0.42642132
      0.16884540      0.15951710      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       21      21.5    0.20    0.00000000      0.41949280      0.11978657
      0.29970623      0.16101441      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       22      22.5    0.24    0.00000000      0.00000000      0.10317406
      0.13868425      0.61945745      0.13868425      0.00000000      0.00000000      0.00000000      0.00000000
2002  1       4       0       0       2       24      24.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003  1       4       0       0       2       9       9.5     0.08    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
2003   1      4      0      0      2      10     10.5   0.68   1.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      11     11.5   0.84   1.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      12     12.5   0.28   1.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      13     13.5   0.08   1.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      14     14.5   0.04   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      15     15.5   0.12   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      16     16.5   1.04   0.00000000   0.96247517   0.03752483
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      17     17.5   2.36   0.00000000   0.42173045   0.57826955
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      18     18.5   1.52   0.00000000   0.17106264   0.77191648
       0.05702088   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      19     19.5   0.44   0.00000000   0.00000000   0.93187358
       0.06812642   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      20     20.5   0.28   0.00000000   0.15154937   0.45464812
       0.39380251   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2003   1      4      0      0      2      21     21.5   0.04   0.00000000   0.00000000   0.00000000
       1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      10     10.5   0.04   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      11     11.5   0.12   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      12     12.5   0.24   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      13     13.5   0.56   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      14     14.5   4.92   0.00214743   0.99785257   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      15     15.5   8.52   0.00000000   0.99461790   0.00090204
       0.00000000   0.00448006   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      16     16.5   5.16   0.00637474   0.89215138   0.08977046
       0.01170342   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      17     17.5   2.20   0.00000000   0.90281333   0.07468987
       0.00000000   0.02249681   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      18     18.5   0.40   0.00000000   0.47614855   0.41908116
       0.00000000   0.10477029   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      19     19.5   0.20   0.00000000   0.44007396   0.22003698
       0.33988907   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      20     20.5   0.08   0.00000000   0.00000000   0.00000000
       0.00000000   1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      22     22.5   0.04   0.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   1.00000000   0.00000000   0.00000000   0.00000000
2004   1      4      0      0      2      24     24.5   0.04   0.00000000   0.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   1.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      12     12.5   0.12   0.00000000   1.00000000   0.00000000
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      13     13.5   1.44   0.00000000   0.94744079   0.05255921
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      14     14.5   5.00   0.00000000   0.75571146   0.24428854
       0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      15     15.5   4.52   0.00000000   0.34603388   0.64863088
       0.00533524   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      16     16.5   6.20   0.00000000   0.05372307   0.92764984
       0.01862708   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      17     17.5   4.08   0.00000000   0.05735068   0.83197509
       0.11067423   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      18     18.5   1.08   0.00000000   0.00000000   0.82469988
       0.17530012   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      19     19.5   0.68   0.00000000   0.00000000   0.74094236
       0.23172901   0.02732863   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      20     20.5   0.08   0.00000000   0.00000000   0.00000000
       1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      21     21.5   0.04   0.00000000   0.00000000   0.00000000
       0.00000000   1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      22     22.5   0.08   0.00000000   0.00000000   0.00000000
       0.00000000   0.50000000   0.50000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      23     23.5   0.04   0.00000000   0.00000000   0.00000000
       1.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000   0.00000000
2005   1      4      0      0      2      24     24.5   0.12   0.00000000   0.00000000   0.00000000
       0.00000000   0.65509877   0.17245061   0.17245061   0.00000000   0.00000000   0.00000000
```

```
2006  1       4       0       0       2       12      12.5    0.64    0.00969243      0.82380091      0.16650666
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       13      13.5    1.96    0.02012177      0.95975646      0.02012177
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       14      14.5    10.52   0.01814196      0.95995117      0.02190687
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       15      15.5    20.68   0.01046287      0.89833397      0.08948205
      0.00172111      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       16      16.5    12.84   0.00874570      0.64404791      0.32883002
      0.01837636      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       17      17.5    6.72    0.00902525      0.18980570      0.70161628
      0.09955277      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       18      18.5    3.28    0.00000000      0.00581165      0.73430932
      0.25987903      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       19      19.5    0.88    0.00000000      0.00000000      0.59829071
      0.40170929      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       20      20.5    0.20    0.00000000      0.00000000      0.00000000
      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       21      21.5    0.08    0.00000000      0.00000000      0.50000000
      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  1       4       0       0       2       22      22.5    0.04    0.00000000      0.00000000      0.00000000
      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       13      13.5    0.08    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       14      14.5    1.20    0.00000000      0.48077290      0.45487444
      0.06435265      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       15      15.5    9.96    0.00512245      0.23293285      0.74214185
      0.01980286      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       16      16.5    25.96   0.00000000      0.07964763      0.78521632
      0.13380924      0.00132681      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       17      17.5    21.72   0.00296877      0.03430437      0.66800724
      0.27504254      0.01967708      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       18      18.5    6.80    0.00000000      0.01314664      0.59422245
      0.35854012      0.03409079      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       19      19.5    1.84    0.00000000      0.00000000      0.18711028
      0.78336189      0.02952782      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       20      20.5    0.40    0.00000000      0.00000000      0.24239388
      0.66239109      0.09521502      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       21      21.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  1       4       0       0       2       22      22.5    0.04    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       12      12.5    0.56    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       13      13.5    0.52    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       14      14.5    0.12    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       15      15.5    1.56    0.00000000      0.72255902      0.27744098
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       16      16.5    9.52    0.01437365      0.40206639      0.57341055
      0.01014941      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       17      17.5    10.20   0.01494950      0.20891244      0.71713015
      0.05900791      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       18      18.5    5.00    0.01158311      0.19545727      0.70464949
      0.08831013      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       19      19.5    1.32    0.00000000      0.19976188      0.49214715
      0.25837049      0.04972048      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       20      20.5    0.56    0.00000000      0.00000000      0.21956475
      0.58478779      0.19564747      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       21      21.5    0.36    0.00000000      0.00000000      0.11111111
      0.55555556      0.33333333      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       22      22.5    0.08    0.00000000      0.00000000      0.19646033
      0.00000000      0.80353967      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  1       4       0       0       2       23      23.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  2       5       0       0       2       16      16.5    0.08    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  2       5       0       0       2       17      17.5    0.52    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  2       5       0       0       2       18      18.5    1.08    0.00000000      0.88620105      0.11379895
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  2       5       0       0       2       19      19.5    1.56    0.00000000      0.89311168      0.08016624
      0.02672208      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990  2       5       0       0       2       20      20.5    0.64    0.00000000      0.81250000      0.06250000
      0.12500000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1990  2     5     0     0     2     21    21.5  0.24  0.00000000  0.33333333  0.16666667
      0.33333333  0.16666667  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2     5     0     0     2     22    22.5  0.28  0.00000000  0.14285714  0.14285714
      0.57142857  0.00000000  0.00000000  0.14285714  0.00000000  0.00000000  0.00000000
1990  2     5     0     0     2     23    23.5  0.08  0.00000000  0.00000000  0.50000000
      0.50000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1990  2     5     0     0     2     25    25.5  0.04  0.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  1.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     15    15.5  0.20  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     16    16.5  0.68  0.75171537  0.24828463  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     17    17.5  0.56  0.26620226  0.73379774  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     18    18.5  1.60  0.00475536  0.94596136  0.04928328
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     19    19.5  1.08  0.00000000  0.76548751  0.01556463
      0.21894786  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     20    20.5  0.64  0.00000000  0.33265289  0.66734711
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     21    21.5  1.24  0.00000000  0.19114016  0.39262484
      0.40378401  0.01245099  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     22    22.5  1.56  0.00000000  0.00635115  0.39120228
      0.36657084  0.10191280  0.13396292  0.00000000  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     23    23.5  1.08  0.00000000  0.00000000  0.16316251
      0.27477704  0.28179147  0.27477704  0.00549195  0.00000000  0.00000000  0.00000000
1991  2     5     0     0     2     24    24.5  0.24  0.00000000  0.00000000  0.00000000
      0.67082131  0.18087100  0.14830769  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     12    12.5  0.32  0.15542419  0.84457581  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     13    13.5  1.80  0.20085116  0.79914884  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     14    14.5  2.04  0.05490258  0.94509742  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     15    15.5  0.72  0.00000000  0.98085083  0.01914917
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     16    16.5  0.16  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     17    17.5  1.48  0.11611207  0.77340194  0.03495331
      0.04057938  0.00000000  0.03495331  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     18    18.5  2.92  0.01820526  0.67880351  0.28226192
      0.02072931  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     19    19.5  1.12  0.00000000  0.61397345  0.34192035
      0.00611504  0.03799115  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     20    20.5  0.20  0.00000000  0.20000000  0.60000000
      0.00000000  0.20000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1995  2     5     0     0     2     21    21.5  0.08  0.00000000  0.00000000  1.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     10    10.5  0.40  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     11    11.5  0.28  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     12    12.5  0.08  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     13    13.5  0.60  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     14    14.5  0.36  0.87500547  0.00000000  0.12499453
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     15    15.5  0.20  0.80000000  0.20000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1996  2     5     0     0     2     16    16.5  0.04  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     10    10.5  0.04  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     11    11.5  0.40  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     12    12.5  0.28  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     13    13.5  0.24  1.00000000  0.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     15    15.5  0.04  0.00000000  1.00000000  0.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     18    18.5  0.04  0.00000000  0.00000000  1.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
1997  2     5     0     0     2     19    19.5  0.12  0.00000000  0.00000000  1.00000000
      0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
```

```
1997  2       5       0       0       2       20      20.5    0.88    0.00000000      0.00000000      0.35607277
      0.63455295      0.00937428      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       5       0       0       2       21      21.5    1.32    0.00000000      0.00000000      0.34237066
      0.56344290      0.09418644      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       5       0       0       2       22      22.5    1.12    0.00000000      0.00000000      0.11124671
      0.27792878      0.49957780      0.11124671      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       5       0       0       2       23      23.5    0.36    0.00000000      0.00000000      0.00000000
      0.60755021      0.08867468      0.30377511      0.00000000      0.00000000      0.00000000      0.00000000
1997  2       5       0       0       2       24      24.5    0.08    0.00000000      0.00000000      0.00000000
      0.00000000      0.32654629      0.00000000      0.67345371      0.00000000      0.00000000      0.00000000
1997  2       5       0       0       2       25      25.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       12      12.5    0.12    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       13      13.5    0.36    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       14      14.5    1.12    0.00000000      0.96794809      0.03205191
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       15      15.5    3.08    0.00000000      0.67116404      0.32883596
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       16      16.5    3.44    0.00000000      0.35007845      0.64992155
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       17      17.5    3.00    0.00000000      0.08942092      0.91057908
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       18      18.5    1.28    0.00000000      0.01917375      0.96165250
      0.01917375      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       19      19.5    0.88    0.00000000      0.00000000      0.58534294
      0.31706859      0.09758847      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       20      20.5    0.28    0.00000000      0.00000000      0.00000000
      0.69221652      0.15389174      0.15389174      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       21      21.5    0.28    0.00000000      0.00000000      0.00000000
      0.33233147      0.66766853      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       23      23.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1998  2       5       0       0       2       24      24.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       11      11.5    0.40    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       12      12.5    0.44    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       13      13.5    0.16    0.75000000      0.25000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       14      14.5    0.04    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       15      15.5    0.16    0.25000000      0.25000000      0.50000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       16      16.5    0.24    0.00000000      0.16666667      0.83333333
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       17      17.5    0.68    0.00000000      0.00000000      0.88235294
      0.11764706      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       18      18.5    1.04    0.00000000      0.07692308      0.88461538
      0.00000000      0.03846154      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       19      19.5    0.28    0.00000000      0.00000000      0.71428571
      0.14285714      0.14285714      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       20      20.5    0.16    0.00000000      0.00000000      0.50000000
      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  2       5       0       0       2       22      22.5    0.08    0.00000000      0.00000000      0.00000000
      0.50000000      0.00000000      0.00000000      0.00000000      0.50000000      0.00000000      0.00000000
2001  2       5       0       0       2       10      10.5    1.40    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       11      11.5    3.20    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       12      12.5    4.16    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       13      13.5    1.80    0.95934452      0.04065548      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       14      14.5    0.48    0.69599744      0.30400256      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       15      15.5    0.08    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       16      16.5    0.36    0.07464287      0.92535713      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       17      17.5    0.48    0.42801644      0.57198356      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  2       5       0       0       2       18      18.5    0.04    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
2001    2       5       0       0       2       24      24.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       13      13.5    0.08    0.11422181      0.88577819      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       14      14.5    0.36    0.10251263      0.36750421      0.52998316
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       15      15.5    0.92    0.01193402      0.80297182      0.09254708
        0.09254708      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       16      16.5    5.16    0.04741002      0.80705913      0.13256785
        0.01148234      0.00000000      0.00000000      0.00000000      0.00000000      0.00148066      0.00000000
2002    2       5       0       0       2       17      17.5    5.76    0.03758427      0.56444403      0.30888731
        0.06506082      0.02402356      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       18      18.5    2.16    0.00000000      0.36405312      0.42303797
        0.21290892      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       19      19.5    2.48    0.00000000      0.27597760      0.40885520
        0.24957613      0.06559106      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       20      20.5    1.20    0.00000000      0.05744562      0.50285465
        0.36288577      0.07681395      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       21      21.5    0.28    0.00000000      0.00000000      0.40307289
        0.20921866      0.19385423      0.19385423      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       22      22.5    0.20    0.00000000      0.00000000      0.00000000
        0.35189446      0.02470466      0.62340088      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       23      23.5    0.20    0.00000000      0.00000000      0.00000000
        0.05517416      0.05517416      0.88965168      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       24      24.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       10      10.5    0.16    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       11      11.5    0.84    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       12      12.5    1.44    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       13      13.5    0.44    0.98659817      0.01340183      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       14      14.5    0.08    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       17      17.5    0.12    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       18      18.5    1.48    0.00000000      0.00000000      0.72972973
        0.21621622      0.05405405      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       19      19.5    1.48    0.00000000      0.05405405      0.54054054
        0.29729730      0.08108108      0.02702703      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       20      20.5    0.40    0.00000000      0.00000000      0.30000000
        0.30000000      0.30000000      0.10000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       21      21.5    0.16    0.00000000      0.00000000      0.50000000
        0.00000000      0.25000000      0.25000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       22      22.5    0.32    0.00000000      0.00000000      0.00000000
        0.50000000      0.25000000      0.12500000      0.12500000      0.00000000      0.00000000      0.00000000
2003    2       5       0       0       2       23      23.5    0.52    0.00000000      0.00000000      0.00000000
        0.00000000      0.69230769      0.07692308      0.15384615      0.07692308      0.00000000      0.00000000
2003    2       5       0       0       2       24      24.5    0.40    0.00000000      0.00000000      0.00000000
        0.10000000      0.30000000      0.00000000      0.50000000      0.10000000      0.00000000      0.00000000
2003    2       5       0       0       2       25      25.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       9       9.5     0.24    1.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       10      10.5    2.16    0.99531249      0.00468751      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       11      11.5    6.00    0.93191473      0.06808527      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       12      12.5    1.88    0.93477061      0.06522939      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       13      13.5    0.64    0.69395774      0.30604226      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       14      14.5    1.56    0.10224608      0.84719357      0.05056035
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       15      15.5    5.04    0.04626828      0.83091696      0.12281476
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       16      16.5    4.56    0.03169265      0.60255500      0.36575235
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       17      17.5    3.60    0.00242652      0.38095782      0.61661566
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       18      18.5    2.12    0.00000000      0.20242306      0.73815847
        0.05941847      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       5       0       0       2       19      19.5    1.72    0.00000000      0.19742671      0.58506159
        0.21751170      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
2005  2       5       0       0       2       20      20.5    0.40    0.00000000      0.15375281      0.18539963
      0.35334195      0.15375281      0.15375281      0.00000000      0.00000000      0.00000000      0.00000000
2005  2       5       0       0       2       21      21.5    0.12    0.00000000      0.00000000      0.15769920
      0.84230080      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005  2       5       0       0       2       23      23.5    0.16    0.00000000      0.00000000      0.00000000
      0.00000000      0.03206209      0.32264597      0.32264597      0.00000000      0.32264597      0.00000000
2005  2       5       0       0       2       24      24.5    0.32    0.00000000      0.00000000      0.16132298
      0.00000000      0.00000000      0.16132298      0.19338508      0.32264597      0.16132298      0.00000000
2005  2       5       0       0       2       25      25.5    0.08    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.50000000      0.50000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       10      10.5    0.04    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       11      11.5    0.04    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       12      12.5    0.32    0.86529329      0.13470671      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       13      13.5    1.16    0.36367152      0.63632848      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       14      14.5    3.68    0.06284476      0.93005190      0.00710334
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       15      15.5    10.20   0.03222547      0.92178075      0.04599379
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       16      16.5    5.68    0.02088898      0.77296677      0.20614426
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       17      17.5    8.28    0.02833227      0.24215200      0.69935774
      0.03015799      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       18      18.5    8.60    0.00000000      0.09281743      0.77794890
      0.12923368      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       19      19.5    5.04    0.00000000      0.02636810      0.81871065
      0.15492126      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       20      20.5    2.12    0.00000000      0.01675003      0.59447152
      0.33123658      0.05754187      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       21      21.5    0.20    0.00000000      0.00000000      0.58224850
      0.41775150      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       22      22.5    0.08    0.00000000      0.00000000      0.00000000
      0.50000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006  2       5       0       0       2       23      23.5    0.08    0.00000000      0.00000000      0.00000000
      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       13      13.5    0.12    0.33333333      0.66666667      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       14      14.5    0.12    0.33333333      0.66666667      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       15      15.5    0.36    0.11111111      0.88888889      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       16      16.5    1.20    0.00000000      0.64912596      0.26842673
      0.08244732      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       17      17.5    3.00    0.03908064      0.26053760      0.62222048
      0.07816128      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       18      18.5    2.60    0.00000000      0.02794742      0.68438827
      0.28766432      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       19      19.5    1.60    0.05628691      0.00000000      0.30419536
      0.61137427      0.02814346      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       20      20.5    2.76    0.10336147      0.05906370      0.25102071
      0.48319266      0.10336147      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       21      21.5    2.16    0.01919930      0.09599648      0.17973897
      0.56372488      0.11519577      0.02614461      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       22      22.5    0.56    0.07484050      0.07484050      0.10191394
      0.44904303      0.22452151      0.07484050      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       23      23.5    0.16    0.00000000      0.00000000      0.00000000
      0.75000000      0.25000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       24      24.5    0.08    0.50000000      0.00000000      0.00000000
      0.00000000      0.50000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007  2       5       0       0       2       25      25.5    0.08    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       10      10.5    0.04    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       11      11.5    0.56    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       12      12.5    2.56    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       13      13.5    1.88    1.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       14      14.5    0.28    0.68140035      0.31859965      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       15      15.5    0.92    0.05683682      0.82948955      0.11367363
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
2008  2       5       0       0       2       16      16.5    4.80    0.04957041      0.78805885      0.13758554
      0.02478520      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       17      17.5    3.48    0.01923391      0.40313320      0.55839897
      0.01923391      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       18      18.5    3.52    0.00409872      0.09907641      0.66446816
      0.23235671      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       19      19.5    1.04    0.00000000      0.17396728      0.33432387
      0.49170886      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       20      20.5    0.48    0.00000000      0.00000000      0.25000000
      0.71088148      0.03911852      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       21      21.5    0.24    0.00000000      0.00000000      0.16666667
      0.50000000      0.33333333      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       22      22.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008  2       5       0       0       2       23      23.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       16      16.5    0.32    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       17      17.5    0.56    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       18      18.5    0.76    0.00000000      0.00000000      0.78519341
      0.21480659      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       19      19.5    0.28    0.00000000      0.00000000      0.28571429
      0.71428571      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       20      20.5    0.24    0.00000000      0.00000000      0.00000000
      0.69739439      0.30260561      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       21      21.5    0.32    0.00000000      0.00000000      0.00000000
      0.25000000      0.37500000      0.37500000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       22      22.5    0.28    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       23      23.5    0.16    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.69162500      0.30837500      0.00000000      0.00000000      0.00000000
1999  1       6       0       0       3       25      25.5    0.04    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000
2000  1       6       0       0       3       11      11.5    0.04    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  1       6       0       0       3       16      16.5    0.24    0.00000000      0.00000000      1.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  1       6       0       0       3       17      17.5    3.24    0.00000000      0.03300653      0.86689633
      0.08826468      0.01183245      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000  1       6       0       0       3       18      18.5    6.52    0.00000000      0.01928321      0.69647070
      0.23989465      0.02893684      0.01541459      0.00000000      0.00000000      0.00000000      0.00000000
2000  1       6       0       0       3       19      19.5    8.28    0.00000000      0.00807944      0.32244351
      0.52296552      0.11812834      0.02115414      0.00722905      0.00000000      0.00000000      0.00000000
2000  1       6       0       0       3       20      20.5    12.68   0.00000000      0.00000000      0.12449694
      0.64655876      0.17771792      0.04196102      0.00796338      0.00130199      0.00000000      0.00000000
2000  1       6       0       0       3       21      21.5    18.72   0.00000000      0.00000000      0.07399142
      0.44820707      0.28891989      0.14243530      0.03501211      0.00198152      0.00945269      0.00000000
2000  1       6       0       0       3       22      22.5    13.28   0.00000000      0.00386514      0.02576429
      0.27008364      0.34372337      0.23651384      0.08677004      0.02704995      0.00622974      0.00000000
2000  1       6       0       0       3       23      23.5    4.60    0.00000000      0.00996296      0.01586354
      0.15180732      0.34677485      0.21674466      0.19932544      0.04157417      0.01794708      0.00000000
2000  1       6       0       0       3       24      24.5    0.64    0.00000000      0.00000000      0.00000000
      0.20930379      0.12633611      0.21845177      0.41168788      0.03422045      0.00000000      0.00000000
2000  1       6       0       0       3       25      25.5    0.16    0.00000000      0.00000000      0.00000000
      0.00000000      0.00000000      0.44068609      0.21415064      0.00000000      0.34516327      0.00000000
2001  1       6       0       0       3       13      13.5    0.56    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       14      14.5    0.44    0.25420421      0.58565611      0.16013968
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       15      15.5    0.16    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       16      16.5    0.04    0.00000000      1.00000000      0.00000000
      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       18      18.5    1.16    0.00000000      0.17422403      0.47674629
      0.23783387      0.08262465      0.00000000      0.02857116      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       19      19.5    8.84    0.00000000      0.00458054      0.32909349
      0.51141206      0.14148721      0.01342670      0.00000000      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       20      20.5    30.72   0.00000000      0.00065648      0.16467934
      0.59152061      0.22020876      0.01904892      0.00388587      0.00000000      0.00000000      0.00000000
2001  1       6       0       0       3       21      21.5    25.36   0.00000000      0.00000000      0.08562425
      0.46441970      0.37714108      0.04144000      0.02534235      0.00445488      0.00157774      0.00000000
2001  1       6       0       0       3       22      22.5    11.84   0.00000000      0.00000000      0.03440246
      0.28222407      0.33928132      0.23718857      0.08796949      0.01515066      0.00378344      0.00000000
2001  1       6       0       0       3       23      23.5    4.48    0.00000000      0.00000000      0.00000000
      0.08570637      0.25600202      0.36932768      0.25050116      0.02767631      0.01078646      0.00000000
```

```
2001    1       6       0       0       3       24      24.5    1.48    0.00000000      0.00000000      0.00000000
        0.02851971      0.10453323      0.23679585      0.52104854      0.04676973      0.06233294      0.00000000
2001    1       6       0       0       3       25      25.5    0.24    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.49985566      0.32443789      0.17570645      0.00000000      0.00000000
2002    1       6       0       0       3       16      16.5    0.08    0.00000000      0.61079970      0.00000000
        0.00000000      0.38920030      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    1       6       0       0       3       17      17.5    0.16    0.00000000      0.08634943      0.47893349
        0.43471708      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    1       6       0       0       3       18      18.5    0.92    0.00000000      0.39617764      0.40178222
        0.17822829      0.01190593      0.01190593      0.00000000      0.00000000      0.00000000      0.00000000
2002    1       6       0       0       3       19      19.5    1.44    0.00000000      0.08625083      0.47505611
        0.33995710      0.00373597      0.06473267      0.00000000      0.03026733      0.00000000      0.00000000
2002    1       6       0       0       3       20      20.5    5.32    0.00000000      0.00401207      0.16414049
        0.30715467      0.43172833      0.06718774      0.01035566      0.01542104      0.00000000      0.00000000
2002    1       6       0       0       3       21      21.5    34.84   0.00000000      0.00145070      0.03644254
        0.21234298      0.45815130      0.22436304      0.04709096      0.01594944      0.00420904      0.00000000
2002    1       6       0       0       3       22      22.5    38.96   0.00000000      0.00127628      0.00952108
        0.11666355      0.42649932      0.25621875      0.12254794      0.04493829      0.02148262      0.00085217
2002    1       6       0       0       3       23      23.5    18.04   0.00000000      0.00028855      0.00319387
        0.07290597      0.24039053      0.31243279      0.22767918      0.10721840      0.03589070      0.00000000
2002    1       6       0       0       3       24      24.5    5.16    0.00000000      0.00000000      0.00000000
        0.02960344      0.16105905      0.24323773      0.20406184      0.17782123      0.17738502      0.00683169
2002    1       6       0       0       3       25      25.5    1.20    0.00000000      0.00000000      0.00000000
        0.00000000      0.02819043      0.02819043      0.30154638      0.37256430      0.24707008      0.02243837
2002    1       6       0       0       3       26      26.5    0.32    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.52252401      0.47747599      0.00000000
2003    1       6       0       0       3       13      13.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       6       0       0       3       14      14.5    0.64    0.00000000      0.29858828      0.70141172
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       6       0       0       3       15      15.5    0.32    0.00000000      0.62500000      0.25000000
        0.12500000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       6       0       0       3       16      16.5    0.04    0.00000000      0.00000000      0.00000000
        1.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       6       0       0       3       17      17.5    1.68    0.00000000      0.02975787      0.58182068
        0.30886203      0.07955942      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       6       0       0       3       18      18.5    5.92    0.00000000      0.04722850      0.46760880
        0.40509113      0.05904153      0.02103003      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       6       0       0       3       19      19.5    8.72    0.00000000      0.04269996      0.43366525
        0.35994732      0.09502079      0.04323789      0.02123095      0.00419784      0.00000000      0.00000000
2003    1       6       0       0       3       20      20.5    10.64   0.00000000      0.01733611      0.30593556
        0.30027638      0.13036714      0.12021657      0.06540075      0.05380557      0.00666193      0.00000000
2003    1       6       0       0       3       21      21.5    12.84   0.00000000      0.00994576      0.18176027
        0.21257802      0.15324734      0.21385771      0.14932707      0.04894178      0.03034204      0.00000000
2003    1       6       0       0       3       22      22.5    23.08   0.00000000      0.00468330      0.02308757
        0.05677871      0.10527284      0.30788695      0.27104398      0.12493071      0.09692110      0.00939483
2003    1       6       0       0       3       23      23.5    16.24   0.00000000      0.00000000      0.00641258
        0.03621734      0.10408906      0.23883767      0.23260055      0.18163413      0.18015648      0.02005219
2003    1       6       0       0       3       24      24.5    6.16    0.00000000      0.00989855      0.00212841
        0.00633103      0.05005049      0.13538310      0.22380492      0.11229262      0.38992971      0.07018118
2003    1       6       0       0       3       25      25.5    1.92    0.00000000      0.00000000      0.00000000
        0.03311627      0.05115089      0.14950048      0.27774681      0.13268694      0.34825778      0.00754083
2003    1       6       0       0       3       26      26.5    0.36    0.00000000      0.00000000      0.00000000
        0.03622831      0.00000000      0.12287175      0.00000000      0.07245663      0.76844330      0.00000000
2004    1       6       0       0       3       11      11.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       12      12.5    0.32    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       13      13.5    1.80    0.00000000      0.89107606      0.10892394
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       14      14.5    3.68    0.00000000      0.85972200      0.12037300
        0.01990500      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       15      15.5    2.96    0.00000000      0.83904840      0.13870511
        0.01950254      0.00274395      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       16      16.5    3.04    0.00000000      0.92077842      0.07922158
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       17      17.5    7.48    0.00000000      0.84749375      0.12133631
        0.03116994      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       18      18.5    4.68    0.00000000      0.71910428      0.18194689
        0.09894882      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       19      19.5    3.28    0.00000000      0.14219601      0.36253950
        0.42396581      0.07129869      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       20      20.5    3.60    0.00000000      0.06876253      0.22308816
        0.43487467      0.20852181      0.02158428      0.04316855      0.00000000      0.00000000      0.00000000
2004    1       6       0       0       3       21      21.5    7.12    0.00000000      0.02523360      0.14573603
        0.40762119      0.27679493      0.08195593      0.03739783      0.00000000      0.02526049      0.00000000
```

```
2004    1       6       0       0       3       22      22.5    10.84   0.00000000      0.01388649      0.06736530
        0.16001678      0.13708020      0.27543335      0.20025884      0.09321367      0.04528926      0.00745612
2004    1       6       0       0       3       23      23.5    13.52   0.00000000      0.00000000      0.01464838
        0.02742063      0.09811807      0.23363740      0.27669559      0.14407660      0.17635411      0.02904922
2004    1       6       0       0       3       24      24.5    5.76    0.00000000      0.00000000      0.02447416
        0.02153968      0.04903033      0.18826142      0.40564100      0.07458536      0.18652085      0.04994720
2004    1       6       0       0       3       25      25.5    1.28    0.00000000      0.00000000      0.00000000
        0.02504627      0.06838936      0.13492778      0.33462134      0.12577938      0.16740853      0.14382734
2004    1       6       0       0       3       26      26.5    0.08    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.36623058      0.00000000      0.00000000      0.63376942      0.00000000
2005    1       6       0       0       3       12      12.5    0.08    0.00000000      1.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    1       6       0       0       3       15      15.5    0.88    0.01234681      0.00000000      0.90747668
        0.00000000      0.08017652      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    1       6       0       0       3       16      16.5    5.32    0.00000000      0.02117233      0.81569502
        0.15807167      0.00506098      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    1       6       0       0       3       17      17.5    14.76   0.00000000      0.00643692      0.78386090
        0.16768398      0.03441422      0.00681993      0.00078404      0.00000000      0.00000000      0.00000000
2005    1       6       0       0       3       18      18.5    7.28    0.00000000      0.02137034      0.74189933
        0.18522377      0.03910072      0.00902156      0.00133995      0.00000000      0.00204433      0.00000000
2005    1       6       0       0       3       19      19.5    1.36    0.00000000      0.01819250      0.64158684
        0.08655129      0.16711808      0.08655129      0.00000000      0.00000000      0.00000000      0.00000000
2005    1       6       0       0       3       20      20.5    0.72    0.00000000      0.00000000      0.18644433
        0.21159536      0.37478424      0.11262483      0.07764147      0.00000000      0.03690975      0.00000000
2005    1       6       0       0       3       21      21.5    1.00    0.00000000      0.00000000      0.11058218
        0.08033083      0.58483459      0.14392158      0.08033083      0.00000000      0.00000000      0.00000000
2005    1       6       0       0       3       22      22.5    1.60    0.01186319      0.00000000      0.00000000
        0.04182579      0.46331823      0.14788122      0.13355128      0.12230725      0.06115363      0.01809941
2005    1       6       0       0       3       23      23.5    3.40    0.00000000      0.00000000      0.02270703
        0.01580244      0.01941801      0.16224343      0.18771438      0.09741137      0.37852707      0.11617627
2005    1       6       0       0       3       24      24.5    3.60    0.02217969      0.00000000      0.00000000
        0.00000000      0.01285565      0.04789099      0.11828064      0.25167777      0.36709791      0.18001735
2005    1       6       0       0       3       25      25.5    0.88    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.05049918      0.00000000      0.20199671      0.52275370      0.22475041
2005    1       6       0       0       3       26      26.5    0.08    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      1.00000000
2006    1       6       0       0       3       17      17.5    0.24    0.00000000      0.00000000      0.00000000
        0.51704794      0.48295206      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006    1       6       0       0       3       18      18.5    4.72    0.00000000      0.00000000      0.04485613
        0.66763358      0.18541480      0.06018060      0.04191488      0.00000000      0.00000000      0.00000000
2006    1       6       0       0       3       19      19.5    15.00   0.00000000      0.00000000      0.00738554
        0.62623700      0.20721653      0.10078611      0.03961159      0.00000000      0.01876323      0.00000000
2006    1       6       0       0       3       20      20.5    4.56    0.00000000      0.00000000      0.01204736
        0.68624103      0.24744517      0.01870889      0.00612294      0.02943461      0.00000000      0.00000000
2006    1       6       0       0       3       21      21.5    0.72    0.00000000      0.00000000      0.00000000
        0.28201547      0.05286253      0.15687364      0.50824836      0.00000000      0.00000000      0.00000000
2006    1       6       0       0       3       22      22.5    0.32    0.00000000      0.00000000      0.00000000
        0.14382757      0.61155174      0.00000000      0.00000000      0.12231035      0.12231035      0.00000000
2006    1       6       0       0       3       23      23.5    0.52    0.00000000      0.00000000      0.00000000
        0.05102635      0.32632506      0.05102635      0.27081036      0.24529718      0.05551471      0.00000000
2006    1       6       0       0       3       24      24.5    0.64    0.00000000      0.00000000      0.00000000
        0.00000000      0.04759693      0.07558210      0.02379847      0.09519387      0.52901755      0.22881108
2006    1       6       0       0       3       25      25.5    0.20    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.04463293      0.47375755      0.05248489      0.42912463      0.00000000
2006    1       6       0       0       3       26      26.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      1.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007    1       6       0       0       3       16      16.5    0.04    0.00000000      0.00000000      1.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007    1       6       0       0       3       17      17.5    2.20    0.00000000      0.00000000      0.23405770
        0.45134353      0.28638930      0.02820947      0.00000000      0.00000000      0.00000000      0.00000000
2007    1       6       0       0       3       18      18.5    18.56   0.00000000      0.00000000      0.07387967
        0.57866062      0.31818637      0.02627771      0.00299564      0.00000000      0.00000000      0.00000000
2007    1       6       0       0       3       19      19.5    41.00   0.00000000      0.00000000      0.03206718
        0.50822540      0.39300028      0.05748750      0.00635274      0.00286690      0.00000000      0.00000000
2007    1       6       0       0       3       20      20.5    23.32   0.00000000      0.00000000      0.00429454
        0.33022721      0.48678811      0.14223291      0.02651538      0.00759121      0.00235063      0.00000000
2007    1       6       0       0       3       21      21.5    2.84    0.00000000      0.00000000      0.01681545
        0.05869263      0.61848626      0.21578829      0.09021738      0.00000000      0.00000000      0.00000000
2007    1       6       0       0       3       22      22.5    0.36    0.00000000      0.00000000      0.00000000
        0.21943368      0.48478024      0.10971684      0.18606924      0.00000000      0.00000000      0.00000000
2007    1       6       0       0       3       23      23.5    0.64    0.00000000      0.00000000      0.00000000
        0.00000000      0.12873917      0.32794428      0.29803092      0.11654646      0.12873917      0.00000000
2007    1       6       0       0       3       24      24.5    0.28    0.00000000      0.00000000      0.00000000
        0.00000000      0.23026227      0.26146000      0.00000000      0.09267182      0.41560591      0.00000000
2007    1       6       0       0       3       25      25.5    0.12    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.37093308      0.62906692
```

```
2007    1       6       0       0       3       26      26.5    0.04    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      1.00000000      0.00000000
2008    1       6       0       0       3       17      17.5    0.88    0.00000000      0.00000000      0.08076448
        0.45003273      0.35683614      0.11236665      0.00000000      0.00000000      0.00000000      0.00000000
2008    1       6       0       0       3       18      18.5    13.00   0.00000000      0.00000000      0.00947453
        0.31733486      0.46910630      0.19708088      0.00700342      0.00000000      0.00000000      0.00000000
2008    1       6       0       0       3       19      19.5    31.80   0.00000000      0.00000000      0.00088788
        0.15513269      0.57650102      0.24663043      0.01823964      0.00260834      0.00000000      0.00000000
2008    1       6       0       0       3       20      20.5    31.28   0.00000000      0.00000000      0.00000000
        0.06003904      0.53242047      0.34558369      0.05663729      0.00205990      0.00325961      0.00000000
2008    1       6       0       0       3       21      21.5    10.44   0.00000000      0.00000000      0.00000000
        0.01484939      0.36056031      0.47324220      0.10868965      0.02650284      0.01615561      0.00000000
2008    1       6       0       0       3       22      22.5    2.64    0.00000000      0.00000000      0.00000000
        0.03897508      0.19667865      0.34888222      0.25442107      0.12206789      0.03897508      0.00000000
2008    1       6       0       0       3       23      23.5    1.08    0.00000000      0.00000000      0.00000000
        0.00000000      0.18006637      0.34311129      0.23113069      0.21052451      0.03516715      0.00000000
2008    1       6       0       0       3       24      24.5    0.40    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.07480441      0.14173186      0.17913407      0.60432966      0.00000000
2008    1       6       0       0       3       25      25.5    0.08    0.00000000      0.00000000      0.00000000
        0.00000000      0.00000000      0.00000000      0.79120553      0.00000000      0.20879447      0.00000000
1989    1       1       0       0       1       9       26      -1      0.00000000      0.59353163      0.27365565
        0.08622067      0.04462877      0.00196328      0.00000000      0.00000000      0.00000000      0.00000000
1989    2       1       0       0       1       9       26      -1      0.05073268      0.62092502      0.21617335
        0.07609903      0.03606992      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       1       0       0       1       9       26      -1      0.00808380      0.19364092      0.42542454
        0.24151739      0.07744135      0.03772440      0.01616760      0.00000000      0.00000000      0.00000000
1990    2       1       0       0       1       9       26      -1      0.15658324      0.37771284      0.32034957
        0.09656544      0.02238333      0.01622257      0.01018300      0.00000000      0.00000000      0.00000000
1991    1       1       0       0       2       9       26      -1      0.05927459      0.32147266      0.26575837
        0.21638494      0.09245957      0.03021308      0.00990973      0.00425573      0.00027134      0.00000000
1991    2       1       0       0       2       9       26      -1      0.02393642      0.42869221      0.21340919
        0.18655840      0.10277294      0.02684128      0.01485877      0.00293080      0.00000000      0.00000000
1992    1       1       0       0       2       9       26      -1      0.00722991      0.93461584      0.05597452
        0.00139527      0.00078446      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1992    2       1       0       0       2       9       26      -1      0.07006539      0.75192505      0.16123275
        0.01677681      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    1       1       0       0       2       9       26      -1      0.01735425      0.11766826      0.80098645
        0.06399103      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1993    2       1       0       0       2       9       26      -1      0.01978668      0.86749247      0.10214238
        0.01057847      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    1       1       0       0       2       9       26      -1      0.02828988      0.51533900      0.18754236
        0.24445883      0.02436992      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1994    2       1       0       0       2       9       26      -1      0.23337686      0.47494308      0.22320755
        0.06186891      0.00000000      0.00660360      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       1       0       0       2       9       26      -1      0.12309472      0.41782160      0.37867270
        0.06094044      0.01947054      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1995    2       1       0       0       2       9       26      -1      0.18928508      0.41520091      0.33086066
        0.03309443      0.03155891      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       1       0       0       2       9       26      -1      0.02314748      0.23183352      0.49327494
        0.15162186      0.09153386      0.00858834      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       1       0       0       2       9       26      -1      0.00000000      0.24061056      0.35141668
        0.26615536      0.07538587      0.06067220      0.00575933      0.00000000      0.00000000      0.00000000
1997    1       1       0       0       2       9       26      -1      0.01460995      0.15528550      0.37527426
        0.30425221      0.11049064      0.03154918      0.00853827      0.00000000      0.00000000      0.00000000
1997    2       1       0       0       2       9       26      -1      0.00000000      0.17045056      0.42193001
        0.29429453      0.10857520      0.00474969      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       1       0       0       2       9       26      -1      0.00000000      0.00880863      0.28637980
        0.38754660      0.24561422      0.04115193      0.02269156      0.00780727      0.00000000      0.00000000
1998    2       1       0       0       2       9       26      -1      0.02259334      0.44329145      0.41202253
        0.08926648      0.02363523      0.00919097      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       1       0       0       2       9       26      -1      0.00449750      0.27555835      0.40316341
        0.20150057      0.08345153      0.02270680      0.00912184      0.00000000      0.00000000      0.00000000
1999    2       1       0       0       2       9       26      -1      0.17306619      0.48712854      0.32141811
        0.01499317      0.00339400      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2000    1       1       0       0       2       9       26      -1      0.00000000      0.67911140      0.22298082
        0.07549106      0.01902610      0.00339061      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       1       0       0       2       9       26      -1      0.03472056      0.57323917      0.31795482
        0.05946567      0.01461978      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    1       1       0       0       2       9       26      -1      0.04479357      0.44251282      0.44545333
        0.06023192      0.00700835      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2001    2       1       0       0       2       9       26      -1      0.33174318      0.45873512      0.19053449
        0.01898721      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1982    1       2       0       0       2       9       26      -1      0.00000000      0.03425732      0.52874625
        0.29851436      0.10918581      0.02197219      0.00732406      0.00000000      0.00000000      0.00000000
1983    1       2       0       0       2       9       26      -1      0.04713505      0.51166972      0.40483419
        0.03636104      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
```

```
1985    1       2       0       0       2       9       26      -1      0.00000000      0.39271792      0.54218533
        0.06044075      0.00465601      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986    1       2       0       0       2       9       26      -1      0.03000179      0.10805952      0.63992813
        0.21581105      0.00619951      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1987    1       2       0       0       2       9       26      -1      0.00047710      0.62245556      0.25233700
        0.11194555      0.01278478      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1988    1       2       0       0       2       9       26      -1      0.00000000      0.12505574      0.67279491
        0.15131912      0.04342634      0.00740390      0.00000000      0.00000000      0.00000000      0.00000000
1989    1       2       0       0       2       9       26      -1      0.00000000      0.60033532      0.35475160
        0.03965266      0.00526042      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       2       0       0       2       9       26      -1      0.00000000      0.25517553      0.32744546
        0.26580266      0.10179956      0.03360862      0.01616817      0.00000000      0.00000000      0.00000000
1991    1       2       0       0       2       9       26      -1      0.00000000      0.17866786      0.47561796
        0.19765458      0.06464035      0.04803873      0.01608205      0.01608205      0.00321641      0.00000000
1992    1       2       0       0       2       9       26      -1      0.00072255      0.31417954      0.51622649
        0.12381327      0.02641475      0.01493522      0.00276564      0.00021998      0.00072255      0.00000000
1993    1       2       0       0       2       9       26      -1      0.00000000      0.01397514      0.43969005
        0.48594377      0.05279004      0.00753685      0.00006415      0.00000000      0.00000000      0.00000000
1994    1       2       0       0       2       9       26      -1      0.02862803      0.40729615      0.35924868
        0.17914791      0.02325451      0.00242471      0.00000000      0.00000000      0.00000000      0.00000000
1995    1       2       0       0       2       9       26      -1      0.03491335      0.54382458      0.38551960
        0.02950667      0.00623581      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    1       2       0       0       2       9       26      -1      0.00544245      0.42718400      0.39281178
        0.15281793      0.02143939      0.00030445      0.00000000      0.00000000      0.00000000      0.00000000
1997    1       2       0       0       2       9       26      -1      0.00000000      0.44098074      0.28759206
        0.19054676      0.06672309      0.01108762      0.00306973      0.00000000      0.00000000      0.00000000
1998    1       2       0       0       2       9       26      -1      0.10174434      0.73378587      0.11753518
        0.02620700      0.02019573      0.00002268      0.00050919      0.00000000      0.00000000      0.00000000
1999    1       2       0       0       2       9       26      -1      0.01679044      0.74345927      0.23281482
        0.00333314      0.00244010      0.00000000      0.00116223      0.00000000      0.00000000      0.00000000
2000    1       2       0       0       2       9       26      -1      0.05288341      0.17464816      0.45216023
        0.29955165      0.01769314      0.00271144      0.00035197      0.00000000      0.00000000      0.00000000
2001    1       2       0       0       2       9       26      -1      0.10396397      0.19743435      0.38190690
        0.27561756      0.03461923      0.00645800      0.00000000      0.00000000      0.00000000      0.00000000
2002    1       2       0       0       2       9       26      -1      0.14953260      0.78666723      0.06380017
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       2       0       0       2       9       26      -1      0.19439931      0.37689810      0.38019161
        0.04293598      0.00477547      0.00079953      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       2       0       0       2       9       26      -1      0.00423420      0.83097814      0.14388998
        0.01834294      0.00255473      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2005    1       2       0       0       2       9       26      -1      0.16153916      0.45314383      0.36566698
        0.01826165      0.00138838      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006    1       2       0       0       2       9       26      -1      0.05799253      0.61465863      0.29377990
        0.03211488      0.00145405      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007    1       2       0       0       2       9       26      -1      0.06272268      0.52271474      0.38097569
        0.03176502      0.00182189      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008    1       2       0       0       2       9       26      -1      0.06799345      0.72959777      0.18271975
        0.01856142      0.00112761      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1981    2       3       0       0       2       9       26      -1      0.09875527      0.41799541      0.35236430
        0.10372733      0.02715770      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1982    2       3       0       0       2       9       26      -1      0.00000000      0.47427325      0.42044410
        0.09627772      0.00900493      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1983    2       3       0       0       2       9       26      -1      0.00000000      0.29366522      0.66216346
        0.03943441      0.00473691      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1984    2       3       0       0       2       9       26      -1      0.01371008      0.23433916      0.66387413
        0.08807663      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1985    2       3       0       0       2       9       26      -1      0.00270747      0.21427884      0.67536557
        0.10611700      0.00153112      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1986    2       3       0       0       2       9       26      -1      0.01087087      0.11367771      0.62286700
        0.23634853      0.01551264      0.00072325      0.00000000      0.00000000      0.00000000      0.00000000
1987    2       3       0       0       2       9       26      -1      0.00097971      0.45384738      0.39143390
        0.12754252      0.02350333      0.00251057      0.00018260      0.00000000      0.00000000      0.00000000
1988    2       3       0       0       2       9       26      -1      0.00904408      0.20285712      0.64069418
        0.10991869      0.03571727      0.00099378      0.00077487      0.00000000      0.00000000      0.00000000
1989    2       3       0       0       2       9       26      -1      0.00712080      0.56005175      0.34999718
        0.07858187      0.00424840      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       3       0       0       2       9       26      -1      0.00405433      0.10407549      0.38358560
        0.28942566      0.13373866      0.03947161      0.03311413      0.01013978      0.00239472      0.00000000
1991    2       3       0       0       2       9       26      -1      0.10454975      0.28496754      0.28613834
        0.16678216      0.07460507      0.05447526      0.01237166      0.00831496      0.00779526      0.00000000
1992    2       3       0       0       2       9       26      -1      0.21270953      0.61168391      0.12593990
        0.03383717      0.01200895      0.00261721      0.00120333      0.00000000      0.00000000      0.00000000
1993    2       3       0       0       2       9       26      -1      0.21107783      0.38432803      0.30706227
        0.06010215      0.02087614      0.01088776      0.00566583      0.00000000      0.00000000      0.00000000
1994    2       3       0       0       2       9       26      -1      0.36945499      0.45924059      0.11019804
        0.05280057      0.00706495      0.00093579      0.00030505      0.00000000      0.00000000      0.00000000
```

```
1995    2       3       0       0       2       9       26      -1      0.27817746      0.42711047      0.27084848
        0.02258129      0.00128230      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       3       0       0       2       9       26      -1      0.35796011      0.32329177      0.25844130
        0.05090290      0.00395532      0.00544861      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       3       0       0       2       9       26      -1      0.15103733      0.44875090      0.19733634
        0.13968975      0.05386400      0.00709763      0.00222404      0.00000000      0.00000000      0.00000000
1998    2       3       0       0       2       9       26      -1      0.31693911      0.50715072      0.14715560
        0.02109377      0.00548953      0.00217127      0.00000000      0.00000000      0.00000000      0.00000000
1999    2       3       0       0       2       9       26      -1      0.27156057      0.51971451      0.18238301
        0.01828750      0.00689955      0.00094581      0.00020904      0.00000000      0.00000000      0.00000000
2000    2       3       0       0       2       9       26      -1      0.26879204      0.40633851      0.26008474
        0.05525678      0.00936705      0.00000000      0.00000000      0.00000000      0.00016089      0.00000000
2001    2       3       0       0       2       9       26      -1      0.66015448      0.19146539      0.10148934
        0.03759536      0.00666211      0.00263333      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       3       0       0       2       9       26      -1      0.21091517      0.60636591      0.15414725
        0.02342142      0.00485236      0.00029789      0.00000000      0.00000000      0.00000000      0.00000000
2003    2       3       0       0       2       9       26      -1      0.88001392      0.04308780      0.04816768
        0.02255285      0.00437095      0.00180680      0.00000000      0.00000000      0.00000000      0.00000000
2004    2       3       0       0       2       9       26      -1      0.08050419      0.83924016      0.06661019
        0.01140637      0.00131594      0.00092315      0.00000000      0.00000000      0.00000000      0.00000000
2005    2       3       0       0       2       9       26      -1      0.56133339      0.36192741      0.07210581
        0.00349421      0.00113917      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2006    2       3       0       0       2       9       26      -1      0.21672324      0.71290692      0.06704194
        0.00332790      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007    2       3       0       0       2       9       26      -1      0.44675703      0.45683954      0.08976722
        0.00663621      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008    2       3       0       0       2       9       26      -1      0.09411655      0.74442594      0.14252238
        0.01893513      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    1       4       0       0       2       9       26      -1      0.00000000      0.07237975      0.19146336
        0.28394634      0.22610527      0.13300310      0.07980186      0.01330031      0.00000000      0.00000000
1991    1       4       0       0       2       9       26      -1      0.00419404      0.07002574      0.83669367
        0.06455877      0.01425483      0.00838808      0.00000000      0.00000000      0.00188486      0.00000000
1996    1       4       0       0       2       9       26      -1      0.00000000      0.05603158      0.57810739
        0.31908499      0.04164414      0.00465746      0.00000000      0.00047444      0.00000000      0.00000000
1997    1       4       0       0       2       9       26      -1      0.00393055      0.41526377      0.48143507
        0.08999595      0.00760341      0.00177125      0.00000000      0.00000000      0.00000000      0.00000000
1998    1       4       0       0       2       9       26      -1      0.00493199      0.54633034      0.36162835
        0.04448701      0.02829612      0.01289356      0.00143262      0.00000000      0.00000000      0.00000000
2001    1       4       0       0       2       9       26      -1      0.09132854      0.28564893      0.08657721
        0.33770022      0.13363953      0.04938364      0.01113291      0.00458902      0.00000000      0.00000000
2002    1       4       0       0       2       9       26      -1      0.17080120      0.53308509      0.23318055
        0.04302421      0.01864609      0.00126286      0.00000000      0.00000000      0.00000000      0.00000000
2003    1       4       0       0       2       9       26      -1      0.16442605      0.32833397      0.45869285
        0.04854714      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2004    1       4       0       0       2       9       26      -1      0.00198629      0.92408733      0.04725081
        0.00746818      0.01333779      0.00000000      0.00586961      0.00000000      0.00000000      0.00000000
2005    1       4       0       0       2       9       26      -1      0.00000000      0.22168661      0.71621251
        0.05441598      0.00533208      0.00156854      0.00078427      0.00000000      0.00000000      0.00000000
2006    1       4       0       0       2       9       26      -1      0.00984756      0.64681603      0.29467613
        0.04866028      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007    1       4       0       0       2       9       26      -1      0.00175663      0.09300149      0.70210690
        0.19217955      0.01095542      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2008    1       4       0       0       2       9       26      -1      0.06153773      0.26346645      0.58780293
        0.07219482      0.01499806      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1990    2       5       0       0       2       9       26      -1      0.00000000      0.77492601      0.09488125
        0.10014826      0.01001483      0.01001483      0.01001483      0.00000000      0.00000000      0.00000000
1991    2       5       0       0       2       9       26      -1      0.17799577      0.41715169      0.15864718
        0.15667932      0.04321272      0.04586638      0.00044695      0.00000000      0.00000000      0.00000000
1995    2       5       0       0       2       9       26      -1      0.05705529      0.72185395      0.18813751
        0.01543685      0.01167760      0.00583880      0.00000000      0.00000000      0.00000000      0.00000000
1996    2       5       0       0       2       9       26      -1      0.92002688      0.03998656      0.03998656
        0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1997    2       5       0       0       2       9       26      -1      0.02352251      0.00098010      0.28069355
        0.43312300      0.18733007      0.05369006      0.02066072      0.00000000      0.00000000      0.00000000
1998    2       5       0       0       2       9       26      -1      0.00000000      0.31633487      0.59382588
        0.05156069      0.03063667      0.00764189      0.00000000      0.00000000      0.00000000      0.00000000
2000    2       5       0       0       2       9       26      -1      0.27173913      0.06521739      0.56521739
        0.06521739      0.02173913      0.00000000      0.00000000      0.01086957      0.00000000      0.00000000
2001    2       5       0       0       2       9       26      -1      0.96373016      0.03566060      0.00000000
        0.00000000      0.00060924      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2002    2       5       0       0       2       9       26      -1      0.02884186      0.54017157      0.27685507
        0.10971538      0.02493740      0.01853747      0.00047062      0.00000000      0.00047062      0.00000000
2003    2       5       0       0       2       9       26      -1      0.17139809      0.01385436      0.37033980
        0.18180317      0.16160282      0.03366725      0.05386761      0.01346690      0.00000000      0.00000000
2005    2       5       0       0       2       9       26      -1      0.29480444      0.41685594      0.23236152
        0.02225237      0.00301486      0.01096939      0.00877207      0.00548470      0.00548470      0.00000000
```

```
2006    2       5       0       0       2       9       26      -1      0.03101788      0.46737569      0.43157297
        0.06665229      0.00338116      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
2007    2       5       0       0       2       9       26      -1      0.05432242      0.11705335      0.32830998
        0.41075726      0.08050326      0.00905374      0.00000000      0.00000000      0.00000000      0.00000000
2008    2       5       0       0       2       9       26      -1      0.28539295      0.35120362      0.27440543
        0.08568118      0.00331682      0.00000000      0.00000000      0.00000000      0.00000000      0.00000000
1999    1       6       0       0       3       9       26      -1      0.00000000      0.00000000      0.59151581
        0.20074375      0.04758623      0.12952271      0.03063150      0.00000000      0.00000000      0.00000000
2000    1       6       0       0       3       9       26      -1      0.00000000      0.00688636      0.21881550
        0.40047784      0.21016510      0.10636801      0.04317442      0.00841536      0.00569741      0.00000000
2001    1       6       0       0       3       9       26      -1      0.00062425      0.00854458      0.12929111
        0.45157984      0.27378079      0.08136846      0.04570145      0.00644444      0.00266509      0.00000000
2002    1       6       0       0       3       9       26      -1      0.00000000      0.00409539      0.03017340
        0.14787476      0.38369270      0.23974883      0.11266489      0.05396427      0.02696349      0.00082226
2003    1       6       0       0       3       9       26      -1      0.00000000      0.02217408      0.17219067
        0.16258946      0.10343330      0.18577061      0.16212425      0.08758732      0.09385460      0.01027571
2004    1       6       0       0       3       9       26      -1      0.00000000      0.21898056      0.09627389
        0.14435703      0.10614319      0.13810613      0.14906384      0.06060232      0.07185832      0.01461473
2005    1       6       0       0       3       9       26      -1      0.00145122      0.01354189      0.68663907
        0.14480865      0.04905053      0.02025573      0.01633840      0.01779562      0.03537279      0.01474610
2006    1       6       0       0       3       9       26      -1      0.00000000      0.00000000      0.01507323
        0.60940354      0.20846448      0.07975828      0.04898422      0.00984424      0.02474646      0.00372556
2007    1       6       0       0       3       9       26      -1      0.00000000      0.00000000      0.03652382
        0.45259247      0.40388313      0.08072259      0.01679819      0.00460344      0.00400642      0.00086995
2008    1       6       0       0       3       9       26      -1      0.00000000      0.00000000      0.00209207
        0.12238777      0.50312153      0.30366764      0.05069205      0.01093989      0.00709905      0.00000000

0 #_N_MeanSize-at-Age_obs
#Yr Seas Flt/Svy Gender Part Ageerr Ignore datavector(female-male)
#                                        samplesize(female-male)
0 #_N_environ_variables
0 #_N_environ_obs
0 # N sizefreq methods to read
0 # no tag data
0 # no morphcomp data
999
ENDDATA
```

NORTHWEST SARDINE SURVEY
12 Bellwether Way, Suite 209
Bellingham, Washington 98225

Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Satellite Sardine Imaging Report

Satellite Sardine Imaging Report

Since the Aerial Survey began two years ago it was apparent that photographs taken by satellites might provide an additional and efficient source of valuable data. The present method of determining the surface areas of sardine schools is done with digital cameras taking pictures from small airplanes at 4,000 feet. This is an acceptable method but it does have limitations.

The speed of a single engine aircraft makes covering a large portion of the ocean in a short amount of time difficult. In order to have a synoptic collection of data, say from the Pacific Northwest to Southern California an airplane flying survey grids may take several days or if hampered by weather, even weeks. By comparison, a satellite can travel our entire coast in a matter of minutes.

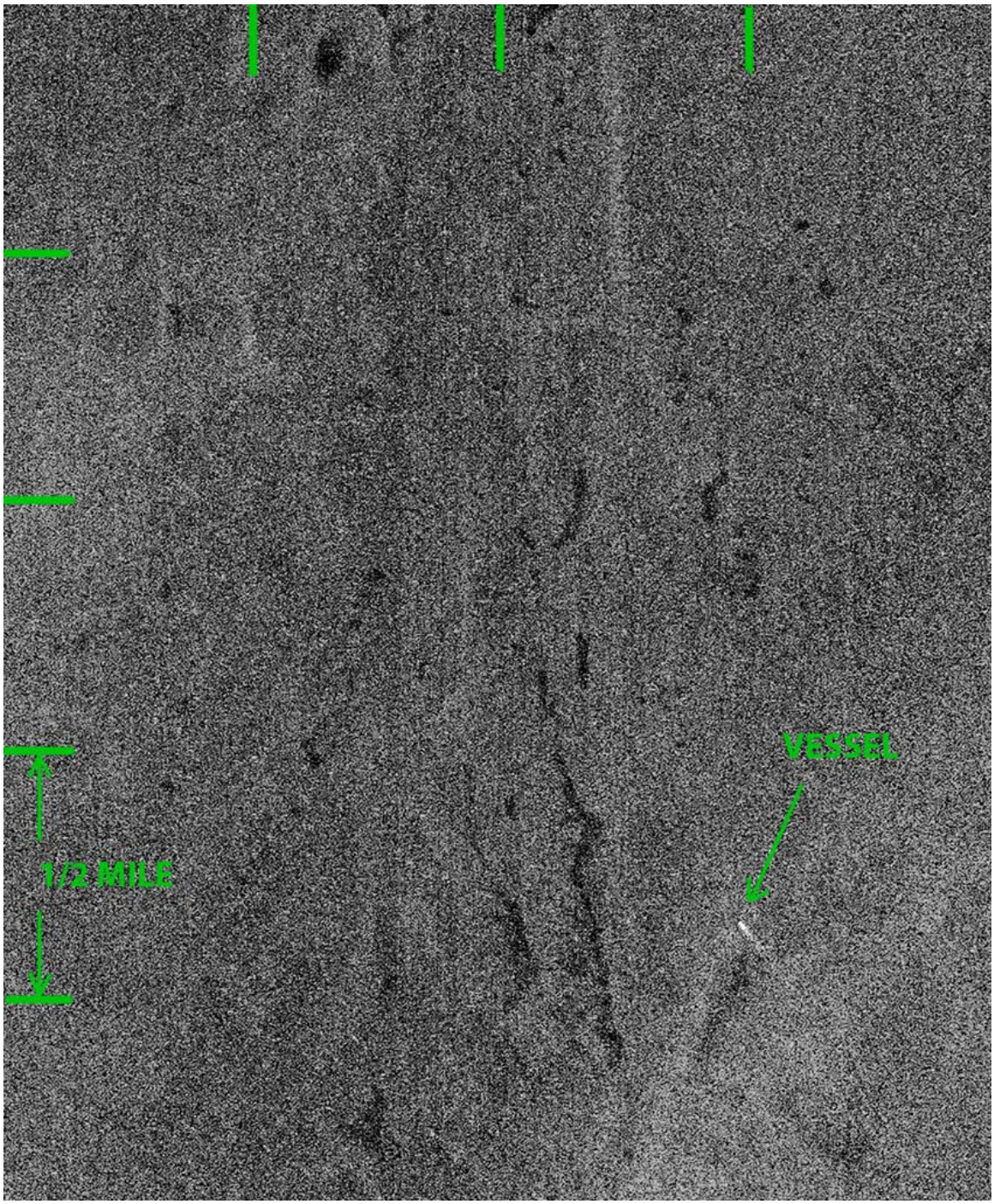
The amount of ocean surface area being photographed with airplanes can be greatly increased by adding satellite imagery. It may even be possible to cover the entire Pacific Coast completely eliminating any need for statistical extrapolation.

The Northwest Sardine Survey contacted GeoEye, a satellite company that provides images for public and private uses. After viewing samples of their images it was obvious that sardines could be photographed from a satellite. A test was set up with the help of Spatial Imaging Solutions to photograph an area of known sardine abundance on the Southern Washington coast. With a weather parameter of 90% clear skies and low water vapor concentration, the satellite's computer was programmed to capture a series of images. On August 23, the IKONOS satellite took the images from 425 miles high.



Dark portion = area photographed by IKONOS on Aug 23rd

The images captured by the IKONOS satellite were delivered and converted to TIFF files. After applying adobe filters, the same ones used for enhancing photos from the Aerial Survey, the satellite images showed many sardine schools.



The above picture is a very small portion the actual area photographed by the satellite. Due to the extensive size of the area photographed it is not possible in this report to show the image in its entirety. After further development and enhancements, the sardine school surface areas will be measured as was done for the Aerial Survey.

Satellite imaging is a time proven technique to accurately measure earth's objects such as buildings, roads and forests. The satellite science and analytical software have been proven for decades and imagery calibration has previously been accepted by science. Applying this achievement to the measurement of sardine schools will be straightforward.

NOAA fisheries scientists need to consider being involved with satellite imaging for future sardine assessments. The satellite is a more reliable and cost efficient method of predicting real world conditions. The cost of trawl surveys when compared to aerial surveys is substantial, but when compared to the cost of satellite imaging, trawling is vastly more expensive and provides uncertain results. The past assessments of sardine abundance have not correctly predicted the biomass and the new Aerial Survey proves this case.

Industry will continue to develop and test satellite imagery if NOAA doesn't takes the lead. However, it is preferred that this endeavor be conducted by people who are accomplished scientists. Fisheries management and industry will be well served by NOAA 's participation in this project.

Jerry Thon
Northwest Sardine Survey

GeoEye 21700 Atlantic BoulevardDulles, VA 20166 Phone: +1.703.480.7500Fax: 703.450.9570 E-mail: info@geoeye.co

Spatial Image Solutions, Jeff Campbell, Bend OR 541-388-8868 jcampbell@spatial-solutions.com

West Coast Aerial Sardine Survey

A Consortium of the Sardine Industry

Sampling Results in 2009





Purpose and Need

- Stock Assessment Scientists, and advisory bodies of the PFMC, including the Coastal Pelagics Species Management Team (CPSMT), Advisory Panel (CPSAP), and the Scientific and Statistical Committee (SSC), have recommended that additional fishery-independent indices of abundance be developed for the assessment of Pacific Sardine

Objectives

- Conduct a coastwide aerial survey of Pacific Sardine

- Conduct Point Sets to relate the aerial survey to biomass

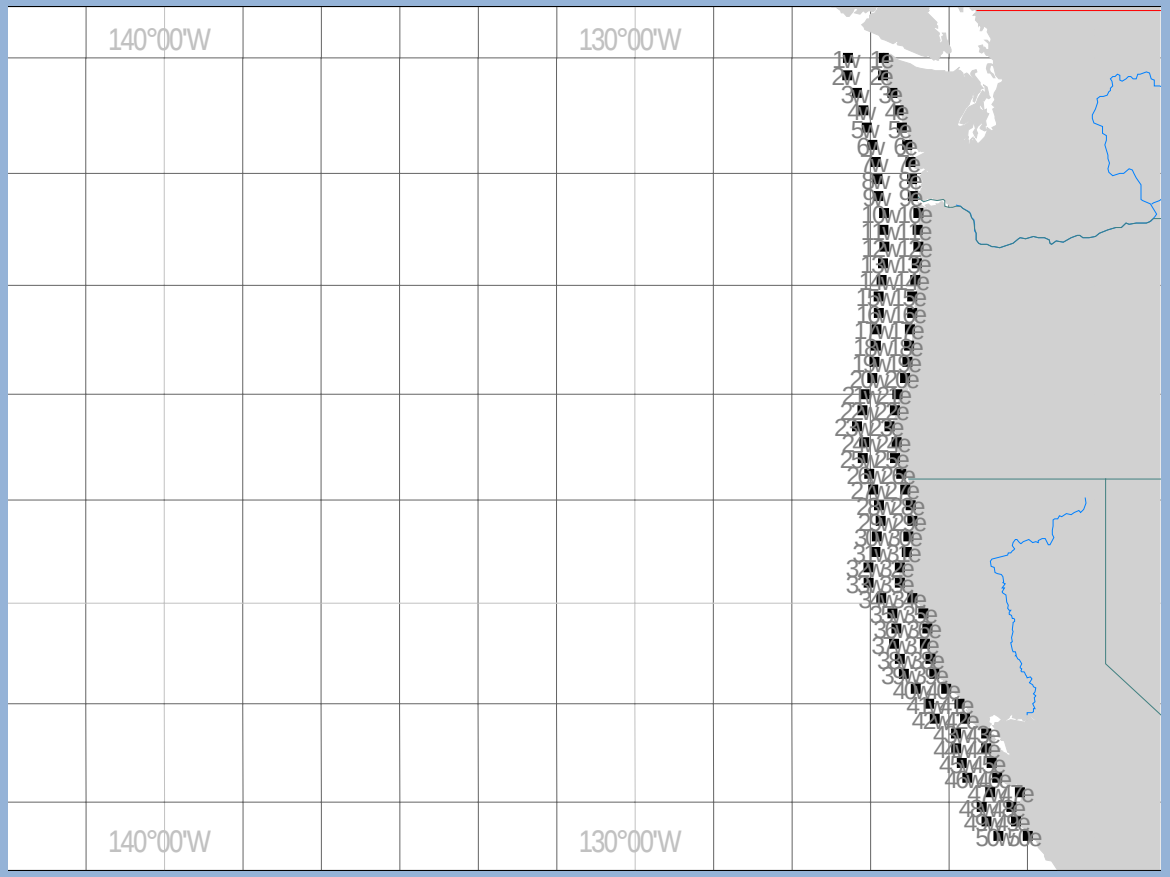
Survey Design

- Stage 1 Sampling: Aerial Survey: Transects
- Stage 2 Sampling: At-Sea Point Sets
- Estimation of Biomass from Stage 1 and Stage 2 Sampling

Stage 1: Aerial Transect Survey

- Logistics
- Data Collection and Reduction
- Calibration and Validation
- Data Analysis
  - Individual school surface area
  - Individual school biomass

Logistics



Cape Flattery to Monterey Bay

Systematic Random Sampling Design

Sampling Unit = Transect

52 Transects, 35 miles in length, spaced 15 miles apart

Logistics



Airplane Spotters



At the nominal survey altitude of 4000 feet, the approximate width-swept by the camera with a 24 mm lens is about 1 mile. Digital images are collected with 60% overlap to obtain seamless photogrammetric coverage of the transects.

Data Collection and Reduction

Aerial Survey Data Acquisition

Manufacturer

Aerial Imaging Solutions

Don LeRoi

Canon EOS 1D Mark III

Digital AF/AE SLR

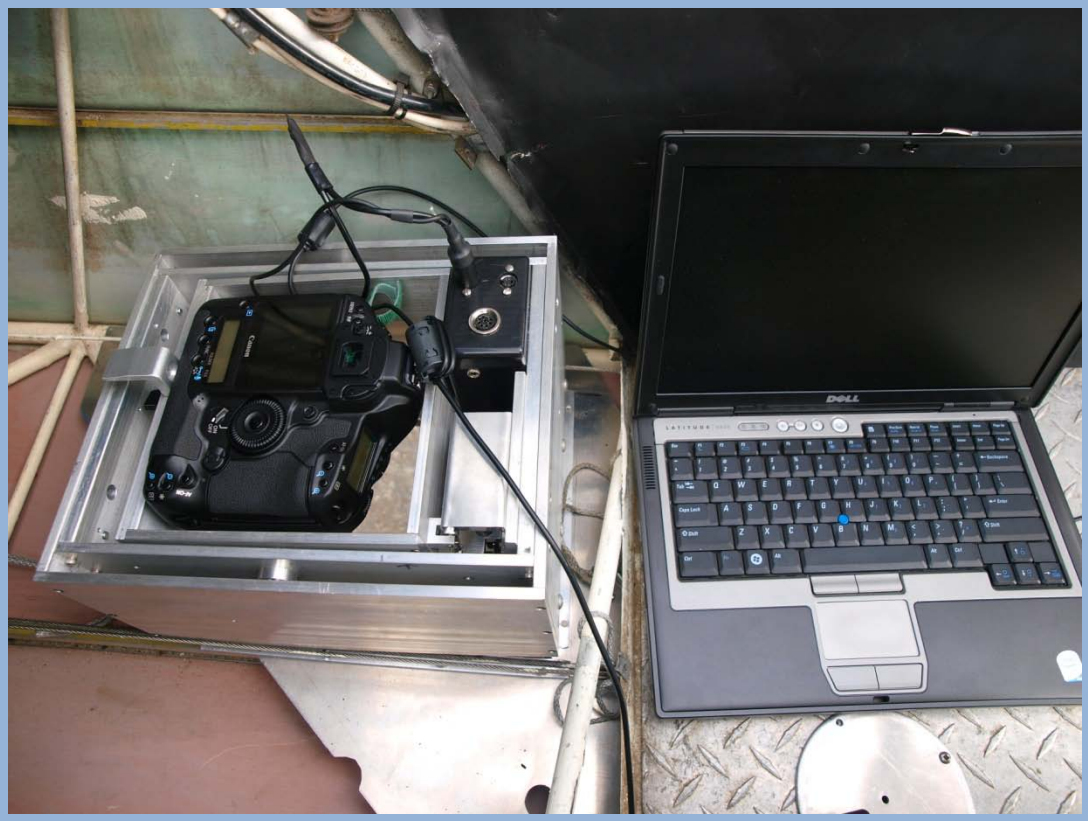
5616 x 3744 pixels

21 mega pixels

Lens 24mm

Laptop PC

Dell latitude D630

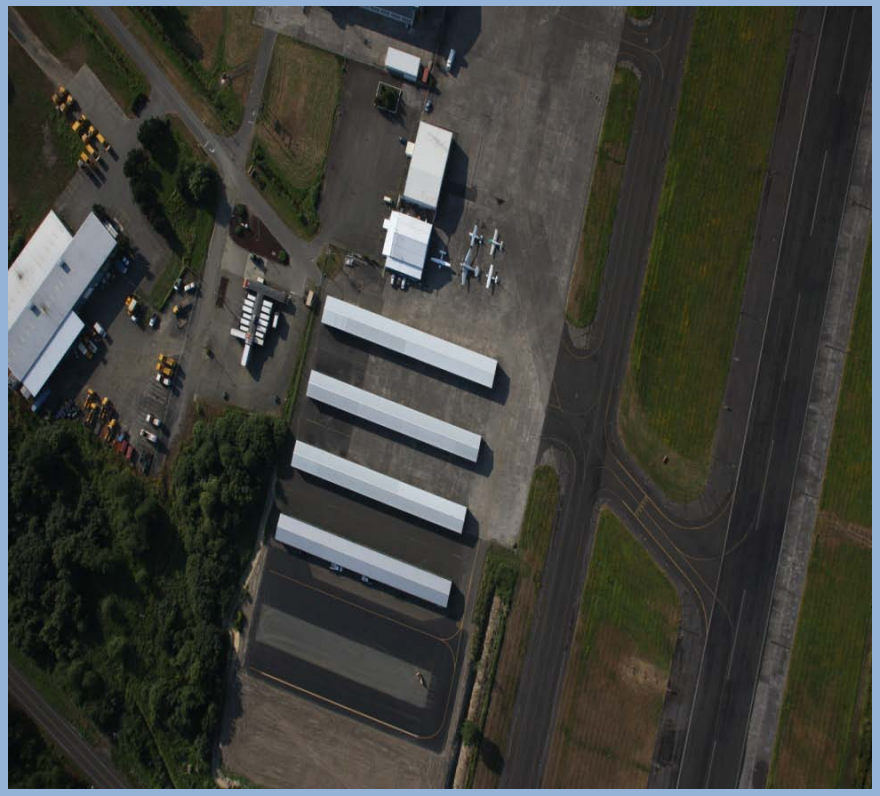


Acquires digital images at specified overlap rate (60%)

Logs: Altitude, GPS Position, Observer Comments

Camera System and Photo Analyst Calibration

Airport Hanger – *Warrenton, OR*



Area of Hanger = 1065 m^2

Tennis Courts - *Hollister, CA*



Area of Tennis Court = 260 m^2

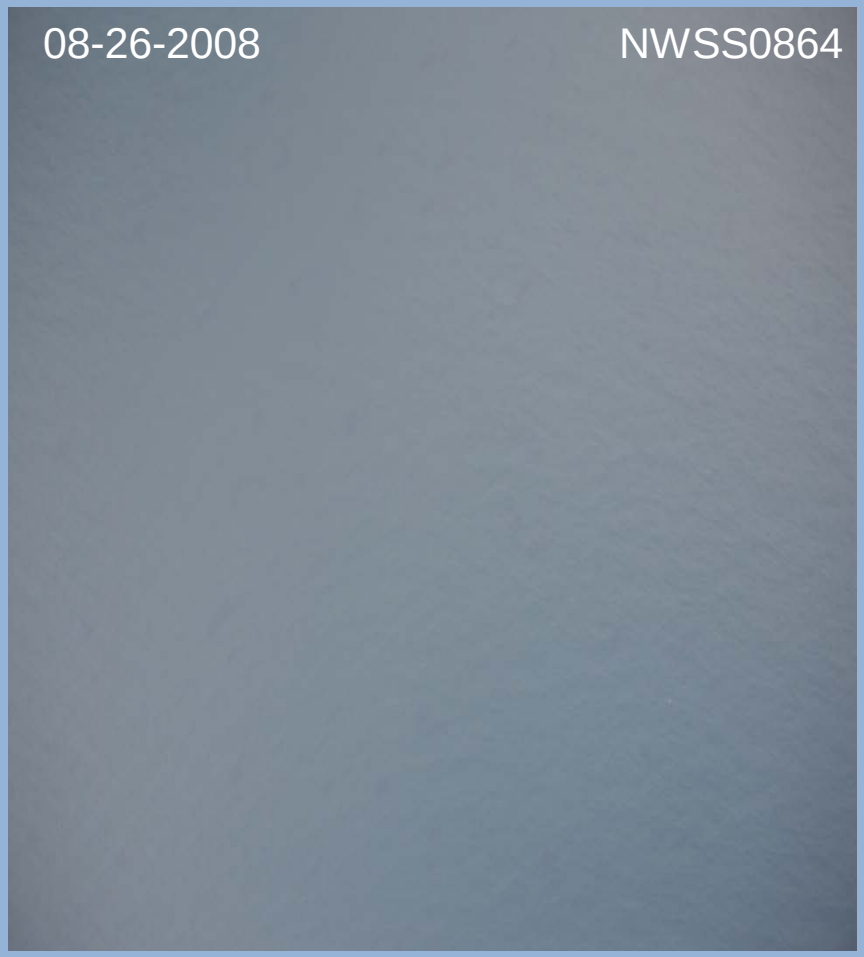
Between Photo Analyst Comparison

Airplane Hanger and Tennis Court

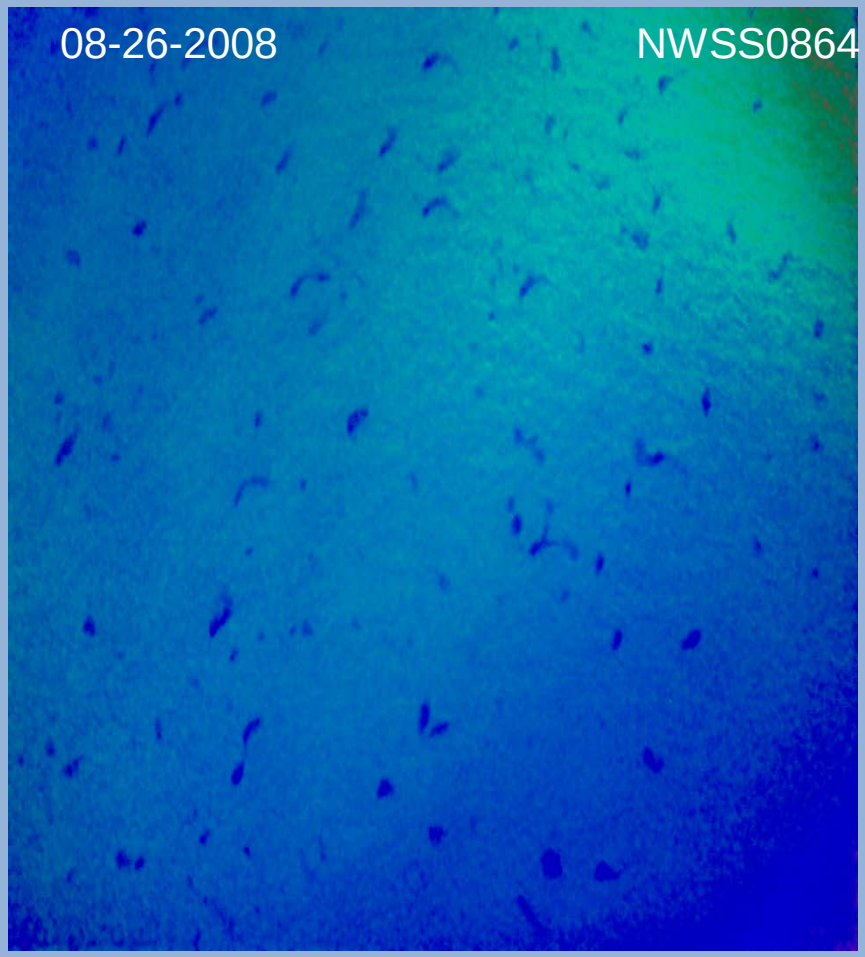
	Analyst 2	Analyst 3	Analyst 4	Analyst 5		
Photo #	Area Results (m^2)	Area Results (m^2)	Area Results (m^2)	Area Results (m^2)	Object Measured	Actual Area (m^2)
46	1001.18	1052.91	996.97	997.60	Hanger	1065
63	1015.54	1044.13	1015.66	1002.51	Hanger	1065
73	1052.85	1091.37	1032.30	1047.05	Hanger	1065
107	995.15	995.37	995.16	993.45	Hanger	1065
825	1058.81	1100.97	1062.89	1084.46	Hanger	1065
845	1043.50	1092.00	1032.17	1032.69	Hanger	1065
860	1057.83	1078.68	1046.22	1057.24	Hanger	1065
903	1085.88	1103.52	1063.21	1086.29	Hanger	1065
270	1064.87	1094.98	1064.87	1065.08	Hanger	1065
312	1060.39	1071.12	1060.39	1057.58	Hanger	1065
4311	264.59	260.44	243.39	266.27	Tennis Court	260
4319	244.48	292.49	245.29	267.47	Tennis Court	260
4345	227.01	256.82	261.18	280.21	Tennis Court	260

Sardine Visibility

Sardine schools are barely visible in the raw photo



Sardine schools are much more visible after photo enhancement

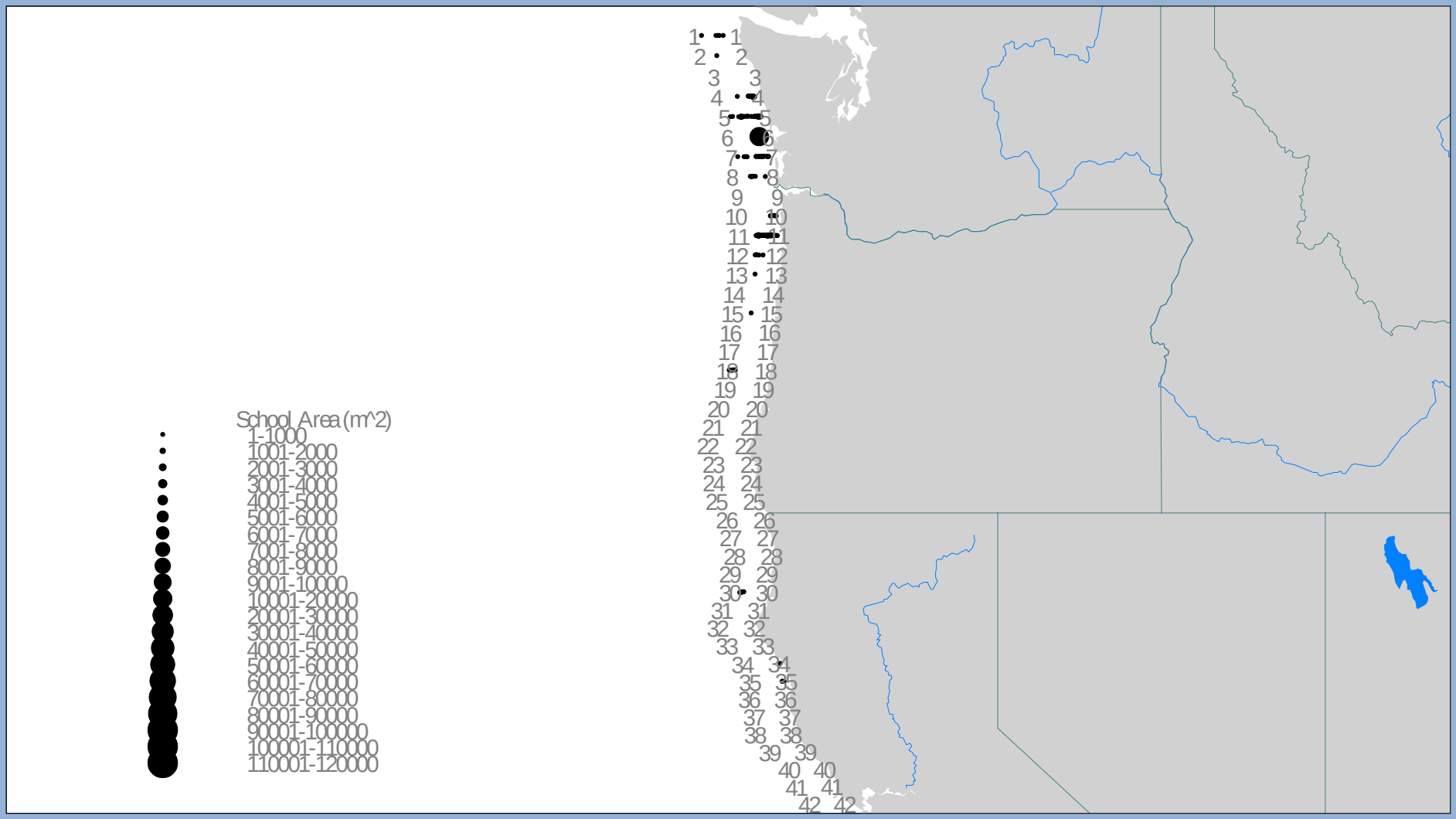


Point Set Taken On 7-28-2009

Landed Weight = 34.98mt Total Area = 1914.62



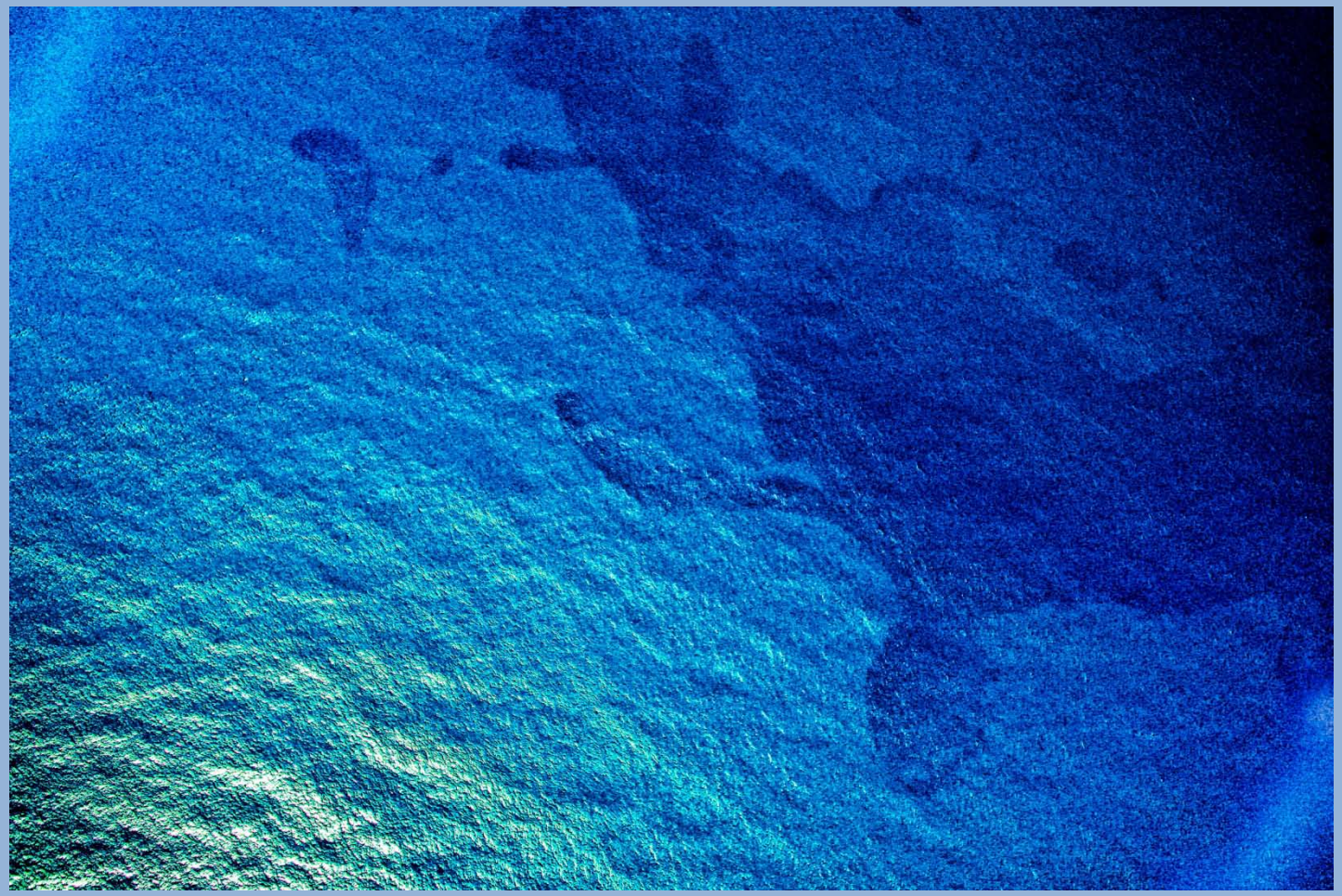
SET A -- Transects 1-41
Sardine School Surface Area



Some Exceedingly Large Schools Were Observed

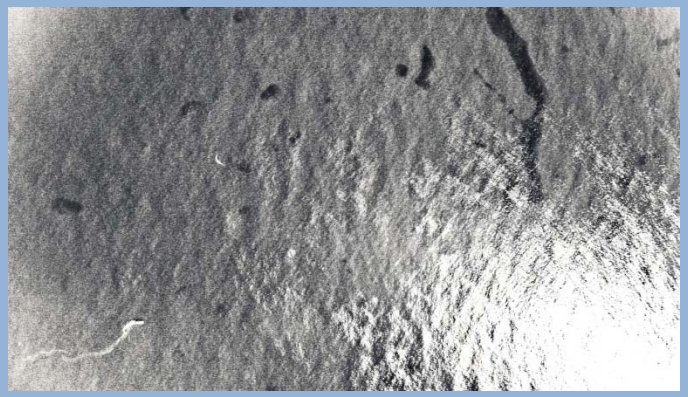
Transect No. 6 8-22-2009 Photo 258

School Area = 504909.7 m^2 School Biomass = 3911.3 mt



A More Typical Pattern of School Distribution









Anchovy Identified by Survey Pilots During Transects

Survey Date	Pilot	Transect	Photo #	Pilot Estimated Wt. (mt)
8/19/2009	SP2	2	263-273	4000
8/22/2009	SP1	6	193-220	n/a
8/22/2009	SP1	7	567-591	500
8/25/2009	SP1	27	403-418	500
9/2/2009	SP1	30	230-286	1000

Survey Date	Pilot	Transect	Photo #	Pilot Estimated Wt. (mt)
8/6/2009	SP1	2	607-623	1000
8/19/2009	SP1	6	616-636	n/a
8/19/2009	SP3	7	94	n/a

Stage 2 Sampling: At-Sea Point Sets

- Logistics
- Biological Sampling
- Sample Size (Number of Point Sets)
- Data Analysis

Logistics

2 EFP vessels in Northern Area – Northwest Sardine Survey, LLC
2 EFP vessels in Southern Area – California Wetfish Producers Association



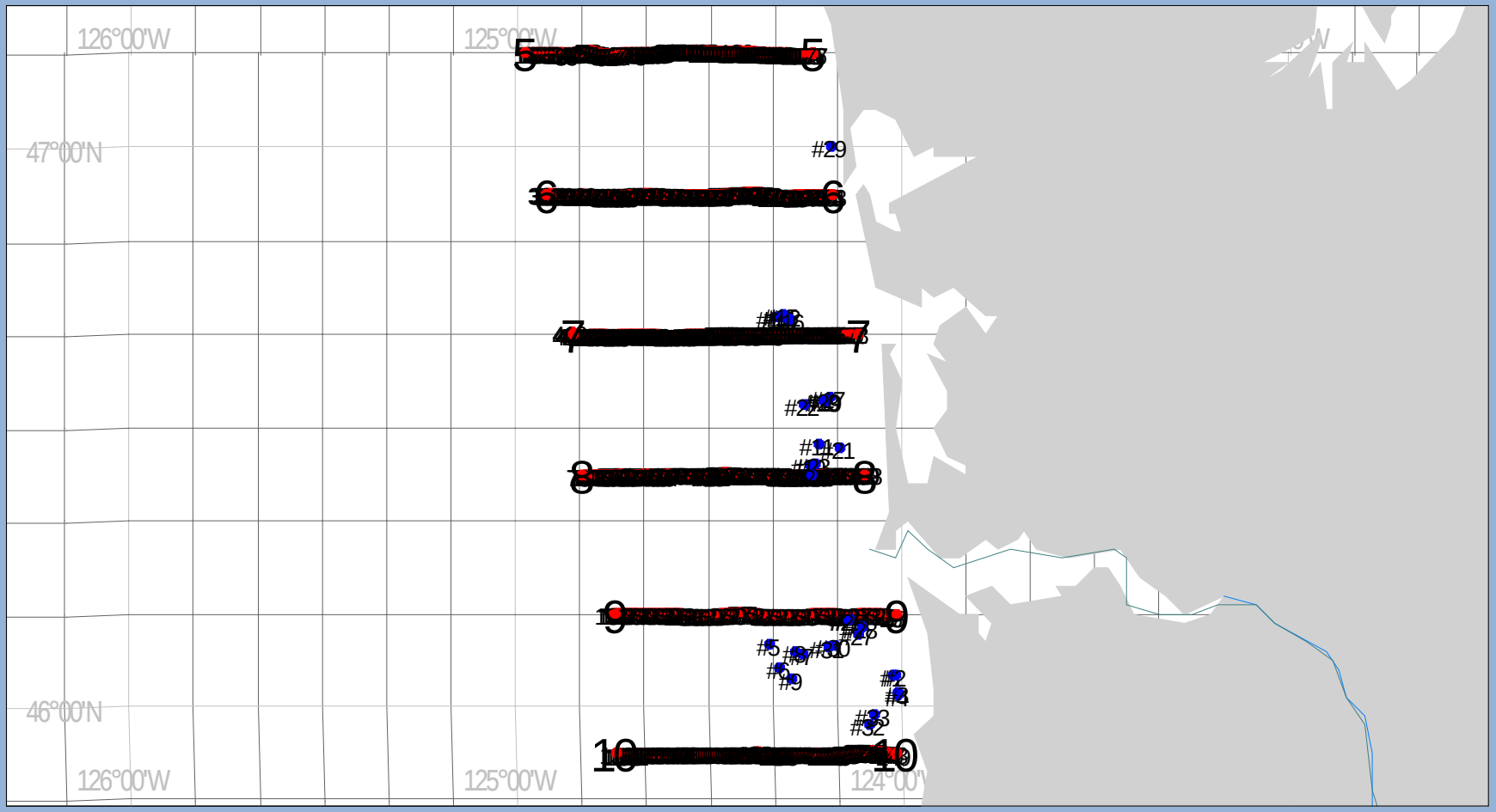


Logistics

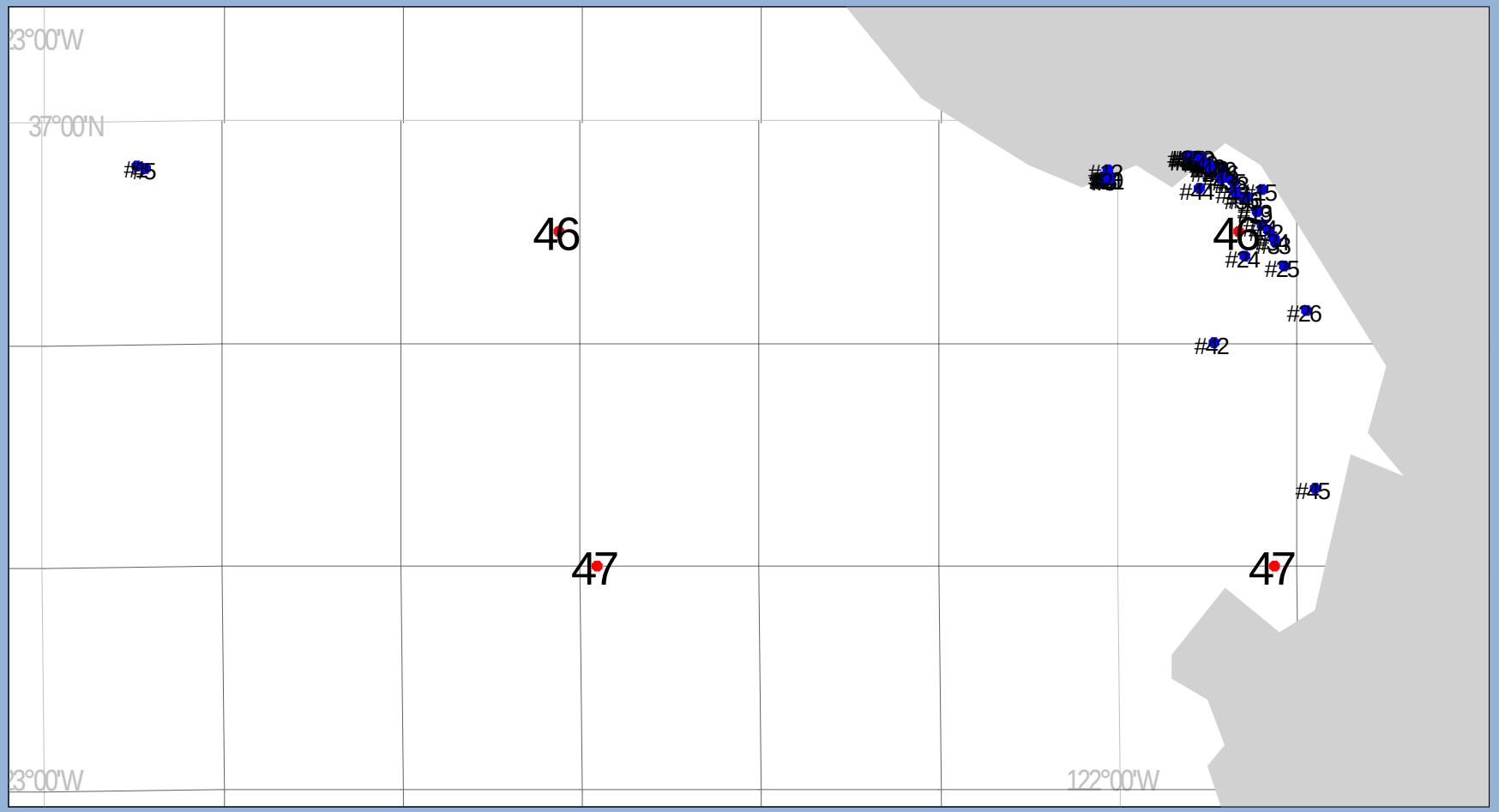
Point Set Size

Size (mt)	*Total (mt)*	*No. of Point Sets Scheduled*	*No. of Point Sets Taken* N	S
5	5	1	3	11
10	190	19	5	16
20	380	19	15	13
40	360	9	7	6
60	180	3	1	1
80	80	1	2	0
	1195	52	33	47

Point Sets - North



Point Sets - South



Logistics

Biological Sampling

Point Sets were sampled for:

Length

Weight

Maturity

Age (otoliths)

N = 50 fish, taken from unsorted catch at beginning, middle, and end of delivery as it is pumped





West Coast Sardine Survey
Vessel Form – NWSS Vessels

Point-set #	Date	Vessel	Time	Depth to Top of School (fath)	Depth to Bottom of school (fath)	Ocean Depth (fath)	Temp. (°F)	Weather Cond. (1-4)	Latitude	Longitude	% Capture	Estimated wt (mt)	Delivered wt. (mt)
1	7/28/2009	Pacific Pursuit	1210	3	6	19	58	1	46.02.2	124.00.9	95	30	29.42
2	7/28/2009	Lauren L Kapp	1230	2	6	20	55.8	1	46.3.5	124.1.7	90	25-30	22.41
3	7/28/2009	Pacific Pursuit	1330	3	6	20	58	1	46.01.3	124.00.5	100	20	19.36
4	7/28/2009	Lauren L Kapp	1430	2	6	19	55.6	1	46.01.3	124.00.7	100	20	34.98
5	8/13/2009	Pacific Pursuit	1145	2	9	60	62	2	46.06.6	124.20.2	96-97	130	128.15
6	8/13/2009	Lauren L Kapp	1530	0	2	61	62	2	46.4	124.2	100	3-5	2.68
7	8/14/2009	Pacific Pursuit	1150	3	7	54	62	3	46.04.1	124.16.1	98	50	42
8	8/14/2009	Lauren L Kapp	1200	0	3	53	61	2	46.6	124.16	95	50	50.1
9	8/14/2009	Pacific Pursuit	1406	3	7	55	62	3	46.02.7	124.17.5	98	30	32.57
10	8/16/2009	Lauren L Kapp	1300	1	6	27	61	1	46.26	124.14	95	50	56.43
11	8/16/2009	Pacific Pursuit	1440	1	6	27	62	1	46.28.25	124.12.92	100	25-30	27.25
12	8/22/2009	Pacific Pursuit	1202	n/a	n/a	37	60	3	46.41.5	124.18.4	99	7-9	7.15
13	8/22/2009	Pacific Pursuit	1310	n/a	n/a	38	60	3	46.41.9	124.19.1	100	25-30	26.56
14	8/22/2009	Lauren L Kapp	1330	2	4	33	60	2	46.42	124.18	100	6	10.17
15	8/22/2009	Pacific Pursuit	1450	n/a	n/a	37	60	3	46.42.7	124.18.2	100	15-17	15.87
16	8/22/2009	Lauren L Kapp	1530	2	5	30	60	2	46.42	127.17	100	30	39.14
17	8/23/2009	Pacific Pursuit	1230	n/a	n/a	20	62	3	46.33.5	124.11.6	100	20	18.6
18	8/23/2009	Lauren L Kapp	1230	0	2.5	20	60	1	46.33	124.12	100	18	13.55
19	8/23/2009	Lauren L Kapp	1430	2	6	20	60	1	46.33	124.12	100	40	48.89
20	8/23/2009	Pacific Pursuit	1450	n/a	n/a	20	62	3	46.33.9	124.10.7	100	18	15.08
21	8/24/2009	Pacific Pursuit	1500	2	4	25	58	3	46.27.9	124.10.9	98	n/a	26.4
22	8/24/2009	Lauren L Kapp	1300	2	4	25	59	1	46.32	124.13	100	25	28.55
23	8/25/2009	Pacific Pursuit	1220	n/a	n/a	25	58.8	3	46.26.1	124.13.5	98	40	41.79
24	8/25/2009	Lauren L Kapp	1230	2	7	24	59	1	46.25	124.14	90	60	68.18
25	9/1/2009	Pacific Pursuit	930	n/a	n/a	33	58	3	46.09.2	124.08.2	99	35-40	29.85
26	9/1/2009	Lauren L Kapp	1000	2	6	27	55	2	46.9	124.8	100	35	39.4
27	9/1/2009	Lauren L Kapp	1230	2	6	28	55	2	46.8	124.7	100	45	39.85
28	9/1/2009	Pacific Pursuit	1230	n/a	n/a	23	58	3	46.09.2	124.06.3	95	55-60	45.03
29	9/2/2009	Lauren L Kapp	1000	1	3	40	58	1	46.6	124.11	100	25	22.29
30	9/2/2009	Pacific Pursuit	1000	n/a	n/a	45	59	3	46.06.1	124.10.8	95	80	80.43
31	9/2/2009	Lauren L Kapp	1130	1	3	40	58	1	46.6	124.11	100	30	29.31
32	9/3/2009	Lauren L Kapp	1600	2	4.5	37	59	3	45.58	124.05	60	32	34.99
33	9/3/2009	Pacific Pursuit	1600	n/a	n/a	35	59	3	45.59.1	124.04.2	100	60	51.61

West Coast Sardine Survey
Vessel Form – CWPA Vessels

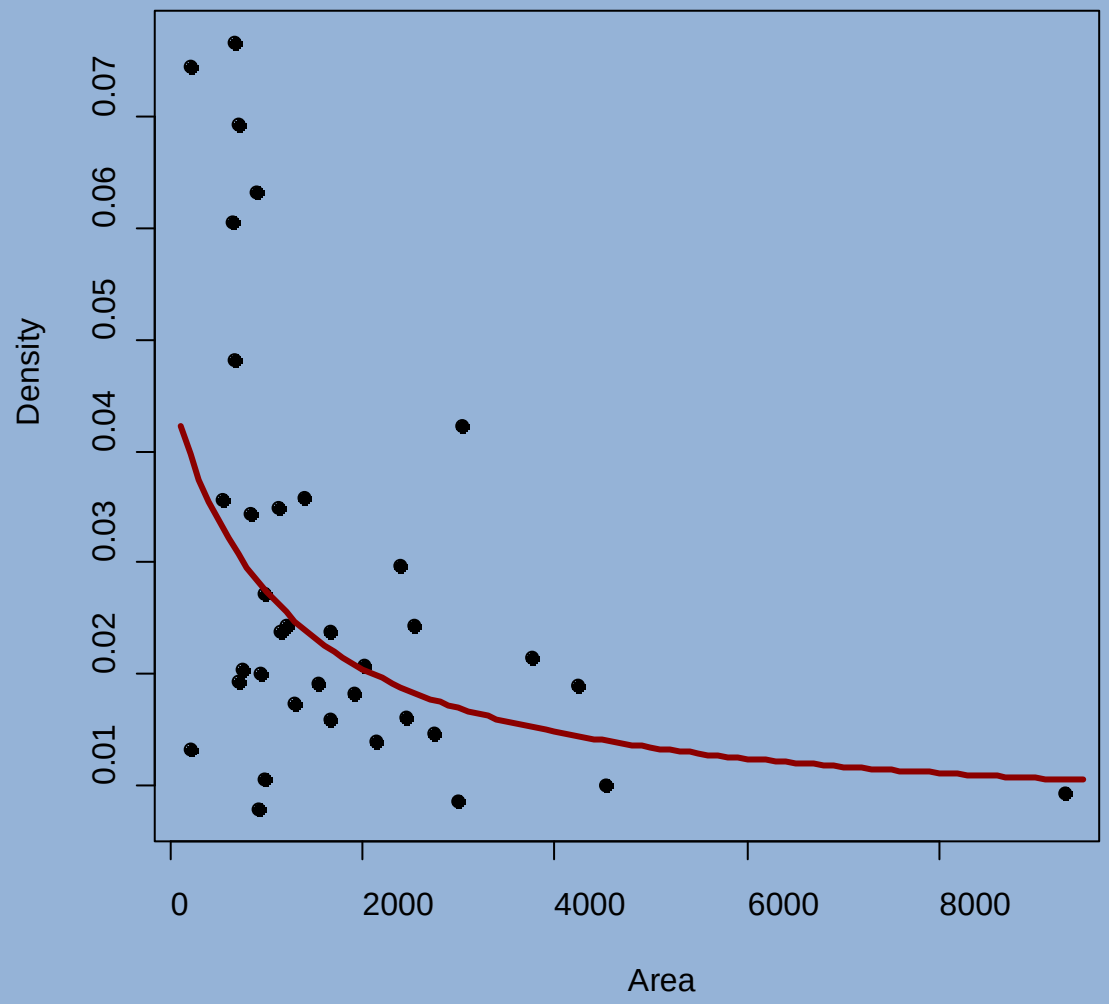
Point-set #	Date	Vessel	Time	Depth to Top of School (fath)	Depth to Bottom of school (fath)	Ocean Depth (fath)	Temp.	Weather Cond.	Latitude	Longitude	% Capture	Estimated wt. (mt)
1	8/5/2009	King Philip	1530	0	3	26	60.4	1	37.445	122.529	0	0
2	8/23/2009	King Philip	1400	1	1.5	3	60	1	36.57.95	122.54.71	50	20
3	8/23/2009	King Philip	1515	1	1.5	2.75	60	1	36.58.00	122.54.66	0	0
4	8/23/2009	King Philip	1700	?	1	3	60	1	36.57.44	122.00.80	10	80
5	8/24/2009	King Philip	1550	?	3	34	59	2	36.57.46	122.00.75	25	30
6	8/24/2009	Ocean Angel IV	1410	1	6	6	61	3	36.57.45	122.00.82	80	50
7	8/25/2009	Ocean Angel IV	1251	2	5	35	61	2	36.57.36	122.00.67	40	25
8	8/25/2009	King Philip	1245	1.5	2.5	3	59.9	1	36.57.81	122.54.25	100	25
9	8/25/2009	King Philip	1500	2	3	4	58	2	36.57.32	122.00.75	20	5
10	8/26/2009	King Philip	1200	3	2	1.5	58.8	1	36.57.43	122.00.60	50	15
11	8/26/2009	King Philip	1500	3	1.5	3	60.8	1	36.58.31	121.56.07	50	47
12	8/26/2009	Ocean Angel IV	1545	1	2.5	4	61	2	36.58.41	121.56.18	35	25
13	8/27/2009	King Philip	1030	1	2	2.5	61.7	1	36.58.29	121.55.99	70	18
14	8/27/2009	King Philip	1200	1.5	2.75	4	59.5	2	36.57.77	122.00.57	80	45
15	8/27/2009	King Philip	1500	1	2	3	60.1	1	36.55.95	121.52.20	40	20
16	8/27/2009	Ocean Angel IV	1515	2	5	20	61	2	36.55.31	121.51.95	90	18
17	8/27/2009	Ocean Angel IV	1625	3	5	15	61	2	36.56.89	121.51.95	90	22
18	8/28/2009	King Philip	1130	1	2	3	59.5	1	36.57.75	121.54.12	60	10
19	8/28/2009	King Philip	1300	1	2	3	60	1	36.58.39	121.56.04	80	40
20	8/28/2009	King Philip	1700	2	4	4	58.8	2	36.55.88	121.52.24	70	35
21	8/28/2009	Ocean Angel IV	1315	10	15	19	61	2	36.58.36	121.55.46	25	25
22	8/30/3009	Ocean Angel IV	1320	2.5	4.5	28	61	2	36.57.4	122.00.5	90	10
23	8/30/3009	Ocean Angel IV	1410	1.5	2.5	3	61.5	2	36.58.2	121.56.0	100	15
24	8/30/3009	Ocean Angel IV	1545	2.5	5.5	11	61	2	36.53.91	121.52.9	90	18
25	8/30/2009	King Philip	1200	1	2.5	3	60	1	36.57.47	122.00.54	60	45
26	8/30/2009	King Philip	1350	1	2.5	2.5	63	1	36.58.38	121.56.04	70	35
27	8/30/2009	King Philip	1600	1	2	4	60	1	36.53.48	121.50.69	10	3
28	8/31/2009	King Philip	1400	2	3	4	60.1	1	36.51.47	121.49.47	100	15
29	8/31/2009	Ocean Angel IV	1635	1.8	3.8	35	62	2	36.57.75	121.54.83	15	25
30	9/7/2009	King Philip	1130	2	3	3.5	59	1	36.57.22	121.53.56	100	40
31	9/7/2009	King Philip	1400	2	3	3	60.6	1	36.57.99	121.54.85	100	20
32	9/7/2009	Ocean Angel IV	1215	2	5	6	62	2	36.57.81	121.54.18	0	20
33	9/7/2009	Ocean Angel IV	1330	2	5	5	62	2	36.57.88	121.54.20	100	35
34	9/7/2009	Ocean Angel IV	1435	3	6	6	62	2	36.57.92	121.54.72	100	20
35	9/9/2009	King Philip	1230	1.5	3	3	57	1	36.54.52	121.51.19	100	47
36	9/9/2009	King Philip	1500	2.5	3	4	57.7	2	36.56.52	121.52.99	90	20
37	9/9/2009	Ocean Angel IV	n/a	2	5	6	61	2	36.58.33	121.55.37	100	15
38	9/9/2009	Ocean Angel IV	n/a	2	5	5	61	2	36.58.18	121.55.25	100	15
39	9/9/2009	Ocean Angel IV	n/a	2	5	6	61	2	36.57.95	121.54.95	100	15
40	9/9/2009	Ocean Angel IV	n/a	1	3	5	61	2	36.57.38	121.54.20	100	10
41	9/9/2009	King Philip	1230	2	2.5	2.5	58.8	1	36.58.38	121.55.99	100	16
42	9/9/2009	King Philip	1400	1	2	2.5	59.5	1	36.57.93	121.54.61	90	45
43	9/9/2009	King Philip	1800	1	2	2.5	59.7	1	36.50.03	121.54.64	80	25

Sample of n = 36 Point Sets Sampled in 2008 (n=8) and 2009 (n=28)

Year	School Area (m^2)	Obs Weight (mt)	Obs Density (mt/m^2)
2008	657.4	50.5	0.0768
2008	1121.7	39.2	0.0350
2008	2399.8	71.2	0.0297
2008	2543.9	61.9	0.0243
2008	3001.9	25.6	0.0085
2008	2752.2	40.3	0.0146
2008	3763.9	80.5	0.0214
2008	9308.4	86.4	0.0093
2009	1546.5	29.4	0.0190
2009	1297.3	22.4	0.0173
2009	544.5	19.4	0.0356
2009	1914.6	35.0	0.0183
2009	3039.0	128.2	0.0422
2009	204.5	2.7	0.0131
2009	2020.1	42.0	0.0208
2009	1396.4	50.1	0.0359
2009	675.4	32.6	0.0482
2009	891.4	56.4	0.0633
2009	1145.9	27.3	0.0238
2009	923.0	7.2	0.0077
2009	1666.0	26.6	0.0159
2009	970.6	10.2	0.0105
2009	212.8	15.9	0.0746
2009	647.0	39.1	0.0605
2009	931.2	18.6	0.0200
2009	702.1	13.6	0.0193
2009	704.3	48.9	0.0694
2009	743.7	15.1	0.0203
2009	972.4	26.4	0.0271
2009	832.3	28.6	0.0343
2009	2149.0	29.9	0.0139
2009	2451.5	39.4	0.0161
2009	1671.8	39.9	0.0238
2009	4543.2	45.0	0.0099
2009	4243.2	80.4	0.0190
2009	1206.0	29.3	0.0243

Michaelis-Menten Model – Lognormal Error

$\ln(\text{Density}) = (a + b^{*}\text{Area})/(c+\text{Area})$

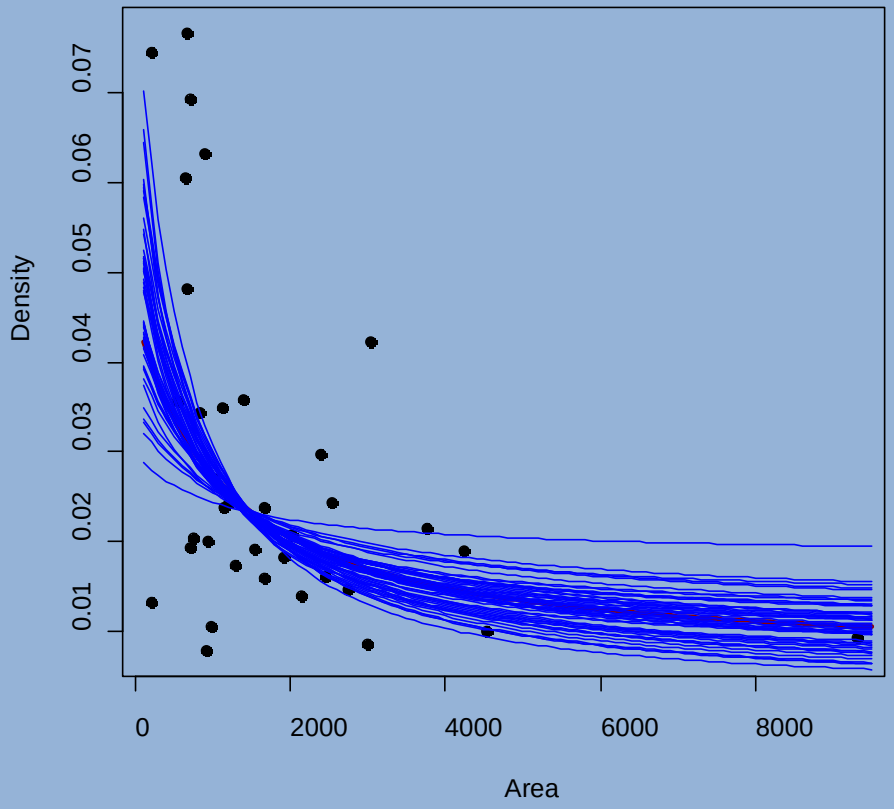


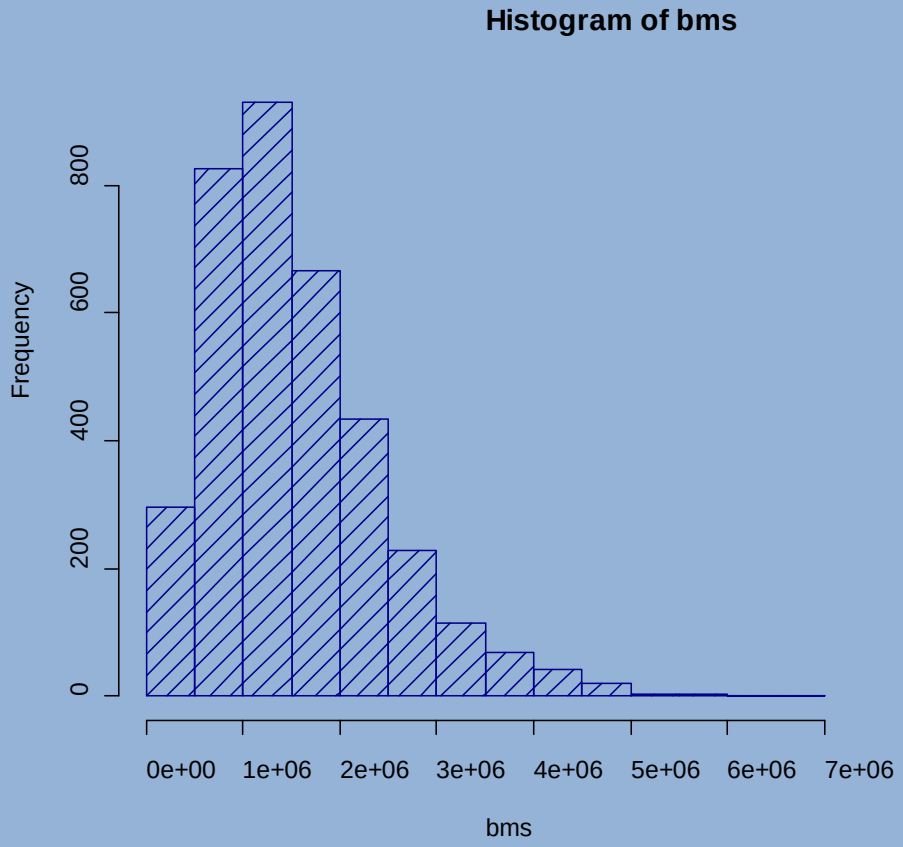
Estimation of Biomass

From Stage 1 and Stage 2 Sampling

Total Transects Possible (N)			
		Latitude	Longitude
Transect 1		48.1667	-125.5222
Transect 41		38.1667	-125.5222
W (m)			1113858.7
w (m)			1858.7
N			599
n			41
Average Transect Biomass (mt)			
Bave		2343.1	
Estimate of Total Biomass (mt)			
Btot		1403504	
Estimate of Total Biomass Variance			
s2u		59811852	
V(Btot)		487600807198	
SE(Btot)		698284	
CIlow		34867	
CIhigh		2772141	
+/-		1368637	

Quantifying Uncertainty





Point Set Planning for 2010

Size (m^2)	Weight (mt)	Total Weight	Number of Point Sets
100	3.8	31	8
500	10.6	85	8
1000	17.0	136	8
2000	26.5	212	8
4000	51.9	415	8
8000	70.5	564	8
10000	82.1	657	8
		2099	56

Acknowledgements

West Coast Sardine Survey

A Consortium of the Sardine Industry

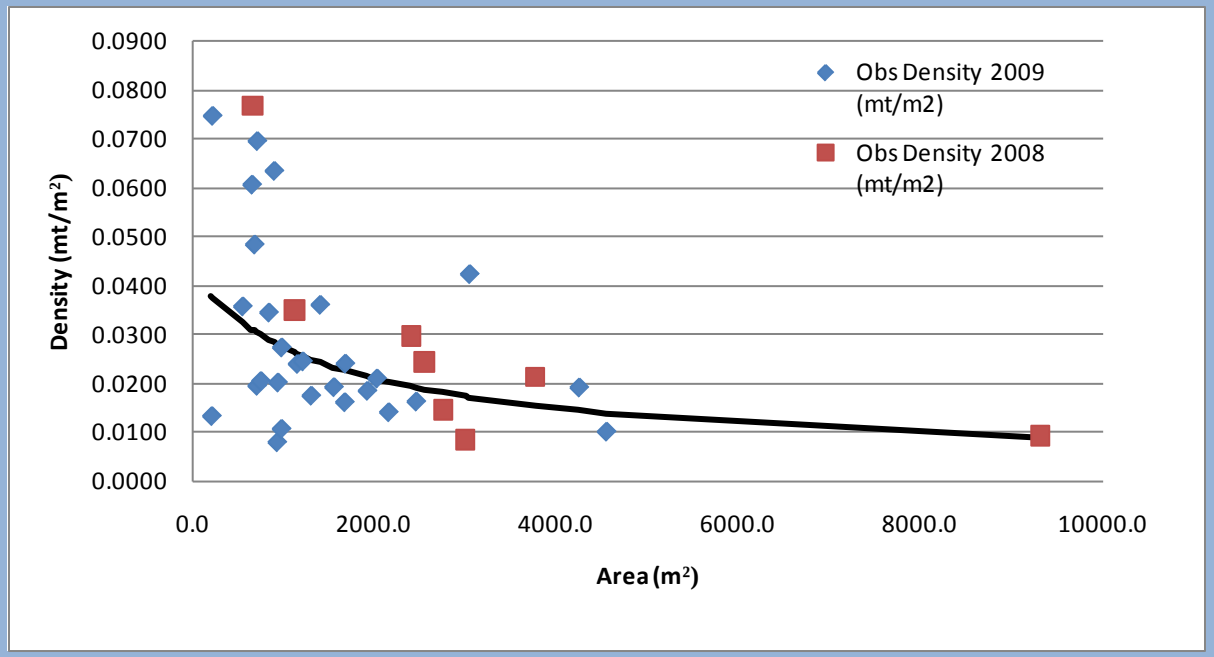
Northwest Sardine Survey, LLC

Jerry Thon, Principal

California Wetfish Producers Association

Diane Pleschner-Steele, Executive Director

Sample of n = 36 Point Sets Sampled in 2008 (n=8) and 2009 (n=28)



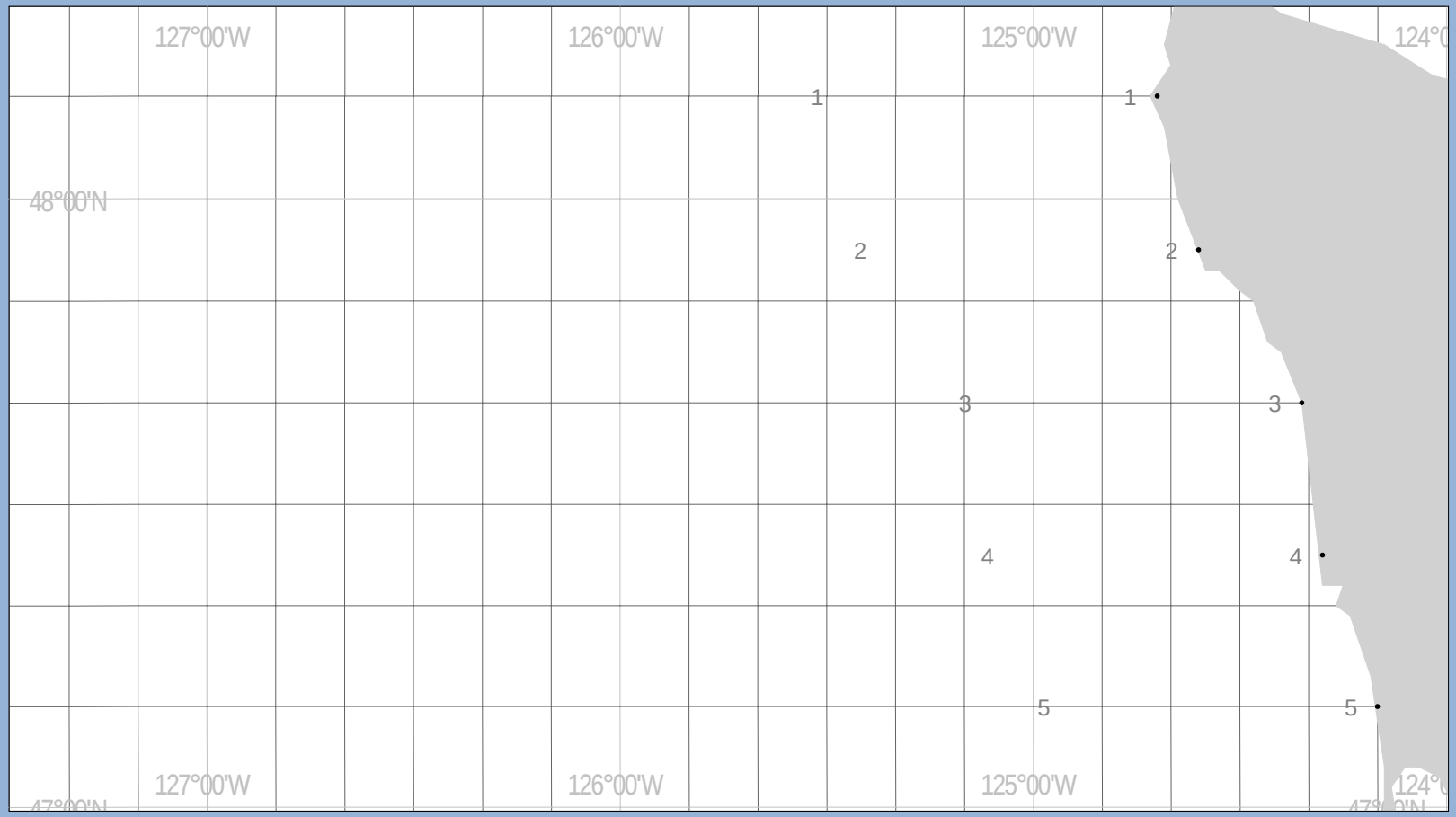
Model: log(Density) = a + b Log(Area) + c Log(Area)^2		
a	**-2.2012835312416**	
b	**0.7527882003985**	
c	**-0.1800584074903**	
School Area (m2)	**Obs Density (mt/m2)**	**Pred Density (mt/m2)**
204.5	0.0131	0.0377
212.8	0.0746	0.0376
544.5	0.0356	0.0324
647.0	0.0605	0.0310
657.4	0.0768	0.0309
675.4	0.0482	0.0307
702.1	0.0193	0.0304
704.3	0.0694	0.0304
743.7	0.0203	0.0299
832.3	0.0343	0.0289
891.4	0.0633	0.0283
923.0	0.0077	0.0280
931.2	0.0200	0.0280
970.6	0.0105	0.0276
972.4	0.0271	0.0276
1121.7	0.0350	0.0263
1145.9	0.0238	0.0261
1206.0	0.0243	0.0256
1297.3	0.0173	0.0250
1396.4	0.0359	0.0243
1546.5	0.0190	0.0233
1666.0	0.0159	0.0227
1671.8	0.0238	0.0226
1914.6	0.0183	0.0214
2020.1	0.0208	0.0209
2149.0	0.0139	0.0203
2399.8	0.0297	0.0193
2451.5	0.0161	0.0191
2543.9	0.0243	0.0188
2752.2	0.0146	0.0181
3001.9	0.0085	0.0173
3039.0	0.0422	0.0172
3763.9	0.0214	0.0154
4243.2	0.0190	0.0145
4543.2	0.0099	0.0139
9308.4	0.0093	0.0089

West Coast Sardine Survey



Logistics

Transects 1-5 SET A



Survey Science Team

Tom Jagielo – Principal Investigator

Doyle Hanan – Project Coordinator – California

Ryan Howe – Coastwide Project Data Coordinator
Sampling Coordinator – Oregon and Washington

Photo Analysts:
Meghan Mikesell
Karen Lindsay
Keith Seidel

Photogrammetric Relationships

$$\frac{I}{F} = \frac{GCS}{A}$$

$$GCS = \frac{I}{F}A$$

I = Image width of the camera sensor (e.g. 36 mm)

F = the focal length of the camera lens (e.g. 24mm)

A = altitude

GCS = "ground cover to the side" (width of the field of view of the digital image)

ASSESSMENT OF THE PACIFIC SARDINE RESOURCE IN 2009 FOR U.S. MANAGEMENT IN 2010

Kevin T. Hill, Nancy C. H. Lo, Beverly J. Macewicz, Paul R. Crone (SWFSC), and Roberto Felix-Uraga (CICIMAR-IPN)

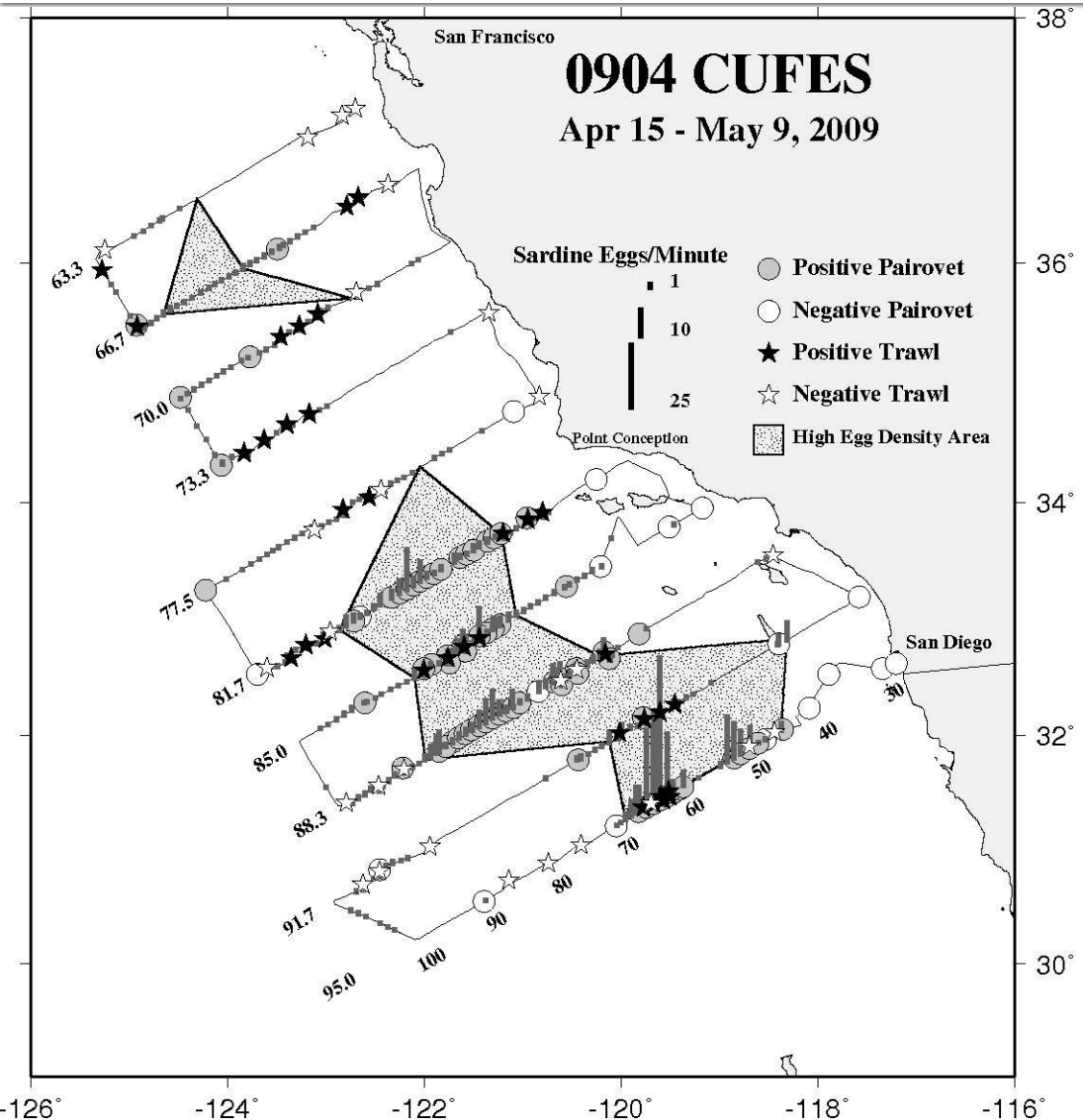


Assessment Changes in 2009

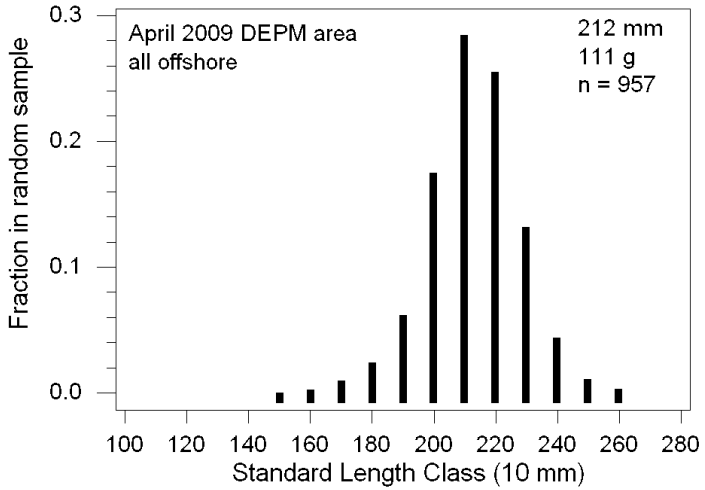
	Assessment Year	
Component Changed	**2007 full & 2008 update**	**2009 full**
Model	SS2 version 2.00i	SS version 3.03a
DEPM & TEP survey series	per Lo et al. 2008 & Hill et al. 2008	Re-analyzed per May 2009 STAR
Fishery Definitions	CA as single fishery	SCA and CCA separated
Catch-weighted Compositions	CA fishery only	All Fisheries
Season time step	Quarter	Semester
Selectivity	Annual - all fisheries	Seasonal for SCA and CCA
Growth	Time invariant	Two periods: 1981-90, 1991-09
Fishing mortality	Pope's approximation	Continuous-F (hybrid method)

New Data:
DEPM survey - 2009
Aerial Survey - 2009
Catch - updated for all fisheries
Size and age comps updated for SCA, CCA, PNW
Canadian fishery length comps (pooled with PNW)
WCVI survey w/ lengths (excluded from Base)
PFFS survey w/ lengths (excluded from Base)

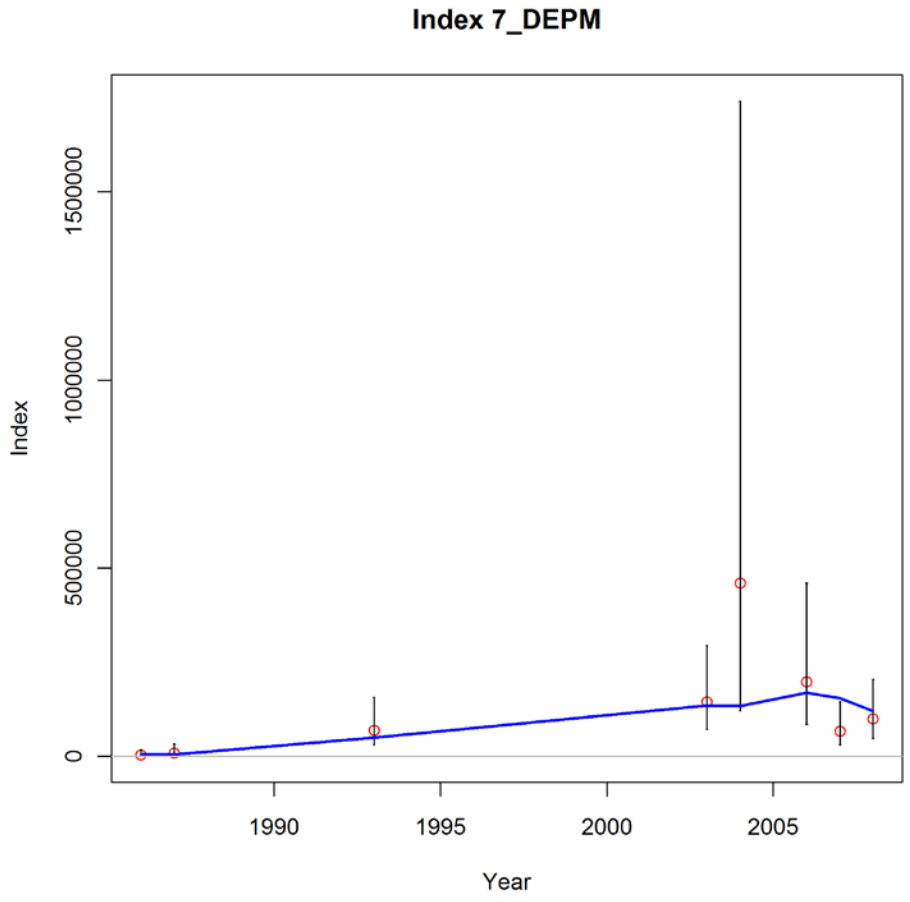
SWFSC Sardine Survey - 0904

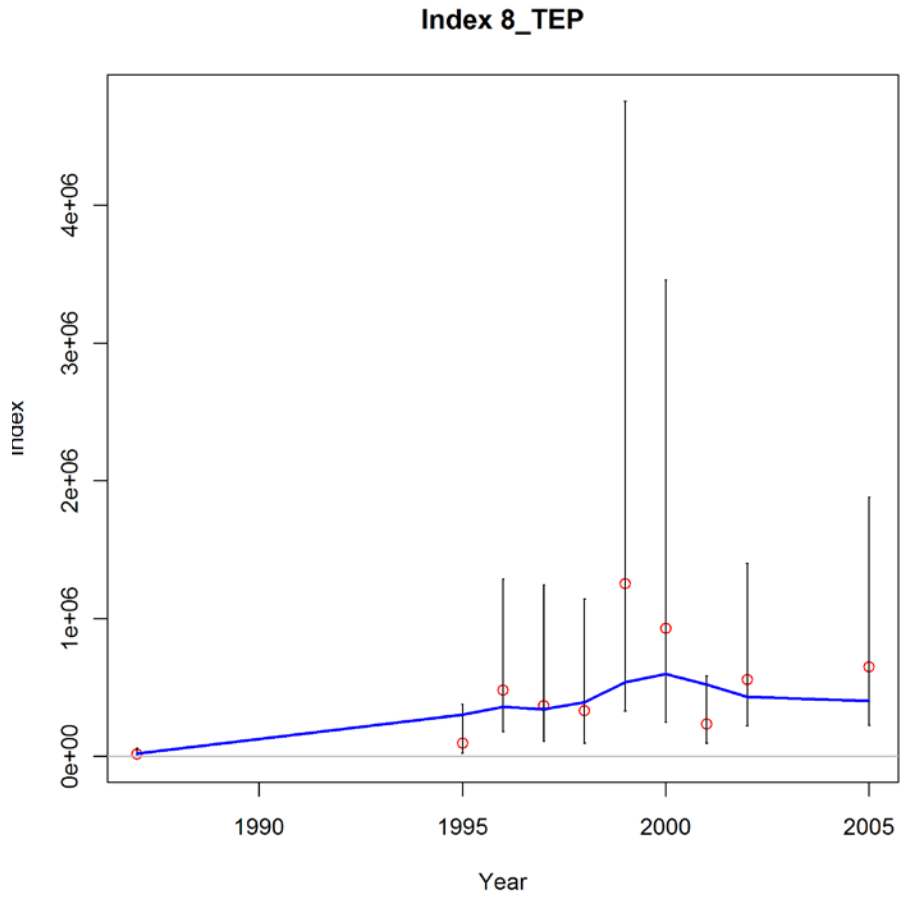


- Low egg density
- Relatively high fraction of spawning females
- SSB_{total} = 166,404 mt
- SSB_{female} = 99,162 mt

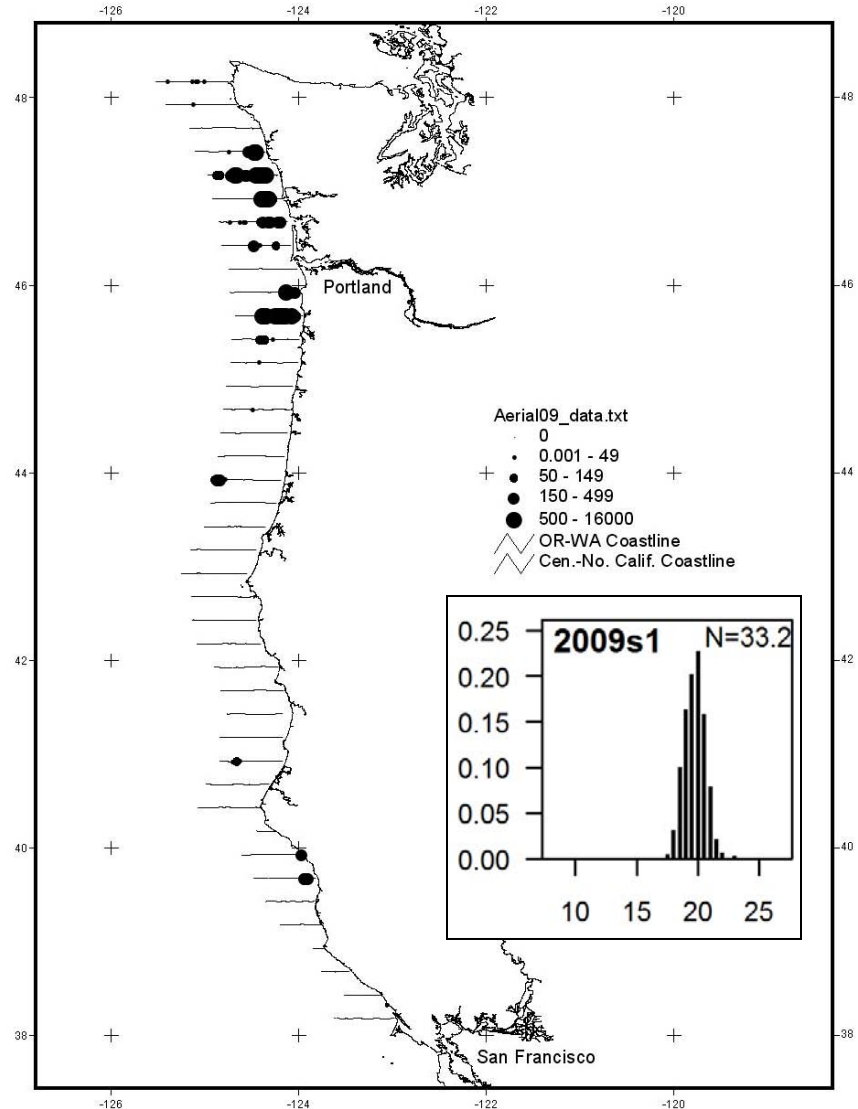


Model fit to DEPM & TEP series



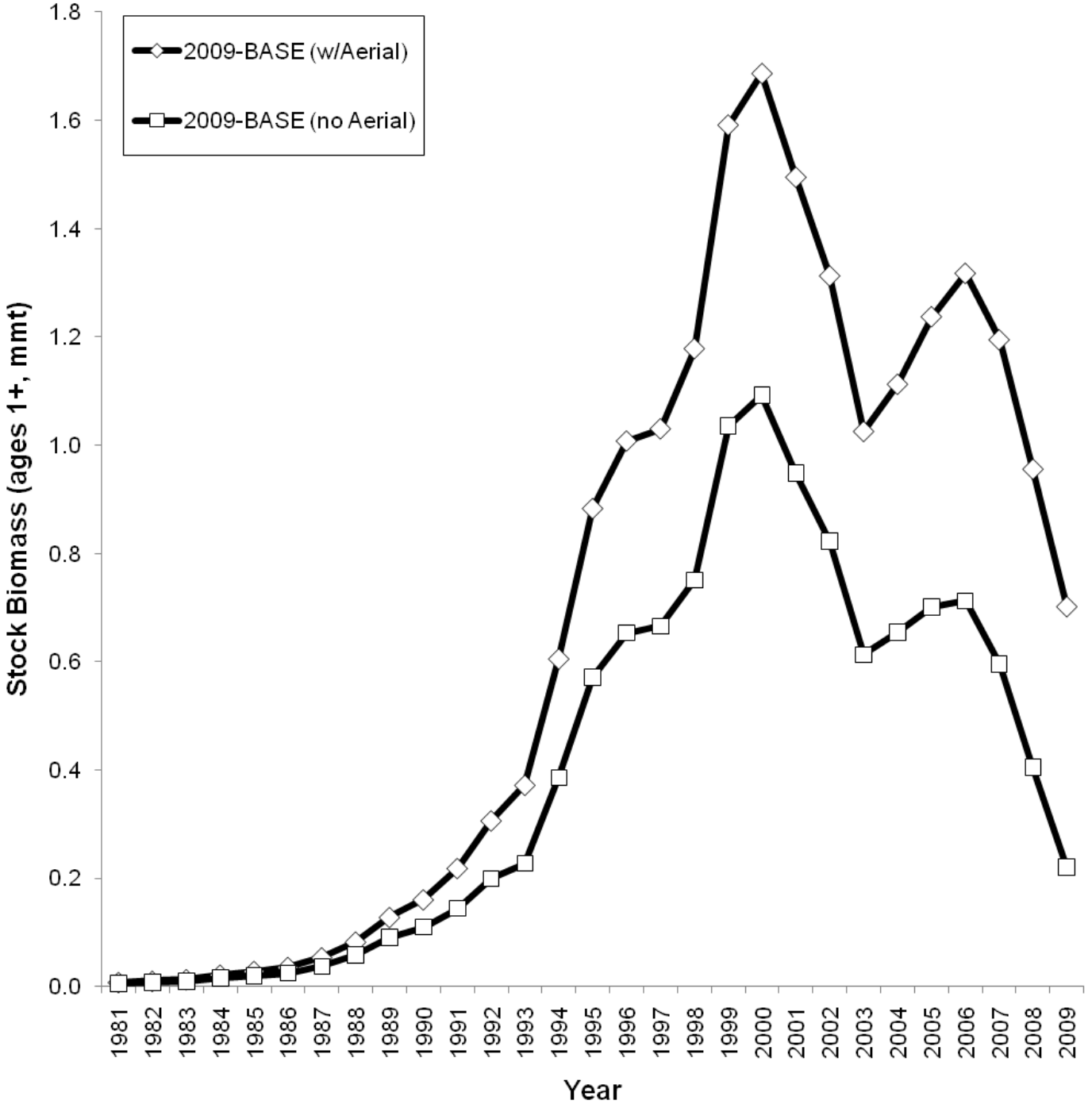


West Coast Sardine Aerial Survey



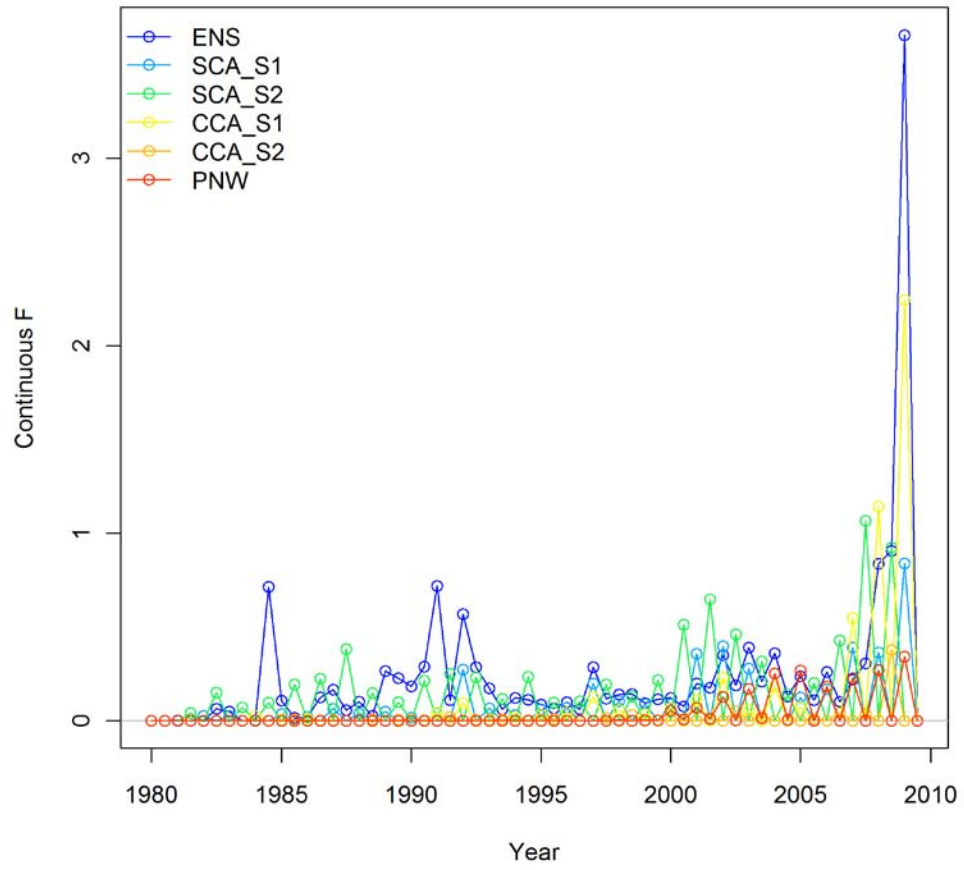
- SS3 model tuned prior to inclusion of aerial survey;
- Aerial biomass = 1.35 mmt (0.55)
- Length comp fit with double-normal selectivity, domed shape;
- Selectivity assumption not explored during STAR, but is inconsistent with PNW fishery selectivity which is forced to asymptotic shape

Stock Biomass (Ages 1+) With and Without Aerial-2009

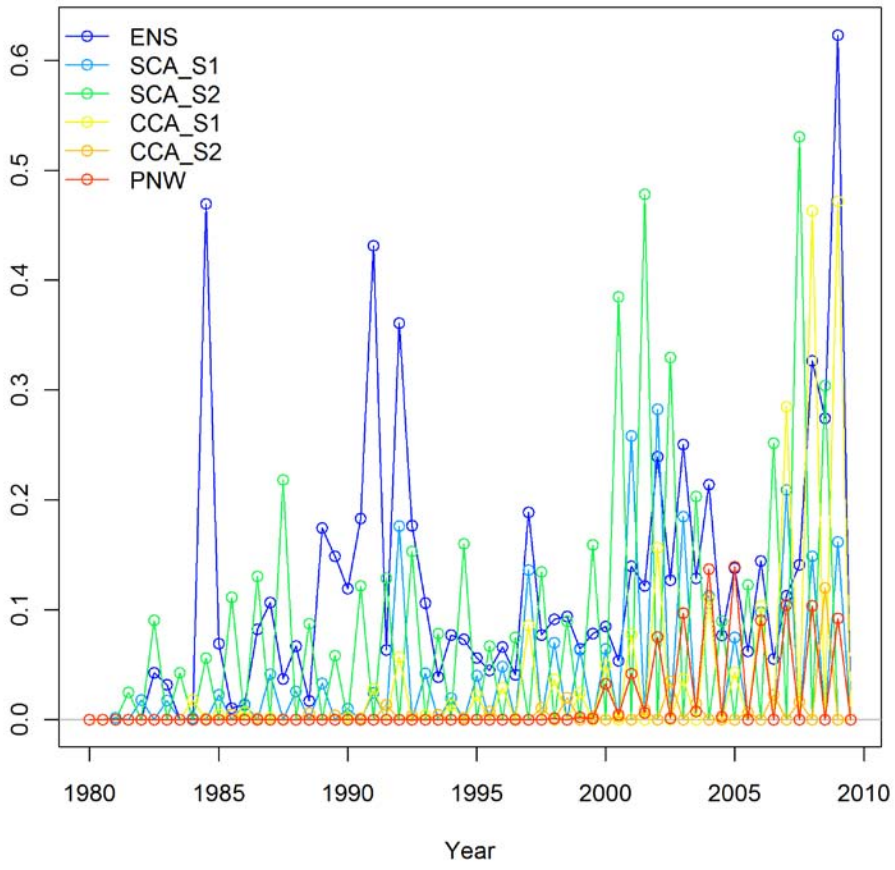


Fishing Mortality Rate

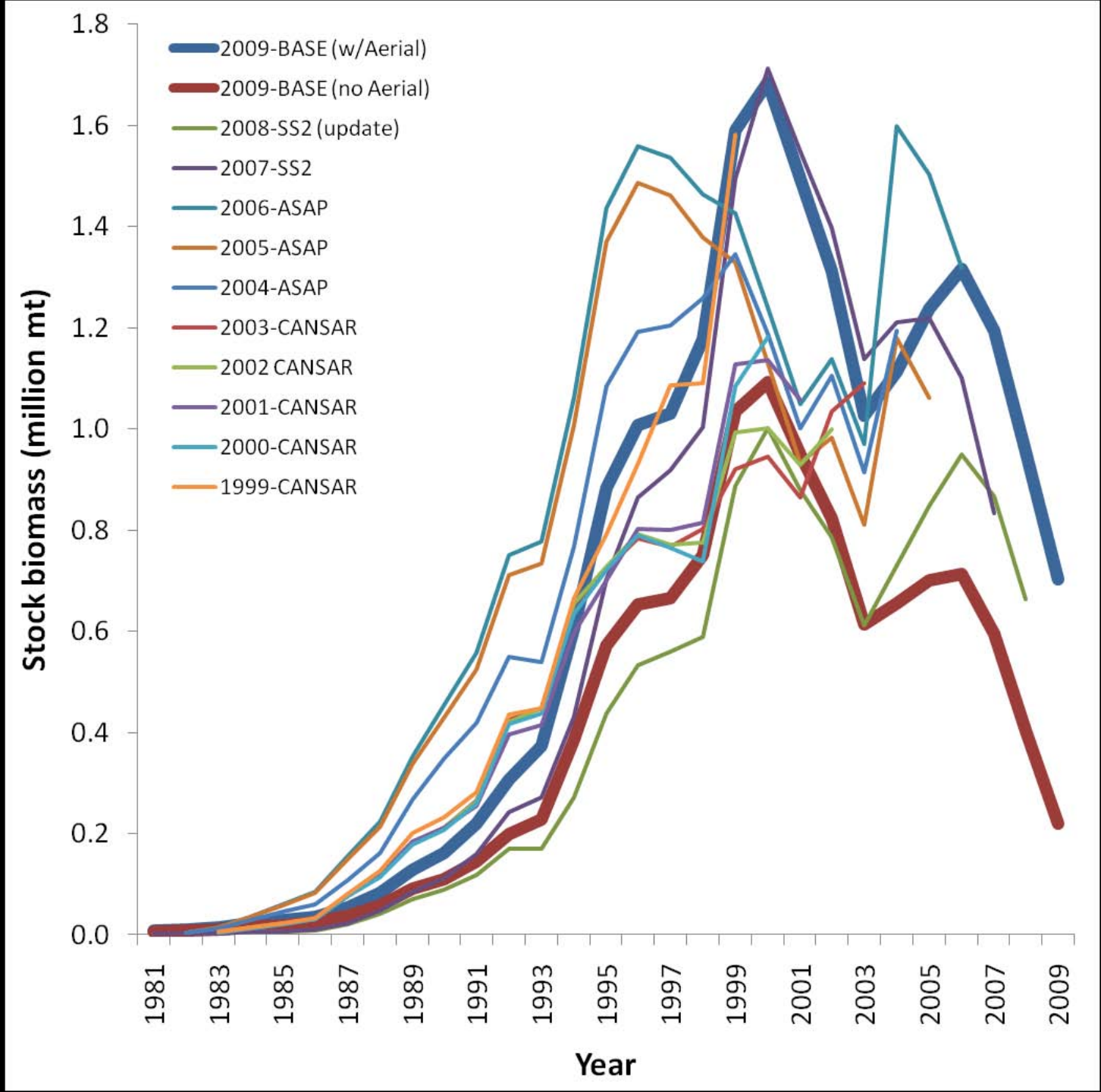
No Aerial



w/ Aerial



Stock Biomass (Age 1+): Previous PFMC Assessments



U.S. ABC - Base Model

$$HG_{2010} = (BIOMASS_{2009} - CUTOFF) \bullet FRACTION \bullet DISTRIBUTION$$

Model	Stock biomass (age 1+, mt)	Cutoff (mt)	Harvest Fraction	U.S. Distribution	U.S. ABC for 2010 (mt)
BASE	702,024	150,000	0.15	0.87	72,039

Pacific Sardine

STAR Panel Meeting Report

NOAA / Southwest Fisheries Science Center
La Jolla, California
September 21-25, 2009

STAR Panel Members:
André Punt (Chair), Scientific and Statistical Committee (SSC), Univ of Washington
Selina Heppell, SSC, Oregon State University
Dvora Hart, External Reviewer, Northeast Fisheries Science Center
John Wheeler, Center for Independent Experts (CIE)

Pacific Fishery Management Council (Council) Representatives:
Briana Brady, Coastal Pelagic Species Management Team (CPSMT)
Mike Okoniewski, Coastal Pelagic Species Advisory Subpanel (CPSAS)
Mike Burner, Council Staff

Pacific Sardine Stock Assessment Team:
Kevin Hill, NOAA / SWFSC
Nancy Lo, NOAA / SWFSC
Beverly Macewicz, NOAA / SWFSC
Paul Crone, NOAA / SWFSC

Aerial Survey Team
Tom Jagielo, Tom Jagielo Consulting
Ryan Howe, West Coast Sardine Survey
Doyle Hanan, Hanan and Associates, for California Wetfish Producers Association (CWPA)

1) Overview

The Pacific Sardine Stock Assessment and Review (STAR) Panel (Panel) met at the Southwest Fisheries Science Center, La Jolla, CA Laboratory from September 21-25, 2009 to review a draft assessment by the Stock Assessment Team (STAT) for Pacific Sardine. The Panel also reviewed the results of the 2009 industry-sponsored aerial survey (aerial survey) for Pacific sardine. Introductions were made (see list of attendees, Appendix 1), and Mike Burner reviewed the Terms of Reference for CPS assessments with respect to how the Panel would be conducted. A draft assessment document and background materials were provided to the Panel in advance of the meeting on the Council FTP site.

In addition to a review of the data inputs and assessment results, the Panel reviewed a report presented by Tom Jagielo on the 2009 aerial survey. The main text of this report outlines the discussions relative to the stock assessment itself, while Appendix 2 outlines the discussions related to the 2009 aerial survey. Both the main text and Appendix 2 list relevant research recommendations.

Kevin Hill (SWFSC) presented the assessment methodology and the results from a draft assessment utilizing the Stock Synthesis Assessment Tool, Version 3.03a (SS3). The model on which the draft assessment was based differed from that on which the 2007 assessment was based in several respects: (a) the use of bi-annual (semester; S1 (July-Dec) and S2 (Jan-June)) rather than quarterly time-steps, (b) separation of the California fishery into central and southern California fisheries, (c) the use of weighted rather than unweighted length-frequencies and conditional ages-at-length for all fisheries rather than just the California fishery, (d) the use of different population length-bins, (e) the use of the hybrid option to estimate F, (f) different assumptions regarding selectivity, and (g) the use of revised estimates of spawning biomass from the daily egg production method (DEPM) as an index of relative abundance. The draft assessment treated the early (1981-1990; EAR) and more recent (1991+; LAT) data for the Ensenada and southern California fisheries as separate fisheries. The review and subsequent explorations of the model through sensitivity analyses were primarily motivated by the marked temporal changes in the biomass time series evident from the retrospective analysis, very high estimates of fishing mortality (F) in some years, poor residual patterns in the fits to the age- and length-composition data for some fleets and years, concern over environmentally-driven and/or density-dependent changes in biological parameters, and seasonal effects on selectivity generated by shifts in fish distribution.

The Panel reviewed the DEPM and TEP time series which had been updated based on the recommendations of the May STAR 2009 Panel. The final DEPM time series was based on the sum of the DEPM spawning biomass estimates for each of two regions rather than on the approach recommended by the STAR Panel because the recommended approach led to estimates with very high variance. The Panel endorsed the use of the revised DEPM and TEP estimates for use in the assessment.

The Panel endorsed the use of the 2009 aerial survey data as the basis for an estimate of absolute abundance after revising the method used to model the relationship between

school weight and school area and the method used to quantify uncertainty. The 2009 aerial survey is a key source of information about the stock status of Pacific sardine. The final version of the document describing the aerial survey, the data collected, and the analysis of those data needs to be provided along with the final assessment report to the November 2009 Council meeting and included in the CPS Stock Assessment and Fishery Evaluation (SAFE).

The Panel and STAT revised the model in the draft assessment by: (a) allowing growth to differ between 1981-90 and 1991+, (b) changing the time-blocking for the selectivity pattern for the central California fishery, (c) combining the early and later fisheries for Ensenada and southern California, , (d) fitting the California fisheries in semesters one and two with separate selectivities, (e) including the 2009 aerial survey estimate of absolute abundance, and (f) not bias-correcting the 2008 and 2009 recruitments. The STAR panel concluded that this final base model constitutes the best available scientific information on the status of Pacific sardine off the west coast of North America and recommends that it be used for status determination and management in the Council process.

The Panel reviewed a proposal for a research set-aside for 2010 (Appendix 3). It agreed that how well different research set-asides improve the precision of the relationship between school weight and school area was an appropriate scientific basis for contrasting alternative research set-asides. However, the Panel noted that there is no way to specify the ideal number of point sets because larger numbers of point sets will lead to more precise estimates. The Panel therefore recommended that the proponents evaluate the trade-off between the number of point sets [and design of school sizes within the set-aside] and the precision of the relationship between school size and school area (e.g., in the form of a Coefficient of Variation (CV)) and present this information to the SSC at the November 2009 Council meeting. The SSC could then provide a recommendation regarding a research set-aside based on this trade-off (e.g., the point at which the rate of change of CV with set-aside indicates diminished returns from extra sampling). The Panel noted that a bootstrap approach along the lines of Adjunct 2 to Appendix 2 could be used to construct the needed trade-off relationship.

This assessment is the first to make use of an estimate of absolute abundance for Pacific sardine, although, as noted below, the uncertainty associated with that 2009 aerial survey is not fully quantified. The need for a STAR Panel review of the Pacific sardine assessment before 2012 depends on whether any major new sources of data (such as estimates of absolute abundance from acoustic surveys or based on satellite images) or substantial revisions to the methodology on which current data sources are based become available. Similarly, a STAR Panel would be warranted if further major changes to the assessment are needed because the revised process for update assessments limits the scope of changes to assessments during “update years”. In addition, the estimate of total catch by the U.S., Mexico, and Canada combined for 2008 exceeded that implied by the harvest guideline for the entire stock based on the 2008 assessment. A more thorough review of stock status may be needed if this continues.

The STAR Panel thanked the STAT for their hard work and willingness to respond to Panel requests, and the staff at the SWFSC La Jolla laboratory for their exceptional support and provisioning during the STAR meeting.

2) Discussion and Requests Made to the STAT during the Meeting

The fisheries modelled and referred to in this and the following sections are:

- Ensenada (ENS)
- Southern California (SCA) – south of Point Conception
- Central California (CCA) – Point Conception to San Francisco
- Pacific Northwest (PNW)

The following acronyms are used as well:

- DEPM = Daily Egg Production Model (fishery independent survey)
- WCVI = West Coast Vancouver Island Survey (fishery independent survey)
- TEP = Total Egg Production
- PFFS = Predator Forage Fish Survey (fishery independent survey)
- S1 = First season (July – Dec)
- S2 = Second season (Jan – June)
- MLE = Maximum likelihood estimate
- EFP = Exempted Fishing Permit

A: Plot the selectivity and growth curves for each retrospective run and perform a sensitivity analysis to assess the influence of different data inputs by doubling the weights on the index, and age- and length-composition data for the four fisheries one at a time.

Rationale: To identify why there were significant deviations in the biomass estimates for the retrospective runs, particularly a large change between 2007 and 2008.

Response: The growth curves were comparable for all retrospective runs, but the selectivity curves were affected by the influx of the large 2003 cohort into the PNW fishery. The sensitivity analysis showed no effect of the DEPM and TEP survey data, but revealed some influence of the age- and length-composition data for the ENS and SCA fisheries on biomass scaling. All the runs showed a similar pattern of decline since 2006.

B: Identify the effects of age- and length-composition data from each fishery on the likelihood profiles for natural mortality (M).

Rationale: The likelihood profile for *M* suggested an MLE much larger than the base value for *M* and inconsistencies between the *M*-values supported by the age- and length-composition data.

Response: The *M*-value at which the fishery-specific likelihood profiles were minimized varied substantially among data sources, with the SCA fishery data supporting a higher *M*. The inconsistency in likelihood profile patterns across fisheries and between the age-composition and length-composition data led to additional scrutiny of age- and length-composition residuals and the possible effects of aging error or environmental variability such as El Niño.

C: Determine the effects of aging error on model results by adding a linear bias to the age compositions.

Rationale: The age-frequency data for the PNW suggested a "spillover" effect by the 2003 cohort, and aging error could affect model fitting for the later years in the time series due to that large cohort.

Response: The suggested (semi-arbitrary) aging bias pattern (a linear increase in expected age from expected age 0.5 at true age 0.5 to expected age 5.5 at true age 6.5 and then a constant bias of 1 year thereafter) resulted in a slightly poorer fit to the data (negative log-likelihood increase from 3341 to 3374), a higher biomass peak and a lower ending biomass. No problems were solved with this analysis, although the level of aging error may have been set too high.

D: Re-run the assessment assuming a Beverton-Holt stock-recruitment relationship.

Rationale: The stock-recruitment plot showed a large amount of variability with large recruitments in four years: 1994, 1997, 1998, and 2003, which are El Niño years. With those points removed or treated separately, there was little obvious (visual) justification for a Ricker curve.

Response: Assuming a Beverton-Holt rather than a Ricker stock-recruitment relationship led to a nearly identical fit (negative log-likelihood = 3330, slightly below that for the base model) and a slightly greater biomass peak, but the population did not appear to grow fast enough during the early part of the time series. This Beverton-Holt curve did not solve the problem of unrealistic *F* estimates.

E: Add the new aerial survey results to the assessment and examine the sensitivity of the assessment to a range of (assumed) coefficients of variation for the biomass estimate; estimate selectivity for the aerial survey.

Rationale: The 2009 aerial survey can be used to calculate a fishery-independent biomass estimate that provides critical information on stock size and distribution. The methods and analysis on which this estimate was based were reviewed and improved through consultation with the Panel (Appendix 2).

Response: The addition of the aerial survey biomass estimate (1.4 million metric tons) increased the expected age-1 biomass and did not drastically alter the residuals for other survey data (DEPM, TEP). The expected current age-1 biomass doubled with a CV of 0.49 and increased as the CV decreased. The selectivity pattern for the aerial survey was dome-shaped, and the model fit the aerial survey length-composition data reasonably well. Additional evaluation of the effects of the aerial survey on the model results was postponed until a new base model was completed.

F: Explore the effects of blocking growth and/or selectivity curves.

Rationale: The residuals for the age- and length-composition data strongly suggested that growth and selectivity were not constant over time, potentially due to strong year classes and two years of data from the ENS and SCA fisheries with particularly high proportions of older fish. There was also biological evidence of shifts in fish distribution that would affect selectivity in the south between the two semesters.

Response: Adding semesters to the selectivity curve estimation improved the model fit, supporting the seasonal shift in fish distribution and age-composition hypothesis.

Removing the length and age data for ENS and SCA in 1990 and 1991 led to a surprisingly large reduction in negative log-likelihood; a similar result was obtained by blocking these data sets for the two years separately from the prior and proceeding years. Efforts to block selectivities by El Niño years and as a function of sea surface temperature patterns were not successful (i.e., deterioration of model fit to data). There was strong support for a shift in growth rates in 1991, with slower growth in the more recent years. The predicted change in the growth parameter k was large – 0.84 yr^{-1} in years prior to 1991, but only 0.40 yr^{-1} in 1991-2009. This may reflect a shift in life history tactics following expansion of the stock into northern waters; additional evaluation of correlated life history parameters, such as length at maturity, is warranted. Improvement to the overall model fit, before adjusting the weights, was over 100 likelihood points and the revised model provided much better fits to the length- and age-composition data. The Panel recommended development and analysis of a new base model that included a change in growth after 1990 and three selectivity time blocks (1981-1991, 1992-1998, and 1999-2009) based on the improvement in negative log-likelihood and data fits. The negative log-likelihood for this new base model was 3151 with 107 parameters.

G: Explore alternative time blocking on selectivities.

Rationale: Residuals from the length- and age-composition data suggest substantial shifts have occurred in catch composition over time and among fisheries, but the number and years needed for optimal blocking are not clear. Time-specific selectivities are supported by observations of a shift in fish distribution by size over time (more and larger fish in the north).

Response: An alternative blocking on selectivity was explored based on observed shifts in the age- and length- compositions in the different fisheries: ENS status quo; SCA 1981-1989, 1990-1991, 1992-1998, 1999-2009; CCA 1981-1992, 1993-1998, 1999-2009; PNW status quo. The negative log-likelihood for this model was 3146 and the model showed minor improvement to age-composition residuals. The analysis indicated that the new base model did not react strongly to isolating 1990 and 1991, years with large numbers of older fish in the catch. The Panel approved the decision by the STAT to use the new split for CCA, but retain the status quo for the other fisheries, based on improved age-composition residuals for that fishery.

H: Add seasonal (semester) selectivities to California fisheries.

Rationale: Observations and length composition data suggest that large fish are present in the southern part of the range in spring (S2) but not in summer (S1), when they move northward.

Response: The overall negative log-likelihood improved with seasonal selectivity for the two California fisheries: 131 parameters, overall negative log-likelihood = 3122. This model showed noteworthy improvements to the fits to the age-compositions for the CA fisheries without degradation in the fit to the ENS and PNW age- and length-composition data. The new model showed shifts in selectivity patterns that conformed to observations of a shift in age structure through time, season, and years. The final age-1 biomass estimate for this model, before adding the aerial survey data, was 0.6 million mt. Fishing mortality estimates were still high for some years and were unrealistically high for 2009.

The residuals on the age compositions for most fisheries were improved, but the model was still struggling to fit the PNW age distribution due to 2003 and possibly 2004 year classes, which recruited in greater numbers to this area.

I: Identify the effects of age- and length-composition data from each fishery on the likelihood profiles for natural mortality (*M*).

Rationale: The likelihood profiles for *M* from the original base model indicated a conflict among the different data sets; it was hoped that the new base model would be more consistent.

Response: The new base model showed a change in the point estimate of *M* from 0.8 yr^{-1} to 0.6 yr^{-1}, which is more biologically reasonable for sardine. The likelihood profiles by fishery and composition types were also more consistent. However, the length composition data indicated a best estimate for *M* of 0.65 yr^{-1}, while the age-composition data still preferred higher *M* estimates.

J: Conduct a sensitivity analysis accounting for aging error.

Rationale: The new base model still had problems fitting the large 2003 year class, with residual patterns that suggested possible "spillover" of fish from the strong 2003 cohort into the 2004 cohort and hence that fish ages may be underestimated.

Response: Similar to request C, this sensitivity test increased expected age linearly with true age, but so that the expected age at true age *n* was age *n*-0.5 from age 6. The negative log-likelihood for this model was 3112, indicating a marginally better fit and providing some support for aging error. However, the residual pattern evident for the PNW was not resolved. The results indicate a need for further investigation of aging error.

K: Re-run the assessment assuming a Beverton-Holt stock-recruitment relationship.

Rationale: The stock-recruitment plot showed a large amount of variability, with large recruitments in four years: 1994, 1997, 1998, and 2003, which are El Niño years. With those points removed or treated separately, there was little obvious (visual) justification for a Ricker curve.

Response: The negative log-likelihood for this model was 3128, a minor improvement overall; the peak biomass and final biomass were both slightly higher. The estimate of steepness was 0.89. The Panel agreed that there was no need to change the base model at this time.

L: Explore the influence of high British Columbia catch in 2008 on model results.

Rationale: There is a need to determine if the British Columbia (BC) fishery should be treated independently from PNW, particularly in light of the large catch reported for 2008.

Response: A sensitivity test was run omitting the 2008 length-composition data for the PNW (where the BC data would have heaviest influence), but not the catch itself. Unlike the 2008 update assessment, reducing the influence of the PNW length and conditional age-composition data for the most recent year had little effect on model results and the shape of the biomass trajectory through time, although the biomass estimates were scaled lower. This result re-emphasized the need for estimates of absolute abundance to scale the population estimates.

M: Estimate *M* separately for the same time blocks used for growth.

Rationale: Natural mortality is correlated with growth in many studies of fish populations. The large predicted difference in growth rate for the two periods (von Bertalanffy growth parameter k = 0.85 yr^{-1} for 1981-1990 and 0.42 yr^{-1} for 1991-2009) suggests that *M* may also have been different for these two periods.

Response: The resulting *M* values for this sensitivity analysis were 1.22 yr^{-1} for the early period and 0.45 yr^{-1} for the late period. An *M* of 1.22 yr^{-1} is unrealistic for Pacific sardine given the ages encountered in the fishery data, and must include the effects of both natural mortality and emigration during the years 1981-1990. The Panel's conclusion after reviewing the residual patterns was that length and age data for 1981-90 are leading to the high estimate of *M* for the early years. This analysis provides a partial explanation for why *M* has a minimum at values larger than 0.4 yr^{-1} in the likelihood profile for the base model. This result warrants further investigation. However, the model did not lead to the expected stock trajectory in the 1980s (recovery), and the results may be caused by local minima in the fitting process.

N: Add aerial survey data to the model and run a sensitivity on the coefficient of variation of the biomass estimate.

Rationale: The 2009 aerial survey can be used to calculate a fishery-independent estimate of biomass that provides critical information on stock size and distribution. The survey methods and analysis for the aerial survey were reviewed and improved through consultation with the Panel (Appendix 2 Adjunct).

Response: The addition of the biomass estimate from the aerial survey (1.35 million mt with a CV = 0.52, Appendix 2) approximately doubled the current expected age 1+ biomass and did not drastically alter the residuals for the other survey data (DEPM, TEP). The selectivity pattern for the aerial survey was dome-shaped, and the model fit the fishery age- and length-compositions reasonably well. The expected biomass increased as the CV decreased, but maintained the same pattern. There was a major increase in the estimate of current (2009) age 1+ biomass (from 0.88 million mt to 2.53 million mt) as the survey CV was decreased from 0.5 to 0.45. The addition of the aerial survey data decreased the peak estimates for fishing mortality, with a maximum *F* estimate of 0.6 yr^{-1} for ENS in 2009. The fit to the DEPM data was not inconsistent with that for models, which ignored the aerial survey data. The model prediction for the 2009 aerial survey is only 114,000 mt (biomass selected by the survey gear), only slightly higher than the biomass estimated from the observed transects (approximately 96,000 mt). The model fits the data adequately and gives a higher biomass estimate than the base model, but not as high as the point estimate of absolute abundance based on the aerial survey. With a CV of 0.55, the model is essentially putting more emphasis on fitting other data sources; this will change if the CV of the estimate of abundance from the aerial survey can be reduced or with the addition of more years of data. A lower CV (0.4) increased age 1+ biomass to 3 million mt, but the model estimate corresponding to the aerial survey estimate was still only 430,000 mt. The catchability coefficients for the DEPM and TEP time-series were markedly lower when the aerial survey data were included in the assessment (e.g., 0.16 for DEPM compared to 0.34 for the previous base model). The Panel concluded that the aerial survey provides important data for estimating absolute population size, and

recommended that it should be included in the assessment, and that the aerial survey should be continued.

O: Run final base model with Beverton-Holt stock-recruitment relationship.

Rationale: There is still uncertainty about the form of the stock-recruitment relationship, so the Beverton-Holt curve should be run as a sensitivity on the final base model.
Response: The fit for this model was similar (no improvement in log-likelihood), but with biomass scaled up. Recruitment variance needs to be adjusted to improve the fit. Due to abrupt changes in biomass caused by tension between the age- and length-composition data and the aerial survey estimate of absolute abundance, the Panel recommended that the sensitivity analysis be completed by including the Beverton-Holt stock-recruitment relationship in the model and tuning the effective sample sizes prior to adding the aerial survey data. This sensitivity analysis should be included in the final assessment report.

P: Add WCVI night estimates (2006, 2008, 2009) to the model as a sensitivity analysis.

Rationale: The WCVI survey is an important source of abundance information from Canada, and methods for this survey are consistent for 2006 onwards. However, the data cannot be formally added to the base model until an analysis of methods has been presented and reviewed; therefore the data were treated as the basis for a sensitivity analysis.
Response: The length compositions from the WCVI survey caused a marked increase in the estimate of current biomass, including high biomass (500,000mt) prior to stock recovery in the 1980s. As with the Beverton-Holt sensitivity analysis (see request O), the Panel recommended that the model be tuned using these data before adding the aerial survey data. This sensitivity analysis should be included in the final assessment report.

Q: Run a likelihood profile on the aerial survey catchability (q).

Rationale: The assumption $q = 1$ for the aerial survey may not be correct. The Panel also wished to further explore the extent to which the aerial survey data were consistent with the remaining data sources
Response: The likelihood profile showed a decrease in negative log-likelihood as q increased (Figure 1), with, as expected, the lowest negative log-likelihood at high q (effectively ignoring the aerial survey data). This further supports the need for additional survey data to scale abundance and provide a time-series of abundance estimates.

R: Document response of the model to "Jitter" analysis to avoid local minima.

Rationale: The sensitivity of the model results to seemingly small changes to assumptions pointed to the possibility of local minima. Repeat the estimation for the base model with 2-5% "jitter" of starting values.
Response: Up to a 4% change in starting values for all parameters caused no major changes in model results.

S: The draft document should be modified to include a more thorough description of the analysis on which PFFS index is based.

Rationale: The document only includes the results of the analyses.

Response: This information will be included in the final report.

3) Technical Merits and/or Deficiencies of the Assessment
The final base model incorporates the following specifications:

- Two seasons (Jul-Dec and Jan-Jun) (assessment years 1981 to 2009).
- Four fisheries (ENS, SCA, CCA, PNW), with annual selectivity patterns for ENS and PNW and seasonal selectivity patterns for SCA and CCA.
- Fishery-specific time-blocking of selectivity (1981-91, 1992-98, 1999+ for ENS and SCA; 1981-92, 1993-98, 1999+ for CCA; 1981-2003, 2004+ for PNW)
- Ricker stock-recruitment relationship with estimated "steepness".
- $M = 0.4$ yr^{-1}; $\sigma_R = 0.89$ (tuned value).
- Initial recruitment estimated; recruitment residuals estimated for 1975-2007.
- Two growth periods (1981-90 and 1991+).
- Length-frequency and conditional age-at-length data for all fisheries.
- Length-frequency data for the 2009 aerial survey, taken from point-set samples.
- DEPM and TEP measures of spawning biomass (1986, 1987, 1993, 2003, 2004, and 2006-08 for DEPM, and 1987, 1995-2002 and 2005 for TEP) and the 2009 aerial survey estimate of abundance.

In contrast to past assessments, the current assessment is based on a more thorough evaluation of time-trends in growth and selectivity, which resulted in better fits to all of the available data sources. The current assessment also considered more potential indices of abundance. While not all of these were included in the base model the potential remains that these sources of data could be used in the future, following review of the analysis techniques on which they were based and of the available data.

The final base model differs markedly from that in the draft assessment in terms of current stock size. This is due primarily to the inclusion of the estimate of abundance from the 2009 aerial survey. Other information in the assessment is not markedly informative about absolute abundance. Therefore, while uncertain, even a fairly imprecise estimate of absolute abundance is informative for scaling biomass.

4) Areas of Disagreement
There were no areas of disagreement between the STAT and Panel.

5) Unresolved Problems and Major Uncertainties

a) Lack of information on absolute abundance
Most of the data sources used in the final base model provide information, which reliably determine trends in abundance. However, as shown by the retrospective analyses (and the 2008 assessment update), relatively "minor" changes to the input data can lead to major changes to the model estimates of absolute abundance. The 2009 aerial survey estimate of abundance provides the first measure of the absolute abundance of Pacific sardine off the U.S. west coast. Inclusion of this estimate in the assessment increased the model estimate of current abundance substantially, and was not in major conflict with the trends in abundance from the DEPM and TEP estimates. While this estimate is likely to be an

underestimate (e.g., the whole range was not surveyed and schools would be missed if they were too deep to be observed from the air), it provided a means to "anchor" the assessment.

The CV used to weight the aerial survey has a major impact on the final outcome of the assessment, but the Panel was not able to evaluate all sources of uncertainty. A CV of 0.55 was assigned to the aerial survey estimate to reflect quantifiable (and some currently unquantifiable) sources of uncertainty. One major source of unquantified uncertainty is the relationship between school area and biomass. In particular, the estimated biomass from the aerial survey is highly sensitive to the estimated biomasses of large (~ >10,000m^2) schools. The conversion of area to biomass for these schools is especially uncertain, due to the lack of point-set data for large schools.

The model estimate corresponding to the 2009 aerial survey estimate of selected abundance is outside of the lower 99%+ confidence interval for the estimate. Furthermore, relatively small changes to the weights assigned to the data can lead to marked changes in current abundance. For example, re-tuning the weights assigned to the age- and length-composition data while fixing the CV to 0.55 for the aerial survey leads to much higher estimates of current stock size. This problem should become less of an issue as more data from aerial surveys become available and it becomes possible to tune the weights assigned to the aerial survey data in the same manner as for other data sources. Sensitivity to selectivity assumptions (e.g. domed vs. asymptotic form) should be more thoroughly explored in the future.

b) Lack of information on population structure
Stock identification continues to be an issue for Pacific sardine; genetic analysis currently indicates one subpopulation from Ensenada to British Columbia, with overlap between the northern and southern subpopulations off Baja. This creates a potential uncertainty in the Mexican and SCA catches as well as the DEPM estimates that may be difficult to resolve. Also, the complex population structure within the northern subpopulation makes coastwide extrapolation of the data difficult. An unknown proportion of older, larger fish migrate north each summer. This leads to unexplained inconsistencies in the data, such as a strong 2003 cohort that can be seen in the PNW age-compositions but not the CA age-compositions.

c) Continuing lack of data from the Mexican fishery
The Mexican fishery for Pacific sardine is a major source of mortality. Abundance and compositional information for this fishery is lacking since 2002 as is the catch for 2009. The lack of the 2009 catch was consequential for the current assessment because this catch led to the very high fishing mortality rates for first semester of 2009 in the original base model, which was a focus of Panel discussion.

d) Residual patterns for the Pacific northwest fishery
The STAT and this and previous Panels have considered a variety of ways (mainly selectivity blocks) to remove the residual pattern for the PNW (the model underestimates the numbers of fish from the 2003 and 2004 year-classes in the PNW). This residual pattern is probably due to fish in these cohorts recruiting in larger proportions to the

PNW than to the CA fisheries, a factor that SS3 cannot model explicitly without many additional assumptions. Aging error may be a factor as well. For example, it is unclear at present whether the 2004 year-class was strong or if the large number of animals in this year-class in the data reflects under-aging of fish from the large 2003 year-class because the 2004 year-class is not apparent as 2-year-olds in PNW or CCA.

e) Canadian West Coast Surveys

The Panel reviewed information on a series of mid-water surveys that have been conducted by the Canadian Department of Fisheries and Oceans off the west coast of Vancouver Island from 1992 to the present. These surveys are designed to examine the distribution and relative abundance of Pacific sardines. Survey results, including length compositions and variance estimates for some years, were available. Unfortunately, raw data were not available to the STAT.

Biomass estimates from WCVI survey were available for 1997, 1999 – 2001, 2004, 2006, 2008, and 2009. Estimates to 2004 were derived from surveys conducted during daytime. In 2006, 2008, and 2009, surveys were conducted at night. This change was made based upon research conducted in 2005, which indicated that sardine schools tend to aggregate in the daytime with catches being fewer, but larger. At night, the fish tend to disperse with many smaller schools being encountered. A calibration factor was developed in 2005 for day / night catch ratios and applied to the 2006, 2008, and 2009 data to standardize the time series to daytime catches. The Panel was concerned with recent nighttime survey results as they were much larger (by almost an order of magnitude) from the last daytime survey in 2006. However, there was insufficient information available to evaluate the calibration factor that was used. Moreover, variance estimates were not available for the biomass estimates from this survey for 2008 and 2009. Continued collaboration with Canadian biologists and the STAT is needed to assure that these data can be incorporated in future assessments.

6) Concerns raised by the CPSMT and CPSAS representatives during the meeting

a) CPSMT concerns

The CPSMT Representative noted that the Panel thoroughly reviewed the stock assessment and the industry-collected aerial survey data. The CPSMT Representative expressed concern in regards to incorporating new data into the stock assessment that did not span multiple years; but agreed that the aerial survey and point-set data were statistically scrutinized in a rigorous manner. Historically, sardine are known to fluctuate on a multi-decadal time-scale and currently appear to be in the downward aspect of the cycle, therefore the CPSMT Representative supported the increase to the nominal CV for the aerial survey to account for the unmodelled uncertainty that the Panel applied to the aerial survey data. The CPSMT Representative also expressed concern that the aerial survey and point set research process is establishing a fishery exclusive of the federally- and state-permitted fisheries, and noted that the calibration point sets can be conducted during the directed fishery as an alternative to research set-asides. The CPSMT Representative requested: 1) the Panel make a clear recommendation regarding the EFP research set aside for the 2010 management cycle, 2) the EFP operating guidelines application be revised by the November Briefing Book deadline to include an updated

sample design that reflects the discussion points that were brought up during the Panel (e.g., distance from shore for EFP point sets), 3) the final Industry Research report include all of the data collected from the PNW and CA, and identify which data were not included in the analyses and why, and 4) the use of hydroacoustics be explored as an additional aspect to the industry research.

b) CPSAS concerns

The CPSAS representative commended the Panel and STAT for their willingness to look at a new scientific data source and use that information in a credible and meaningful manner, noting that the modeling process for sardines had needed a new data source for years. This has been pointed out by previous Panels, the CPS Advisory Bodies, and the SSC. Past modeling results were derived from DEPM, TEP, and at one time a spotter index, and attempted to account for all fish as various modeling platforms were employed and rejected. Now the same modeling structure predicts a crashing sardine population. The CPS industry embarked in 2008 on a mission of discovery after years of living under a scientific status quo that signaled a declining population. This pilot effort was the starting point for the NW aerial survey.

He noted that the 2009 aerial survey established an absolute biomass estimate of 1.4 million tons for approximately 660 miles of coastline (less than 25 percent of the range of this species) using 40+ transects. This was based on a 2009 CV of 0.49. Only one replicate was achieved during 2009, but results of three replicates during the 2008 pilot effort indicated a CV of 0.23. CPS industry representatives expected to see a range of 0.23 to 0.49 not the 0.55 that the Panel selected and the Panel's rationale for this decision is not fully understood.

He further noted that the density values of the larger schools in 2009 (10,000 m^2) could not be quantified using point sets because there was too much fish in these schools to practice safe capture by a vessel. The lowest density evidenced in 2008 and 2009 was used to estimate the weight of the larger school sizes. This appeared to be the most conservative approach possible. This was still deemed inappropriate by the Panel. This logic does not appear valid from fishing observations or the aerial survey. While larger schools may be less dense (or more), fishermen have "diagonally-cut set" on large schools for years and there has been no evidence of drastic density differentials. Extrapolating the graph line to equate very large sardine schools into very low relative weights seems contradictory to everything the fishery and other observations indicate. Perhaps this is the statistically correct approach, but the treatment appears artificial compared to what the aerial survey portrays and fishing-based knowledge indicates. Either way it dramatically influenced the outcome.

In relation to the total biomass, the CPSAS representative noted that Pacific sardine schools were observed from Ensenada, Mexico to northern Canada while the aerial survey was being conducted; both Canada and Ensenada were landing fish at this time. Also, although the aerial survey encountered difficulties with weather and could not survey in the Monterey, CA area, fish were readily landed and seen in the Monterey area at the same time. It is difficult to accept that the entire coast biomass from Ensenada to Sitka, Alaska is only 700,000mt.

The CPSAS representative recommended that yearly STAR Panels may be needed for Pacific sardine and that there is a need to continue, promote and enhance the aerial survey. To that end, he recommended that a smaller pilot project south of Monterey be started next year. He noted that the SWFSC is willing to employ sonar arrays in conjunction with aerial survey and point sets. This experimental approach should be encouraged. It is likely that research set-asides and exempted fishing permits will be required to conduct these enhanced aerial survey efforts in 2010.

7) Research Recommendations (not in priority order)

A. Future assessments should consider the fishery-independent midwater trawl surveys off the west coast of Vancouver Island. This data set is potentially valuable as it provides abundance information for a large area within Canadian waters. However, it needs to be analysed further before it can be included in a future assessment. The STAT should confer with the lead investigator for the WCVI survey to obtain further information, including raw data. If necessary, the lead investigator should be invited to attend the next STAR Panel to present results for this time series.
B. Further review the sampling protocols and analysis methods for other potential indices of abundance (such as the SWFSC juvenile rockfish survey and the acoustic surveys, which have been conducted in conjunction with egg surveys since 2003) and consider inclusion of such data in future assessments.
C. Density-dependent changes in growth or reproduction have not been identified nor evaluated. Maturity at length is variable from year to year, although adult sampling has not been consistent, and young fish may be under-represented. Available maturation ogives could be compared to biomass estimates to identify possible density-dependent effects, although environmental variation is likely to be a major factor in growth and maturation so inference may be weak.
D. Fecundity at age is based on weight and does not account for the total number of batches of eggs produced during a season (annual fecundity). While the spawning frequency during the peak season does not appear to be age-dependent, the length of the spawning season may be longer in older fish. This may affect the stock-recruitment relationship. Whether visual estimates of activity (presence of developed gonads) from port-collected samples can be used to estimate length-specific timing and duration of spawning across the stock's range should be explored.
E. There continues to be uncertainty in the DEPM survey as a key indicator of spawning stock biomass trends coastwide. Expand coastwide sampling of adult fish to further refine the estimate of the proportion spawning.
F. Temperature at catch could provide insight in stock structure and the appropriate catch stream to use for assessments, because the southern subpopulation is thought to prefer warmer water. Conduct sensitivity tests to alternative assumptions regarding the fraction of the ENS and SCA catch that comes from the northern subpopulation.
G. The assessment would benefit not only from data from Mexico and Canada, but also from a joint assessment, which includes assessment team members from these countries.
H. Re-evaluate the magnitude of discards in each fishery, and account for discards in future assessments.
I. Otolith and microchemistry studies are useful tools for evaluating stock structure. Results should be evaluated to determine if the spatial distribution is purely age-

dependent or due to an alternate life history strategy. These evaluations could be combined with a traditional tagging study (which has not been done since the 1940s) to provide useful information about fish migration and distribution.

J. The relationship between environmental correlates and abundance should be examined. In particular, the relationship between environmental covariates and recruitment deviations should be explored further.
K. Further evaluate the appropriate form of stock-recruitment relationship for Pacific sardine, including appropriate environmental covariates.
L. Consider spatial models for Pacific sardine, which can be used to explore the implications of regional recruitment patterns and region-specific biological parameters. These models could be used to identify critical biological data gaps.
M. Re-estimate age-reading error matrices and include them in updated assessments.

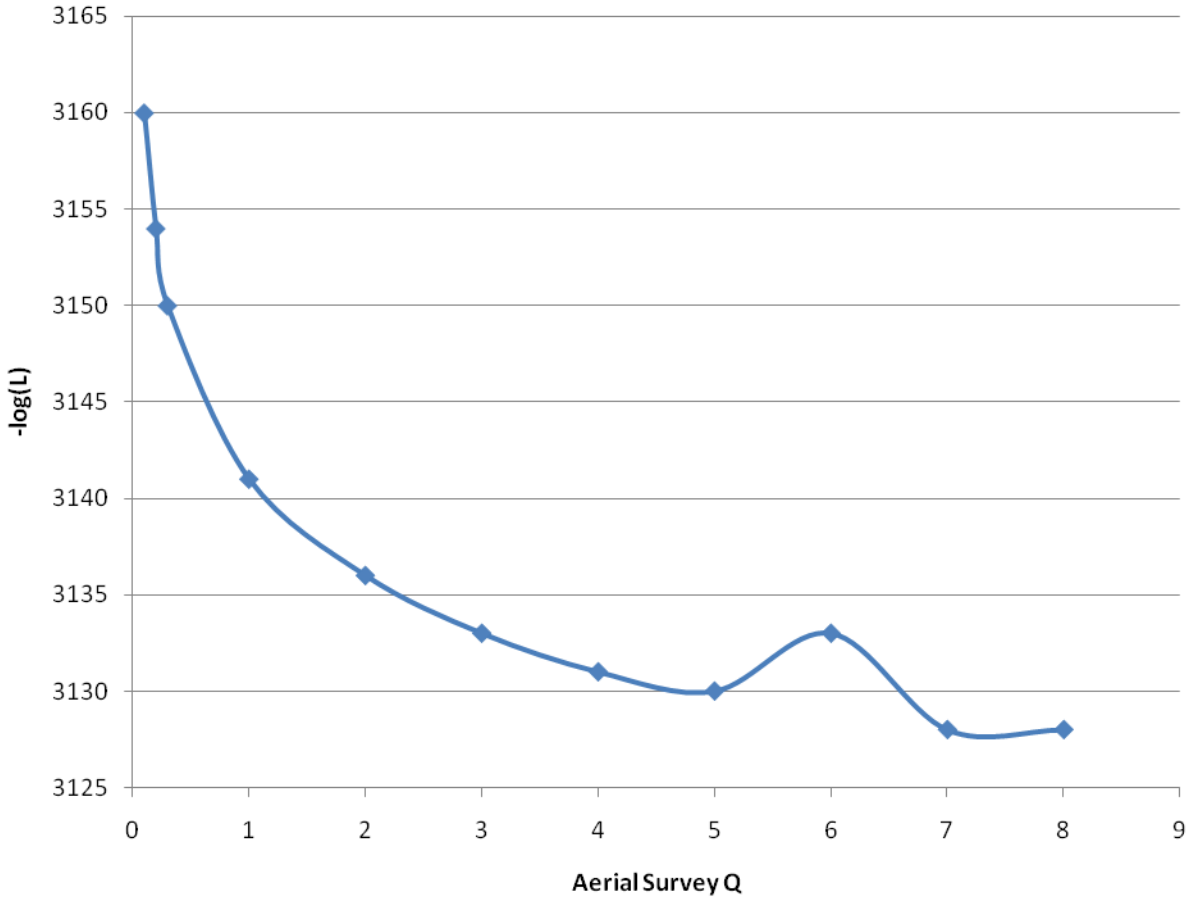


Figure 1. Likelihood profile for the aerial survey *q* parameter.

Appendix 1

STAR Panel Members:
André Punt (Chair), Scientific and Statistical Committee (SSC), Univ of Washington
Selina Heppell, SSC, Oregon State University
Dvora Hart, External Review, Northeast Fisheries Science Center
John Wheeler, Center for Independent Experts (CIE)

Pacific Fishery Management Council (Council) Representatives:
Briana Brady, Coastal Pelagic Species Management Team (CPSMT)
Mike Okoniewski, Coastal Pelagic Species Advisory Subpanel (CPSAS)
Mike Burner, Council Staff

Pacific Sardine Stock Assessment Team:
Kevin Hill, NOAA / SWFSC
Nancy Lo, NOAA / SWFSC
Beverly Macewicz, NOAA / SWFSC
Paul Crone, NOAA / SWFSC

Aerial Survey Team
Tom Jagielo, Tom Jagielo Consulting
Ryan Howe, West Coast Sardine Survey
Doyle Hanan, Hanan and Associates, for CWPA

Others in Attedance
John Butler, NMFS, SWFSC, La Jolla, CA
Richard Carroll, Ocean Gold Seafoods
Ray Conser, NMFS, SWFSC, La Jolla, CA
David Haworth, Fisherman, San Diego, CA
Jime Humphrys, Marine Stewardship Council, Seattle, WA
Steve Joner, Makah Tribe
Darrell Kapp, Astoria Pacific Seafoods
Greg Krutzikowsky, Oregon Dept. of Fish and Wildlife, Newport, OR
Hui-hua Lee, NMFS , SWFSC, La Jolla, CA
Josh Lindsay, NMFS , Southwest Regional Office
Mark Maunder, Inter-American Tropical Tuna Commission (IATTC), La Jolla, CA
Sam MccClatchie, NMFS, SWFSC, La Jolla, CA
Jenny Mc Daniel, NMFS, SWFSC, La Jolla, CA
Kevin Piner, NMFS, SWFSC, La Jolla, CA
Diane Pleschner-Steele, CWPA
Bob Seidel, Astroia Holdings, Inc.
Alexandre Silva, IATTC, La Jolla, CA
Christina Show, NMFS, SWFSC, La Jolla, CA
Kevin Steinhoft, NMFS, SWFSC, La Jolla, CA
Dale Sweetnam, Californinia Dept. of Fish and Game, La Jolla, CA
Andrew Thompson, NMFS, SWFSC, La Jolla, CA

Jerry Thon, Astroia Holdings, Inc.
Russ Vetter NMFS, SWFSC, La Jolla, CA,Fisheries Research Division, Director
Rob Zuanich, Purse Seine Vessel Owners Association

Appendix 2
Summary of Discussions Related to the 2009 Aerial Survey

Summary

Mr. Tom Jagielo outlined the 2009 aerial survey for Pacific sardine. The design for the aerial survey was reviewed by a STAR Panel during May 2009 and considered by the SSC at its June 2009 meeting, and the implemented survey followed most of the protocols established during that Panel. A key modification to the aerial survey protocol was that the flights were conducted from 4000ft rather than 8000ft. This reduced the width of transects, but it also increased the number of sampling days when conditions could permit clear visibility of sardine schools on the ocean surface.

The aerial survey involved two stages. The first stage aimed to collect data on the number of sardine schools on three sets of 52 transects and the second stage aimed to collect 52 point-sets in the north and the south strata (separated at Oregon-California border) to determine the relationship between school area and weight (or density) of sardine. Various factors, including weather and survey protocols, meant that it was not possible to achieve the target number of transects (156) and point sets (104). A total of 41 transects (of which 16 recorded sardine schools) and 28 point sets, which could be used for abundance estimation were collected during the aerial survey. The lack of replicate sets of transects precluded the use of replicate surveys as the basis for variance estimation. Instead the variance estimate was based on among-transect variation in density. The final estimate of abundance was 1,403,504 mt with a standard error of 698,284 mt. It was noted that there are various reasons why this estimate should be expected to be negatively biased, including schools that are missed by the aerial photographs (e.g., because they are too deep to be seen) and a survey area that excludes some areas in which sardine would be expected to be found.

The Panel welcomed the aerial survey, noting that several previous STAR Panels have recognized the need for new indices of abundance for Pacific sardine, particularly those which pertain to the Pacific Northwest. The Panel reviewed the document describing the 2009 aerial survey and had access to the data on which the estimate of abundance was based (suggested changes to the survey document are listed in Adjunct 1). The Panel noted that the lateness of the document describing the survey was due primarily to the timing of the aerial survey and that of the Panel meeting and that this lateness is to be expected if the aerial survey continues to be conducted during August-September and assessment reviews continue to occur in late September.

The Panel discussed the aerial survey as it had been implemented in 2009 and identified several recommendations for further work. The Panel noted that the CV was very large compared to that for the 2008 aerial survey, which was based on replicate sets of transects, and hence that it was likely (though not definite) that some of the variance estimate of 698,284 mt is associated with spatial variation in density rather than sampling variation. The Panel included the 2009 aerial survey estimate of abundance in the stock assessment by assuming that it provided an estimate of the absolute abundance of the component of the population selected by the gear used during the point sets.

The Panel was concerned with the approach proposed to model the relationship between school weight and school area because it implied zero density at infinite school area. It therefore explored an alternative formulation for this relationship. The Panel also identified, and worked with the analysts to implement, a method for estimating the variance of the estimates of biomass, which accounts for more (but not all) of the uncertainty.

The Panel endorsed the use of the 2009 aerial survey estimate for use in the Pacific sardine stock assessment. The aerial survey provides a basis for scaling the abundance of Pacific sardine, something which was not available in the past. However, efforts should continue to refine the survey design and to enhance the precision of the estimate by collecting additional data to quantify the relationship between school weight and school area. Specifically, the Panel notes that collection of data for schools with sizes between 4,000 and 10,000m^2 should allow this relationship to be refined.

The Panel was advised that consideration was being given to extending the aerial survey into Canada and using information of, for example, school area, from satellites. It agreed that there would be no need for a STAR Panel to review the survey estimate for an extension to include Canada as long as the methods used to conduct an aerial survey off Canada are the same as those used during the 2009 aerial survey. However, use of satellite data as the basis for abundance estimation would require a thorough review by a STAR Panel. Similarly, in-depth review would be needed if acoustic methods were to form the basis for assigning weights to schools which are too large to be sampled using point sets.

Requests

A. Annotate the school density and weight data by the years concerned.

Reason: To check whether there are year-specific patterns in the data.

Response: The data from 2008 tended to correspond to the largest surface areas. The Panel explored this further through request F.

B. Compute the variances of the estimates of abundance from the 2008 aerial surveys using a between-transect estimator.

Reason: The estimate of variance for the 2009 aerial survey was based on among-transect variation in density, but this may confound spatial variation with sampling variation. Comparing the between-replicate variation for the 2008 aerial survey with the average between-transect variation for that aerial survey provides information on the potential bias in the current method of variance estimation.

Response: The CV for the biomass in the 90-mile stretch of coast during 2008 was 0.23 based on the between-transect variation while the CVs for each set based on the spatial variation in density were 0.29, 0.16, and 0.27 respectively. The Panel concluded that these results provided no basis to modify the CV from the 2009 aerial survey

C. Estimate abundance (and its CV) using only the data for the northern stratum.

Reason: A sensitivity test is to be conducted using only the aerial survey estimate for the northern stratum because most of the detected biomass (>90%) and transects were in the northern stratum.

Response: The estimate for the northern stratum was 1,361,012 mt (CV 0.49). The abundance estimate and CV were sufficiently close to the estimate and CV for the whole coast, so the Panel deemed it unnecessary to conduct a sensitivity test based on the northern transects only.

D. Compute the confidence and prediction intervals for the relationship between school area and weight.
Reason: The uncertainty associated with this relationship needs to be quantified because it impacts how the estimate of abundance is to be used in the stock assessment.
Response: The prediction and confidence intervals were wide for the lowest and highest school areas. See request H for further considerations of this matter.

E. Plot the weighted and raw length frequency data from the 2009 aerial survey.
Reason: The Panel wanted to check that weighting the length-frequency distribution did not unduly impact the distribution.
Response: The plots of the weighted and unweighted length-frequencies were essentially identical.

F. Fit the school weight and surface area data for 2008 and 2009, and test whether the data are consistent with pooling the data.
Reason: The data from 2008 tended to correspond to the large surface areas.
Response: The two data sets were fitted separately using the model used in the survey analysis report and the fits compared with that of a fit to all of the data pooled using a likelihood ratio test. This test found no reason (P=0.38) to reject the hypothesis that the data for the two data sets cannot be pooled and analysed together.

G. Explore the sensitivity of the biomass estimate to using the relationship between school surface area and school density to estimate the weight of all schools rather than using the lowest density for schools that are larger than schools with the largest surface areas, which were sampled for density.
Reason: Data on density are not available for schools larger than 9,500 m^2 and the assumption was made that the density for these schools equalled the lowest density.
Response: The predicted density from the model implies an unrealistic zero density at very high surface area. However, the approach used in the survey analysis report could be argued to be arbitrary because it assumes that the density of all schools larger than the maximum observed in the point sets is equal to the lowest density. The Panel identified an alternative model for the relationship between school weight and school area (see Request H).

H. Fit the data on school weight and school size to a Michaelis-Menten model assuming log-normal error, i.e., ln(Density) = (a + b*Area)/(c+Area).
Reason: The log-transformed quadratic regression model used to convert school area to density is not ideal because, by its structure, it incorrectly predicts that the density would tend to zero as area tends to infinity. The solution proposed to this problem by the analysts was to put a floor on the predicted density equal to the lowest observed density. The Panel was concerned that this floor is somewhat *ad hoc*, and depends on the quantity of data collected. The Michaelis-Menten model has the advantage of allowing a non-zero

asymptote *b*. This parameter functions similarly to the floor in the original model, but is estimated rather than fixed.
Response: A least-squares fit of this model to the point-set data, using the nls function in R, gave estimates of a = -8667, b = -5.00, and c = 2795. Although there is considerable scatter, the resulting curve leads to a reasonable fit to the data, which is similar to the fit of the original model (Figure A1). The estimated asymptotic density, $\exp(b) = 0.00676$, is slightly lower than the density floor (0.0077). The estimate of abundance using the new relationship was 1,353,170 mt. The Panel, survey analysis team, and STAT agreed to base further analyses on this estimate.

I. Quantify the uncertainty associated with the 2009 estimate of abundance taking account of both the between-transect variation and the uncertainty related to the relationship between school density and school area.
Reason: The measures of uncertainty in the draft document related only to between-transect variation in density.
Response: A bootstrap procedure was developed to estimate a CV for the abundance estimate. However, numerical problems related to non-convergence of the non-linear minimization method precluded accounting for the uncertainty due to the relationship between school density and school area. The Panel rounded the CV up from 0.52 to 0.55 to account to some extent for this unmodelled uncertainty based on between-transect variation. While not a formal estimate of unmodelled uncertainty, it reflects the fact that there are sources of unmodelled uncertainty (an "extra" CV of approximately 0.2).

Research Recommendations
The Panel noted that most of the short-term recommendations of the May 2009 Panel had been implemented and identified a number of additional recommendations (not in priority order).

1. Further attempt to quantify (and then account for) the impact of "edge effects" on photographs, including the effect of calculating school weight for an estimate of school area, in which only part of a school is visible in a photograph.
2. Further attempt to calibrate the scheme used to estimate surface area from photographs. Specifically, calibration experiments should consider objects which do not have a regular shape (e.g., a baseball field was identified as a possible "target") and explore whether there are "analyst effects" and/or "photograph effects" by analysing existing and future calibration data.
3. Future research should consider methods that can be used to determine the proportion of sardine schools that are visible from aircraft. Acoustics (e.g., from fishing vessels) was identified as one potential method to achieve this goal.
4. Continue to refine the approach used to identify sardine schools in photographs. The use of mosaicing and recording lines on the images were identified as possible areas of investigation.
5. Examine the trade-offs associated with different flight heights between area surveyed and the ability to fly transects.
6. Estimate the variation in the perceived size of sardine schools using multiple photographs of the same schools.

7. Refine the method of variance estimation to account for all sources of uncertainty. Specifically, identify methods (e.g., based on bootstrapping; see Adjunct 2) that can take into account: (a) inter-transect variation in density, (b) uncertainty about the school weight – school area relationship, (c) variation for individual schools about the school weight – school area relationship, and (d) uncertainty arising from attempting to estimate the size of schools.
8. Consider the use of geostatistical methods to estimate sardine abundance and the uncertainty of the estimate, especially if the likelihood of obtaining multiple replicates within a single aerial survey is likely to remain low.
9. Consider further stratification of the area surveyed during the aerial survey. In particular, consider the benefits of offshore strata. Such strata could have lower coverage, consistent with likely lower density.
10. Consider whether it is possible to use acoustics to calculate the density associated with schools that are too large to be sampled using point sets. Consideration must be given to the impact of vessel avoidance in the analysis of such data.
11. Collect data on environmental conditions from point sets (e.g., using onboard loggers) and explore whether environmental covariates explain some of the variation about the school weight – school area relationship.
12. Refine how photographs are analysed to account for pitch and roll.
13. Provide all of the data on which the aerial survey estimate is based (including the original photographs and details regarding school size identification and quantification) to the STAT.

Additional recommendations from the May 2009 STAR Panel:

- Record qualitative information related to processing photographs, and the difficulty in assigning species and calculating school areas.
- Observer effects when viewing photographs could be evaluated using double-blind comparisons and similar techniques.

Adjunct 1: Suggested modifications to the document

A. Add a table that lists all of the point sets, including location; include reasons if point sets were not included in the density vs surface area relationship.
B. Add latitude to table 4.
C. Discuss the results related to maturity and the impact of predators of sardine.

Adjunct 2: A bootstrap method for assessing the uncertainty associated with the aerial survey

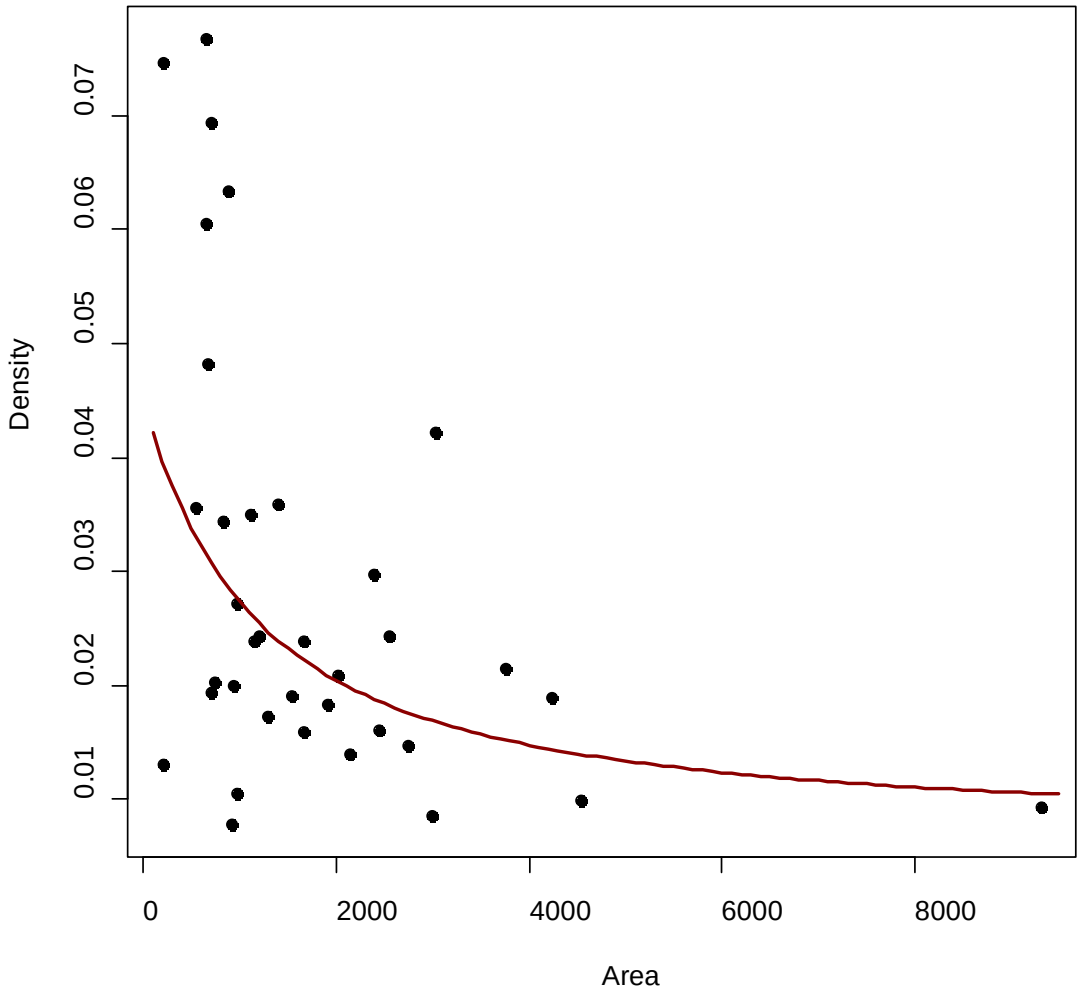
The confidence intervals for the biomass from the aerial survey should not be constructed assuming a normal distribution because of the high variability associated with the aerial survey relative to its mean. Instead, the Panel recommended using a bootstrap approach. Ideally, both the point set data and the transect data should be bootstrapped so as to capture uncertainty in both the area/biomass conversion as well as in the aerial survey itself. Each bootstrap replicate would involve sampling transects at random and with replacement from the 41 transects while the residuals about the area/biomass relationship would be permuted and added to the model predictions to generate a pseudo area/biomass data set, which is "balanced" and is conditioned on the observed school sizes observed during the point sets.

However, there were difficulties in bootstrapping the point-set data because the non-linear model fitted to the bootstrapped point-set data would occasionally fail to converge. For this reason, only the transect data were bootstrapped. Biomass on each transect was computed based on the observed school areas, converted to biomass using the fixed area to biomass conversion, and then summed over all schools on the transect. The 41 transects were then resampled with replacement 10,000 times, and the total estimated biomass was calculated for each bootstrap replicate. The 95% confidence interval was calculated using the 2.5% and 97.5% quantiles, and the mean, median and standard error of the mean biomass of the 10,000 runs were also computed (Table A1).

It should be noted that this analysis underestimates the total uncertainty associated with the aerial survey. In particular, uncertainty associated with the conversion of school area to biomass is not included in this analysis.

Table A1 – Bootstrapped biomass estimates (mt) of sardines from the aerial survey

Mean	1,343,754
Median	1,277,557
S.E.M.	659,138
90% C.I.	(384670, 2545251)
95% C.I.	(271558, 2792850)


Density
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0
2000
4000
6000
8000
Area

Appendix 3
Proposed Point Set Sampling for 2010
Tom Jagielo

In developing a recommendation for the number of point set samples needed for the aerial sardine survey in 2010, consideration was given to obtaining more data points for the area-biomass regression in the region between 2,000 and 10,000 m^2 (Figure 1). The purpose of getting more data points in this size range is to better determine the asymptote of the relationship and thus to better estimate the biomass of the largest schools observed. In order to distribute the samples across the full range of size categories, and to sample the larger schools with an adequate sample size (e.g., n = 32 for the 2,000-10,000 m^2 size range), an overall sample size of n=56 point sets is proposed. This sampling schedule would require a catch allowance of 2,100 mt per area (north and south), and thus a total EFP set-aside of 4,200 mt coastwide.

The Panel has identified the need to reduce the variance of the area-biomass relationship in order to reduce the estimate of total biomass from the aerial sardine survey. The addition of 56 new data points per region (assuming that any new data points obtained for 2010 could be pooled with the 2008-2009 dataset) should help to reduce the overall uncertainty of the area-biomass relationship.

Another consideration for 2010 point set sampling is the number of vessels to be permitted in the EFP fishery. The aerial survey team found that being limited to two vessels per region had the effect of constraining the project such that it was difficult to complete the project effectively in the time available for the EFP fishery. We recommend that 4 vessels per region be granted EFP permits in 2010.

Figure 1. Relationship of surface area (m^2) (x axis) vs. density (y axis) determined from point sets sampled in 2008 and 2009. Obs: actual point-set data; Pred: model-estimate of density.

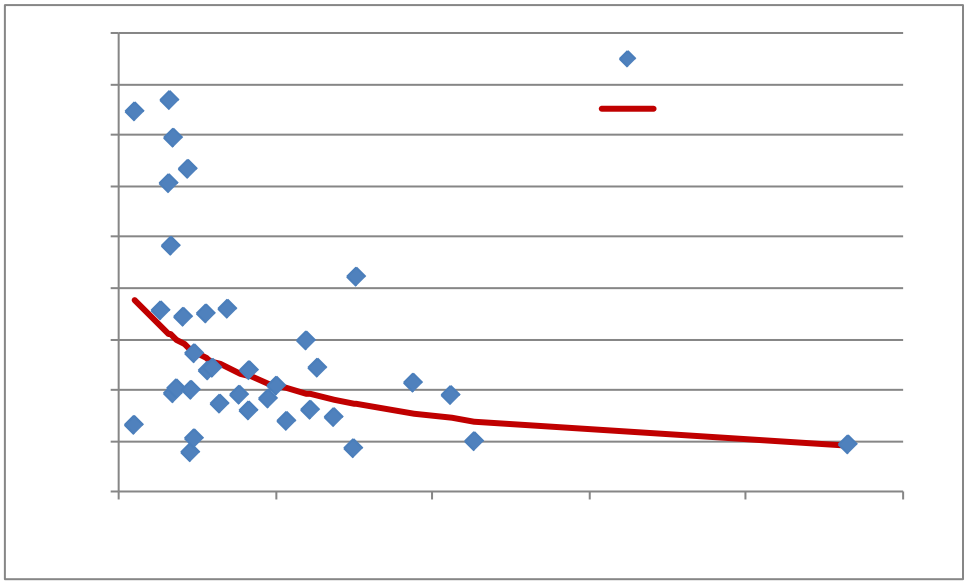


Table 1. Distribution of point set sizes proposed for each region (north and south) for the 2010 Aerial Sardine Survey.

Size (m^2)	Weight (mt)	Total Weight	Number of Point Sets
100	3.8	31	8
500	10.6	85	8
1000	17.0	136	8
2000	26.5	212	8
4000	51.9	415	8
8000	70.5	564	8
10000	82.1	657	8
		2099	56

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL REPORT ON PACIFIC SARDINE STOCK ASSESSMENT AND MANAGEMENT MEASURES

The Coastal Pelagic Species Advisory Subpanel (CPSAS), along with the Coastal Pelagic Species Management Team (CPSMT), received presentations on the 2009 Pacific Coast Aerial Survey from Tom Jagielo and the aerial research team; and the 2009 Pacific Sardine Stock Assessment from Dr. Kevin Hill. The CPSAS thanks Dr. Hill and the Stock Assessment Team for their hard work to incorporate the point estimate from the summer aerial survey as recommended in the September STAR Panel meeting. The CPSAS appreciates the support accorded by the STAR Panel and Science and Statistical Committee (SSC) in both recognizing the importance of this new sardine survey method and including the data in the 2009 base model.

With the aerial survey included as a minimum estimate of absolute biomass, in a precautionary manner to address uncertainty, the assessment resulted in a biomass (ages 1+) estimate of 702,024 mt. After applying the harvest control rule, the assessment produced an acceptable biological catch (ABC) for the 2010 fishery of 72,039 mt.

Management Measures

As occurred in 2009, the directed seasonal allocation of the recommended 2010 HG (72,039 mt) will be reached prematurely in each time period. The CPSAS agrees with the CPSMT on the need for (1) a set aside of 7,000 mt (to account for incidental catch and management uncertainty), and (2) a set aside of 5,000 mt for industry-supported research, to be deducted from the HG before it is allocated.

Further, the CPSAS recommends that the first two incidental catch amounts should each be set to 1,000 mt and that the last amount should be set to 5,000 mt total to account for management uncertainty in addition to incidental sardine catch in other fisheries. This means that any overage in the directed sardine fishery in the third period would be deducted from the 5,000 mt incidental set aside in the third period.

The CPSAS is in agreement with the CPSMT regarding the in-season automatic actions that should be taken to deal with surpluses or shortages that may occur for the direct and incidental seasonal allocations. The CPSAS recommends NMFS take the following inseason automatic actions:

- Any unused seasonal allocation to the directed fishery from Period 1 or Period 2 rolls into the next period's directed fishery.
- Any overage of a seasonal allocation to the directed fishery from Period 1 or Period 2 is deducted from the next Period's directed fishery.
- Any unused Incidental Set-Aside from Period 1 or Period 2 rolls into the next period's directed fishery.
- Any overage of the third period's allocation to the directed fishery will be deducted from that period's set-asides.

- If both the seasonal allocation to the directed fishery and the Incidental Set-Aside are reached or exceeded in any period, the retention of Pacific sardine will be prohibited.
- Any set-aside for research that is not included in an exempted fishing permit (EFP) will be rolled into the third period's directed fishery.
- Any research set-aside attributed to an EFP designed to be conducted prior to September 15, but not utilized, will roll into the third period's directed fishery.
- Any research set-aside attributed to an EFP designed to be conducted after September 15, but not utilized, will not be re-allocated.

The CPSAS also recommends the incidental landing allowance be no more than 30 percent Pacific sardine by weight, increased by 10 percent from 2009 to allow more opportunity to fish on other CPS after the directed fishery has closed.

Research Set Aside and EFP Request

After successful completion of the 2009 Aerial Survey, the first under the EFP, the CPSAS again asks the Council for an EFP set aside for the 2010 summer Sardine survey to continue and improve the survey as recommended by the STAR Panel. After STAR Panel review, the data collected was added to the assessment model, resulting in a harvest guideline of 72,039 mt vs. 9,100 mt without the survey. This difference averted a complete collapse of the sardine industry.

The CPSAS requests that the Council set aside 5,000 mt of the 2010 quota allocation to be utilized by the Principal Investigators, Tom Jagielo and Dr. Doyle Hanan, to increase the point set database with the goal to target larger schools, and to perform photographic and acoustical documentation of the Sardine population during the summer and fall of 2010.

The CPSAS also expresses the need for two STAR Panels in 2010 to review new data sources. These include the Canadian trawl survey data and analysis first discussed at the 2009 STAR Panel, and replicated satellite photography and measurement of sardine schools. These photographs will be developed and enhanced using the same methods as in the 2009 West Coast Sardine Survey. In order to utilize these new data sources in the model, STAR Panel reviews will be required. The benefits include: (1) improved scientific understanding of the overall sardine population dynamics (reproductive patterns, stock range, and migratory behavior), (2) achievement of a survey that is truly synoptic, (3) reduction of the CVs (coefficient of variation), and (4) the potential for significant increase of economic benefit to the sardine industry and coastal communities.

The CPSAS strongly recommends that the Council support the EFP research and our request for STAR Panels as a continuation and expansion of the 2009 aerial survey. The CPSAS encourages the National Marine Fisheries Service (NMFS) to continue to support and fund comprehensive coast-wide annual coastal pelagic species research to improve understanding of the spawning biomass and migration patterns; and to encourage similar cooperative surveys in Canada and Mexico.

The CPSAS continues to advocate for coordinated international management of coastal pelagic species fisheries, to avoid the potential for coastwide overfishing. The CPSAS encourages the Council, NMFS and the State Department to continue working to achieve timely receipt of biological research data from Mexico.

COASTAL PELAGIC SPECIES MANAGEMENT TEAM REPORT ON PACIFIC SARDINE STOCK ASSESSMENT AND MANAGEMENT MEASURES

The Coastal Pelagic Species Management Team (CPSMT) received a presentation from Dr. Kevin Hill regarding the Pacific sardine stock assessment conducted in 2009 and a presentation from Tom Jagielo regarding the results of the aerial survey conducted in 2009 that was incorporated into the Pacific sardine assessment. The CPSMT recommends that the Council adopt the assessment and the resulting harvest guideline. The biomass (ages 1+) estimate is 702,024 mt, and the acceptable biological catch (ABC) for the 2010 fishing year is 72,039 mt. This represents a 7 percent increase from the 2009 ABC/harvest guideline (HG) adopted by the Council (November 2008). The CPSMT agrees with the Stock Assessment Team, the Stock Assessment and Review Panel, and the Scientific and Statistical Committee approved base model.

Set asides and incidental load allowance

The CPSMT recommends that the incidental catch amounts for all three allocation periods should be set to 1,000 mt. To account for management uncertainty, 4,000 mt should be reserved for the 3rd period (Table 1). The CPSMT recommends that the incidental landing allowance be no more than 30 percent Pacific sardine by weight. The CPSMT recommends setting the sardine research set aside at 5,000 mt, which should be used solely for aerial point sets in 2010.

Table 1. Allocation scheme for 2010 Pacific Sardine HG.

HG = 72,039 mt Research set aside = 5,000 mt Adjusted HG = 67,039 mt				
	Jan 1- Jun 30	Jul 1- Sep 14	Sep 15 – Dec 31	Total
Seasonal Allocation (mt)	23,463	26,816	16,760	67,039
Incidental Set Aside (mt)	1,000	1,000	1,000	3,000
Management Uncertainty			4,000	4,000
Adjusted Allocation (mt)	22,463	25,816	11,760	60,039

Future work

The CPSMT agrees with the SSC to schedule the 2010 assessment as an update.

The CPSMT recognizes the challenges involved with conducting the aerial survey field work, especially during the first one or two years of data collection. The industry outlined improvements for the 2010 Aerial Survey Methodology in November 2009 Public Comment. The CPSMT is providing additional guidance for the applicants submitting the 2010 EFP application (Attachment 1).

The CPSMT recommends the Council encourage National Marine Fisheries Service (NMFS) to continue to fund comprehensive coastwide annual CPS research. The CPSMT continues to believe strongly that coordinated international management of CPS fisheries is essential to avoid the potential for coastwide overfishing. The CPSMT encourages the Council, NMFS and the State Department to continue working to achieve timely receipt of biological research data from Mexico. The CPSMT supports further exploration of innovative survey techniques for assessing the stock.

Attachment 1

The CPSMT has concerns with the oversight of the EFP point set data collection in 2009. The CPSMT recommends that the EFP application for 2010:

1. Specify the procedure for submitting aerial photograph data for each point set
2. Specify the procedure to determine if the point set data and corresponding aerial photographs are acceptable.
3. Document point set / aerial photos review process
    a. Date data were submitted for review with date received
    b. Date data were reviewed
    c. Date data were approved or denied
    d. Describe next phase (e.g., sample again OR make corrections and sample again)

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON PACIFIC SARDINE STOCK ASSESSMENT AND MANAGEMENT MEASURES

Mr. Tom Jagielo presented the 2009 sardine aerial survey results and Dr. Kevin Hill summarized the Pacific sardine assessment for the Scientific and Statistical Committee (SSC). Dr. André Punt summarized the Stock Assessment Review (STAR) Panel report on the 2009 aerial survey and the 2009 Pacific sardine assessment, held in La Jolla, California, September 21-25, 2009.

The 2009 aerial survey was designed and executed based on recommendations stemming from the Survey Methodology Review panel held in May 2009. Results from the survey provide the first estimate of the absolute biomass of Pacific sardine off the U.S. west coast. The estimate of abundance used in the assessment was 1.35 million mt, with a coefficient of variation of 0.55. It was noted that this estimate could well be negatively biased due to a variety of reasons, such as schools that are missed by the aerial photographs (e.g., because they are too deep to be seen) and a survey area that excludes regions in which sardine would be expected to be found.

The previous assessment of Pacific sardine was conducted in 2007, transitioning from the ASAP model into the Stock Synthesis model (version 2). In the new 2009 assessment, changes are made in several model components, new data are added, and the Stock Synthesis 3 (version 3.03a) assessment model was utilized. However, the most notable change in the 2009 assessment is the use of an absolute abundance estimate from the aerial survey, which is a key source of information about the size of the Pacific sardine stock.

The SSC discussed and noted the difficulty in quantifying uncertainty in the aerial survey abundance estimate. The CV of the aerial survey abundance was estimated to be 0.52 using a bootstrapping procedure, while a value of 0.55 was used in the assessment model to include between-transect variation. The value of 0.55 means the model put more emphasis on the other data sources than the aerial survey abundance estimate. The main source of uncertainty in the abundance estimate is the conversion of school area to school biomass, especially for schools sizes between 4,000 and 10,000 m^2, which is due to a paucity of point-set data in that range. This problem should be solved as the aerial survey continues and more data become available.

The dome-shaped selectivity curve for the aerial survey implies an absence of large fish in the survey. Although this selectivity specification was estimated in the model, it should be more thoroughly explored in the future in order to explain the deficit of large fish.

The catchability coefficient (*q)* of the aerial survey could not be estimated in the model because there is only one data point. It was therefore fixed at $q = 1$. Discussion and rationalization of this value is warranted. To do so, additional survey data may be needed and, in addition, further consideration of developing a *q* prior is also recommended.

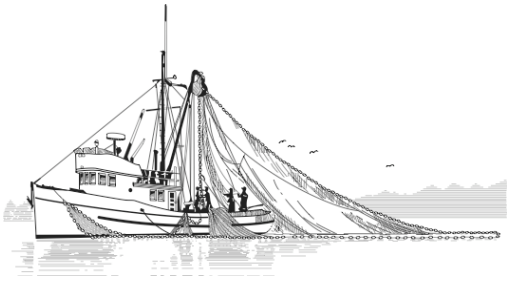
- A concern about correctly identifying the species composition of aerially spotted schools was raised. However, anchovy were infrequently observed in 2009 and there was a lack

of valid point-sets in the southern portion of the survey where anchovy are typically more abundant.

- Other data sources that could be used to estimate coast-wide sardine biomass, e.g., satellite images and acoustics, should be considered in the future. These new data sources need to be thoroughly examined by a methodology review panel before their actual use in the assessment.
- A later start of the fishery would allow more time to conduct and finalize the stock assessment.
- The assessment would benefit by including data from Mexico and Canada.
- Efforts should continue to refine the aerial survey design and to enhance the precision of the estimate by collecting additional data to quantify the relationship between school weight and school area.
- The 2009 EFP point-set set-aside was useful and valuable information was collected.

The SSC endorsed the 2009 Pacific sardine assessment as the best available science for status determination and Council management. The SSC recommends an ABC for the 2010 fishery of 72,039 mt. The 2010 assessment is recommended to be an update.

PFMC
11/02/09



CALIFORNIA WETFISH PRODUCERS ASSOCIATION

Representing California's Historic Fishery

VISIT WWW.CALIFORNIAWETFISH.ORG FOR INFORMATION

October 13, 2009

Mr. Dave Ortmann, Chair &
Dr. Don McIsaac, Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place #200
Portland OR 97220-1384

RE: Agenda Item I.1.d: Sardine Assessment and Management Measures &
Experimental Fishing Permit (EFP) for Pacific coast Sardine Research including CA

Dear Chairman Ortmann, Dr. McIsaac and Council members,

The California Wetfish Producers Association (CWPA) represents the majority of active wetfish fishermen and processors from both Monterey and southern California. We very much appreciate this opportunity to address the Council on the subject of Pacific sardine management measures and research.

As we have testified in the past, we believe developing a second index of sardine abundance is essential to expand understanding of the sardine resource and improve sardine resource management. We appreciate the Council's interest in and support of the industry-sponsored aerial/acoustic research program, in which California collaborated with the Northwest Sardine Survey this past summer. A STAR panel review of survey results found:

- "The 2009 aerial survey is a key source of information about the stock status of Pacific sardine."
- "The 2009 aerial survey can be used to calculate a fishery-independent estimate of biomass that provides critical information on stock size and distribution."
- 'The Panel endorsed the use of the 2009 aerial survey estimate for use in the Pacific sardine stock assessment. The aerial survey provides a basis for scaling the abundance of Pacific sardine, something which was not available in the past."

We strongly support the STAR panel recommendations and encourage the Council to adopt the panel's advice.

We very much appreciate the acceptance of survey methodology by the stock assessment team and STAR panel, and their encouragement to refine and continue the survey in the future. Repeating the aerial survey in 2010 and beyond will reduce the coefficient of variation applied this year to address uncertainty.

We encourage the Council to approve another collaborative EFP application and related research set-aside, as focusing attention on this research in its critical early years outside the pressures of the directed derby fishery will improve precision of this minimum biomass estimate, ultimately leading to an improved index of abundance, and providing essential information on the sardine resource.

California's wetfish industry and CWPA support further development of this survey and have committed our energies and funding to continue our collaboration with the Northwest Sardine Survey in 2010.

PO BOX 1951 BUELLTON, CA 93427 TELEPHONE 805-693-5430 FAX 805-686-9312
EMAIL <DPLESCH@EARTHLINK.NET>

We continue to work closely with the principals involved in this survey to improve the outcome in 2010. Although the California portion encountered difficulties in 2009, in major part caused by El Niño conditions, including a persistent marine layer, as outlined in the Final EFP Report, such conditions are predicted to abate by the time of the survey next year.

We hope to repeat and improve on the core survey protocol approved in 2009. In addition, we are investigating the use of hydroacoustics to estimate density and biomass of sardine schools too large to quantify with 'point sets'. As summarized in the final report, we experimentally deployed a Biosonics DT-X scientific echosounder outfitted with a side-looking transducer to measure sardine schools, and successfully completed an acoustic survey of a series of sardine schools while the acoustic tow vessel identified the sardines with onboard acoustics, and the aerial crew took photographs of the vessel and the sardine schools. CWPA transmitted the acoustic data file and pertinent photographs to Biosonics Inc. for analysis with Echoview software. The report is in preparation and will be submitted as soon as it is available.

We are fully committed to ensure the success of the second year of this EFP research and hope the Council will support its continuation also. In CA the use of the research set aside will be taken under the guidance of CA Northwest scientists, with the goal to achieve representative samples of school size, as outlined in the EFP final report. In addition, we will also use our Biosonics DT-X, again deployed with both down-sound and side-looking capabilities to better quantify school height and density.

Again, we appreciate the Council's interest in this research and urge you to approve a collaborative Pacific coast sardine EFP application for the 2010 season, allowing this synoptic research program to be conducted after the summer directed fishing period has closed.

Thank you for your consideration.
Best regards,

Diane Pleschner-Steele
Executive Director

Northwest Sardine Survey

12 Bellwether Way
Bellingham, Washington 98225

Mr. Don Hansen, Chair &
Dr. Don McIsaac, Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220-1384

Exempted Fishing Permit for Sardine Survey 2010

The 2009 Sardine Exempted Fishing Permit was applied and used successfully by the West Coast Aerial Survey. Valuable scientific data was attained which was ultimately used in the assessment model to determine an estimate of sardine abundance. It is now essential that a continuation of data collection occur in 2010. From this, an even more accurate sardine assessment is possible.

Industry expresses thanks to NOAA and the Pacific Fishery Management Council. Without assistance of all parties it would not have been possible to create a second index of abundance. The Aerial Survey methods have now been developed and approved by Star Panels appointed by the Pacific Fisheries Management Council and included as part of the 2009 assessment update for 2010. This resulted in a substantial quota increase over the quota without the Aerial Survey.

Point Sets taken with fish provided by the EFP are still needed to add statistical confidence in the survey. The larger the number of qualifying point set estimates, the greater the confidence in the survey data and its usage in the SS-3 assessment model. Industry would like to substantially add to this database during the 2010 survey season.

The Northwest Sardine Survey participants requests that the Pacific Fisheries Management Council set aside 5000 M/T of the 2010 quota allocation as an EFP to be used under the direction of the Principal Investigator, Tom Jagielo. The plan is to increase the point set database and perform photographic documentation of the Sardine population during the summer of 2010. In order to ensure the proper use of the EFP the Principal Investigator must have control over assigning locations and times for point set captures. This will guarantee that the data produced is scientifically valid for use in the assessment model. Any fish from the EFP not used for the collection of scientific data should be reallocated to the September 15th quota.

Attached are the necessary protocols for the scientific validation of the point sets that require fish from the EFP.

Regards,

Jerry Thon
Northwest Sardine Survey

Aerial Survey Point Set Protocol
(Draft 10-6-2009)

1) Sardine schools to be captured for point sets will first be selected by the spotter pilot and photographed at the nominal survey altitude of 4,000 ft. After selection, the pilot may descend to a lower altitude to continue photographing the school and setting the fishing vessel.
2) A continuous series of photographs will be taken before and during the vessels approach to the school to document changes in school surface area before and during the process of point set capture. The photographs will be collected with a time interval of no greater than 30 seconds between photograph.
3) Each school selected by the spotter pilot and photographed for a potential point set will be logged on the spotter pilots' Point Set Flight Log Form. The species identification of the selected school will be verified by the Captain of the purse seine vessel conducting the point set, and will be logged on the Fishermans' Log Form. These records will be used to determine the rate of school mis-identification by spotter pilots in the field and by analysts viewing photographs taken at the nominal survey altitude of 4,000 ft.
4) The purse seine vessel will wrap and fully capture the school selected by the spotter pilot for the point set. Any schools not "fully" captured will not be considered a valid point set for analysis.
5) If a school is judged to be "nearly completely" captured (i.e. over 90% captured), it will be noted as such and will be included for analysis. Both the spotter pilot and the purse seine vessel captain will independently make note of the "percent captured" on their survey log forms for this purpose.
6) Upon capture, sardine point sets will be held in separate holds for separate weighing and biological sampling at the dock.
7) Biological samples of individual point sets will be collected at fish processing plants upon landing. Samples will be collected from the unsorted catch while being pumped from the vessels. Fish will be systematically taken at the start, middle, and end of a delivery as it is pumped. The three samples will then be combined and a random subsample of fish will be taken. The sample size will be n = 50 fish for each point set haul.
8) Length, weight, maturity, and age structures will be sampled for each point set haul and will be documented on the Biological Sampling Form. Sardine weights will be taken using an electronic scale accurate to 0.5 gm. Sardine lengths will be taken using a millimeter length strip provided attached to a measuring board. Standard length will be determined by measuring from sardine snout to the last vertebrae. Sardine maturity will be established by referencing maturity codes (female- 4 point scale, male- 3 point scale). Otolith samples will be collected from n = 25 fish selected at random from each n = 50 fish point set sample for future age reading analysis.
9) School height will be measured for each point set. This may be obtained by using either the purse seine or other participating research vessels' hydroacoustic gear. The school height measurements to be recorded on the Fishermans' Log Form are: 1) depth in the water column of the top of the school, and 2) depth in the water column of the bottom of the school. Simrad ES-60 sounders will be installed on three purse seine vessels. Data collected by the ES-60 sounders will be backed-up daily and archived onshore.

10) Point sets will be conducted for a range of school sizes. Each day, the spotter pilot will operate with an updated list of remaining school sizes needed for analysis. The spotter pilot will use his experience to judge the surface area of sardine schools from the air, and will direct the purse seine vessel to capture schools of the appropriate size. Following landing of the point sets at the dock, the actual school weights will be determined and the list of remaining school sizes needed will be updated accordingly for the next day of fishing. If schools are not available in the designated size range, point sets will be conducted on schools as close to the designated range as possible.

11) The field technician will oversee the gathering of point set landing data and will update the list of point sets needed (by size) daily for use by the spotter pilot.

12) Photographs and FMCdatalogs of point sets will be forwarded from the field for lab analysis daily.

13) The total landed weight of point sets sampled will not exceed the EPF allotment per area.

Proposed Point Set Sampling for 2010

Draft 9-24-2009

In considering the number of point set samples needed for the aerial sardine survey in 2010, consideration was given to obtaining more data points for the area-biomass regression in the region between 2,000 and 10,000 m^2 (Figure 1). The purpose of getting more data points in this size range is to better determine the asymptote of the relationship and thus to better estimate the biomass of the largest schools observed. In order to distribute the samples across the full range of size categories, and to sample the larger schools with an adequate sample size (e.g. n = 32 for the 2,000-10,000 m^2 size range), an overall sample size of n=56 point sets is proposed. This sampling schedule would require a catch allowance of 2,100 mt per area (north and south), and thus a total EFP set-aside of 4,200 mt coastwide.

The September, 2009 Sardine STAR Panel has identified the need to reduce the variance of the area-biomass relationship in order to reduce the estimate of total biomass from the aerial sardine survey. The addition of 56 new data points per region (assuming that any new data points obtained for 2010 could be pooled with the 2008-2009 dataset) should help to reduce the overall uncertainty of the area-biomass relationship.

Another consideration for 2010 point set sampling is the number of vessels to be permitted in the EFP fishery. The aerial survey team found that being limited to two vessels per region had the effect of constraining the project such that it was difficult to complete the project effectively in the time available for the EFP fishery. We recommend that 4 vessels per region be granted EFP permits in 2010.

Figure 1. Relationship of surface area (m^2) (x axis) vs. density (y axis) determined from point sets sampled in 2008 and 2009.

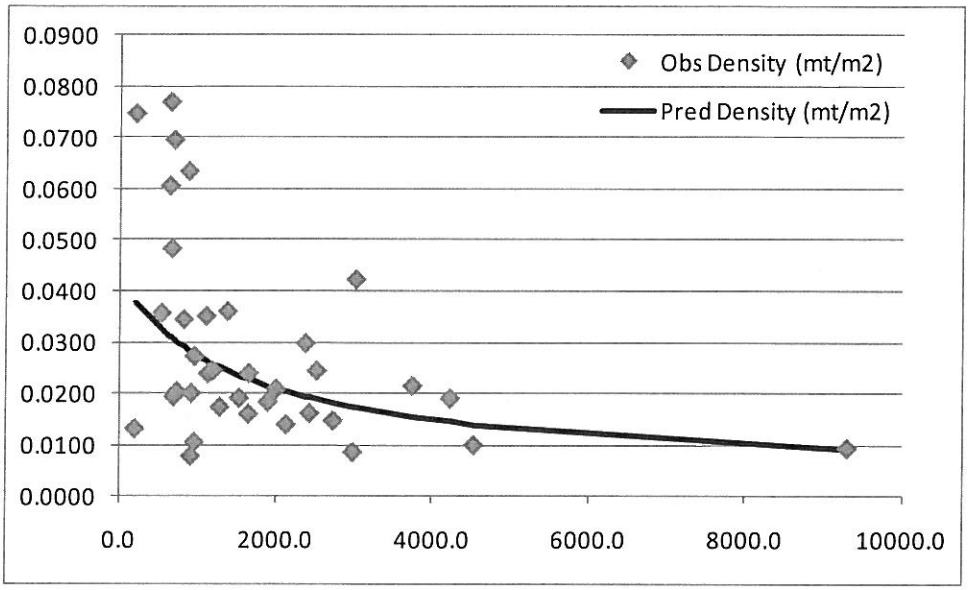


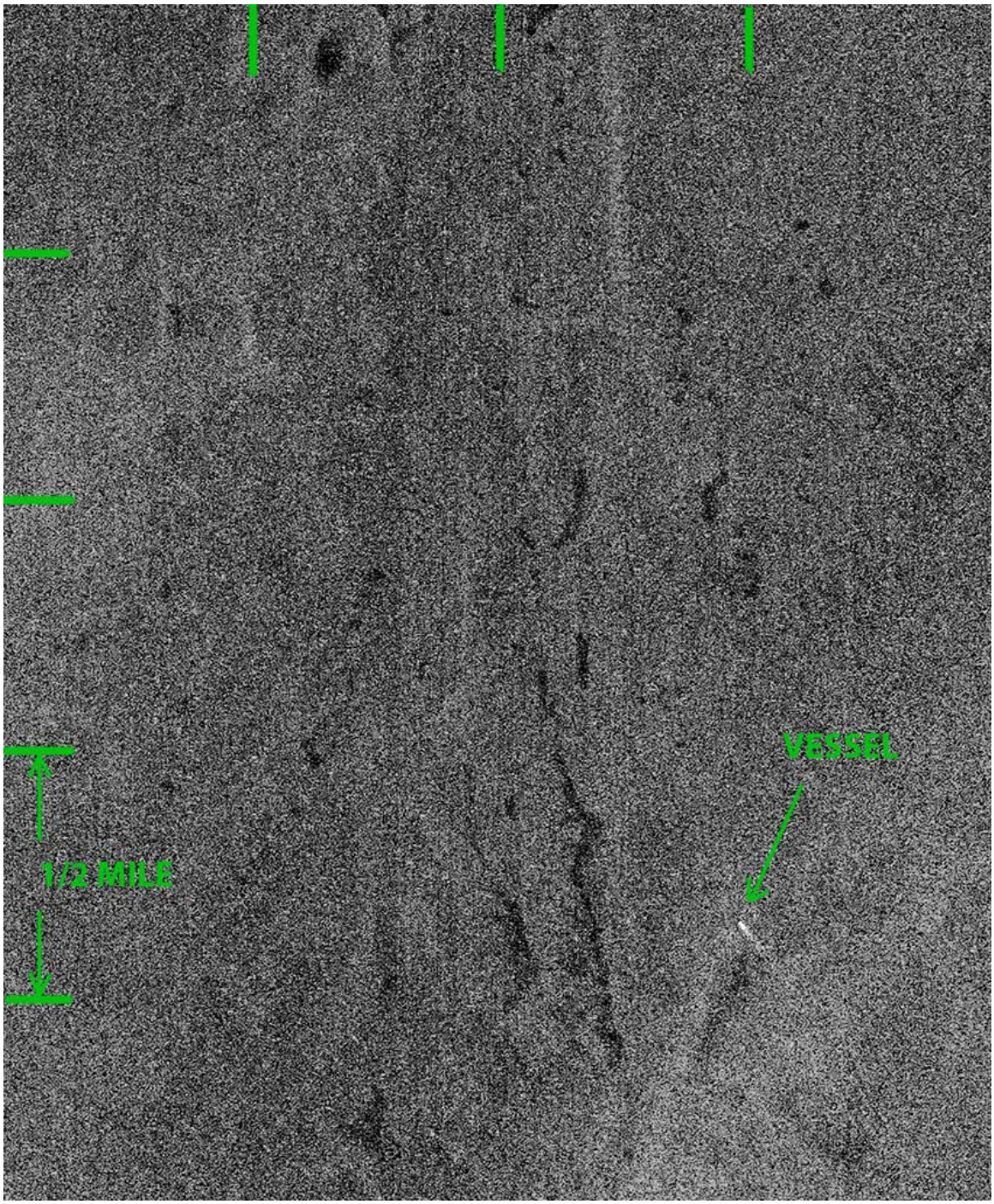
Table 1. Distribution of point set sizes proposed for each region (north and south) for the 2010 Aerial Sardine Survey.

Size (m^2)	Weight (mt)	Total Weight	Number of Point Sets
100	3.8	31	8
500	10.6	85	8
1000	17.0	136	8
2000	26.5	212	8
4000	51.9	415	8
8000	70.5	564	8
10000	82.1	657	8
		2099	56



Dark portion = area photographed by IKONOS on Aug 23rd

The images captured by the IKONOS satellite were delivered and converted to TIFF files. After applying adobe filters, the same ones used for enhancing photos from the Aerial Survey, the satellite images showed many sardine schools.



FISHERY MANAGEMENT PLAN AMENDMENT 13: ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES

The Magnuson-Steven Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) established several new fishery management provisions pertaining to National Standard 1 (NS1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which states "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry." On January 16, 2009, the National Marine Fisheries Service (NMFS) published a final rule to implement the new MSRA requirements and amend the guidelines for NS1 (74 FR 3178, see Agenda Item C.3.a, Attachment 1, March 2009). The MSRA and amended NMFS guidelines introduce new fishery management concepts including overfishing levels (OFLs), annual catch limits (ACLs), annual catch targets (ACTs), and accountability measures (AMs) that are designed to better account for scientific and management uncertainty and to prevent and end overfishing. These important aspects of the MSRA are required to be implemented by 2011 for most species and by 2010 for those species subject to overfishing.

The Pacific Fishery Management Council's (Council's) Coastal Pelagic Species (CPS) Fishery Management Plan (FMP) include harvest control rules for actively managed species (Pacific sardine and Pacific mackerel) that are intended to prevent overfishing while maintaining relatively high and consistent catch levels over the long-term and provide a solid foundation for new fishery management provisions such as OFLs, ACLs, and ACTs. The CPS FMP's monitored stocks are either exempt from the new requirements because of their short life cycle (market squid) or are currently harvested at relatively low levels (anchovy, jack mackerel). ACLs for monitored stocks may be implemented with greater flexibility, but also greater precaution, than for actively managed species because they are assessed with less frequency.

The Council held a scoping session at its March 2009 meeting on amending the CPS FMP to address the National Standard 1 guidelines. Scoping comments included recommendations to assess scientific and management uncertainty, include krill and other forage species as ecosystem components of the FMP, improve accountability of live bait harvest and overall fishery discards, and improve inseason harvest reporting. Additionally, the review of CPS harvest control rules has been identified by the Council as a high priority research need. Since March, additional public comments have been provided to the Council that re-emphasize the need to review provisions in the harvest control rules, call for spatial-temporal management of CPS, request more explicit accounting for the forage role of CPS, and request improved accountability for monitored stocks (see Open Public Comment materials from this year's June and September Council meetings).

Determining the degree to which the provisions in the existing harvest control rules adequately buffer CPS stocks from overfishing will be a critical step in insuring the amended CPS FMP meets the new NS1 requirements. The Scientific and Statistical Committee (SSC) Groundfish and CPS Subcommittees are working on the development of a framework for factoring scientific uncertainty into harvest control rules. They recommended quantifying assessment variability for stocks with a history of multiple assessments as a basis for evaluating the size of a scientific uncertainty buffer (i.e., the difference in yield between the OFL and the ABC) and the risk of overfishing the stock. SSC recommendations will be brought forward at this meeting to the full

SSC and the Council.

No CPS FMP stocks are subject to overfishing or are designated as overfished. Therefore, implantation of an amended FMP and fishery regulations is targeted for the 2011 fishing year. The Council is scheduled to review a range of amendment alternatives and adopt a preliminary preferred alternative at its March 2010 meeting. Final Council action is schedule for the June 2010 Council meeting to allow for full implementation by 2011. The CPSMT is working on the development of alternatives for public and Council review and is seeking guidance on the development of alternatives at this meeting.

Council Action:

Provide Guidance on Alternatives for Public Review Draft.

Reference Materials:

1. Agenda Item I.2.a, Supplemental Attachment 1, *Summary of Amendment 13 Issues and Potential Alternatives*.
2. Agenda Item I.2.b, Supplemental SSC Report.
3. Agenda Item I.2.b, Supplemental CPSMT Report.
4. Agenda Item I.2.b, Supplemental CPSAS Report.

Agenda Order:

a. Agenda Item Overview — Mike Burner
b. Reports and Comments of Management Entities and Advisory Bodies
c. Public Comment
d. **Council Action**: Provide Guidance on Alternatives for Public Review Draft.

PFMC
10/16/09

G:\!PFMC\MEETING\2009\November\CPS\I1_CPS_Sardine_Assess_Sitsumm.docx

AMENDMENT 13 TO THE COASTAL PELAGIC SPECIES FISHERY MANAGEMENT PLAN: NATIONAL STANDARD 1 GUIDELINES, ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES; SUMMARY OF ISSUES AND POTENTIAL ALTERNATIVES

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) established several new fishery management provisions pertaining to National Standard 1 (NS1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which states "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry." On January 16, 2009, the National Marine Fisheries Service (NMFS) published revised guidelines on implementing NS1 in accordance with the new MSRA requirements, which are designed to better account for scientific and management uncertainty and to prevent and end overfishing (50 CFR 660.310). The MSRA and NMFS guidelines introduce new fishery management 'concepts,' i.e., measures generally related to fish stock assessments and stock status determinations, including: overfishing levels (OFLs); annual catch limits (ACLs); annual catch targets (ACTs); and accountability measures (AMs). These important stipulations of the MSRA are required to be implemented by 2011 for most species and by 2010 for those species subject to overfishing. No Coastal Pelagic Species (CPS) are currently subject to overfishing or are designated as overfished. Therefore, implementation of an amended FMP and fishery regulations is planned for the 2011 fishing year.

This report was compiled by Pacific Fishery Management Council (Council) staff and members of the Coastal Pelagic Species Management Team (CPSMT). This report summarizes Council deliberations, Council Advisory Body recommendations, scoping comments, and Council staff efforts on bringing the CPS Fishery Management Plan (FMP) into compliance with the reauthorized MSA through FMP Amendment 13. The intent of the report is to inform and stimulate the discussion of Amendment 13 alternatives at the November 2009 Council meeting and is not intended to limit or constrain future development of the amendment.

This report presents a review of CPS stock classifications, stock status determination criteria, annual catch limits, accountability measures, and a proposed schedule for timely completion of Amendment 13. The CPSMT, in conjunction with the SSC and the CPS Advisory Subpanel (CPSAS), is working on the development of Amendment 13 alternatives and now seeks Council guidance at its November 2009 meeting. Amendment 13 alternatives and corresponding analyses will be developed for Council and public review in advance of the March 2010 Council meeting when the Council is scheduled to adopt a preliminary preferred alternative. Council final action on Amendment 13 is scheduled for June 2010 with full implementation in 2011.

1.0 CLASSIFICATION OF STOCKS

Stocks in the CPS FMP are classified under the following management categories: actively managed; monitored; and prohibited harvest species (Table 1-1). The CPS FMP is based on a management framework designed to react quickly to changes in the fisheries and/or stocks, with the CPSMT providing advice on classification changes in accordance with fishery/stock dynamics.

Table 1.1 Stocks managed under the CPS FMP.

Management Category	Common Name	**Scientific Name**
Actively Managed	Pacific sardine	*Sardinops sagax*
	Pacific (chub) mackerel	*Scomber japonicus*
Monitored	Northern anchovy Central and Northern Subpopulations	*Engraulis mordax*
	Market squid	*Loligo opalescens*
	Jack mackerel	*Trachurus symmetricus*
Prohibited Harvest	Krill or Euphausiids	*Euphausia pacifica*
	All West Coast EEZ Species	*Thysanoessa spinifera*
	Eight dominant species	*Nyctiphanes simplex*
	First two species are common and are	*Nematocelis difficilis*
	the most vulnerable to fishing.	*T. gregaria*
		E. recurva
		E. gibboides
		E. eximia

1.1 Stocks "In the Fishery"

According to NS1 guidelines ('600.310(d)(1)), all stocks in an FMP are considered to be "in the fishery" by default, unless they are identified as ecosystem component (EC) species. All species in the fishery require specification of status determination criteria (SDC), including: OFL; maximum sustainable yield (MSY); allowable biological catch (ABC); optimum yield (OY); and most require ACLs and AMs to prevent overfishing. Stocks that exhibit annual life cycles or stocks managed under international agreements to which the United States is a party are exempt from the new measures, such as the ACL, AM, etc. requirements. It is important to note that no CPS are currently managed under international agreements, but market squid would be considered exempt, given this species' longevity is less than one year.

Species in the actively managed category as well as market squid and northern anchovy in the monitored species category are target species and thus, would be considered "in the fishery". The other species in the monitored category, jack mackerel, is currently targeted to a much lesser degree than the two actively managed species, but when encountered is generally retained for sale.

Regarding the krill species in the prohibited harvest category, the Council might consider a few alternative stock classifications. Harvest for krill is currently prohibited under the FMP and Federal regulation, and no directed fishery for krill existed in the West Coast Exclusive Economic Zone (EEZ) when this action was taken. Ecosystem considerations were a key element of the rationale for the prohibition and krill may be a good candidate for an EC species. However, the prohibition prevents the conceivable development of a targeted fishery in the future and this may be sufficient rational to include krill and its broad regulatory harvest prohibition as a species in the fishery.

Non-target species caught in the fishery that either are retained for sale or are overfished or subject to overfishing may also be included in the fishery. Bycatch in CPS fisheries is generally low and tends to be dominated by other CPS in the FMP. It is important to note that a more current review of bycatch in CPS fisheries may be warranted to ensure all appropriate species are included and properly classified in the FMP.

1.2 Ecosystem Component Species

The specification of EC species is optional and there are several criteria that should be met for a species to be included in the EC category (' 660.310(d)(5)(i)). These are:

- Be a non-target stock/species;
- Not be subject to overfishing, approaching overfished, or overfished and not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and,
- Not generally retained for sale or personal use, although "occasional" retention is not by itself a reason for excluding a species from the EC category

Comments received during the scoping session at the March 2009 Council meeting request that the Council consider the addition of forage species not currently in the FMP as EC species (i.e., Pacific saury, myctophids, Pacific sand lance, white bait smelt, and other smelts). The intent of the request is to monitor a set of forage species and to report on their trends, status, and ecological roles, and not to develop a fishery. There is a growing interest in ecosystem-based fishery management and for the consideration of the ecological roles and interrelations of species when developing management and conservation strategies for all federally managed fisheries, not just for CPS. The Council has initiated the development of an Ecosystem Fishery Management Plan (E-FMP) and is scheduled to appoint a plan development team and advisory subpanel at the November meeting. The identification and monitoring of indicator species and the role species play in the food web are likely to be important issues for the E-FMP, which is intended as an over-arching framework for all four of the Council's existing FMPs. The interaction of species in an E-FMP and EC species in any Council FMP along with the potential management implications of these two approaches will likely be explored.

1.3 Federal versus State Management

In recent years, the CPSMT has discussed the suite of stocks in the CPS FMP and their appropriate classification as monitored or actively managed species (e.g., moving Pacific mackerel to the monitored species category in light of multiple years of low harvest and diminished data series for assessing stock status, and potentially moving northern anchovy to the actively managed category). The CPSMT has also reviewed the science and harvest policies for market squid in recent years to determine the need, if any, to revise management. The CPSMT has informally discussed the costs and benefits of including two monitored species in the CPS FMP versus transferring management authority to the State of California. Commercial landings of market squid and jack mackerel occur almost exclusively in California and are either currently managed under a California State FMP (market squid) or have been landed at low and generally declining levels for many years (jack mackerel). There are a considerable number of research and data needs identified for the CPS FMP and focusing available science and management resources on fewer FMP stocks may have benefits. Given the need to review stock classifications and reference points for Amendment 13, exploring Federal versus State management of CPS FMP stocks could be prudent at this time.

Market Squid

The market squid fishery has been managed solely by California in accordance with the CPS FMP, and State management has changed considerably since the inception of the CPS FMP.

California state legislation transferred authority to market squid to the California Fish and Game Commission (Commission) in 2001. In 2005, the Commission adopted a State Market Squid FMP (MSFMP), the environmental documentation, and the implementing regulations. The goals of the MSFMP are to provide a framework that will be responsive to environmental and socioeconomic changes and to ensure long-term resource conservation and sustainability.

The tools implemented to accomplish these goals include: (1) setting a seasonal catch limit of 107,048 mt (118,000 st) to prevent the fishery from over-expanding, (2) maintaining monitoring programs designed to evaluate the impact of the fishery on the resource, (3) continuing weekend closures that provide for periods of uninterrupted spawning, (4) continuing gear regulations regarding light shields and wattage used to attract squid, (5) establishing a restricted access program that includes provisions for initial entry into the fleet, permit types, permit fees, and permit transferability that produces a moderately productive and specialized fleet, and (6) creating a seabird closure restricting the use of attracting lights for commercial purposes in any waters of the Gulf of the Farallones National Marine Sanctuary. Under this framework, the MSFMP provides the Commission with specific guidelines for making management decisions. The Commission has the ability to react quickly to changes in the market squid population off California and implement management strategies without the need for a full plan amendment. The MSFMP framework structure was also designed to achieve the goals and objectives of the California Marine Life Management Act and to be consistent with the management outlined in CPS FMP Amendment 10.

Market squid provide forage, and it is well recognized that market squid population levels fluctuate significantly with environmental conditions. This, coupled with effective State fishery management, may make market squid a candidate as a management or indicator species in the Council's developing E-FMP rather than a monitored stock under the CPS FMP.

Jack Mackerel

Until 1999, jack mackerel were managed under the Council's groundfish FMP. There is no evidence of significant exploitation of this species on the Pacific coast of North America, and accordingly, there have not been regular stock assessments or efforts to collect biological information. Currently, most landings of jack mackerel are incidental to Pacific sardine and Pacific mackerel in California; however, pure landings do occur sporadically. Jack mackerel appear to be an underexploited stock that could be effectively managed at the State level. Alternatively, jack mackerel may be a candidate as an EC species although it is not clear whether current landing levels, although low, meet the intent of "occasional retention" in the criteria for the EC category.

1.4 Stock Classification Alternatives

Regarding stocks in the fishery, it appears straight-forward that actively managed and monitored species should be specified as stocks in the fishery. The Council may recommend for the purpose of analysis the alternate treatments of krill as prohibited harvest species in the fishery, or EC species for which harvest is prohibited. The Council may also recommend that the CPSMT

review the list of bycatch species in CPS fishery for their potential inclusion in the fishery or in the EC category.

Regarding the EC category, for the purpose of analysis, the following might serve as a reasonable range of alternatives.

- No EC species,
- Only those bycatch species in CPS fisheries, if any, that meet the criteria for EC classification,
- Include bycatch and/or additional forage species for monitoring.

How the last alternative dovetails with an E-FMP could be analyzed under this amendment process, through the development of the E-FMP, or both.

Regarding CPS FMP stocks and State management, the Council may recommend the analysis of alternative treatments of market squid, jack mackerel, or other species as State rather than CPS FMP managed species, as EC species, as species for potential inclusion in the Council's E-FMP, or as a combination of these approaches.

2.0 STOCK STATUS DETERMINATION CRITERIA AND REFERENCE POINTS

The National Standard 1 Guidelines identify reference points (see Table 2-1 below) that must be specified for stocks "in the fishery," which will likely include FMP species in the actively managed and monitored categories and may include krill in the prohibited harvest category. As noted above, market squid are exempt from ACL and AM requirements because of their annual life cycle, but MSY, OY, and SDCs must nevertheless be specified for these stocks.

Table 2-1 Required reference points for stocks in the fishery.

Maximum Sustainable Yield (MSY) *600.310(e)(1)*	The largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technology characteristics (e.g., gear selectivity)
Optimum Yield (OY) *600.310(e)(3) and (e)(3)(iv)*	A decisional mechanism to address MSA and FMP objectives. OY definition(s) must account for the need to prevent overfishing. A long-term average amount of desired yield that accounts for economic, social, and ecological factors - an FMP must contain ACLs and AMs to achieve OY. See (e)(3)(iii) and (iv) for factors to be considered in determining OY.
Status Determination Criteria (SDC): *600.310(e)(2)*	The FMP must describe which one of two methods will be used to determine overfishing status: (1) F > MFMT or reasonable proxy or (2) Catch > OFL;
Maximum Fishing Mortality Threshold (MFMT)	The level of fishing mortality (F), on an annual basis, above which overfishing is occurring
Overfishing Limit (OFL)	Annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance expressed in terms of numbers or weight of fish

Table 2-1 Required reference points for stocks in the fishery.

Minimum Stock Size Threshold (MSST)	The level of biomass below which the stock or stock complex is considered overfished
Acceptable Biological Catch (ABC) / ABC Control Rule *600.310(f)*	ABC is a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty and should be based on the ABC control rule. ABC control rule means a specified approach to setting ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. Councils should develop a process for receiving scientific information and advice used to establish ABC including the body that will apply the ABC control rule (calculate the ABC) and the review process. The SSC must recommend the ABC to the Council.
Annual Catch Limit (ACL); mechanisms for specifying ACLs *600.310(f)*	The level of annual catch of a stock or stock complex that serves as the basis for invoking AMs. ACL cannot exceed ABC but may be divided into sector-specific ACLs.
Accountability Measures (AMs) *600.310(g)*	Management controls to prevent ACLs from being exceeded and to correct or mitigate overages of the ACL if they occur. There are two categories: inseason AMs and AMs for when the ACL is exceeded.
Annual Catch Target (ACT) (optional) *600.310(f)(6) & (g)(2)*	An optional AM. An amount of annual catch that is the management target of the fishery, and accounts for management uncertainty in controlling catch at or below the ACL.

Under the CPS FMP, an MSY control rule is defined to be a harvest strategy that provides biomass levels at least as high as the F_{MSY} (fishing mortality rate that maximizes catch biomass in the long term) approach while also providing relatively high and consistent levels of catch.

The use of an MSY control rule for actively managed stocks is designed to provide managers with a tool for setting and adjusting harvest levels on a periodic basis, while preventing overfishing and overfished stock conditions. All actively managed stocks must have stock-specific MSY control rules, a definition of overfishing, and a definition of an overfished stock (see Table 2-2).

The main use of an MSY control rule for a monitored stock is to help gauge the need for active management. MSY control rules and harvest policies for monitored CPS stocks may be more generic and simpler than those used for actively managed stocks. Under the FMP, any stock supporting catches approaching the ABC or MSY levels should be actively managed unless there is too little information or other practical problems.

Table 2-2. **Existing** CPS FMP specifications for Status Determination Criteria

	MSY	**MFMT**	**MSST**	**ABC (serves as OFL)**	**OY**
Pacific sardine	MSY control rule	Catch exceeding ABC	50,000 mt	Equal to MSY control rule calculation	Currently at or below MSY
Pacific (chub) mackerel	MSY control rule	Catch exceeding ABC	18,200 mt	Equal to MSY control rule calculation	Currently at or below MSY
N. anchovy Northern Subpop.	Unknown	Catch exceeding ABC	Not specified	25% of MSY Catch level (unknown)	Unknown
N. anchovy Southern Subpop.	Estimated at 123,000 mt	Catch exceeding ABC	Not specified	25% of estimated MSY or 31,000mt 26,000mt in U.S.	26,000mt
Market squid	F_{MSY} resulting in egg escape-ment $\geq$ 30%	F_{MSY} resulting in egg escape-ment $\leq$ 30%	Not specified	F_{MSY} resulting in egg escape-ment $\geq$ 30% mt	107,047mt
Jack mackerel	Age/Area based potential yield	Catch exceeding ABC	Not specified	48,000mt 31,000mt in U.S.	31,000mt
Krill or Euphausiids	Not specified	Catch over de minimus or trace amounts	Not specified	Not specified	0

As noted above, the reference points in table 2-1 must be specified for all of the species in the fishery except that market squid is exempt from ACL and AM requirements. Current reference points for monitored species are designed to trigger active management well before a stock experiences overfishing or is designated as overfished. Under active management, stock status would be assessed, reference points addressed, and management measures implemented as necessary. To comply with the revised NS1 guidelines, all existing reference points for stocks in the fishery will be reviewed and developed where currently insufficient (e.g., MSST for monitored stocks and an MSY proxy for the northern subpopulation of northern anchovy).

The default MSY control rule for monitored stocks sets the ABC at 25 percent of estimated MSY levels making it more conservative than the MSY control rules for actively managed species for which more data and more current assessments exist. This approach is similar to "tiered" approaches used in North Pacific Fishery Management Council FMPs and the Council's Groundfish FMP where harvest specifications and reference points differ for categories or tiers of species based on the amount and quality of data that is available for management. This approach could be explored further for CPS with the development of a tier system for determining alternative proxy reference points for these species according to what is known about their current status, productivity, and vulnerability to fishing pressure.

2.2 Overfishing Levels and Acceptable Biological Catch

The NS1 guidelines envision OFL to correspond to the best available estimate of MSY stock size. The guidelines also call for an assessment of scientific uncertainty in the estimate of MSY and the development of an ABC control rule that addresses scientific uncertainty and management risk when setting an ABC level below the OFL.

The CPSMT has proposed that the MSY control rules for actively managed species could serve as an adequate buffer to account for scientific uncertainty as it explicitly and significantly reduces harvest as biomass approaches an overfished condition, or in the case of Pacific sardine as biomass approaches a level three times the current designation of MSST. The Scientific and Statistical Committee (SSC) has not supported this approach stating that the MSY control rules "were selected to maximize long-term yield given variation in recruitment (an MSY control rule)."

The harvest control rule for actively managed species.

HARVEST = (BIOMASS-CUTOFF) x FRACTION x DISTRIBUTION

where:

FRACTION is the fraction of the BIOMASS above the CUTOFF value that can be harvested, for Pacific sardine this is an environmental driven component that is based on sea surface temperature.

DISTRIBUTION is the percentage of the stock assumed to be in U.S. waters.

CUTOFF is the estimated biomass below which directed harvest is not allowed. If the CUTOFF is greater than zero, then the harvest rate (H/BIOMASS) declines as biomass declines. By the time BIOMASS falls as low as CUTOFF, the harvest rate is reduced to zero. The CUTOFF provides a buffer for the spawning stock that is protected from fishing and available for use in rebuilding if a stock becomes overfished. CUTOFF may alone serve as an adequate buffer between OFL and ABC to prevent overfishing while providing long-term yield.

Determining the degree to which the provisions in the existing harvest control rules adequately buffer CPS stocks from overfishing will be a critical step in ensuring the amended CPS FMP meets the new NS1 requirements. The SSC Groundfish and CPS Subcommittees are working on the development of a framework for factoring scientific uncertainty into harvest control rules. They have recommended quantifying assessment variability for stocks with a history of multiple assessments as a basis for evaluating the size of a scientific uncertainty buffer (i.e., the difference in yield between the OFL and the ABC) and the risk of overfishing the stock. SSC recommendations will be brought forward at the November meeting.

To illustrate the role of the CUTOFF values, the role of scientific uncertainty, and the application of management risk in choosing an ABC control rule, the Council may recommend a range of alternatives that compares simulated long-term stock status and management performance under the existing control rules, under an SSC recommended ABC control rule that accounts for scientific uncertainty, or a combination of both. The Council reviewed a similar simulation approach when choosing the existing control rules and a contemporary simulation could be informative in the development of an ABC control rule. Simulations that include an analysis of

various harvest policies and their potential impact on the ecological roles of forage species would also be valuable to the development of alternative harvest control rules.

2.3 Annual Catch Limits and Accountability Measures

Annual catch limits serve the basis for invoking accountability measures and corresponds to OY. In the CPS framework for actively managed species this is often referred to as the harvest guideline (HG) for the directed fishery. ACLs may be set at the ABC level or below the ABC level for OY considerations (social, economic, or ecological, factors). For the relatively data-poor stocks in the monitored category, the Council could recommend a tiered system (see Section 2.0) for the development of reference points including ACLs for these species, which in most cases have not been assessed in recent years and are unlikely to be assessed in time for this amendment.

Sector Specific ACLs

The NS1 guidelines allow for sector specific ACLs and recommend their use if a stock is targeted by multiple fishery sectors, each with their own level of monitoring and inseason management. The California live bait fishery may be a candidate for a sector specific portion of the overall annual catch limits. This fishery is small but important and supplies bait fish primarily for recreational vessels. The fishery is not actively monitored or managed inseason, but landings are estimated at the end of the year. The Council may wish to include an alternative that establishes a sector-specific ACL and corresponding ACT for the live bait fishery that takes this less intensive management strategy into consideration. Another alternative could be to consider the small landings in the live bait fishery as an AM.

Under the current management regime, the Council has been in the practice of setting aside a portion of the Pacific mackerel and the Pacific sardine HGs for the purpose of protecting other CPS fisheries that may land these species incidentally after their respective directed fisheries close. The Council may recommend an alternative that considers the incidental fishery as a sector and sets a specific ACL for this purpose. Another approach that would be within the scope of the existing management strategies would be to set aside a portion of an ACT to cover incidental landings.

In 2009, the Council and NMFS set aside a portion of the Pacific sardine HG to cover fish landed during an industry-sponsored aerial research project under an exempted fishing permit (EFP). This too may be an area where the Council might explore the use of a sector specific ACL focused on research applications and/or EFPs. As with incidental set-asides, an alternate approach could be to set aside a portion of the ACT to cover planned research.

2.4 Annual Catch Targets

Annual catch targets are optional reference points designed to account for management uncertainty when setting target levels below ACLs. Good inseason management of CPS fisheries exists through catch monitoring, and the fishery can be closed quickly by NMFS through an automatic regulatory action. However, several aspects of CPS fisheries warrant the consideration of ACTs.

The HG for the directed Pacific sardine fishery has been declining in recent years and has created a derby-style fishery. This has increased the rate at which the seasonal HGs are taken and added additional management uncertainty. The Council has recently begun setting aside portions of the

Pacific sardine and Pacific mackerel HGs to account for "management uncertainty" and this proactive approach could be included as an ACT alternative for Amendment 13.

Under the NS1 guidelines catch is defined to include mortality associated with fishery discards. Discards do occur in CPS fisheries when a vessel captures more fish than can be brought onboard or when a school of an undesirable species composition is captured and then released. There is limited observer and logbook data available to enumerate the mortality associated with these discards. To meet the NS1 requirements and account for total mortality in the catch, a consideration of discard mortality when setting an ACT could be analyzed as an alternative.

2.5 Additional Accountability Measures

As touched on in previous sections, several preseason and inseason accountability measure exist in the CPS fisheries. In March, under the scoping period for this amendment, the CPSMT and the CPSAS recommended several ways to improve the inseason monitoring and management of CPS fisheries. Recommended actions for consideration include:

- Improving inseason management flexibility to open or close the fishery faster by revising reporting requirements (e.g., processors faxing information daily), setting daily trip limits, and opened/closed days, and
- Exploring a shift in the start date of the Pacific sardine fishery from January 1 to July 1 to allow additional time for stock assessment work and the development of new fishery-independent indices of abundance.

Council direction at the time was to focus efforts on those aspects of Amendment 13 that are required to be in place by 2011 and only address these improvements to the FMP as time and workload allows. The CPSMT will continue to proceed with this approach unless Council guidance on this matter changes at the November meeting.

3.0 PROPOSED AMENDMENT SCHEDULE

No CPS FMP stocks are subject to overfishing or are designated as overfished. Therefore, implementation of an amended FMP and fishery regulations is targeted for the 2011 fishing year. The Council is scheduled to review a range of amendment alternatives and adopt a preliminary preferred alternative at its March 2010 meeting. Final Council action is scheduled for the June 2010 Council meeting to allow for full implementation by 2011.

Table 3-1Proposed Timeline for CPS FMP Amendment 13

Stage	Date
Council Announces Scoping -Initiates FMP Amendments	March 2009
Potential alternatives for draft FMP Amendment	November 2009
Adopt Preliminary Preferred Alternative for Public Review	March 2010
Final Council Action	June 2010
Secretarial Approval	January 2011
Changes in Existing Fishing Regulations	2011

Agenda Item I.2.b
Supplemental CPSAS Report
November 2009

COASTAL PELAGIC SPECIES ADVISORY SUBPANEL REPORT ON FISHERY MANAGEMENT PLAN AMENDMENT 13: ANNUAL CATCH LIMITS AND ACCOUNTABILITY

The Coastal Pelagic Species Advisory Subpanel (CPSAS) heard a presentation from Mr. Mike Burner on Amendment 13 to the Coastal Pelagic Species Fishery Management Plan: National Standard 1 Guidelines, Annual Catch Limits and Accountability Measures: Summary of Issues and Potential Alternatives. The CPSAS engaged in preliminary discussion of issues outlined in Supplemental Attachment 1 and plans to meet early in 2010 to refine alternatives for inclusion. The Subpanel looks forward to providing more detailed comments as the process moves forward.

At this time, the CPSAS recommends that the analysis of alternatives include consideration of accountability measures that include increased regulatory flexibility for the SW Region to make timely inseason management decisions. Actions for consideration could include:

- Improving inseason management flexibility to open or close the fishery more quickly through augmented reporting requirements (e.g., processors faxing information daily), or other actions that could set daily trip limits, or closure days.
- Exploring a shift in the start date of the Pacific sardine fishery from January 1 to July 1 to allow additional time for stock assessment work and the development of new fishery-independent indices of abundance.

We also recommend the analysis include consideration of annual catch targets, in addition to annual catch limits.

PFMC
11/03/09

COASTAL PELAGIC SPECIES MANAGEMENT TEAM REPORT ON FISHERY MANAGEMENT PLAN AMENDMENT 13: ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES

The Coastal Pelagic Species Management Team (CPSMT) is seeking guidance from the Council regarding developing alternatives Amendment 13 to bring the Fisheries Management Plan (FMP) into compliance with National Standard 1 (NS1) guidelines of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) of 2006. The discussion points are described in Supplemental Attachment 1 for Agenda Item I.2.a:

- Classification of Stocks
  - Stocks "in the Fishery"
    - Alternatives for Krill?
  - Ecosystem Component Species
    - Add non-target forage species?
  - Federal vs. State Management
    - Develop alternatives or not?
  - Stock Classification Alternatives
- Stocks Status Determination Criteria and Reference Points
  - Overfishing Levels and Acceptable Biological Catch
  - Annual Catch Limits and Accountability Measures
    - Sector allocation (eg. sardine live bait) vs. management buffer?
  - Annual Catch Targets
  - Additional Accountability Measures
- Proposed Amendment Schedule

The CPSMT notes that the CPS FMP, through its harvest control rules, recognizes the cyclical nature of CPS populations, buffers against overfishing, and explicitly reduces harvest as biomass declines. The CPSMT is reexamining the current harvest control rules for CPS in terms of the new terminology and definitions in the NS1 guidelines to identify any gaps and/or deficiencies. The CPSMT also plans to conduct an explicit retrospective analysis of annual stock assessment output and resultant harvest specifications to examine scientific uncertainty among assessments for actively managed species. Options for establishing required reference points and accountability measures will be presented in March.

The CPSMT also is concerned that all CPS species are trans-boundary stocks and are not under international management. Although management measures under this amendment only target U.S. fisheries, monitoring total fishing mortality for these stocks continues to be a major concern.

PFMC
11/03/09

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON FISHERY PLAN AMENDMENT 13: ANNUAL CATCH LIMITS AND ACCOUNTABILITY MEASURES

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA) established several new fishery management provisions pertaining to National Standard 1 (NS1) to end overfishing and account for scientific uncertainty in stock assessment. The new guidelines require that all managed and monitored stocks have identified overfishing levels (OFLs), annual catch limits (ACLs), annual catch targets (ACTs), and accountability measures (AMs). These stipulations of the MSRA are required to be implemented by 2011 for most species. The SSC has discussed in general terms the new requirements over the past year and in the context of each Fishery Management Plan. The Scientific and Statistical Committee (SSC) reviewed a report developed by the Coastal Pelagics Species Management Team (CPSMT) that includes recommendations to bring the CPS Fishery Management Plan (FMP) into compliance with the reauthorized act through FMP Amendment 13.

The SSC discussed two primary issues: (1) quantification of scientific uncertainty within and among stock assessments to determine Allowable Biological Catches (ABCs) and (2) the CPSMT's recommendation to allow the current harvest control rule, which includes a buffer for uncertainty and ecosystem considerations ("CUTOFF"), to remain unchanged relative to new guidelines for ABC determination. ACLs will be needed for all species that are categorized as managed or monitored under the current FMP, except market squid (1 year lifespan) and krill, a proposed Ecosystem Component (EC) species. Other EC bycatch species may need to be identified, as noted by the CPSMT.

Under the new guidelines, ABC is determined by assigning a buffer to the OFL to account for scientific uncertainty. Scientific uncertainty was characterized by comparing stock assessments to see how biomass estimates vary among assessments for groundfish and CPS species. This analysis provides an evaluation of uncertainty by calculating ratios of all pairs of biomass estimates in a year, for the most recent 20 years of data. The analysis also provides an estimate of "within" assessment variability as the variance in the terminal biomass estimate from each assessment. Within assessment variance was generally lower than the "among" assessment variability, indicating that changes in model structure, assumptions, and data inputs have a larger effect on biomass uncertainty than uncertainty in the data inputs themselves. For CPS, the uncertainty analysis included three assessments for sardine and four assessments for Pacific mackerel. Combined, the analysis provided a standard deviation of 0.46 (sardine = 0.40, mackerel = 0.69) among assessments, and within assessment coefficients of variation of 0.41 for sardine and 0.25 for Pacific mackerel.

The CPSMT proposed a "no change" option for the harvest control rule, assuming that the current control rule sufficiently accounts for scientific uncertainty through the "CUTOFF" of 150,000 mt. The SSC notes that because this value is a constant, it becomes a smaller buffer

when stock size is large, and so has diminishing effects as a buffer as stock size increases. A proportional buffer that explicitly accounts for scientific uncertainty is more likely to meet the needs stipulated in the new MSRA guidelines and provides an incentive to improve data collection.

In addition to the choice of how to compute ABCs (and hence ACLs) for assessed species such as Pacific sardine and Pacific mackerel, there is a need to be determine how ABCs and ACLs will be computed for monitored species. Also, it is necessary for the Council to specify P*, i.e., the probability of overfishing, for each species before ABCs can be recommended by the SSC. The SSC notes that the value of P* is a policy choice with a maximum upper limit of 0.5, in which case overfishing due to scientific uncertainty would be expected to occur in half of all years if the catch equals the ABC.

The SSC concluded that it will be necessary to hold a joint meeting of the SSC CPS Subcommittee and the CPSMT if these outstanding issues are to be addressed before the March 2010 Council meeting. The SSC also recommends that this meeting take place before the proposed joint meeting of the GMT and SSC Groundfish Subcommittee (see item G.5 Supplemental SSC statement).

PFMC
11/03/09

Memo To:
Pacific Fishery Management Council –
Mr. Dave Ortmann, Chair & Dr. Donald McIsaac, Executive Director & Council Members

From: Karen Carlson, Graduate Student, Master of Public Policy - California State University, Monterey Bay, Department of Health, Human Services & Public Policy and the Panetta Institute.

Re: Pacific Sardine (*Sardinops sagax*) Federal Management Alternatives

Karen M. Carlson
208 Roosevelt Terrace
Santa Cruz, CA 95060

Problem

The onset of "derby" competition in the Pacific sardine (*Sardinops sagax*) fishery is threatening the viability of the existing high-volume, low-value sardine fishery and preventing development of a lower-volume, higher-value domestic fishery.

Background

The Pacific sardine (*Sardinops sagax*) is a small schooling fish with populations extending from Baja California in Mexico to British Columbia. Described as a coastal pelagic fish due to its movement throughout a large range, the sardine is the largest volume fishery in the Western Hemisphere. Well-documented population appearances and disappearances show that Pacific sardines respond to temperature cycles in the California current. Recognizing these dynamic natural fluctuations, National Marine Fisheries Service scientists have developed a stringent Harvest Guideline formula. After calculating the annual biomass, they subtract 150,000 metric tons called a "cutoff". A sliding scale rate of 5-15% based on water temperatures in southern California then determines the remaining biomass allowed for harvest. These regulations are meant to reserve over 85% of the estimated biomass as forage for marine predators.

Fishery

Sardines are currently a high-volume export fishery. The U.S. catch over the last ten years, 2000-2009 averaged 114,000 mt or 228 million pounds. An average price of 6 cents per pound yielded $13.6 million dollars. A 1 cent increase in the price per pound would raise the catch revenue $2.28 million dollars. Pacific sardines are processed whole in frozen blocks for the Australian tuna industry and Japanese longline-fishing. Fish for human consumption are also exported to foreign processors. Domestic Sardine canneries have closed, unable to compete with canneries in Mexico, Ecuador, Peru and Morocco.

American consumers are now learning that the fast growing, oily sardine is superior in health value compared to larger, long-lived highly migratory fish such as tuna and swordfish which tend to concentrate unhealthy toxins. The U.S. Pacific sardine fishery is recognized for its sustainable fishing practices. It is listed in consumer seafood guides as a "best-choice-to-eat".

Regulation

The year-round California (CA) fishery has been regulated since the 1940's when about 200 vessels participated in the fishery. In 1999, the Pacific Fishery Management Council (PFMC)

assumed management of the CA sardine fishery. To prevent overcapitalization, a maximum fishing capacity established in 2003 reduced the fleet to 65 "limited access" permits south of 39º N latitude (Point Arena, CA). These purse-seine (a type of net) fishermen are diversified in the coastal pelagic species (CPS) they target, switching to higher value squid, and other pelagic finfish when sardines are not abundant at the size and oil content demanded by overseas markets. Due to global market demand and competition, the annual allocation was under-fished between 1999 and 2007.

Recovered sardine populations and under-fishing stimulated a northern re-entry into the fishery. Beginning in 2001, the PFMC allowed up to 40 new "open access" experimental sardine fishery permits in Oregon and Washington. These states were allowed to set their own policies for limited entry permits and were initially allocated a separate annual harvest guideline.

Amendment 11 was established by PFMC in 2004 for the five-year period 2005-09 "to achieve optimal utilization of the Pacific sardine resource and equitable allocation of the harvest opportunity for Pacific Sardine" (70 FR 69502). The Harvest Guidelines (HG) formula estimates the population annually through marine science temperature measurements and egg counts at the southern range of the fishery where the greatest spawning activity was believed to occur.

For the first three years, 2005 through 2007, HG set under Amendment 11 did not restrict the fishermen, allowing market forces to work relatively freely. Fishermen landed an average 114,000 mt (81%) of a 141,000 mt average allocation during this 5-year regulatory period. The final two years, 2008 and 2009, the formula calculated a decline in the biomass of sardines, resulting in a drop in HG to 89,093 mt in 2008 and to 66,932 mt in 2009.

Management Alternatives for the Future

Alternative One: Status Quo

•Management - Continue "Command and Control" Federal Management methodology.
•Permits - Continue to allow "open access" permits in the PNW and "limited access" in CA.
•Quota - Use the same southern range: temperature studies, annual egg surveys and HG formula to forecast the quota for the next year. Use the tri-annual regional percentage format: 35% Jan through June, 40% July through Sept 14 and 25% Sept 15 through Dec 31.
•Result – Water temperatures and timing of egg surveys do not account for strength of fish populations observed in central California and the PNW. If Quotas below 100,000 mt persist, the

"race to fish" will continue with early tri-annual closures. Competition between CA and PNW will intensify. Declining revenues provide disincentive to risk investment into lower volume domestic market innovations. Fishing effort will shift to more profitable CPS.

Alternative Two: Domestic Food Market Incentive and Permit Equity

•Management - Continue status quo "Command and Control" Federal Management

•Permits - Include PNW in "limited access" permit rules.

•Quota – Continue Amendment 11 annual Harvest Guideline allocation formula. Apply the 35/40/25 tri-annual allocation split for bulk export markets only. Allow 365-day fishing access for domestic food markets.

•Result – Progress is made toward permit equity between CA and PNW. A minor change in fishery access by market could be included in the 2010 guideline. A method to track the domestic market sardines similar to tracking the allowed set aside for bycatch can be implemented during tri-annual fishery closures. Established fresh and processed fish markets as well as new market testing and collaborative demonstration projects will not be affected by early season closures unless the annual HG is met. These actions will support innovative research and development experiments and sustain local efforts toward a higher value fishery.

Alternative Three: Community Property Rights (CPR)

•Management – PFMC would oversee NMFS verified fishery data gathering activities conducted by area communities and hired marine scientists. Fishery property rights management is transferred to the area level as community-based decision-making. The community areas are determined by geographical/ecological/political splits, Southern California and Northern California (SCA and NCA) and PNW. Separate fishery population assessments and harvest limits are established for each independent community area.

•Permits – Permit decisions inclusive of socio-economic considerations are made by each area and adapted to sardine biomass changes.

•Quota - Each area receives a separate allocation, which includes visual and physical population data from the specific area. This data collected by the fishing community, provides a secondary index increasing the accuracy of baseline southern range biomass forecasts.

•Result – Race to fish quota and permit competition is eliminated between California and PNW. Fishermen would fish according to the weather and conditions in their community area. SCA and NCA would continue a year-round fishery strategy diversified between coastal pelagic

species. PNW would fish during summer and early fall when their fish are the largest and weather is best. Communities would be vested in improving their methods to set permit access and data gathering to maintain a healthy fishery population and sustainable fishing community in their area. Less time and fewer economic resources will be spent competing for resources with fishermen outside the area.

Alternative Four: Individual Transferable Quota (ITQ)

•Management - Implement a limited access privilege program (LAPP), Individual Transferable Quota (ITQ) system. PFMC would develop for NMFS approval new methods to establish and track individual permit landings and limits.

•Permits - Private property rights are granted through allocation of a percentage of the Total Allowable Catch (TAC) per permit. Permit holders have rights to sell the permit share.

•Quota - Historical catch data per permit holder is measured and a percentage determined. Annual maximum sustainable yield and HG calculate the TAC. Annual ITQ shares of the fishery harvest are allocated by permit percentage.

•Result – The race to fish is eliminated. If pre-1999 historical data is used, CA will receive 100% of the shares. If 2006/07 data is used, PNW will receive approximately half of the share percentage for 10% of the active fishery participants. Expanded management structure is needed to track individual catch share limits. Fluctuating sardine populations and cyclic declines make sustainable private property rights impossible to guarantee. If low TAC persists, smaller shareholders will be motivated to sell, causing industry consolidation.

Recommendation

Pacific sardine management, NMFS and PFMC are beginning to lay the groundwork for Long-Term Amendment 13. In the meantime, short-term policy adjustments can be made for the 2010 season. Alternative Two: Domestic Food Market Incentive is a viable short-term plan to sustain availability for existing low-volume domestic food markets and preserve expansion opportunities. The fishing industry is likely to support a domestic market incentive if their larger export markets are not threatened. If the landed value were to reach that of market squid in 2009 (34 cents/lb), fishermen would receive approximately $2.2 million from only 5% (3,300 mt) of the 65,723 mt HG2009 compared to $8 million at 6 cents/lb for 100% of the HG2009. A higher-value domestic market for sardines will stimulate the fishing industry to expand their local

seafood offering and diversify their products leading to greater prosperity with lower-volume landings.

In the short-term, a "limited access" permit system for both CA and the PNW is more equitable in a declining fishery by removing existing discrepancies between federal and state laws. In the long-term, permit access to the fishery can be re-assessed. Implementation of Alternative Three, Community Property Rights in the next long-term plan will allow permit rights based on sardine population expansion and retraction in each area rather than across the entire fishery.

As the fishery recovered, it expanded from the south throughout its central and northern ranges. Known as a prolific spawner, the Pacific sardine is now capable of laying eggs from Mexico to British Columbia. Biomass estimates reached through traditional egg surveys in the southern range do not support reports by fishermen of large sardine schools off the coasts of central and northern California, Oregon and Washington. In 2009, PNW and NCA were granted a portion of the 1,200 mt research set aside allocated in the HG to develop a methodology for visually and physically measuring the expanded Pacific sardine population off the coasts of NCA and PNW. There is support among the PFMC subcommittees and NMFS to test, verify and incorporate this type of secondary index into the HG. These advances will build trust among stakeholders and open the opportunity to implement a new long-term management strategy based on geographical/ecological/political areas such as Community Property Rights. The PFMC has the jurisdiction to expand our understanding of the dynamic Pacific sardine population and recommend regulations to strengthen a heritage fishery with deep local community dependence and individual character.

NS1 Issues & Potential Alternatives in Amendment 13 to CPS FMP | **MFCN**

November 3, 2009

Bruce Stedman, Executive Director, Marine Fish Conservation Network
MFCN is the largest national coalition dedicated to promoting the long-term sustainability of marine fish and fisheries. We represent almost 200 member groups, including environmental organizations, commercial and recreational fishing groups, aquaria and marine science organizations,

General
In general, the Supplemental Attachment 1 (Agenda Item I.2.a) is responsive to many of the issues MFCN has raised in comments delivered at the March, June and September Council meetings. However, a number of major issues are missing and have not been addressed; we think these must be included in the analysis of alternatives:

- Settle the confusion about the role of CUTOFF in the control rule
- Address the efficacy of the environment-indexed F_{MSY} exploitation FRACTION in the existing CPS control rule
- Address spatial ***and temporal*** distribution of ABC and/or ACL explicitly in the specification process
- Specify the method of accounting for bycatch and discards in ACL

In addition, we want to strongly emphasize the need to clearly specify the mechanism(s) in the ABC and ACL (or ACT) control rules that account for predator needs. Specific mechanisms for setting ACLs to achieve OY should be developed with the goal of maintaining significantly higher biomass than the conventional single-species target biomass of B_{MSY}. The National Research Council's Committee on Ecosystem Effects of Fishing, Phase II concluded in 2006 that if the U.S. is to manage fisheries within an ecosystem context the following will all have to be explicitly accounted for with developing fishery harvest strategies: food web interactions, life-history strategies, and trophic effects. There must also be adequate forage to support rebuilding of overfished stocks.

I have passed out a figure from our August 27, 2009 letter to you on this subject to illustrate a more conservative forage fish "F_{FORAGE}" to compare with a single species strategy.

I want to point to just a few other specifics from the Supplemental Attachment

Regarding Classification of Stocks in the Fishery

- We urge the Council to retain the status of krill as a "prohibited harvest" species in the FMP. The Council should consider establishing "prohibited species" category within the FMP separate from the EC category.
- We also urge the Council to conduct a new review of bycatch in CPS fisheries.

Ecosystem Component Species

- The Council should strongly consider the addition of forage species not currently in the FMP as EC species: e.g., Pacific saury, myctophids, Pacific sand lance, white bait smelt, and other smelts. The intent should be to monitor these species, not to develop fisheries for them.

Federal versus State Management

- Council should not remove market squid and jack mackerel from the CPS FMP at this time, pending more analysis. If the Council considers placing market squid in the E-FMP, it should not be done until the E-FMP is fully in place.

Stock Classification Alternatives

- Council could and should include: actively managed ('in the fishery'), EC species, and "prohibited" species.
- The EC species category should be included such that it addresses bycatch species that qualify for EC designation, and could include additional forage species for monitoring purposes.

ABC control rule: design

- We support the recommendation to evaluate a range of alternative control rules and management under existing controls to compare the resulting catch levels and make a comparative evaluation of each approach.
- The Council should develop a tiered ABC control rule that allows the SSC to make numerical recommendations for ABC across many different data quality situations ranging from relatively data-rich and assessed to data-poor and unassessed. The three-tiered control rule in the groundfish FMP provides a simplified example, but the Council should consider an approach that incorporates consideration of whether or not the stock is assessed, the status of the stock relative to target biomass (i.e., $B > B_{target}$, *or* $B < B_{target}$), and a productivity-susceptibility analysis (PSA).

Again, we urge that the ABC control rule should explicitly account for uncertainty in predation and needs of predators, including needs of predator fish stocks in rebuilding programs.

Thank you for allowing us to testify today; the Network is committed to working with the Council as you develop each of the steps toward an ecosystem-based fisheries management system.

I.2.C.
Supplemental Public Comment 3

Memo To:
Pacific Fishery Management Council –
Mr. Dave Ortmann, Chair & Dr. Donald McIsaac, Executive Director & Council Members

From: Karen Carlson; Graduate Student, Master of Public Policy - California State University, Monterey Bay, Department of Health, Human Services & Public Policy and the Panetta Institute, May 2009.
Executive Director, Friends of Moss Landing Marine Laboratories

Re: Pacific Sardine (*Sardinops sagax*) Federal Management Alternatives

Karen M. Carlson
208 Roosevelt Terrace
Santa Cruz, CA 95060



Problem

The onset of "derby" competition in the Pacific sardine (*Sardinops sagax*) fishery is threatening the viability of the existing high-volume, low-value sardine fishery and preventing development of a lower-volume, higher-value domestic fishery.

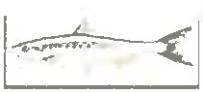
Background

The Pacific sardine (*Sardinops sagax*) is a small schooling fish with populations extending from Baja California in Mexico to British Columbia. Described as a coastal pelagic fish due to its movement throughout a large range, the sardine is the largest volume fishery in the Western Hemisphere. Well-documented population appearances and disappearances show that Pacific sardines respond to temperature cycles in the California current. Recognizing these dynamic natural fluctuations, National Marine Fisheries Service scientists have developed a stringent Harvest Guideline formula. After calculating the annual biomass, they subtract 150,000 metric tons called a "cutoff". A sliding scale rate of 5-15% based on water temperatures in southern California then determines the remaining biomass allowed for harvest. These regulations are meant to reserve over 85% of the estimated biomass as forage for marine predators.

Fishery

Sardines are currently a high-volume export fishery. The U.S. catch over the last ten years, 2000-2009 averaged 114,000 mt or 228 million pounds. An average price of 6 cents per pound yielded $13.6 million dollars. A 1 cent increase in the price per pound would raise the catch revenue $2.28 million dollars. Pacific sardines are processed whole in frozen blocks for the Australian tuna industry and Japanese longline-fishing. Fish for human consumption are also exported to foreign processors. Domestic Sardine canneries have closed, unable to compete with canneries in Mexico, Ecuador, Peru and Morocco.

American consumers are now learning that the fast growing, oily sardine is superior in health value compared to larger, long-lived highly migratory fish such as tuna and swordfish which tend to concentrate unhealthy toxins. The U.S. Pacific sardine fishery is recognized for its sustainable fishing practices. It is listed in consumer seafood guides as a "best-choice-to-eat".



Regulation

The year-round California (CA) fishery has been regulated since the 1940's when about 200 vessels participated in the fishery. In 1999, the Pacific Fishery Management Council (PFMC) assumed management of the CA sardine fishery. To prevent overcapitalization, a maximum fishing capacity established in 2003 reduced the fleet to 65 "limited access" permits south of 39° N latitude (Point Arena, CA). These purse-seine (a type of net) fishermen are diversified in the coastal pelagic species (CPS) they target, switching to higher value squid, and other pelagic finfish when sardines are not abundant at the size and oil content demanded by overseas markets. Due to global market demand and competition, the annual allocation was under-fished between 1999 and 2007.

Recovered sardine populations and under-fishing stimulated a northern re-entry into the fishery. Beginning in 2001, the PFMC allowed up to 40 new "open access" experimental sardine fishery permits in Oregon and Washington. These states were allowed to set their own policies for limited entry permits and were initially allocated a separate annual harvest guideline.

Amendment 11 was established by PFMC in 2004 for the five-year period 2005-09 "to achieve optimal utilization of the Pacific sardine resource and equitable allocation of the harvest opportunity for Pacific Sardine" (70 FR 69502). The Harvest Guidelines (HG) formula estimates the population annually through marine science temperature measurements and egg counts at the southern range of the fishery where the greatest spawning activity was believed to occur.

For the first three years, 2005 through 2007, HG set under Amendment 11 did not restrict the fishermen, allowing market forces to work relatively freely. Fishermen landed an average 114,000 mt (81%) of a 141,000 mt average allocation during this 5-year regulatory period. The final two years, 2008 and 2009, the formula calculated a decline in the biomass of sardines, resulting in a drop in HG to 89,093 mt in 2008 and to 66,932 mt in 2009.



Management Alternatives for the Future

Alternative One: Status Quo

•Management - Continue "Command and Control" Federal Management methodology.

•Permits - Continue to allow "open access" permits in the PNW and "limited access" in CA.

•Quota - Use the same southern range: temperature studies, annual egg surveys and HG formula to forecast the quota for the next year. Use the tri-annual regional percentage format: 35% Jan through June, 40% July through Sept 14 and 25% Sept 15 through Dec 31.

•Result – Water temperatures and timing of egg surveys do not account for strength of fish populations observed in central California and the PNW. If Quotas below 100,000 mt persist, the "race to fish" will continue with early tri-annual closures. Competition between CA and PNW will intensify. Declining revenues provide disincentive to risk investment into lower volume domestic market innovations. Fishing effort will shift to more profitable CPS.

Alternative Two: Domestic Food Market Incentive and Permit Equity

•Management - Continue status quo "Command and Control" Federal Management

•Permits - Include PNW in "limited access" permit rules.

•Quota – Continue Amendment 11 annual Harvest Guideline allocation formula. Apply the 35/40/25 tri-annual allocation split for bulk export markets only. Allow 365-day fishing access for domestic food markets.

•Result – Progress is made toward permit equity between CA and PNW. A minor change in fishery access by market could be included in the 2010 guideline. A method to track the domestic market sardines similar to tracking the allowed set aside for bycatch can be implemented during tri-annual fishery closures. Established fresh and processed fish markets as well as new market testing and collaborative demonstration projects will not be affected by early season closures unless the annual HG is met. These actions will support innovative research and development experiments and sustain local efforts toward a higher value fishery.

Alternative Three: Community Property Rights (CPR)

•Management – PFMC would oversee NMFS verified fishery data gathering activities conducted by area communities and hired marine scientists. Fishery property rights management is transferred to the area level as community-based decision-making. The community areas are determined by geographical/ecological/political splits, Southern California and Northern



California (SCA and NCA) and PNW. Separate fishery population assessments and harvest limits are established for each independent community area.

•Permits – Permit decisions inclusive of socio-economic considerations are made by each area and adapted to sardine biomass changes.

•Quota - Each area receives a separate allocation, which includes visual and physical population data from the specific area. This data collected by the fishing community, provides a secondary index increasing the accuracy of baseline southern range biomass forecasts.

•Result – Race to fish quota and permit competition is eliminated between California and PNW. Fishermen would fish according to the weather and conditions in their community area. SCA and NCA would continue a year-round fishery strategy diversified between coastal pelagic species. PNW would fish during summer and early fall when their fish are the largest and weather is best. Communities would be vested in improving their methods to set permit access and data gathering to maintain a healthy fishery population and sustainable fishing community in their area. Less time and fewer economic resources will be spent competing for resources with fishermen outside the area.

Alternative Four: Individual Transferable Quota (ITQ)

•Management - Implement a limited access privilege program (LAPP), Individual Transferable Quota (ITQ) system. PFMC would develop for NMFS approval new methods to establish and track individual permit landings and limits.

•Permits - Private property rights are granted through allocation of a percentage of the Total Allowable Catch (TAC) per permit. Permit holders have rights to sell the permit share.

•Quota - Historical catch data per permit holder is measured and a percentage determined. Annual maximum sustainable yield and HG calculate the TAC. Annual ITQ shares of the fishery harvest are allocated by permit percentage.

•Result – The race to fish is eliminated. If pre-1999 historical data is used, CA will receive 100% of the shares. If 2006/07 data is used, PNW will receive approximately half of the share percentage for 10% of the active fishery participants. Expanded management structure is needed to track individual catch share limits. Fluctuating sardine populations and cyclic declines make sustainable private property rights impossible to guarantee. If low TAC persists, smaller shareholders will be motivated to sell, causing industry consolidation.



Recommendation

Pacific sardine management, NMFS and PFMC are beginning to lay the groundwork for Long-Term Amendment 13. In the meantime, short-term policy adjustments can be made for the 2010 season. Alternative Two: Domestic Food Market Incentive is a viable short-term plan to sustain availability for existing low-volume domestic food markets and preserve expansion opportunities. The fishing industry is likely to support a domestic market incentive if their larger export markets are not threatened. If the landed value were to reach that of market squid in 2009 (34 cents/lb), fishermen would receive approximately $2.2 million from only 5% (3,300 mt) of the 65,723 mt HG2009 compared to $8 million at 6 cents/lb for 100% of the HG2009. A higher-value domestic market for sardines will stimulate the fishing industry to expand their local seafood offering and diversify their products leading to greater prosperity with lower-volume landings.

In the short-term, a "limited access" permit system for both CA and the PNW is more equitable in a declining fishery by removing existing discrepancies between federal and state laws. In the long-term, permit access to the fishery can be re-assessed. Implementation of Alternative Three, Community Property Rights in the next long-term plan will allow permit rights based on sardine population expansion and retraction in each area rather than across the entire fishery.

As the fishery recovered, it expanded from the south throughout its central and northern ranges. Known as a prolific spawner, the Pacific sardine is now capable of laying eggs from Mexico to British Columbia. Biomass estimates reached through traditional egg surveys in the southern range do not support reports by fishermen of large sardine schools off the coasts of central and northern California, Oregon and Washington. In 2009, PNW and NCA were granted a portion of the 1,200 mt research set aside allocated in the HG to develop a methodology for visually and physically measuring the expanded Pacific sardine population off the coasts of NCA and PNW. There is support among the PFMC subcommittees and NMFS to test, verify and incorporate this type of secondary index into the HG. These advances will build trust among stakeholders and open the opportunity to implement a new long-term management strategy based on geographical/ecological/political areas such as Community Property Rights. The PFMC has the jurisdiction to expand our understanding of the dynamic Pacific sardine population and recommend regulations to strengthen a heritage fishery with deep local community dependence and individual character.

