

RecFIN STATUS REPORT

Presented to:
Pacific Fishery Management Council
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Foster City, CA

Introduction:

This RecFIN Technical Committee is submitting three proposals on how RecFIN intends to collect and process data in the RecFIN database system. We request the endorsement of these three proposals by the Council, SSC and management teams. These proposals include:

- Proposal on Discarded Fish Procedures
- Proposal on Average Weight Computation
- Proposal to Manage Recreational Fisheries by Numbers of Fish

An update is provided on the following items relating to recreational fisheries in this report:

- Overview of Trip types Used in catch estimates
- Overview of Location of Catch data collected
- The newly adopted RecFIN Change Policy.
- A brief summary of the comparison report of the Marine Recreational Fisheries Statistics Survey (MRFSS) effort estimates and the current RecFIN effort estimates in the state sampling programs.
- Summary of the RecFIN Workshop
- National Research Council Report/NMFS Development Plan - update on plans to provide improvements to recreational sampling surveys.
- Recreational Data Elements Table

I. Discarded Fish Procedures

In the Marine Recreational Fishery Statistics Survey (MRFSS) conducted in the three states from 1980-2003, fish caught by the angler were put in two categories during the interview process by the field sampler:

Sampler observed fish (Type A) were those fish present in the angler's bag, which the sampler counted, identified to species, and optionally obtained measurements .

Angler Reported fish (Type B) were those fish that were not available for the sampler to look at. These fish were further categorized into two general types:

Reported Dead (B1): Angler reported dead fish that were unable to be observed.

A disposition was also recorded for all dead fish as follows:

1. Thrown back dead (as determined by the sampler or angler)
2. Used for Bait
3. Given away
4. Filleted
5. Not present [in car or elsewhere]

Reported returned alive (B2): Angler reported fish that were thrown back alive as reported by the angler, or observed by the sampler (on CPFV's) to have been thrown back alive.

The surveys in Oregon and Washington estimate and report the total number of discarded/released fish; they do not distinguish between fish reported as discarded dead or released alive. The CRFS program in California from 2004 onward has collected data on discarded/released fish, but currently reports the data using the same catch-type categories as were used in the MRFSS (catch types A, B1 and B2). Thus, the fish that were reported as dead when they were discarded are combined with other unobserved dead catch. California has proposed modifying its reporting system to create three categories of unobserved fish: discarded dead, released alive, and fish that were caught but not available for the sampler to examine (see Attachment A). The fish that were discarded dead and those that were released alive will be added to estimate total discards, and the estimate of total discards will be comparable to the estimates from the Oregon and Washington surveys.

RecFIN plans to apply mortality rates established by species and depth to the estimates of total discards to estimate total mortalities for fish discarded. The discard mortalities will be added to harvested catch to apply against the allowable catch quotas set by the Council. This new method of tallying discards will assure that discard mortalities are determined in a consistent manner in all three states. A summary of the past methods used in each state to tally discards, determine the species and compute a portion that was estimated as killed is explained in Attachment A to this report.

The RecFIN Technical Committee is working with the GMT to determine the mortality rates to apply by species, depth and area. In adopting this procedure, the RecFIN database is left with the need to apply some type of mortality to all species observed or reported as discarded. While some of these species are not currently under the management microscope, the use of this method in the database creates a need to

determine some degree of mortality for each species in the catch database regardless of their current status in management. Current discard mortality rates for rockfish are based on essentially one research effort in California. There is need for additional studies on discard mortalities for both rockfish and other species of importance. It is the hope of RecFIN that as refinements to sampling design go forward in state and regional federal forums in the next few years, that these studies can be undertaken.

A continuing challenge is the correct species identification of discards. While this challenge can in some cases be easily met when samplers ride CPFV trips, it is not easily solved for private boat trips where the interview takes place at the completion of the trip. For private boats all discard data must be reported by the angler at the end of the trip. This of necessity leaves a number of fish that are listed as “unidentified” discards. Samplers can attempt to use angler skills in identifying species in the retained catch as a guide to the species of discards. However, in many cases discards cannot be identified to species. Currently many discards are classified to higher taxonomic levels. The fish listed as unidentified discards are not currently tallied towards the catch quota of any individual species. This challenge needs to be explored as we develop sampling procedures and estimation methods to better account for discards.

ACTION ITEM I: RecFIN requests endorsement of the procedure to tally all California fish thrown back into one category of “Discards” as is done currently in Oregon and Washington. RecFIN would then apply species and depth based mortality rates that are identical in all three states. Groundfish mortalities will be set in consultation with the GMT. Mortality rates for other species will be determined by consultation with other Council Management Teams (HMS, STT etc.) and the SSC. Mortality rates for some species will be set by RecFIN and its state and NMFS members in the absence of any management entity for consultation. RecFIN will continue to explore methods to determine more specific speciation of unidentified discards. If methods to determine the identity of some portion of these fish and place them in more specific categories are found, proposals on this topic will be submitted to the PFMC.

II. Average Weight Procedures

The need to express recreational landings in metric tons has necessitated determination of an average weight for each species of fish in each estimation cell (month, mode, area, trip type, etc). This can be the most difficult for species when management does not allow for any retention in the angler’s bag. Samplers riding aboard CPFV’s can determine length for some species prior to their being discarded. That data along with historic length and weight data allow for determination of an estimated mean weight in cases where there is a lack of data to determine a mean weight in an estimation cell. The states have developed “pooling rules” in cooperation with RecFIN to determine an average weight of landed fish for each estimation cell. The average weight is used to convert landings to metric tons (including retained and discarded mortalities) to compare to the allowable catch quotas. Attachment B to this report is a summary of the pooling rules currently used in each state sampling program when lack of data requires pooling to get

enough weight data for average weights of landed fish for each estimation cell. It is the intent of the RecFIN program and its state partners to continue refining pooling rules for average weight of discarded fish largely based on at-sea observations with possible adjustments for depth based regulations. Sampling programs will still make every attempt within available funds to collect as much weight data as possible.

ACTION ITEM II: Endorsement of RecFIN pooling rules and refinements for use as the best estimate of average weights to utilize in the conversion to metric tons landed for management purposes.

III. Management by Number of Fish

The RecFIN Technical Committee discussed the idea of monitoring the recreational fishery catch in numbers as opposed to metric tons at the RecFIN Workshop in August, 2006 with all the Workshop participants. This proposal was further discussed by the Technical Committee at our February, 2007 meeting. The following rationale is presented for this proposal as provided primarily by Dr. Richard Methot:

“The assessment model used to do the projections of available harvest levels works in numbers of fish:

1. The model forecasts the population numbers-at-large forward to the year for which the quota needs to be calculated.
2. For each fishery sector in the model, it uses the fishery-specific selectivity at age/length and the relative fishing mortality level for that fleet to calculate the expected catch in numbers.
3. It then multiplies the catch numbers-at-age by the expected body-at-age for that fleet to calculate the total catch in weight for that fleet.
4. The catch is then added up across fleets to get the total allowable catch (in weight).

Therefore, the annual metric ton quota is already dependent on the expected selectivity and body weight for that year. In-season, there is no expectation that the size/age composition of the commercial catch will be monitored closely and checked against the selectivity pattern that was expected when the quota was set; this is just part of the variability in the management implementation. Further, the selectivity used in the assessment and projection models is not necessarily estimated on a year-specific basis, the estimate age-specific fishery selectivity is most often applied over a block of years that could be as long as the entire assessment time series. So, even if in-season monitoring appeared to detect a different selectivity for a particular fleet in a particular year, there is no explicit feedback loop that would force implementation of a different selectivity for that year in the next assessment update; it could be within the range of expected variability in size/age composition data and not result in a different selectivity estimate.”

The RecFIN Technical Committee is requesting that the Council and Groundfish Management Team not use observed weight in the recreational fishery in a way that would hold this fishery to a higher degree of in-season accountability that is warranted by the overall degree of assessment and monitoring precision. The RecFIN sampling programs will continue to collect average weight data from the recreational fishery, but it is equally important to collect the size composition data itself. In many cases, especially for non-retention species, average weight is calculated from observed size composition and the average weight-at-length relationship anyway. Dr. Methot has pointed out that the reporting section of the SS2 assessment model has already been modified so that it will show catch in weight and catch in numbers for each fleet in each year of the projection. The numbers were always there in the internal calculations; they just were not being reported.

ACTION ITEM III: RecFIN requests that the allowable catch quotas for recreational groundfish be presented in numbers of fish and RecFIN and the states will report monthly catches in numbers of fish as the official method for monitoring the quota. Field surveys will continue to collect data on length and weight by species and numbers of fish in the sample data for further stock assessment analysis and estimation of total weight. However, no adjustments of the number quota will be made in-season in relation to actual observed average lengths or weights of various species in the catch. This is because of the block of years used in the assessment model for age-specific selectivity in the fishery.

IV. Trip Types

Each of the various state sampling programs in RecFIN make catch estimates stratified by the type of fishing trip; halibut, salmon, bottomfish, etc. This allows catch and effort estimates to be made by directed fishery. There is some variation in the trip types used in the various surveys in the three states. Washington uses ten trip types in their Ocean Sampling Program (OSP) and eight in their Puget Sound Boat Survey. Oregon uses seven trip types in their Oregon Recreational Boat Survey (ORBS). California is moving to eight trip types in their California Recreational Fisheries Survey (CRFS), a reduction of the original 17 trip types used when CRFS was first implemented. Attachment C summarizes the trip types for the various state sampling programs.

V. Location of Catch

Collecting data on location of catch is important to meet management needs and to profile the catch by depth and area for future management to best allow for fishing opportunities for the allowable catch. The current sampling programs collect location of catch in differing degrees. California codes recreational catch to specific catch locations during the sampling process. Samplers carry area maps to assist private boat anglers in providing information as to catch location and depth. The catch locations are mapped to one mile squares for the entire coast of California from the shoreline seaward to encompass all areas where recreational angling occurs. Specific location data for California can then be summarized into whatever large geographic areas and depths are

desired. Washington and Oregon gather tallies on catch falling into predefined large geographic areas as specified in Attachment D.

VI. RecFIN Survey Change Procedures

Survey Change Notification. Each state and RecFIN will provide a description of proposed changes to their recreational survey or estimation programs to the RecFIN Technical Committee and cc the RecFIN Statistical Subcommittee. The RecFIN Technical Committee will decide if the change warrants review and recommendations from the RecFIN Statistical Subcommittee. The proposed change will then be directed for review by the RecFIN Statistical Subcommittee or approval confirmed by the RecFIN Technical Committee to the submitting state. Changes that would trigger a Survey Change Notification would include: changes that affect estimates back in time, changes which affect a time series, changes in sampling procedures, changes in estimation procedures, changes in variance computations, and changes to sampling frames or coverage . Notification of these changes when approved and implemented will be transmitted to appropriate PFMC entities by RecFIN.

Emergency Change. Emergency changes will be sent to the Chair of the RecFIN Technical Committee for distribution to RecFIN and Pacific Fishery Management Council (PFMC) entities along with a caveat about the resulting estimate numbers pending review by the appropriate Sampling Change Notification procedure that RecFIN determines will be necessary as follow up.

Semi-Annual Report. Each state and RecFIN will submit a Semi-annual report documenting all changes made to their recreational sampling programs during the previous 6 months. This will include minor changes as well as mid-level or major changes. These reports will be submitted to the RecFIN Chair on March 1st and September 1st each year. The Chair will distribute the reports to the RecFIN Technical Committee and its subcommittees as well as appropriate PFMC entities. It will also be posted on the RecFIN website.

Adopted by RecFIN Technical Committee
October 19, 2006

Attachment E is a copy of the first report submitted on March 1, 2007. This first report covers any and all changes in CY 2006. Subsequent reports will be issued every six months.

VII. MRFSS Effort/State Surveys Effort Comparison Report

The Marine Recreational Fisheries Statistics Survey (MRFSS) was replaced by state sampling programs in the three states in mid 2003 and the beginning of 2004. These state programs included: the Washington Ocean Sampling Program (OSP) and the Puget Sound Boat Survey, the Oregon Recreational Boat Survey (ORBS) and Shore and

Estuary Boat Survey (SEB), and the California Recreational Fisheries Survey (CRFS). These new surveys raised concerns about interpreting past historic catch and effort data used for management gathered under the MRFSS protocol in relation to the catch and effort estimates from the state sampling programs. The species composition in the angler's catch and the CPUE comes from surveys of anglers in both the MRFSS and in state sampling surveys. While the catch surveys remain similar, there is a difference in sample sizes in the catch surveys. The state surveys interview more anglers than MRFSS did. On the other hand, the effort component of the estimates differ between the MRFSS and the state sampling programs. In the MRFSS the effort estimates came from a random sampling of coastal households to locate fishermen and profile the type and number of trips taken in a specific time period. The state surveys primarily use field survey methods to collect data on effort. They augment it with a telephone survey from the state's angler license frame for modes that are more difficult to access directly in the field. Since 2003 the NMFS has continued the MRFSS telephone survey of coastal households in order to compare effort estimates with the state surveys. It was agreed that this comparison was important so that historic data in the Recreational Fisheries Information Network (RecFIN) back to 1980 could be compared with the current state sampling programs. It is hoped that this overlap will provide information on how best to compare current catch and effort estimates with the longer term historic catch and effort estimates in RecFIN for both stock assessment purposes and Pacific Fishery Management Council (PFMC) and state management purposes.

The RecFIN Technical Committee assigned the RecFIN Statistical Subcommittee to conduct this comparison and report back to RecFIN and the management entities. The draft report is the result of this comparison for the period 2003-2005. The report has been provided to the PFMC headquarters for distribution to the PFMC's Scientific and Statistical Committee, Groundfish Management Team and other appropriate entities along with the Stock Assessment Biologists. The primary purpose of the report was a comparison of the recreational effort estimates from MRFSS and the various state recreational surveys. The findings of the report are summarized as follows:

- 1. Estimates of total angler trips and average trips per angler showed common patterns across states and across the various surveys. For some of the comparisons based on shorter sequences of waves (two-month period), this pattern is less clear. This pattern is annual, but not strictly cyclic. As is reasonable to expect, variance estimates often increased with increasing levels of the point estimates.*
- 2. In general, the differences seen in total angler trips were very different across modes of fishing, and those differences tend to outweigh the differences seen across waves and between surveys. For most comparisons, the differences seen in annual fishing patterns also were larger than the differences seen between surveys at a given wave and fishing mode. The differences seen in average trips per angler across modes of fishing were often larger than the differences in estimates between surveys within fishing mode and survey wave.*

3. *It is important to point out the limitations of surveys and their analyses, which contribute to major uncertainties. The project provides us a rare opportunity to try and study the merits and deficiencies of alternate survey designs. Our conclusion is that all surveys are subject to improvement.*

a. We don't know which survey is closer to the truth due to an intractable distribution of the population based on one sample which is dependent on a particular sampling design.

b. The time period over which the data series overlap is relatively short and the results of comparison should not be extrapolated to where data series do not overlap.

c. The data collection programs have not been static.

d. Differences are not systematic. Environmental and regulatory changes may play a major role.

e. No single method is free from all of the following criticisms: non-sampling errors, methods of estimation and imputation, implementation of survey protocol and data processing, multi-purpose surveys which may not optimize for all estimates, and data issues on zero/null estimates and variance due to small sample size.

4. *During the course of this study, we have identified the following strategies - each calling for suitable research and data-collection measures - for improvement of surveys:*

- *Improve sampling frames (e.g., use multiple frames, angler/vessel registry)*
- *Reduce nonresponse errors (e.g., redesign questionnaires, do outreach, collect relevant variables to aid imputation)*
- *Reduce measurement and implementation errors (e.g., provide or upgrade training for contract workers, debriefing/audit, data automation, database management)*
- *Improve estimation (e.g., amend estimation procedures in accord with sampling design, evaluate imputation methods, use domain and small area estimation methodologies)*
- *Combine multiple survey estimates (e.g., use expert collaboration to obtain and apply optimum weights)*
- *Review issues of survey costs versus sample size*
- *Improve survey documentation.*

VIII. RecFIN Workshop

The RecFIN Workshop hosted by Pacific States Marine Fisheries Commission (PSMFC) and the Pacific Fishery Management Council was held in Portland, OR on August 28-31, 2006. The agenda and a brief summary of the Workshop is included as Attachment F. All presentations given at the Workshop are available on the PSMFC website at: <http://www.psmfc.org/2006-documents-from-workshops-conferences.html>.

The workshop provided a forum to address items from the National Research Council's (NRC) report on recreational fishery sampling programs on the three coasts (Atlantic, Gulf and Pacific) as well as review in detail the three Pacific state's field sampling programs. Information in response to the NRC report was prepared as part of the workshop and transmitted to NMFS at an organizational meeting on responding to the NRC report held in Denver, Colorado on September 6-8, 2006. The Workshop product of a summary of responses to the NRC report recommendation is provided as Attachment H. As a result of the Denver meeting, NMFS prepared a Development Plan to address the recommendations of the NRC report and improvements to sampling programs to better support state and federal management needs.

IX. NRC Report/NMFS Development Plan

The National Marine Fisheries Service contracted with the National Academies, National Research Council (NRC) to conduct a review of recreational fisheries survey methods. Their report entitled "*Review of Recreational Fisheries Survey Methods*" was published in June, 2006. It provided a review of recreational survey methods employed on the Atlantic, Gulf and Pacific coasts in support of Regional Council and state management programs. The complete report is available on the National Academies website at www.nap.edu. A number of recommendations were made in the NRC review relating to recreational surveys. The RecFIN workshop provided a listing of these recommendations and the status of pacific coast RecFIN/State sampling programs in relation to the recommendations. This overview is provided in Attachment G.

In response to management needs and the NRC report recommendations, NMFS has prepared a Development Plan with input from recreational managers and constituents to review and/or address current management needs and the recommendations from the NRC report. The Development Plan is available on the NMFS website at: <http://www.st.nmfs.gov>. The Development Plan sets up four Committees to spearhead improvement in sampling programs for recreational fisheries. These include:

1. Executive Steering Committee (ESC)
2. Operations Team (OT)
3. Design and Analysis Group (DAG)
4. Communications and Education Group (CEG)

The main purposes of each group is as follows:

- 1) ESC: To provide high-level guidance and advice on cross-regional issues, as well as to ensure that the collaborative design of the new system of surveys proceeds in a manner

that is consistent with the fundamental policies and general principles of the partner agencies. To ensure that these goals are realized, the ESC will provide advice on program management issues; ensure that the mission, goals, and objectives of the plan match available resources; assist in resolving critical, high-level management issues in a timely manner; approve spending plans; and coordinate and inform all partners about the functions and progress of the redesign efforts. The ESC will be comprised of the three Interstate Fishery Commission Directors as representatives of the states, three NOAA Fisheries Service executives, including the Director of the Office of Science and Technology (ESC Chair), one Regional Administrator and one Science Center Director, one representative from the Department of Commerce's constituent advisory body, the Marine Affairs Advisory Committee (MAFAC), as well as executive level representation from Alaska, Pacific Islands and Caribbean regions. The ESC connection to the recreational fishing community will be through the MAFAC Recreational Fisheries Subcommittee.

2) OT: To ensure that formulation of the new system of surveys adheres to the overall approach described within the Development Plan. The OT will be responsible for providing a leadership role in updating and improving the Development Plan, establishing priorities, project selection, resource allocation, performance monitoring, and progress reporting of all working groups established by the ESC.

3) DAG: To be responsible for analyzing current and historical data collection programs, as well as developing new surveys of marine recreational fishing catch and effort. To continue the work initiated by NOAA Fisheries S&T to identify potential causes of bias and evaluate the magnitude and direction of any apparent biases. To advise the ESC on possible additional work needed to evaluate the relative impact of known biases on stock assessments and fisheries management decisions. To design improved sampling and estimation methods that will provide less biased and more precise catch and effort statistics.

4) CEG: To promote communication between and among NOAA Fisheries, partner organizations, and constituents during the survey redesign effort. To coordinate with the ESC, OT, MAFAC, DAG, and other working groups to inform constituents about the development and progress of survey improvement efforts.

An update on the latest status of the status of the Development plan groups will be given verbally by Russell Porter, RecFIN Technical Committee Chairman during his presentation on this Council Agenda Item.

X. Data Elements Collected/Requested in Sampling Surveys

The RecFIN Technical Committee compiled a list of data elements collected in the three state recreational fisheries surveys. The Pacific Fishery Management Council's Scientific and Statistical Committee (SSC) and the Groundfish Management Team (GMT) provided RecFIN a list of desired recreational data elements. In addition, the National Research Council (NRC) in their June, 2006 report provided a list of data elements they viewed as necessary in recreational sampling programs. A table of these data elements from the current surveys and those requested by the SSC, GMT and NRC are provided in Attachment H.

ATTACHMENT A

Summary of State Procedures for Discarded Fish

Washington Department Of Fish & Wildlife

Estimation of Discarded Catch in the Washington Ocean Sampling Program (OSP)

As part of the field intercept survey, OSP samplers ask anglers whether they discarded any fish during their fishing trip, and if so, to identify discarded catch by species and number. Due to the conservation concern, samplers specifically ask if canary or yelloweye rockfish were among the discarded catch.

Discarded catch is expanded in the same manner as retained catch to produce estimates of total discarded catch. Mortality factors applied to discarded catch appear in WDFW Table 1. With the exception of lingcod, average weight of discarded catch is assumed to be equal to average weight, by species, of retained catch.

Oregon Department of Fish & Wildlife

Recording Discards In The Oregon Recreational Fishery - 2006

Ocean Recreational Boat Survey (ORBS)

Introduction

The weight of discards is estimated for several species of management concern due to harvest limits set in weight. To estimate the weight of discard, the number of fish discarded, average weight of the fish, and mortality rate is required. For most other species only estimated number of fish discarded is presently calculated. The Oregon Department of Fish and Wildlife plans to expand this process to include these other species.

Discarded number of fish

The number of fish discarded by species is estimated through the ORBS state sampling program, which is described under Agenda Item E for the August 2006 RecFIN Workshop (Attachment F). Estimates of discards are essentially based on angler reports of fish discarded that is expanded for sampling rates.

Average weight of discarded fish

The estimated physical size of discards of groundfish species is based on at-sea observations where samplers take lengths of fish prior to discard, which are later converted to weight. At-sea observations were conducted on recreational charter vessels

off Oregon during 2001, 2003-2005, but lengths were not taken in 2001. A total of 360 vessels trips were conducted (Table 1). Each year the observations were distributed across the state in an effort to represent the relative magnitude of catch by area. The annual goal was to conduct 100 observations, but that goal was not always achieved due to inseason closures. The number of groundfish observed by species that were discarded in the Oregon recreational groundfish fishery is reported in Table 2.

The expected average weight of discarded fish in the ocean boat fishery is primarily based on at-sea observations with attention paid to matching samples with depth closure regulations (i.e., open all-depth versus open only inside the 40-fathom line). Observations indicate that yelloweye rockfish and canary rockfish caught inside of the 40-fathom line were considerably smaller compared to the average size of those caught offshore as it appears more juveniles of these species reside nearshore (Table 3).

For yelloweye rockfish released in fisheries other than the directed halibut fishery, observation data was not used due to small sample sizes observed at-sea. Instead the average weight of fish landed in 2003, the most recent year where retention was allowed, was used to represent the average weight of yelloweye rockfish caught during periods of no depth restrictions.

Because few observations of discards have been observed in the directed halibut fishery, the average size of yelloweye rockfish and canary rockfish caught outside of 30-fathoms and landed in 2003 are used as a proxy. This approach is used because the directed recreational halibut fishery occurs in waters deeper than 30-fathoms.

Another exception to using observation data was for widow rockfish and nearshore rockfish other than black rockfish and blue rockfish, again due to small sample sizes (most are retained), where a 25 percent reduction in average weight from average landed weight was assumed for discards of these species. This was thought to be conservative as the observed average size of discarded black rockfish and blue rockfish were on the order of a 50 percent reduction from average landed weight. Most legal species released are due to their small size (angler preference).

Mortality rates for discarded fish

For 2006, mortality rates were adopted for several species of management concern discarded in the Oregon recreational groundfish fishery. Historically, in the Marine Recreational Fisheries Statistical Survey (MRFSS) sampling program, anglers reported their discarded fish as either dead or alive. Often a fish discarded alive would eventually die due to the effect of barotrauma. Thus, it is speculated that total discard mortality was underestimated by this approach.

A similar approach to that used for the commercial open-access nearshore fishery was developed for estimating the mortality rate of discarded groundfish in the 2006 Oregon sport fishery. The approach incorporates at-sea observations of catch by species,

stratified by depth, and the stratum based mortality rates by species recommended by the Groundfish Management Team.

The count of released fish by depth bin from at-sea observations used to develop mortality rates is reported in Table 4.

The species of rockfish caught inside of 20-fathoms, and for which mortality rates less than 100 percent are derived, include black, blue, other nearshore rockfish, canary, and yelloweye. The distribution of discarded fish by species and depth bin (fm) based on at-sea observations are identified in Table 5. Observed distributions are presented for all-depth fisheries, and predicted distributions are presented for fisheries closed seaward of 40-fathoms, 30-fathoms, 25-fathoms, 20-fathoms, and 10-fathoms.

Mortality rates for fish discarded by depth strata are detailed in Table 6 and represent rates determined by the Groundfish Management Team. A mortality rate of 100% would be applied to all rockfish caught and discarded in waters deeper than 20-fathoms. These mortality rates were applied to the species distributions (Table 5) to determine the comprehensive mortality rates detailed in Table 7. These mortality rates are applied to estimated discard, calculating estimated mortality.

A seven percent mortality rate is applied in the Oregon recreational groundfish fishery for discarded lingcod, cabezon, and greenling species, as is used in the commercial open-access nearshore fishery. In addition, a 7 percent mortality rate is used for shore and estuary boat fisheries for all species discarded because, as barotrauma is not an issue, mortality is mostly related to hook location.

Shore and Estuary Boat Survey (SEBS)

Discards by species is estimated through the SEBS state program, which is described under Agenda Item G. Estimates of discards are based on angler sampled discard per unit of effort expanded by total estimated angler trips. This survey was conducted during 2003-05 and discard estimates have not been calculated. SEBS is not being conducted in 2006 due to funding shortfall. To date the methodology to determine the weight of discards in the shore and estuary boat fishery has not been determined, but since this survey is very similar to the Marine Recreational Fishery Survey (MRFSS) the process will likely be similar to that used in MRFSS.

Table 1. Number of observed bottomfish trips by year and regulation type

Regulations	Year				Total
	2001	2003	2004	2005	
Closed > 40 fm	N/A	N/A	51	63	114
Open All Depth	105	89	20	32	246
Total	105	89	71	95	360

Table 2. Count of discard lengths taken by year and species

Species	Year				Total
	2001	2003	2004	2005	
Black rockfish		131	115	252	498
Blue rockfish		209	226	242	677
Brown rockfish		1			1
China rockfish		1	2	1	4
Copper rockfish				1	1
Quillback rockfish		2		12	14
Canary rockfish		38	116	179	333
Yelloweye rockfish		2	21	22	45
Widow rockfish			3	2	5
Kelp Greenling		5	3	6	14
Lingcod		505	249	235	989
Cabezon		2	10	21	33

Note: Canary rf and yelloweye rf retention allowed in 2003, but not in 2004-05.

Table 3. Example of different size of released fish due to regulations

2005 observations	Open all depth		Fish captured <40fm	
Spp.	N	Mean (kg)	N	Mean (kg)
Canary rockfish	68	1.11	152	0.60
Yelloweye rockfish	13	2.47	11	1.69
Widow rockfish	1	0.51	12	0.29
Lingcod	95	1.44	220	1.47

Table 4. 2001, 2003-2005 Count of released fish by depth bin (fm). Canary and yelloweye data from open all depth periods only; black, blue, and other nearshore rockfish data from all periods. Other nearshore rockfish includes brown, copper, quillback and china rockfishes (no discards of other nearshore rockfish species were observed).

Species	<=10	11-20	21-25	26-30	31-40	>40	Total
Black rockfish	296	372	18	2	0	0	688
Blue rockfish	183	622	48	5	0	0	858
Other nearshore rockfish	1	8	2	5	0	0	16
Canary rockfish	13	107	29	2	5	52	208
Yelloweye rockfish	0	5	1	1	0	13	20

Table 5. Distribution of released fish by depth bin (fm) when open all depths.

Species	<=10	11-20	21-25	26-30	31-40	>40	Total
Black rockfish	43%	54%	3%	0%	0%	0%	688
Blue rockfish	21%	72%	6%	1%	0%	0%	858
Other nearshore rockfish	6%	50%	13%	31%	0%	0%	16
Canary rockfish	6%	51%	14%	1%	2%	25%	208
Yelloweye rockfish	0%	25%	5%	5%	0%	65%	20

Predicted distribution of released fish when closed outside 40 fm

Species	<=10	11-20	21-25	26-30	31-40	Total
Black rockfish	43%	54%	3%	0%	0%	688
Blue rockfish	21%	72%	6%	1%	0%	858
Other nearshore rockfish	6%	50%	13%	31%	0%	16
Canary rockfish	8%	69%	19%	1%	3%	156
Yelloweye rockfish	0%	71%	14%	14%	0%	7

Predicted distribution of released fish when closed outside 30 fm

Species	<=10	11-20	21-25	26-30	Total
Black rockfish	43%	54%	3%	0%	688
Blue rockfish	21%	72%	6%	1%	858
Other nearshore rockfish	6%	50%	13%	31%	16
Canary rockfish	9%	71%	19%	1%	151
Yelloweye rockfish	0%	71%	14%	14%	7

Predicted distribution of released fish when closed outside 25 fm

Species	<=10	11-20	21-25	Total
Black rockfish	43%	54%	3%	686
Blue rockfish	21%	73%	6%	853
Other nearshore rockfish	9%	73%	18%	11
Canary rockfish	9%	72%	19%	149
Yelloweye rockfish	0%	83%	17%	6

Predicted distribution of released fish when closed outside 20 fm

Species	<=10	11-20	Total
Black rockfish	44%	56%	668
Blue rockfish	23%	77%	805
Other nearshore rockfish	11%	89%	9
Canary rockfish	11%	89%	120
Yelloweye rockfish	0%	100%	5

Table 6. Mortality rates developed by the Groundfish Management Team

Mortality rate	? 10 fm	11-20 fm	21-25	26-30	31-40	> 40 fm
Black RF	10%	40%	100%	100%	100%	100%
Blue RF	10%	40%	100%	100%	100%	100%
Other Nrsre RF	10%	50%	100%	100%	100%	100%
Canary RF	10%	50%	100%	100%	100%	100%
Yelloweye RF	10%	50%	100%	100%	100%	100%

Table 7. Adopted mortality rates for all-depth fisheries and fisheries closed outside of 40-fathoms, 30-fathoms, 25-fathoms, 20-fathoms and 10-fathoms.

Species	<=10 fm	<= 20 fm	<= 25 fm	<= 30 fm	<= 40 fm	All depth
Black rockfish	10%	27%	29%	29%	29%	29%
Blue rockfish	10%	33%	37%	37%	37%	37%
Other nearshore rockfish	10%	46%	55%	69%	69%	69%
Canary rockfish	10%	46%	56%	57%	58%	69%
Yelloweye rockfish	10%	50%	58%	64%	64%	88%

California Department of Fish & Game

Discard Procedures - California Recreational Fisheries Survey (CRFS)

Data collected on discards

Samplers collect the following data during the creel census (*i.e.*, angler intercept interviews) for each fishing mode:

1. Number of fish landed and examined by species.
2. Fork length (mm), weight (kg), and sex of each examined fish if time allows. The priority order for collecting the data is length, weight, and sex.
3. Number of fish caught but unavailable, and the reason why the fish were unavailable (*i.e.*, disposition).
4. Depth fished where most of the fish were caught (for the boat modes)
5. Location where most of the fish were caught.

Samplers collect the following data at each fishing location while sampling on-board commercial passenger fishing vessels (CPFV) at sea:

1. Specific location (latitude and longitude).
2. Minimum and maximum depths of the location.
3. Number of anglers whose fishing activities the sampler observed (monitored) while at the location.
4. Fishing method (*i.e.*, free drift, stationed, anchored, or troll).
5. Species caught by the all the anglers who were observed and the number kept, the number discarded alive, and the number discarded dead (including fish that are obviously not going to survive).
6. Fork length (mm) and weight (kg) of discarded fish.

Reporting of discard data

Currently, the reporting of California Recreational Fisheries Survey (CRFS) data on the Recreational Fisheries Information Network (RecFIN) doesn't clearly distinguish discards from catch that was unexamined. The California Department of Fish and Game proposes modifying the reporting categories for the CRFS data. The purpose of these changes is to separate discarded fish from the fish that are part of the angler's bag (*e.g.*, fish that are caught and landed, or caught and given away, or caught and eaten, or caught and filleted). This will make the California discard data comparable to the Oregon and Washington discard data, and it will make it easier to perform bag analyses.

The CRFS estimates are currently generated and reported as follows:

- A** = Examined catch: whole landed fish that were examined by the sampler
(Note: fillets that can be identified can be included in A, but this is a rare event)

B = Reported/Unavailable catch: fish that were caught but not kept (released, given away, or used for bait) or fish that were landed but not available for the sampler to examine.

B1 = Fish that were caught and filleted (Note: these are fillets where the sampler cannot identify the species); or fish that were caught and reported by the angler as given away, used for bait, released dead, or disposed of some way other than A or B2; or fish that were caught and landed but not available for the sampler to examine.

B2 = Released alive: fish that were caught and reported by the angler as released alive.

The proposed reporting system continues to distinguishing between examined and unexamined catch, and it clearly separates landed catch from discards. Under the proposed system, CRFS estimates would be generated and reported as follows:

A = Examined catch: whole landed fish that were examined by the sampler.

R = Reported/Unavailable catch: fish that were caught but not kept (released, given away, or used for bait) or fish that were landed but not available for the sampler to examine.

R1 = Released dead: fish that were caught and reported by the angler as released dead.

R2 = Released alive: fish that were caught and reported by the angler as released alive.

R3 = Fish that were caught and filleted; or fish that were caught and reported by the angler as given away, used for bait, or disposed of in some way other than A, R1 or R2; or fish that were caught and landed but not available for the sampler to examine.

The categories A and R3 are catch, and the categories R1 and R2 are discards. Estimates using the proposed categories can be generated for CRFS data from prior years, because the disposition of the unavailable fish (B category in the current system) are in the database.

Estimation of discards

The estimates that are currently produced by CRFS are not exclusively “discard”; they are for B1 and for B2 catch (B1 fish include those that were reported as released/discarded dead as well as fish that were caught and filleted, fish that were caught and reported by the angler as given away, used for bait, or disposed of some way other than A or B2, and fish that were caught and landed but not available for the sampler to examine; B2 fish include those that were caught and reported by the angler as released

alive). The number of fish in category B1 and category B2 are estimated by month, district, fishing mode, and species. The average weight of the category B1 and category B2 fish is based on at-sea observations of discarded fish by CRFS samplers on CPFVs. No mortality estimate is applied to the B2 fish.

Reporting fishing mortality to the PFMC Groundfish Management Team

Management requires an estimate of total fishing mortality. California used the following method for calculating fishing mortality for recreationally caught rockfish until November 2006.

$$\text{Total mortality} = A + B1 + (B2 \times \% \text{ of catch at depth strata} \times \text{mortality rate for depth strata})$$

A depth profile (proportion of catch by 10 fm increments) was used to apportion the catch of each species by depth and groundfish management area. The depth profiles were generated from MRFSS data from 1999 and 2000, the most recent unregulated years by depth in California. The following mortality rates were applied 10.5% for 0-10 fm, 42% for >10-20 fm, and 100% for >20 fm to the B2 catch.

For November 2006 through June 2007, this methodology was slightly modified due to the recognition that most of the B2 rockfish were taken in shallow waters (less than 20 fm). As a result of this modification, the above equation was changed to:

$$\text{Total mortality} = A + B1 + (B2 \times \text{mortality rate for 0-20fm}),$$

where the mortality rate was set at 42%.

ATTACHMENT B

Summary of State Procedures for Determining Average Weight by Species

Washington Department of Fish & Wildlife

Average Weight and Discard Mortality Applied to WA Recreational Catch

Average Weight

Beginning in 2004, WDFW has applied an average weight consisting of the most recent 50 fish sampled in the agency Biological Data System (BDS) to convert estimated numbers of fish to total weight. This protocol was adopted to reduce uncertainty in management resulting from large fluctuations in average weight caused by very small sample sizes. Average weights have been applied seasonally on a coastwide basis. WDFW is currently working with RecFIN staff to refine algorithms, timing and borrowing rules for extracting average weights from the BDS. Weight for released fish is assumed to be equal to that for retained fish. Insufficient data have been collected to determine the size of released fish. However, due to the length restriction on lingcod, a different average weight was applied to released catch based upon at-sea information collected by ODFW. Average weights used in 2006 are in Table 1.

Discard Mortality

WDFW current applies a discard mortality based upon best professional judgment. Fish with unvented swim bladders (physoclistous) are assumed to have either total, or very high discard mortality due to barotrauma, while only hooking mortality is applied to fish with no swim bladder. A 90% (rather than 100%) mortality rate is applied to more nearshore rockfish species. Canary and yelloweye rockfish have been uniquely treated due to management implications and imposed depth-management measures implemented specifically to control catches of these two species. Since the halibut fishery is prosecuted at a considerable depth, canary rockfish associated with that trip type continue to have a 100% discard mortality applied. When no depth restrictions are in place, canary rockfish in non-halibut trips have a 66% discard mortality applied based upon average depth of catch information collected in the intercept survey. When the recreational groundfish fishery is constrained by regulation to within 20 fathoms, a 50% discard mortality is applied to both canary and yelloweye rockfish based upon barotrauma work conducted in California. Discard mortalities applied in 2006 are in Table 1.

The Pacific Council's Groundfish management Team and the RecFIN Technical Committee are continuing work to develop a consistent, coastwide approach to apply discard mortality across all species based upon depth of capture.

Table 1. Average weight and discard mortality applied to Washington coastal recreational fishery catches. Both are applied coastwide on an annual basis.

<u>Average weight applied to Washington recreational catches</u>		<u>Mortality applied to released catch in the Washington recreational fishery ^{2/}</u>	
<u>SPECIES</u>	<u>kg/fish</u>	<u>SPECIES</u>	<u>MORTALITY RATE</u>
Black Rockfish	1.18	Black Rockfish	0.90
Blue Rockfish	1.05	Blue Rockfish	0.90
Bocaccio	1.17	Bocaccio	1.00
Cabazon	2.2	Cabazon	0.05
Canary Rockfish	1.19	Canary Rockfish	1.00
China Rockfish	0.78	China Rockfish	0.90
Copper Rockfish	1.00	Copper Rockfish	0.90
Flatfish	0.50	Flatfish	0.03
General Cod	0.5	General Cod	1.00
General Rockfish	0.50	General Rockfish	0.90
Kelp Greenling	0.68	Kelp Greenling	0.05
Lingcod ^{1/}	3.13	Lingcod	0.05
Miscellaneous	0.50	Miscellaneous	0.90
Pacific Cod	3.29	Pacific Cod	1.00
Surfperch	0.44	Surfperch	0.22
Quillback Rockfish	1.13	Quillback Rockfish	1.00
Sharks and Skates	3.00	Sharks and Skates	0.08
Tiger Rockfish	0.87	Tiger Rockfish	1.00
Albacore	4.08	Albacore	1.00
Vermilion Rockfish	1.87	Vermilion Rockfish	1.00
Yelloweye Rockfish	2.61	Yelloweye Rockfish	1.00
Yellowtail Rockfish	1.21	Yellowtail Rockfish	1.00
Lingcod Released ^{1/}	1.50		

1/ A different average weight is applied to lingcod due to the size limit. All other weights for released fish are assumed equal to retained catch.

2/ The exception to the above rates is that a mortality rate of 0.66 is applied to canary rockfish caught in non-halibut trips, and 0.50 mortality rate is applied to canary and yelloweye rockfish when the fishery is constrained to within 20 fathoms.

Oregon Department of Fish & Wildlife

Converting Number Of Fish Landed To Weight for Recreational Fisheries Overview of 2006 Methodology

Ocean Recreational Boat Survey (ORBS)

Landed catch by species is estimated through the ORBS state program, which is described under Agenda Item E. Estimates of landed catch are essentially based on sampled angler catch that is expanded for sampling rates. In addition to sampling the ocean boat fishery for catch, ORBS samplers also sample the catch for average length and weight. For most species both length and weight is measured, but for some species, such as Pacific halibut, only lengths are taken and then converted to weight. A summary of length and weight sampling goals is detailed in Table 1 for the 2006 fishery season. These goals are slightly changed from 2005 so as to improve sampling rates for frequently seen species such as black rockfish, blue rockfish and lingcod. Total sample size and sampling rate by species from the 2005 fishery are summarized in Table 2. Starting in 2006, a new method for estimating average weight was initiated. This “pooling” method was the result of advice from the RecFIN Statistical Committee after their review of the issue. Average weight per species is determined for each stratum (port, month, boat type and trip type) and the pooling rules are summarized in Table 3.

Table 1. Length and weight sampling goals for ORBS in 2006

Species	Daily	Weekly
Black rf, blue rf, and lingcod length/weights		10 per species per boat trip type per sampler (20 total)
All other groundfish length/weights		10 per sampler
Chinook salmon lengths		10 per sampler
Coho salmon length/weight	Two boats per sampler	
Halibut lengths	All fish from every other boat	
Tuna lengths		10 per week

Table 2. 2005 ORBS Length & Weight Samples (N) by Species
(ocean boats only)

Year	SpCode	Common	Length (N)	Weight (N)	Est landed (N)	% length taken
2005	31	blue shark	9	2	38	24
2005	35	spiny dogfish	1	1	4	25
2005	42	big skate	2	0	8	25
2005	46	longnose skate	1	0	2	50
2005	55	P. herring	10	10	158	6
2005	63	coho	987	987	13,725	7
2005	65	chinook	3,681	4	27,941	13
2005	78	rainbow trout	4	4	15	27
2005	201	P. cod	5	5	10	50
2005	203	P. whiting	17	17	42	40
2005	290	jack mackerel	12	12	73	16
2005	291	yellowtail jack	4	4	4	100
2005	300	surfperch unid	5	5	118	4
2005	303	redtail surfperch	2	2	4	50
2005	306	striped seaperch	19	19	63	30
2005	374	P. mackerel	23	23	83	28
2005	375	albacore	392	354	5,044	8
2005	410	rockfish unid	5	5	8	63
2005	416	brown rockfish	29	29	62	47
2005	418	redbanded rockfish	4	4	6	67
2005	419	silvergray rockfish	14	14	34	41
2005	421	copper rockfish	695	695	1,671	42
2005	423	greenspotted rockfish	6	6	17	35
2005	424	black & yellow rockfish	1	1	3	33
2005	429	greenstriped rockfish	21	21	27	78
2005	431	widow rockfish	363	363	1,913	19
2005	433	yellowtail rockfish	1,743	1,743	15,636	11
2005	436	rosethorn rockfish	23	23	41	56
2005	441	quillback rockfish	929	929	2,470	38
2005	442	black rockfish	3,667	3,667	275,728	1
2005	444	vermillion rockfish	960	960	2,844	34
2005	445	blue rockfish	2,741	2,740	40,178	7
2005	446	China rockfish	619	619	1,826	34
2005	447	tiger rockfish	64	64	136	47
2005	449	bocaccio	12	12	13	92
2005	451	canary rockfish	18	18	148	12
2005	453	redstripe rockfish	32	32	112	29
2005	454	grass rockfish	6	6	15	40
2005	456	rosy rockfish	5	5	8	63
2005	457	yelloweye rockfish	2	2	15	13
2005	458	flag rockfish	1	1	10	10
2005	477	sablefish	102	101	325	31
2005	481	kelp greenling	1,535	1,535	5,612	27
2005	482	rock greenling	8	8	41	20
2005	484	lingcod	3,256	3,220	32,850	10
2005	523	buffalo sculpin	11	11	24	46
2005	527	red Irish lord	22	22	53	42
2005	529	brown Irish lord	1	1	2	50
2005	556	cabezon	1,458	1,458	6,178	24
2005	600	flatfish unid	1	1	14	7
2005	604	P. sanddab	81	81	1,015	8
2005	606	arrowtooth flounder	3	3	3	100
2005	608	petrale sole	10	10	27	37
2005	614	P. halibut	4,852	0	13,288	37
2005	618	butter sole	6	6	19	32
2005	620	rock sole	15	15	36	42
2005	624	Dover sole	4	4	31	13
2005	626	English sole	2	2	5	40
2005	628	starry flounder	20	20	67	30
2005	634	sand sole	38	38	130	29
2005	670	ocean sunfish	1	0	2	50
2005	682	unknown	4	4	9	44
Total			28,564	19,948	449,984	6

Table 3. Average weight pooling rules for ORBS in 2006

For each species in each stratum (port, month, boat type, trip type):

<i>If there are not enough observations, then Rule 1 is applied</i>	Pool boat types in each trip type, port and month
<i>If there are still not enough observations, then Rule 2 is applied</i>	Pool boat types and trip types in each port and month
<i>If there are still not enough observations, then Rule 3 is applied</i>	Pool boat types, trip types and months (up to 2 years) in each port
<i>If there are still not enough observations, then Rule 4 is applied</i>	Pool boat types, trip types, months (up to 2 years) and ports in two port clusters
<i>If there are still not enough observations, then Rule 5 is applied</i>	Pool boat types, trip types, months (up to 5 years) and ports statewide

- Observation goal = 10 percent of landed or 50 fish, whichever occurs first

Shore and Estuary Boat Survey (SEBS)

Landed catch by species is estimated through the SEBS state program, which is described under Agenda Item G. Estimated landed catch is based on angler sampled catch per unit of effort expanded by total estimated angler trips. This survey was conducted during 2003-05 and catch estimates have not been calculated. SEBS is not being conducted in 2006 due to funding shortfall. To date the methodology to determine average weight in the shore and estuary boat fishery has not been determined, but since this survey is very similar to the Marine Recreational Fishery Survey (MRFSS) the process will likely be similar to that used in MRFSS.

California Recreational Fisheries Survey

Estimated Weight of Harvest

Converting number of fish to weight

Catch estimates are first produced for the number of fish, and then total weight is calculated using the mean weight. The mean weight that is used depends on the mode of fishing (man-made structures, beaches and banks, private and rental boats, and commercial passenger fishing vessels), and type of catch (or disposition of the catch). The three types of catch are:

- Type A: Fish that were landed and examined by a sampler.
- Type B1: Fish that were reported by the anglers as released/discarded dead as well as fish that were caught and filleted, fish that were caught and reported by the angler as given away, used for bait, or disposed of some way other than A or B2, and fish that were caught and landed but not available for a sampler to examine.
- Type B2: Fish that were caught and reported by the angler as released alive.

Plans are underway to modify the categories for type of catch used by the California Recreational Fisheries Survey (CRFS). The proposed categories would separate discarded/released fish from the fish that are part of the angler's bag (*e.g.*, fish that are caught and landed, or caught and given away, or caught and eaten, or caught and filleted).

Determining average weight

The CRFS currently estimates mean weight for Type A fish using observations from the month and mode of fishing, and Type B1 and B2 using observations from the last 12 months. The data for Type B1 and B2 fish come from observations at sea on commercial passenger fishing vessels (CPFVs). The data used for calculating mean weight, and pooling rules for missing data are currently under review; a proposal for modifying the rules will be submitted to RecFIN. Currently, the basic rules for pooling data when a mean weight is missing for a catch type are as follows:

- Type A: Use weight data from the other fishing modes
- Type B1: Use Type A data
- Type B2: For the beach and bank mode and the party and charter (*i.e.*, CPFV) mode, use Type A; for the man-made structures mode and the private and rental boat mode, use Type B1 or use Type A if no Type B1 data is available.

ATTACHMENT C

Summary of Trip Types used in State Recreational Sampling Surveys

Washington Department of Fish & Wildlife

Trip Type Categories and fishing modes

Washington Coast – Ocean Sampling Program (OSP)

Fishing Methods (Modes):

Charter Boat

Private Boat

Columbia River Jetty (shore site sampled due to contribution to coastal salmon catch)

Target Trip Types:

1 - Halibut

2- Commercial jig

3- Tuna

4- Non-fishing

5- Halibut/salmon combo

6- Marine fish only

7- Salmon

8- Dive (spearfishing)

9- Sturgeon

10-Salmon/sturgeon combo

Puget Sound – Puget Sound Boat Survey

Fishing Methods (Modes):

Kicker/private vessel

Charter vessel

Pier

Shore

Shore Diver

Diver/kicker

Diver/charter

Target Trip Types:

1- Salmon

2- Marine fish

3- Both salmon and marine fish

4- Halibut specifically

5- Combination of halibut and other bottom fish

6- Combination of halibut and salmon in the same trip

- 7- Steelhead only
- 8- Cutthroat trout only

Oregon Department of Fish and Wildlife

Trip Types Used by the Ocean Recreational Boat Survey (ORBS)

The Ocean Recreational Boat Survey (ORBS) of the Oregon Department of Fish and Wildlife is tasked to collect interview information from both private boat and charter boat anglers fishing in the Pacific Ocean off of Oregon, and make estimates of effort and catch. The ORBS employs approximately 22 seasonal field samplers each year in 10 port locations along the Oregon Coast to make counts of boat traffic, and interview anglers on returning boats to collect the data elements needed to generate estimates of both catch and effort.

Data elements are stratified in several different ways to more accurately represent the fishery. One of those stratifications is trip type. This loosely indicates a target species or species group, or other division in the recreational effort and landings that has been determined to be advantageous and needed to be able to isolate in the estimation process. The ORBS uses a total of seven different trip types: Salmon, Bottomfish, Halibut, Tuna, Dive (spear fishing), Combination, and Non-fishing (Note that the underlined first letter is the coding that has been assigned to the trip type within the project).

Although the definitions for each of these trip types is basically the same for both charter vessels and private vessels, there are some minor differences in the estimation process that should be clarified. First, charter effort is most often collected directly from the charter office (storefront). Samplers contact each charter office usually 5-7 times during the week to get the number of vessel trips by trip type for every day of the week. For charter vessels operating out of offices, we do not record the number of non-fishing trips or interview those trips (whale watching, burial at sea, etc.). During the interview process with returning vessels, on occasion the boat reports a different trip type than the office reported. In those cases, the office trip type is corrected in the total effort to reflect the correct trip type.

Private vessels, and charters that do not have an accessible office, use a different methodology. First total bar crossings are estimated by counting exiting vessels, and then trip types from returning interviewed vessels are proportionately applied to all trips counted out. This includes non-fishing trips.

In the categorization of trip types, there are two exceptions in the assigning of trips. First, vessels may “fish” for crab or other non-fish species and this will not affect the designation of a trip with another target species or species group. Second, vessels fishing for “baitfish” i.e. sardines, anchovies, herring, or smelt, and fishing for another target species or species group are not categorized with regard to the fishing for “baitfish,” unless the “baitfish” was the only fishing activity to occur. In other words, a boat that went salmon fishing, but also stopped and jigged some herring for bait on the trip would still be categorized as a salmon trip and not a combination trip. A description of each of the trip types utilized by ORBS is as follows:

Salmon: The salmon trip type includes any vessel where the only target species on the trip was salmon. These trips may include some minor incidental catch of other species, but that catch is truly incidental and was not targeted on the trip.

Combination: This is a trip in which the vessel fished at least part of the time for salmon, but also spent some portion of the trip fishing for another species or species group as well. The proportion of time spent salmon fishing is irrelevant in the categorization. These trips can include fishing for salmon and rockfish, salmon and halibut, salmon and albacore, etc.

Bottomfish: The bottomfish trip includes fishing for non-salmon, non-Pacific halibut, and non-HMS species. These are most typically trips targeting rockfish and lingcod; but also include flatfish trips (other than Pacific halibut), “baitfish”, surfperch, non-HMS shark species, etc. A vessel that fishes for bottomfish and HMS species on the same trip will be categorized to the predominant catch on the trip.

Halibut: The halibut trip type is specific to Pacific halibut. If a vessel is fishing for Pacific halibut during a portion of the trip and other bottomfish during another portion of the trip, it is categorized as a “halibut” trip. Similarly for HMS species, if the vessel fishes both halibut and any HMS species on the trip, the trip will be called a halibut trip.

Tuna: The tuna trip type has generally exclusively meant albacore trips off Oregon. In recent years there has been some interest develop in trying to target other HMS species such as shortfin mako shark and broadbill swordfish. It is the intent of ORBS to include these trips along with albacore trips so that the “tuna” trip type will actually represent all HMS trips. See noted in bottomfish and halibut for trips with combined activity.

Dive: The trip type actually represents only those trips where spear fishing is occurring. The spear fishing activity is the primary driver in this category, and not the species targeted. If both spear fishing and angling occurs on the same trip, then the appropriate angling trip type prevails and the entire trip falls under that category.

Non-fishing: Non-fishing trips mean just that, no fishing (or spear fishing) occurred on the trip. In most cases where ORBS encounters a non-fishing trip, there was either an initial intent to go fishing or the intended activity does not fall into the fishing category. The cause of aborted fishing activity usually falls under the either boat/engine problems, sea sick angler, or ocean/weather conditions worse than anticipated. If the anglers do not drop a line in the water, then the trip is categorized as a non-fishing trip regardless of the pre-trip intent. Non-fishing activities generally fall under either just out for a boat ride, or they were only crabbing.

California Department of Fish & Game

Trip-type Categories - California Recreational Fisheries Survey (CRFS)

Background

The California Recreational Fisheries Survey (CRFS) is a multi-part survey to estimate the total catch and fishing effort of marine recreational anglers in California. Field sampling is conducted at approximately 580 publicly-accessible sites during daylight hours to gather catch and effort data. A telephone survey of licensed anglers is conducted to gather data on effort when field observations of effort are not feasible, such as fishing at night and fishing from boats that return to private marinas. A telephone survey of commercial passenger fishing vessel (CPFV) operators is conducted to gather data for effort estimates for this mode of fishing. Data from the field sampling, the telephone survey of licensed anglers, sport fishing license sales, and the telephone survey of CPFV operators are combined to estimate catch and effort. The data are generally stratified during the estimation procedures by month, district, mode of fishing (*i.e.*, type of place or type of boat where fishing occurred), water area (ocean waters more than 3 miles from shore, ocean waters less than 3 miles from shore, inland marine waters, or Mexican waters), and trip-type category.

Methods

Each fishing trip is assigned to a trip-type category based on the type of fish that was targeted during the trip. Each angler that is interviewed in the field or on the telephone is asked what kind of fish he or she was targeting or attempting to catch, and each CPFV operator interviewed in the CPFV telephone survey is asked to identify the primary activity of each trip that his or her CPFV took during the survey period. Data are collected from anglers on primary and secondary target species. Data are also collected from private and rental boats and from CPFV on non-fishing trips. Non-fishing trips are trips where no directed fishing for finfish occurred.

The responses from anglers and CPFV operators are placed into trip-type categories during the estimation process. All angler responses on primary and secondary target species have been maintained in the database with one exception: the original responses during the telephone survey of licensed anglers in 2004 were not recorded; only the resulting trip-type was recorded.

Composition of Trip-type Categories

The CRFS initially used 17 trip-type categories (Table 1). The trip-type categories were recently reviewed and revised (Table 2). One of the goals in revising the trip-type categories was to reduce the number of categories, and thus, increase the sample size in each stratum. Another goal was to incorporate as many species from a Pacific Fishery Management Council (Council) management unit (*i.e.*, species that are managed under the same fishery management plan) as possible within one trip-type category. This will facilitate the calculation of total effort for each management unit. The criteria used for the new trip-type categories were: habitat, fishing method, Council management units, species associations, and catch-per-unit-effort for a species within a given trip-type category.

Table 1. The trip-type categories initially used by the California Recreational Fisheries Survey and the composition of each category.

Trip-type category	Examples of target species and/or groups in the trip-type category
Anything	Angler targeting ‘anything’; unidentified fish; trips targeting invertebrates where finfish are incidentally caught
Salmon	Chinook, coho, pink, chum, and sockeye salmon; sea run trout; steelhead
Rockfish	All rockfish species
Lingcod	Lingcod
Tuna/Sharks/Billfish	Tunas, sharks, billfish, skates, rays, mackerels, skipjacks, manta, louvar
Yellowtail	Yellowtail
White Seabass	White seabass
Bass/Barracuda/Bonito	Kelp bass, sand basses, California barracuda, giant sea bass, Pacific bonito
Halibut	California halibut, Pacific halibut
Croakers	Croakers/drums (except black croaker, spotfin croaker, California corbina, white seabass)
Perches	Surfperches, seaperches
Corbina	California corbina
Smelt	Surf smelt, jacksmelt, topsmelt, silversides family, eulachon
Sturgeon	White and green sturgeon
Striped Bass	Striped bass
Other	Any species or kind of fish that is not specifically listed under the other trip-types is placed in the “Other” trip-type category. These include: bottomfish (species group for non-specific groundfish trips), cabezon, greenlings, scorpionfish, black and spotfin croakers, flounders, Pacific whiting, herring, anchovies, jack mackerel, cods, sablefish, wrasses, soles, turbot, sculpins, gobies, gunnels, pricklebacks, unidentified surface fish, unidentified tunas (non-mackerel), and basic family groups of other trip types - salmon, sea bass, and surfperch families
Non-fishing	Fishing trips where invertebrates are the primary target and no finfish are caught; recreational finfish trips where no fishing occurred (<i>e.g.</i> , returned because of boat or engine problems and no gear was put in the water); commercial fishing trips; and non-fishing trips for activities such as diving, wildlife viewing, cruising, sailing, and maintenance.

Table 2. The new trip-type categories for the California Recreational Fisheries Survey and the composition of each category.

Trip-type category	Examples of target species and/or groups in the trip-type category
Anything	Angler targeting ‘anything’; unidentified fish; and trips targeting invertebrates where finfish are incidentally caught
Coastal pelagic and coastal migratory species	All species listed in the federal Pacific Fishery Management Council Pelagic Species Fishery Management Plan (northern anchovy, Pacific mackerel, jack mackerel, Pacific sardine); and other anchovies, Pacific barracuda, butterfish, flyingfish, jacks (family, yellowtail), mackerels (family, bullet, sierras, Pacific bonito), Pacific saury, and unidentified surface fish
Highly migratory species	All species listed in the federal Pacific Fishery Management Council Highly Migratory Species Fishery Management Plan, and other billfishes, Pacific cutlassfish, sunfish, other pelagic sharks, pelagic stingray, other tunas
Nearshore hard bottom, kelp beds, and shelf/slope hard and soft bottom	All species listed in the federal Pacific Fishery Management Council Groundfish Fishery Management Plan except leopard shark, California skate, sand sole, and starry flounder; all species listed in the California Nearshore Fishery Management Plan; and unidentified bottomfish or groundfish, blacksmith, black croaker, white seabass, other flounders, sea chubs, groupers, grunts, Pacific halibut, sea basses (except spotted sand bass), giant sea bass, kelpfishes, sculpins, wrasses, ocean whitefish, some surfperches (black, kelp, pink, rainbow, reef, sharpnose, striped), and other flatfish and sharks found nearshore over hard bottoms and off shore
Surf and nearshore soft bottom	Leopard shark, California skate, sand sole, starry flounder, croakers/drums (except black croaker and white seabass), herring, spotted sand bass, smelts, and silversides; surfperches not listed under Nearshore hard bottom, kelp beds and shelf/slope hard and soft bottom; and sharks, skates, rays, and flatfish found over nearshore soft bottoms
Salmonids	Salmon (chinook, coho, pink, chum, and sockeye), sea run trout, and steelhead
Other anadromous species (non-salmonid)	Striped bass, lampreys, shad, and sturgeons
Non-fishing	Fishing trips where invertebrates are the primary target and no finfish are caught; recreational finfish trips where no fishing occurred (<i>e.g.</i> , returned because of boat or engine problems and no gear was put in the water); commercial fishing trips; and non-fishing trips for activities such as diving, wildlife viewing, cruising, sailing, and maintenance

Revision of the Estimates Using the New Trip-type Categories

New estimates will be produced for 2004, 2005, and 2006 using the new trip-type categories. The 2005 and 2006 data can be input directly into the estimation programs using the new trip-type categories, because angler responses for target species have been maintained in the database. However, the original responses for the telephone survey of licensed anglers in 2004 were not maintained. We will use the 2005 and 2006 data to test ways in which to combine the initial trip-type categories used in 2004 so that they mirror the new trip-type categories.

ATTACHMENT D

Summary of Area of Catch Methods used in State Sampling Surveys

Washington Department of Fish & Wildlife

WDFW marine area codes for which catch estimates are produced:

Note: The Ocean Sampling Program (OSP) also produces estimates for the Columbia River estuary and catch landed from Canadian waters.

(1) **Area 1** (Ilwaco): West of the Megler-Astoria Bridge - north to Leadbetter Point. Waters west of the Buoy 10 Line and north to Leadbetter Point.

(2)(a) **Area 2** (Westport-Ocean Shores): From Leadbetter Point north to the Queets River. **Area 2** excludes waters of Willapa Bay and Grays Harbor.

(b) **Area 2-1**: Willapa Bay east of a line from Leadbetter Point to Willapa Channel Marker 8 (Buoy 8) then to the westerly most landfall on Cape Shoalwater.

(c) **Area 2-2**: Grays Harbor east of a line from the outermost end of the north jetty to the outermost exposed end of the south jetty.

(3) **Area 3** (La Push): From the Queets River north to Cape Alava.

(4) **Area 4** (Neah Bay): From Cape Alava north to a line from the Tatoosh lighthouse to Bonilla Point, British Columbia. **Area 4B**: Inside Juan de Fuca Strait from a line from the Tatoosh lighthouse to Bonilla Point, British Columbia east to the Sekiu River.

(5) **Area 5** (Sekiu and Pillar Point): From mouth of Sekiu River east to Low Point, mouth of the Lyre River.

(6) **Area 6** (East Juan de Fuca Strait): From Low Point east to the Partridge Point-Point Wilson line north to the line from Trial Island (near Victoria, B.C.) - Rosario Strait Traffic Lane Entrance Lighted Buoy R (USCG Light List No. 16340, referenced as Y "R" on National Ocean Service Chart No. 18400-1 dated 1997-08-30 - Smith Island - the most northeasterly of the Lawson Reef lighted buoys (RB1 QK Fl Bell) - Northwest Island - the Initiative 77 marker on Fidalgo Island.

(7) **Area 7** (San Juan Islands): All marine waters north of the line described under **Area 6** to the United States-Canadian boundary.

(8)(a) **Area 8** (Deception Pass, Hope and Camano Islands): Line projected from West Point on Whidbey Island to Reservation Head on Fidalgo Island east through Deception Pass, including all waters east of Whidbey Island to the Possession Point - Shipwreck Line.

(b) **Area 8-1** (Deception Pass and Hope Island): East of a line projected from West Point on Whidbey Island to Reservation Head on Fidalgo Island, south of the Burlington Northern Railroad Bridge at the north end of Swinomish Slough, north of the Highway 532 Bridge between Camano Island and the mainland, and westerly of a line from the East Point Light on Whidbey Island to the Saratoga Pass Light #4 on Camano Island (Fl red 4 sec.).

(c) **Area 8-2** (Port Susan and Port Gardner): East of a line from the East Point Light on Whidbey Island to the Saratoga Pass Light #2 on Camano Island (Fl red 4 sec.) and north of a line from the south tip of Possession Point 110 degrees true to a shipwreck on the opposite shore.

(9) **Area 9** (Admiralty Inlet): All waters inside and south of the Partridge Point-Point Wilson Line and a line projected from the southerly tip of Possession Point 110 degrees true to a shipwreck on the opposite shore and northerly of the Hood Canal Bridge and the Apple Cove Point-Edwards Point Line.

(10) **Area 10** (Seattle-Bremerton): From the Apple Cove Point-Edwards Point Line to a line projected true east-west through the northern tip of Vashon Island.

(11) **Area 11** (Tacoma-Vashon Island): From the northern tip of Vashon Island to the Tacoma Narrows Bridge.

(12) **Area 12** (Hood Canal): All contiguous waters south of the Hood Canal Bridge and adjacent waters north of the Hood Canal Bridge when fishing from the pontoon beneath the bridge.

(13) **Area 13** (South Puget Sound): All contiguous waters south of the Tacoma Narrows Bridge.

Oregon Department of Fish & Wildlife

OCEAN AREA AND REEF LOCATION 2006

In addition to catch landed by port, the ODFW Ocean Recreational Sampling Program (ORBS) collects area of catch information during dockside interviews. Historically the area of catch of salmon species has been based on geographic coordinates (e.g., latitude) without depth information (Table 1). Starting in the early 2000's the bottomfish and halibut fisheries have been sampled for mega reef of catch. Since most nearshore reefs off Oregon do not extend past the 30-fathom contour, the catch areas were assigned by latitude and split inside and outside of 30-fathoms (Table 2).

Table 1. Ocean Catch Areas for Salmon Fisheries

OCEAN AREA	AREA DESCRIPTION
1	North of Leadbetter Creek, WA
2	Leadbetter Creek to Cape Falcon
3	Cape Falcon to Cascade Head
4	Cascade Head to Heceta Head
5	Heceta Head to Humbug Mountain
6	Humbug Mountain to Point St. George
7	South of Point St. George, CA

Table 2. Reef Catch Area for Bottomfish and Halibut Fisheries

OUTSIDE REEF	INSIDE REEF	AREA DESCRIPTION
1	2	Washington
3	4	Columbia River to Necanicum River
5	6	Necanicum River to Cape Falcon
7	8	Cape Falcon to Tillamook Bay
9	10	Tillamook Bay to Netarts Bay
11	12	Netarts Bay to Sand Lake
13	14	Sand Lake to Nestucca Bay
15	16	Nestucca Bay to Siletz Bay
17	18	Siletz Bay to Beverly Beach
19	20	Beverly Beach to Yaquina Bay
21	22	Yaquina Bay to N. of Yachats
23	24	N. of Yachats to Sutton Creek
25	26	Sutton Creek to Siltcoos River
27	28	Siltcoos River to Tenmile Creek
29	30	Tenmile Creek to Cut Creek
31	32	Cut Creek to Floras River
33	34	Floras River to mouth of Garrison Lake
35	36	Garrison Lake to S. of Humbug Mountain
37	38	S. of Humbug Mountain to Euchre Creek
39	40	Euchre Creek to Hunter Creek
41	42	Hunter Creek to Pistol River
43	44	Pistol River to Whalehead Creek
45	46	Whalehead Creek to OR/CA border
47	48	California

California Department of Fish & Game

Fishing Location Data - California Recreational Fisheries Survey (CRFS)

Data collected on fishing location

Samplers collect the following data during the creel census (*i.e.*, angler intercept interviews) for each fishing mode:

6. Site where the interview took place.
7. County where the site is located.

Samplers also collect the following data during the creel census of anglers who fished from private/rental boats or from commercial passenger fishing vessels (CPFV):

1. The location where most of the fish were caught, or the location where most of the effort occurred if no fish were caught. These data are recorded using one of the following formats:
 - Latitude and longitude coordinates.
 - California Department of Fish and Game Block-Box (micro blocks) Designations. Each box is approximately one square nautical mile. [Note: latitude and longitude coordinates are generated for each micro block location, and both the coordinates and block-box appear in the database.]
 - Name of the fishing location (*e.g.*, name of a reef or landmark). [Note: latitude and longitude coordinates are generated for site, and both the coordinates and location name appear in the database.]
2. Bottom depth (fathoms) where most of the fish were caught, and whether a depth finder was used to determine the depth.
3. Location data for specific fish can also be recorded. The data sheet for anglers interviewed at the primary sites for private/rental boats provides space for recording the catch location and depth for each fish. The data sheet for anglers interviewed at secondary private/rental boat sites and on CPFVs provides space to identify those fish caught at the primary catch locations (*i.e.*, the location where most of the fish were caught).

Samplers collect the following data at each fishing location while sampling on-board commercial passenger fishing vessels (CPFV) at sea:

7. Specific location (latitude and longitude).
8. Minimum and maximum depths of the location.
9. Number of anglers whose fishing activities the sampler observed (monitored) while at the location.
10. Species caught by the all the anglers who were observed; and the number kept, the number discarded alive, and the number discarded dead (including fish that are obviously not going to survive).

Reporting

California has been divided into six geographic areas or districts for CRFS. The district boundaries coincide with county boundaries. The districts are:

- District 1 (South District) – Los Angeles, Orange, and San Diego counties.

- District 2 (Channel District) – Santa Barbara and Ventura counties.
- District 3 (Central District) - Santa Cruz, Monterey, and San Luis Obispo counties.
- District 4 (San Francisco District) - Marin, San Francisco, and San Mateo counties on the coast, and the six counties surrounding San Francisco and San Pablo bays (Alameda, Contra Costa, Solano, Marin, San Francisco, and San Mateo counties).
- District 5 (Wine District) - Mendocino and Sonoma counties.
- District 6 (Redwood District) - Del Norte and Humboldt counties.

Estimates are produced by district and by water area (ocean waters more than 3 miles from shore, ocean waters less than 3 miles from shore, or inland marine waters). Sample data is available at the site, angler, and trip level.

ATTACHMENT E

Report on RecFIN Sampling Survey Changes in 2006



Summary Report on 2006 Recreational Surveys Sampling Changes

I. CALIFORNIA - By California Department of Fish and Game

Field Survey Methods

No changes were made to the field survey methods in 2006.

Estimation Procedures

Errors were found and corrected in the computer programs to estimate catch and effort at man-made structures, secondary sites for private and rental boats, and beaches and banks. The changes that were made are described below.

(1) Man-made structures:

- A. A step in the estimation program calculates mean angler-trips per angler-hour by month/district/kind-of-day/cluster stratum. Trip-type and water area (ocean within 3 miles or inland marine waters) domains were mistakenly included in the stratum definition for the calculation. The mistake in stratification effected a subsequent calculation of mean angler-trips per day (*Angler-trips per day = angler-hours per day \times mean angler-trips per angler-hour*). The impacts of the error on the estimates of mean angler-trips per day were inconsistent and unpredictable.
- B. One of the steps in estimating CPUE is to sum the number of sampled anglers by district, month, trip-type, and water area. The program also mistakenly summed the number of sampled anglers by species which caused an error in the CPUE estimates and subsequent catch estimates. The results of the mistake on the estimates for CPUE and catch were inconsistent and unpredictable.

- (2) Secondary sites for private and rental boats: The same two errors that occurred in the estimation program for man-made structures occurred in the estimation programs for secondary sites for private and rental boats with the same results.
- (3) Beaches and banks: If no weight observation exists for a taxon in a mode/month stratum, the estimation program pools the weights for that taxon from other modes that month. Typically, only unobserved catch (*i.e.*, B fish) at taxonomic levels higher than species (*e.g.*, genus and family) and rare fish do not have weights after pooling occurs. A programming error resulted in the elimination of catch estimates (in number of fish) for taxon with no mean weight after pooling. This error primarily impacted the estimates of unobserved catch that were reported at the genus or family levels and rare fish.

II. OREGON - By Oregon Department of Fish & Wildlife Marine Resource Program

Changes in Oregon Recreational Boat Survey (ORBS) Methodology

Introduction

In October, 2006 the RecFIN Technical Committee established a process for communicating changes in sampling programs designed to determine effort and catch in west coast marine sport fisheries. Notification is required for all changes that affect: estimates back in time, a time series, sampling procedures, estimation procedures, variance computations, and sampling frames or coverage. This process was to start with a report on each sampling program due March 1, 2007 which summarized qualifying changes that occurred in the 2006 calendar year. As the Oregon Shore and Estuary Boat Survey (SEBS) was not conducted in 2006, this report focuses on the Oregon Ocean Recreational Boat Survey (ORBS).

Discussion

Only one change in ORBS methodology was designed in 2006 and incorporated in January, 2007. The change was a modification in the method to estimate effort and catch (both landed and discarded) during unsampled periods. This was not considered to be a major modification as the portion of annual effort and catch occurring in the unsampled frame is less than 10 percent of the annual estimates of impacts on groundfish stocks, and a much smaller portion of estimated harvest of other important species such as salmon and Pacific halibut due to the timing of their limited seasons.

Previous Methodology

The impetus for this change reflected concern that there was a lack of consistency between the inseason and postseason estimation methodology, as the two methods were different. This often resulted in an undesirable shift of estimated impacts when total

harvest is calculated postseason. For example, a fishery may be restricted due to the inseason estimate showing the quota had been attained. The postseason catch estimates may indicate the quota had not been attained and the fishery was restricted prematurely. Of course, the opposite could also happen where the fishery was not restricted inseason when it should have been.

The inseason approach used in past years to estimate effort and catch during unsampled periods was based on the previous year's monthly estimate by port, boat type, and species. Postseason, the approach was to adjust those estimates based on the effort and catch observed during the sampled period by port and incorporating temporal patterns observed during a three-year study conducted during the late 1990s and early 2000s. The temporal patterns were based on sampling in four major ports (Depoe Bay, Newport, Charleston and Brookings) with the results applied to all ports.

Current Methodology

The methodology implemented for 2007 is based on relating the effort and catch by boat type in an unsampled port to the effort and catch by boat type in sampled port(s) during that month. It compares the relative level of angler trips and catch between ports during periods when all ports are sampled, generally June through September. In order to provide estimates during the winter period (November through February), sampling will occur in one to three ports year round. By sampling year round on an annual basis, we are addressing the variable weather influence on fishing opportunity.

To estimate angler trips in an unsampled port, an effort relationship was developed between observed effort in each of the ports and the Oregon coastwide effort as a whole during the summer sampling period (generally June through September). This relationship was based on a three year running average that included the most recent sampled period. During periods in which no sampling is conducted in a port, the proportion of coastwide effort attributed to that port is divided by the proportion of effort attributed to the ports that were sampled in that period. This unsampled to sampled relationship is applied to the estimated effort for the sampled ports, resulting in the number of angler trips that is estimated to have occurred in the unsampled port (see example below).

The bottomfish catch per angler (CPUE) and species composition in unsampled ports by boat type are based on the average observed during the most recent sampled period in each port. Thus, sampling conducted during the summer sampling period (generally June through September) would be used to determine both CPUE and species composition for the period when sampling terminates for that year until sampling is resumed the following year. CPUE was determined using only data collected on bottomfish trips and the catch of salmon, halibut, tuna, and bait species were not included. Salmon and halibut would be closed during unsampled periods and tuna are not seen in the winter months.

To estimate species level impacts in unsampled ports by boat type, the CPUE observed during the most recent sampling period (as described in previous paragraph) is applied to the estimated effort (process described above), resulting in estimated bottomfish impacts. The estimated bottomfish impacts are then parceled out by species using a port and boat type specific species composition, developed from the most recent sampling period.

No change was made in the methodology used to determine average weight and discard mortality rates.

Example of revised method to determine catch in an unsampled port :

Newport and Brookings are sampled year round and angler effort during the period from November through February in all other ports is estimated based on the fisheries in these two sampled ports. Calculate the catch in Depoe Bay in December in the charter fishery. (Note: the example does not use real data)

The June-Sept charter effort in Depoe Bay is 25% of the combined Newport-Brookings charter based angler trips. The prior March through October average CPUE out of Depoe Bay is 5 fish per angler in the charter fleet. The prior March through October species composition in the charter fleet for Depoe Bay shows that black rockfish comprise 85% of the catch, lingcod is 10%, and blue rockfish is 5%. In December, an estimated 100 angler trips on charter vessels were taken out of combined Newport-Brookings.

Step 1 (calculate the December effort in Depoe Bay):

100 combined Newport-Brookings December angler days * 0.25 Depoe Bay = 25 Depoe Bay December charter angler trips

Step 2 (calculate the total catch in Depoe Bay):

5 fish per angler * 25 angler days = 125 total fish landed on Depoe Bay charter vessels in December

Step 3 (calculate landings by species in Depoe Bay on charter vessels in December):

125 total fish * 0.85 black rockfish = 106.25 black rockfish

125 total fish * 0.10 lingcod = 12.5 lingcod

125 total fish * 0.05 blue rockfish = 6.25 blue rockfish

III. WASHINGTON By Washington Department of Fish and Wildlife

No changes were made to field survey methods or estimation procedures in the Puget Sound Boat Survey or the Ocean Sampling Program during 2006.

Submitted by:

Russell Porter

RecFIN Technical Committee Chairman

March 1, 2007

ATTACHMENT F

RecFIN Workshop Summary/Agenda



**RecFIN Workshop Agenda
August 28-September 1, 2006
Marriott Residence Inn, Portland, OR @ Riverplace**

*Presented by
Pacific States Marine Fisheries Commission
Pacific Fishery Management Council*

Monday, August 28, 2006

12:00 Noon - Served Buffet Lunch in Meeting Room

1:15 P.M.

Welcome - *Randy Fisher, PSMFC Executive Director*

A. Discussion and Listing of Recreational Data Needs for the Council Family
[SSC, Management Teams, Advisory Panels, Stock Assessment Biologists]
Russell Porter, PSMFC RecFIN Technical Comm., Facilitator

3:00 P.M. Break

3:15 A.M.

B. Discussion of Stock Assessment Biologist's needs and uses of data
Alec McCall, NMFS/SWFSC, Santa Cruz, CA .

C. Review of National Research Council report commissioned by NMFS on recreational fishery sampling methodologies. – *Dave VanVoorhees, NMFS/HQ & Russell Porter, PSMFC*

5:00 P.M. Adjourn

Tuesday, August 29, 2006

8:30 A.M. **Review of RecFIN & AK Field Sampling Programs & Methodologies**

- D. California Recreational Fisheries Survey (CRFS) – *Connie Ryan, CDFG*
1. Review of Sampling Design
 2. Catch & Effort Expansion Program/Statistics
 3. Discussion/Questions & Answers

10:00 A.M. Break

- E. Oregon Recreational Boat Survey (ORBS) – *Eric Schindler, ODFW*
1. Review of Sampling Design
 2. Catch & Effort Expansion Program/Statistics
 3. Discussion/Questions & Answers

11:00 A.M.

- F. Alaska SWHS/Logbook program – *Allen Bingham, ADFG*

11:45 A.M. Lunch (On Your Own)

1:15 P.M.

- G. Washington Ocean Sampling Program (OSP) – *Theresa Tsou, WDFW*
1. Review of Sampling Design
 2. Catch & Effort Expansion Program/Statistics
 3. Discussion/Questions & Answers

3:00 P.M. Break

3:15 P.M.

- H. Oregon Shore & Estuary Boat Survey (SEB) – *Linda Zumbrunnen, ODFW*
Brian Wright, ODFW
1. Review of Sampling Design
 2. Catch & Effort Expansion Program/Statistics
 3. Discussion/Questions & Answers

- I. Washington Puget Sound Boat Survey – *Pete Hahn, WDFW*
1. Review of Sampling Design
 2. Catch & Effort Expansion Program/Statistics
 3. Discussion/Questions & Answers

4:45 P.M. Adjourn

Wednesday, August 30, 2006

8:30 A.M.

- J. Discussion of RecFIN Sampling Components/ Database Access of Them

Wade VanBuskirk, PSMFC RecFIN Programmer/Analyst

K. Review Process For Recreational Data and Estimates Used in Management

Russell Porter, Wade VanBuskirk, PSMFC

10:00 A..M. Break

10:15 A.M.

L. *Comparison Report* by RecFIN Statistical Subcommittee of the current RecFIN sampling programs for fishing effort (Agenda Items D - H) and the MRFSS Household Survey for fishing effort [What can we say about past estimates in MRFSS and current RecFIN Sampling surveys in relation to the effort component – reviews 2004-05 effort estimates from the three state programs and the MRFSS household survey for effort]

Todd Lee, NMFS, RecFIN Statistical Subcommittee Chairman

11:45 A.M. Lunch (On Your Own)

1:15 P. M.

M. Converting Numbers of fish in the catch estimates to Weight (MT) – Review of current RecFIN sampling components, weight conversion processes, and pooling rules by state for average weight computation by species.

Discussion Leader – *Wade VanBuskirk, RecFIN Programmer/Analyst*

Panel Members - *Connie Ryan, CDFG*

Eric Schindler, Don Bodenmiller, ODFW

Theresa Tsou, WDFW

Alaska Port Sampling Program for Mean weights – *Scott Meyer, ADFG*

3:00 P..M. Break

3:15 P.M.

N. Discussion of the concept of developing a functional depth-weight relationship for groundfish species [Utilize for determining average weight for fish not seen, but for which depth of catch is know, such as discards etc.]

Russell Porter, RecFIN Technical Comm. Chairman

PSMFC, Facilitator

4:45 P.M. Adjourn

Thursday, August 31, 2006

8:30 A.M.

- O. Recording Discards in State Sampling Programs/RecFIN
 - Review of Current Methods in CA, OR & WA
 - Computing Average Weights of Discards
 - Computing Mortality percentages/Hooking Mortality
 - Generating MT removed/killed for Discarded Fish
 - Wade VanBuskirk, PSMFC RecFIN Programmer/Analyst & Three State Representatives*

10:00 A.M. Break

- P. Report by the RecFIN Database Subcommittee on review and suggestions for the RecFIN website.
 - Wade VanBuskirk, PSMFC, RecFIN Programmer/Analyst; RecFIN Data Subcommittee Member*

11:45 A.M. Lunch (On Your Own)

1:15 P.M.

- Q. Workshop Summary and Consensus where possible on agenda items.
 - Russell Porter, RecFIN Technical Committee Chairman, PSMFC*

3:30 P.M. Adjourn

RecFIN Workshop Summary
Prepared for RecFIN Technical Committee
October 18-19, 2006

Introduction. The RecFIN Workshop was held August 28-31, 2006 in Portland, Oregon. The first main agenda item included presentations on the five field sampling programs for marine recreational fisheries in Washington, Oregon and California that are loaded into the RecFIN database as well as a presentation on the Alaska recreational sampling programs. The summaries of the five RecFIN/State sampling programs included: California Recreational Fisheries Survey (CRFS), Oregon Recreational Boat Survey (ORBS), Oregon Shore and Estuary Boat Survey (SEB), Washington Ocean Sampling Program (OSP), and Washington Puget Sound Boat Survey. These sampling method reviews are available on the RecFIN website [www.recfin.org]. The additional main agenda items included reviews of data elements needed for management, data needs for stock assessments, computation of average weight by species for conversion of numbers of fish landed to metric tons landed, and recording of discards by species and size for incorporation of a portion of the discards and removed catch. In addition, a review of the National Research Council report led to a summary of responses to their recommendations from a Pacific coast perspective (attached).

Data Needs. Three lists for data needs for management were provided. These included one for data elements now or previously collected in RecFIN sampling programs, data needs from the Pacific Fishery Management Council's Groundfish Management Team (GMT), and data needs from the Pacific Fishery Management Council's Scientific and Statistical Committee (SSC). These three listings are provided as attachments to this summary. RecFIN needs to review these lists in relation to current sampling programs for possible discrepancies in data collection.

Average Weight. There need to be methods agreed to for computation of average weight by species for both retained and discarded catch in each state sampling program. The ideal would be for these methods being more consistent as to process, imputation when needed, and number of observations required.

Discards. The current methods used in the various states differ to some degree, but can be brought to a common denominator. RecFIN needs to address this issue and try to come to a solution for the data so that they are more comparable. This discussion needs to also include agreement on hooking or discard mortalities being used.

NRC Report & NMFS Response. NMFS held the first of a number of planned meetings in Denver with the three coast survey representatives and managers to commence discussion on the NRC report. The meeting was held the week after the RecFIN Workshop. Two representatives attended from PSMFC and Oregon Fish and Wildlife and three from Alaska Fish and Game. A draft implementation plan to address the NRC recommendations and the process for moving forward is being drafted by NMFS headquarters and will be distributed sometime in mid-October.

ATTACHMENT G

NRC Report Recommendations and RecFIN State Sampling Programs Status

NRC REPORT COMMENTS Pacific Coast RecFIN Workshop Portland, OR August 28-31, 2006

I. Sampling Issues:

a. Comprehensive Saltwater Angler Sampling Frame

All four Pacific States (CA, OR, WA, & AK) have angler licenses.
OR & WA have electronic point of sale (POS) angler license frames
CA will have an electronic POS frame in 2008.
AK has a paper license.

CA: License is for fresh or saltwater fishing, some exclusions by fishing mode and age (juveniles)

OR: License is for fresh or saltwater fishing, some exclusions by age (juveniles) and short term licenses (1-day etc.)

WA: Saltwater license with just a few exclusions (juveniles)

AK: License is for fresh or saltwater fishing, some exclusions by age (juveniles). Not electronic, but AK is moving forward to instituting an electronic licensing program.

-Under 16 not present

-Daily licenses not included, impacts CPFV

b. Telephone Surveys based on the Angler sampling frame

The angler license frames are currently used as a component of effort sampling in CA, OR and WA along with direct counts of effort in the field. AK uses their angler frame for a random drawing of anglers for a mail survey.

c. CPFV Logbooks with caught and released data required

CA: Has had a mandatory CPFV log and license for many decades. Individual species limited, others grouped.

OR: Currently no log required

WA: Currently no log required, instituted a voluntary program in 2006, would support it mandatory if mandated

AK: Has a mandatory CPFV log. AK licenses all charter businesses and vessels and require logbooks for all trips with clients on board.

Currently a Federal Logbook is required for CPFV Highly Migratory Species (HMS) trips in PFMC regulated states. Electronic logs better for managers, but there may be issues with onboard data entry, also accuracy issues if complying Funding?

d. Added studies to understand discards and magnitude in catch etc

CA: Rides all CPFV's sampled to observe discards, species and size

OR: Ride some CPFV's sampled to observe discards on certain trip types, for species and size

WA: Ride some CPFV's (Halibut and salmon trips) to observe discards for species and size

AK: Not currently riding CPFV's, discards reported in logbooks. AK collects information on released fish by species. Can estimate release mortality.

All states providing base-line data for CPFV's. There are issues with other modes, as angler reported data is the only current way to assess discards. Some additional observers/samplers added to CPFV HMS trips.

e. Panel Surveys to contact anglers over time for trend data & improve efficiency

CA: Some field tests of angler panels at public and private access boat sites were undertaken in 2005. Data is being studied.

OR: Has not been used to date.

WA: Has not been used to date.

AK: Not used, see potential for bias.

There may be prestige bias issues, or lack of less avid angler participation. This is considered a low priority by Pacific States. However, the Pacific states feel it would be very helpful, if we could get at private access trips to profile catch and CPUE.

f. Sampling frame of sites should be redesigned to include low effort and private sites

In CA, OR & WA all sites are in the sampling frame, including low effort sites. Private access sites are enumerated, but cannot be sampled directly.

CA: Only private access sites not in frame
OR: Major, minor and occasional ports all in the frame
WA: Most all sites covered as coastal sites are not extensive
AK: Randomly sample all major access sites representing over 90% of effort. Are the catch rate and species composition different at these sites?

-

g. Employ dual sampling frames to reduce sampling bias

Dual frames are used in some modes as a cross check.

CA: Has not employed another frame for license frame exclusions, other than ratios of non-licensed effort from field questions on license type or none.
OR: Not employed for license frame exclusions (SEB only)
WA: Not employed for license frame exclusions (Puget Sound only)
AK: Dual sampling during creel surveys and logbooks

- Main issue: How do we get CPUE for private trips?

h. Internet surveys should be employed, especially for panels for anglers to submit information.

CA: Not used
OR: Not used
WA: Not used
AK: Not used

-Internet surveys more useful for panel surveys.
-Should we employ a mechanism to capture email addresses?
Many anglers don't have internet service.

II. Statistical Estimations

a. Determine statistical properties of sampling, data collection and data analysis methods

Processes have been instituted to review data problems by the RecFIN Statistical Subcommittee and PFMC Science and Statistical Committee (SSC) for CA, OR & WA.

Concur that there should be a continuing process to evaluate methods. It is important to verify assumptions made in designing the sampling and estimation methods. Possible biases that may arise because of survey designs should be documented. The possible significance of assumptions made in the sampling and estimation process should be described to data users.

AK: All AK marine sampling programs have operational plans that undergo biometric and in some cases peer review.

b. All sampling assumptions examined and verified

We need to better explain what we do. Comparison studies and validation of sampling data needs to be noted.

AK: Yes, as part of periodic program reviews. Our household mail survey is currently undergoing review.

c. Is a research group of statisticians used to design and keep up on new survey methods?

The Pacific States may have different needs because of quota management schemes and in-field catch and effort surveys, along with license frame effort surveys.

If funding is available we could possibly get an independent group to review methods that are currently reviewed in-state by statisticians and the RecFIN Statistical Subcommittee (States & NMFS) if so, we should identify specific needs for outside input. A Full time RecFIN Statistician would assist to address regional needs and do specific detailed analyses.

AK: All sampling programs are reviewed and approved annually by a biometrician. In addition, all final estimates are reviewed by a biometrician.

III. Human Dimensions

a. Develop national trip and expenditure survey for Valuation studies and impact analysis

AK: Periodically conducts trip and expenditure surveys.

- b. Continue add-on surveys in a more focused way to target specific management needs.

AK: Conducts various add-on surveys to address management issues/needs as they arise.

- c. Sampling frame should be enhanced to support social, economic and human dimensions analyses

CA, OR and WA: Currently defer to the NMFS periodic surveys for these items. The Pacific supports the planned NMFS Review of the Economic Surveys. The Pacific would like a study that looks at the impacts of MPA's on angler behavior.

IV. Program Management & Support

- a. Permanent independent Research Group should be established for survey statistical design adequacy and to guide modifications
- b. Fund Survey office devoted to management and implementation of surveys and coordination between various state and federal surveys

Pacific/RecFIN Comments: These items are best done regionally and through the regional fishery management councils. The Pacific is open to bringing in independent reviews and receiving input from a National group.

V. Communication and Outreach

- a. Advise anglers on constraints that apply to data uses for various purposes and data limitations.
- b. Outreach and communication should be institutionalized in the sampling programs.
- c. Anglers associations should be engaged as partners with managers through workshops and participation in advisory groups for data collection and survey design, knowledge gathering, and dissemination activities.

The Pacific agrees with this recommendation

The NOAA Regional Salt water Fishing Action teams composed of angling rep and agency representatives are currently being used to communicate program information to the angling community in Southern California.

It is Important that there be more coordination by NMFS on their economic surveys with the States and the angling community
The Web site could be a useful tool to enhance communication.

ATTACHMENT H

**Data Elements Collected in Field Sampling programs and those requested by the
GMT, SSC and the NRC Report.**

SUMMARY OF RECREATIONAL FISHERY DATA NEEDS

<u>Data Element</u>	<u>RecFIN/States Collect</u>	<u>GMT Requests</u>	<u>SSC Requests</u>	<u>Stock Assessment Requests</u>	<u>NRC Report</u>
Effort Estimates:	CA, OR, WA	Yes	Yes	Yes	Yes
Trips per Angler by trip type	CA, OR, WA		Yes		
Number of Anglers	CA *		Yes		
Landed Fish by species:	CA, OR, WA	Yes	Yes	Yes	
By Numbers	CA, OR, WA	Yes	Yes	Yes	
By Weight	CA, OR, WA	Yes	Yes	Yes	
CPFV Logs Required	CA				Yes
Discards (Returns)	CA, OR, WA	Yes	Yes	Yes	Yes
Mortality rate applied	OR, WA, CA *	Yes	Yes	Yes	
Estimated Dead	CA, OR, WA	Yes	Yes	Yes	Yes
Estimated Alive	CA, OR, WA	Yes	Yes	Yes	
Weights for landed catch	CA, OR, WA	Yes * added	Yes	Yes	
Weights for discards	CA, OR	Yes * added	Yes	Yes	
CPUE	CA, OR, WA		Yes (& raw data)	Yes (& raw data)	
Catch by:					
Water area	CA, OR(some)		Yes (very fine)	Yes	
depth	CA, OR(charter)		Yes		
Biological Data:					
Otoliths	CA, OR, WA		Yes	Yes	
fin rays	By Request				
Scales	By Request				

<u>Data Element</u>	<u>RecFIN/States Collect</u>	<u>GMT Requests</u>	<u>SSC Requests</u>	<u>Stock Assessment Requests</u>	<u>NRC Report</u>
Zip code of residence	CA		Yes		
Regulations Summaries by Year	? RecFIN Job?		Yes		
Number of Active & Inactive CPFV's	CA,OR,WA(on request)		Yes		
Number of CPFV Trips by Trip Type	CA,OR,WA OR,WA (not for the non-fishing)		Yes		
Economic Data for CPFV's by Trip Type	Not annually NMFS Study?		Yes		
RecFIN Reports:					
Effort Data Summary		Yes			Yes
Removals including same hooking mortality applied	CA,OR,WA *Not standard rate	Yes			
Catch By PMFC Mgt Areas	Limited by Rec Sample frames	Yes			
Canned Reports for Major catch & effort needs		Yes			
Complete Angler Frame	Partial – CA,OR,WA				Yes