

**DRAFT SUMMARY MINUTES**  
**Scientific and Statistical Committee**

Pacific Fishery Management Council  
Embassy Suites Portland Airport  
Firs I  
7900 NE 82nd Avenue  
Portland, OR 97220  
503-460-3000  
September 19-21, 2005

***Call to Order and Scientific and Statistical Committee (SSC) Administrative Matters***

The meeting was called to order at 8 a.m. Dr. Don McIsaac briefed the SSC on priority agenda items.

Subcommittee assignments for 2005 are detailed in the table at the end of this document.

**Members in Attendance**

Mr. Tom Barnes, California Department on Fish and Game, La Jolla, CA  
Mr. Steve Berkeley, University of California, Santa Cruz, CA  
Mr. Alan Byrne, Idaho Department of Fish and Game, Nampa, ID  
Mr. Robert Conrad, Northwest Indian Fisheries Commission, Olympia, WA  
Dr. Ramon Conser, National Marine Fisheries Service, La Jolla, CA  
Dr. Michael Dalton, California State University, Monterey Bay, CA  
Dr. Martin Dorn, National Marine Fisheries Service, Seattle, WA  
Dr. Owen Hamel, National Marine Fisheries Service, Seattle, WA  
Dr. Kevin Hill, National Marine Fisheries Service, La Jolla, CA  
Mr. Tom Jagielo, Washington Department of Fish and Wildlife, Olympia, WA  
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR  
Dr. Hans Radtke, Yachats, OR  
Dr. Stephen Ralston, National Marine Fisheries Service, Santa Cruz, CA  
Dr. David Sampson, Oregon State University, Newport, OR  
Ms. Cynthia Thomson, National Marine Fisheries Service, Santa Cruz, CA

**Members Absent**

Dr. André Punt, University of Washington, Seattle, WA

## **Scientific and Statistical Committee Comments to the Council**

The following is a compilation of September 2005 SSC reports to the Council. (Related SSC discussion not included in written comment to the Council is provided in italicized text).

### ***Salmon Management***

#### **G.2. Methodology Review – Final Priorities and Schedule for 2005**

The SSC met with Mr. Andy Rankis and other members of the Model Evaluation Workgroup (MEW) to identify items for review by the SSC Salmon Subcommittee at its October meeting. The following items were identified as ready for review:

- Chinook and Coho Fishery Regulation Assessment Model (FRAM) Documentation. The MEW indicated that the FRAM Overview document that was submitted previously has been updated. This update includes the addition of some previously undocumented model equations.
- Documentation of the base data development process for Chinook FRAM.
- Documentation of the base data development process for Coho FRAM.
- Ocean abundance predictor methodologies for Columbia River Fall Chinook salmon.

The SSC Salmon Subcommittee will review these products in October prior to the full SSC meeting in November.

### ***Groundfish Management***

#### **F.7. Rebuilding Plan Revision Rules**

At the June meeting, the SSC prepared a detailed statement that described an approach to assessing adequacy of progress of overfished groundfish stocks towards attaining their rebuilding targets. The SSC also evaluated a set of decision rules that could lead to revisions of rebuilding plans, should progress be deemed inadequate. The approach was developed and studied using a computer simulation technique termed a management strategy evaluation (MSE). Although the Council directed the SSC to continue its evaluation of revision rules, subsequent advice from Council staff indicated that the approach was inconsistent with language in Amendment 16-1 to the Groundfish Fishery Management Plan (FMP). Hence, work on the MSE was stopped and, instead, a list of rebuilding “runs” was developed that could be used by the Council to assess rebuilding progress and to provide some guidance on what changes might be required to rebuilding plans (see Agenda Item F.7.a, Attachment 1). Effectively, this will allow the Council to treat each overfished stock individually.

The SSC discussed the list of runs that are outlined in Attachment 1 and concluded that results from such an analysis should provide the essential information the Council will need to evaluate rebuilding progress and to implement revisions to rebuilding plans, should progress be lagging. In particular, Run #5 is viewed as critical for framing a set of alternatives that could bracket a range of policies. Specifically, there are two possible outcomes of Run #5 that could guide Council decision-making. First, if Run #5 shows that the probability of rebuilding by  $T_{max}$  at the current spawning

potential per recruit (SPR) is greater than the original probability value selected by the Council (P0), thus in order to be consistent with proposed NS1 guidelines, the existing exploitation rate should be maintained in order to rebuild the stock as soon as practical. Second, if Run #5 indicates that the probability of rebuilding by  $T_{max}$  at the current SPR is less than 0.50, then the Council may elect to lower the exploitation rate (i.e., increase SPR) to insure that rebuilding is more likely than not.

Some additional recommendations are:

- $T_{min}$ , mean generation time, and  $T_{max}$  should be re-calculated routinely using new information obtained from updated stock assessments and their values compared with existing estimates.
- Both the rebuilding exploitation rate and SPR should be reported in rebuilding analyses.
- An additional rebuilding run should be conducted that maintains the same optimum yield (OY) values as provided in the existing rebuilding analysis.
- If an analyst opts to use a different method of projecting stock rebuilding the effect of the change should be fully evaluated and described.

#### F.8. Stock Assessments for 2007-2008 Management.

### **April 18-22 STAR Panel, Seattle, Washington - English Sole, Petrale Sole, Starry Flounder**

#### English Sole

The SSC reviewed the assessment and Stock Assessment and Review (STAR) Panel reports for English sole (*Parophrys vetulus*). The stock of English sole off the U.S. West Coast had not previously been assessed on a coastwide basis; the most recent previous assessment, completed in 1993, was restricted to the stock off Oregon and Washington. The new assessment reconstructed the catch history back to the late 1800s, the assumed start of fishing. For the analysis the stock was divided into southern and northern fisheries and surveys, with detailed length and age composition data available primarily for the northern fishery. The only observations of trends in relative biomass were from the National Marine Fisheries Service (NMFS) triennial shelf bottom trawl survey, which has indicated very large increases during the past decade in the biomass of English sole in both the southern and northern areas. The assessment concludes that the spawning stock biomass of English sole at the start of 2005 was 92% of the unexploited level and that current exploitation is very low. The SSC found this to be a very thorough assessment and endorses the English sole stock assessment as providing the best available science and can form the basis for Council decision-making.

#### Starry Flounder

The SSC reviewed the assessment and STAR Panel reports for starry flounder (*Platichthys stellatus*). This is the first assessment of starry flounder off the U.S. West Coast. It is based on the assumption of separate biological populations north and south of the California/Oregon border and uses data on catches, indices of relative abundance based on trawl logbook data, and an index of age-1 abundance from trawl surveys in the San Francisco Bay and Sacramento-San Joaquin River estuary. Unlike most other groundfish stock assessments, no age- or length-composition data are directly used in the

assessment. Both the northern and southern populations are estimated to be above the target level of B40%, although the status of this data-poor species remains fairly uncertain compared to that of many other groundfish species. The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

#### Petrale Sole

The Petrale sole (*Eopsetta jordani*) Stock Assessment Team (STAT) decided to treat the population off the U.S. West Coast as separate northern and southern stocks. The assessment for the northern stock was withdrawn from the April STAR Panel review because age-composition data for recent years, which might influence the assessment's estimate of current stock status, arrived during the review. The assessment for the northern stock will be reviewed during the mop-up STAR Panel in late September.

The SSC reviewed the assessment and Draft STAR Panel reports for the southern stock of petrale sole. The revised assessment document received following the STAR Panel was incomplete and could not be thoroughly reviewed and approved by the SSC. The STAT Team will be informed of the missing information and the SSC will review the revised document at its November meeting. Depending on the outcome of the mop-up STAR review of the northern petrale assessment, the SSC may request additional analyses from the STAT Team for the southern petrale assessment.

#### **May 9-13, 2005 STAR Panel, Long Beach, California - Cowcod, Gopher Rockfish, Vermilion Rockfish, and California Scorpionfish**

#### Gopher rockfish

The SSC reviewed the assessment and STAR Panel report for gopher rockfish (*Sebastodes carnatus*). This is the initial assessment of gopher rockfish. Though the distribution of gopher rockfish extends south into the Southern California Bight, the assessment is restricted to the stock north of Pt. Conception. The assessment is based on landings and length composition data from commercial and recreational fisheries (primarily hook and line gear), and an index of relative abundance (catch per unit effort) from the commercial passenger fishing vessel (CPFV) Sportfish Survey database. These data sources were used to estimate population trends from 1965 to 2004. There are no fishery-independent indices of stock biomass for gopher rockfish. Assessment results indicate an upward trend in gopher rockfish biomass since the 1980s and estimates of 2005 abundance ranged between 60% and 110% of average unfished stock size. Recent exploitation rates are estimated to have been well below the FMSY proxy for rockfish. The SSC endorses the STAR Panel conclusions that this assessment represents the best available science and can form the basis for Council decision-making.

#### *Technical notes and recommendations:*

- *Although the distribution of gopher includes the Southern California Bight, the assessment was restricted to the area north of Pt. Conception. This is not uncommon for West Coast groundfish and the GMT has considerable experience in expanding results from assessed areas to the full range of the stock. At some point, however, the SSC may want to provide general advice on this issue.*
- *The CPFV catch per unit of effort (CPUE) index is considered more reliable than the RecFIN CPUE index because it uses data collected by onboard observers who record location and identify species. However, this time series ended in 1998 and offers no*

*information on current biomass, and will become increasingly problematic for future assessments.*

- *As recommended by the STAR Panel, the RecFIN CPUE index was not used in the final runs. However, these data and all discussion of them were also removed from the revised assessment document. For this assessment and more generally for all assessments, all data sources which were considered should be included in the final assessment documents.*
- *Projections were carried out using the 40:10 control rule. For gopher rockfish, the projected catches in the first years of the projection were more than twice the current catch. The 40:10 projections should be supplemented with projections that set these catches at a level more similar to current catch.*

### Vermilion rockfish

The SSC reviewed the assessment and STAR Panel report for vermillion rockfish (*Sebastodes miniatus*). This is the initial assessment of vermillion rockfish. The assessment is restricted to the stock in California waters. Separate assessment models were developed for the stock north and south of Pt. Conception. Recent genetic research indicates that vermillion rockfish is actually two species, however nothing is known about biological differences between the two species, or their relative abundance. The two species were assessed as a single stock. The assessment uses data on recreational and commercial catches, length-frequency data, and indices of relative abundance derived from CPFV and RecFin CPUE data. There are no fishery-independent indices of stock biomass for vermillion rockfish. Biomass estimates for most model configurations show an upward trend since about 1990, and recent exploitation rates are estimated to be near the FMSY proxy for rockfish. However, fishing mortality rates may have exceeded the FMSY proxy for rockfish historically, and vermillion rockfish may have dropped temporarily below the overfished threshold prior to the recent increase. For the northern component, estimates of 2005 biomass ranged between 41% and 89% of average unfished biomass, while for the southern component, the range was between 30% and 88% of average unfished biomass.

The STAR Panel was unable to identify a base model for vermillion rockfish, and instead proposed a pair of models to illustrate the range of uncertainty in stock status. The STAR Panel concluded the stock does not currently appear to be overfished and overfishing is not occurring. The SSC does not fully concur with the STAR Panel conclusions. The SSC notes the available data indicate the stock was overfished in the past, and a few recent extreme values appear to drive the recent upward trend in abundance. The assessment model produced divergent results and exhibited extreme sensitivity to what should be innocuous changes in data or assumptions. Vermilion rockfish is currently in a group of data-poor rockfish that are subject to restrictive management. Given concerns about assessment reliability, the SSC questions whether moving vermillion rockfish out of this data-poor group and basing management on this stock assessment can be justified. SSC considers the assessment to be best available science, but at this stage does not endorse the results as being suitable for setting OYs.

*Technical notes and recommendations:*

- *The model and data problems for vermillion rockfish do not appear solvable at this time. The SSC, however, encourages further assessment work on vermillion rockfish in a future assessment cycle, perhaps with a simpler modeling approach with fewer data requirements.*

Cowcod

The SSC reviewed the assessment and STAR Panel report for cowcod (*Sebastodes levis*). The first assessment of cowcod in 1999 led to the stock being declared overfished and the establishment of a rebuilding plan. Like the previous cowcod assessment, this assessment is restricted to the stock south of Pt. Conception, although the distribution of cowcod extends further north. The assessment is based on catch data from commercial and recreational fisheries, an index of relative abundance (catch per unit effort) derived from CPFV data from 1963-2000, and a single visual transect survey conducted by submersible in the Cowcod Conservation Area (CCA) in 2002. Although assessment results suggest that cowcod are less depleted than was estimated in the initial cowcod assessment, they are still overfished by Council criteria. Estimates of stock size in 2005 ranged from 14 to 21% of mean unfished stock size depending on a plausible range of assumptions for the stock-recruit relationship. Rebuilding measures appear to have been successful in reducing cowcod exploitation rates to negligible levels. The SSC endorses the STAR Panel conclusions that this assessment represents the best available science and can form the basis for Council decision-making.

*Technical notes and recommendations:*

- *The cowcod assessment did not attempt to estimate recruitment variability. While this approach is reasonable given the lack of informative data, it presents difficulties for rebuilding analyses. The software for conducting rebuilding analyses uses variation in future recruitments to evaluate rebuilding probabilities. The SSC suggests two possible methods for introducing uncertainty in stock projections:*
  1. *Estimate recruitment variability from a meta-analysis of other rockfish species for which a time series of recruitments is available.*
  2. *Use the probabilities assigned to steepness ( $h$ ) by the STAR Panel to infer a probability density function, which can then be sampled to obtain alternative values of steepness to use in stock projections, or make separate runs using each of the values of steepness and then weigh the outputs by their assumed probabilities (30%/40%/30%).*
- *The second concern of the SSC is that currently there is no mechanism in place to monitor stock recovery. The SSC recommends that any future monitoring survey should include the area outside as well as inside the CCA. The SSC recommends either a visual survey be continued or some other non-lethal sampling technique be employed. Suggestions included non-lethal genetic sampling (i.e. a genetic mark-recapture experiment), or yet to be developed acoustic survey methods.*

California scorpionfish

California scorpionfish (*Scorpaena guttata*) is related taxonomically to rockfish, but exhibits different behavior and biology. Unlike rockfish, scorpionfish form dense spawning aggregations and release eggs rather than larvae. Although the species ranges south into Mexican waters, the assessment evaluates stock status in U.S. waters south of Pt. Conception. This is the first stock assessment of California scorpionfish. The assessment is based on landings and length composition

data from commercial and recreational fisheries and an index of relative abundance (catch per unit effort) derived from CPFV logbook data from 1980-1999. A fishery-independent index of abundance was obtained by aggregating nearshore trawl surveys conducted by sanitation districts to assess outfall impacts. Assessment results indicate an upward trend in California scorpionfish biomass since the 1970s. Estimates of 2005 stock abundance ranged between 60% and 80% of average unfished stock size. Estimates of historical exploitation rates are uncertain, but apparently were significantly higher than the Council's FMSY proxy of F50% for most of the last three decades. The current high abundance of scorpionfish is surprising given historical exploitation rates, and may be a result of favorable environmental conditions. The SSC endorses the STAR Panel conclusions that this assessment represents the best available science and can form the basis for Council decision-making.

*Technical notes and recommendations:*

- *Estimates of historical exploitation rates were very sensitive to the assumed coefficient of variation in length at age. A high priority should be given to obtaining additional length-at-age data to resolve this uncertainty.*
- *It was noted that some of the recruitment estimates are near zero. The SSC found no good explanation why this should be occurring, but it merits further investigation as it may indicate some pathology in model behavior.*

**May 16-20, 2005 STAR Panel, Seattle, Washington – Pacific Ocean Perch, Darkblotched Rockfish, Cabezon**

**Darkblotched Rockfish**

The SSC reviewed the assessment and STAR Panel report for darkblotched rockfish (*Sebastodes crameri*), which was assessed as a single stock ranging from California to the Canadian border. The last full stock assessment occurred in 2000 and estimated spawning biomass was 22% of the unfished level. It was subsequently declared overfished in January 2001 and a rebuilding plan was implemented, based on results from an updated assessment conducted in 2001. The assessment model was again updated in 2003 using recent data. Notably, both updated stock assessments concluded the stock was considerably more depleted than the original assessment. The 2005 analysis was a full assessment and incorporated a number of significant changes to the model, including: (1) use of Stock Synthesis II, (2) starting the model in 1928 vs. 1963, (3) estimating growth parameters within the model, (4) estimation of discard rates and retention curves within the model, (5) eliminating all age composition data except for shelf trawl survey ages read in 2004, and (6) use of delta-Generalized Linear Models (GLM) estimates of abundance from the Alaska Fisheries Science Center (AFSC) slope survey. Model estimates of abundance are influenced primarily by four fishery-independent surveys, i.e., the AFSC triennial shelf, POP, and slope trawl surveys and the Northwest Fisheries Science Center (NWFSC) slope trawl survey. Results of the assessment indicate that spawning output has more than doubled since 1999 (i.e., 8% to 17% of the unfished level) and that rebuilding is occurring due to strong 1999 and 2000 year-classes. Moreover, recent exploitation rates have been quite low (2%-3%). The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

### Pacific Ocean Perch (POP)

The SSC reviewed the updated assessment and STAR Panel report pertaining to the stock of Pacific ocean perch (POP, *Sebastodes alutus*) residing in the combined U.S. Vancouver-Columbia International North Pacific Fishery Commission (INPFC) areas. Historically POP catches were characterized by removals in excess of 5,000 mt per year-1 from 1962-1968, largely due to extensive foreign fishing. In 1981 the Council adopted a 20-year plan to rebuild what was considered a depleted resource, representing the first attempt at stock rebuilding by the PFMC. POP was declared overfished in 2001 and a rebuilding plan was officially adopted as Amendment 16-2 to the Groundfish FMP. The 2005 assessment is an update of the stock assessment model prepared in 2003. Consequently the model code is unchanged but data time series were extended to include: (1) catches through 2004, (2) fishery size compositions for 2003 and 2004, (3) NWFSC slope survey biomass estimates through 2004, (4) NWFSC slope survey age compositions for 2001, 2003, and 2004, (5) the triennial shelf survey biomass estimate for 2004, and (6) triennial shelf survey age compositions for 1995 and 2004. Results of the assessment show that exploitation rates have been very low since 2000 ( $\square 1\%$  per year) and that the stock is slowly rebuilding (relative spawning stock biomass in 2005 was 23%, up from 21% in 2000). Relatively strong recruitments occurred in 2002 and 2003, representing the 1999 and 2000 year-classes. The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

### Cabezon

The SSC reviewed the assessment and STAR Panel report for cabezon (*Scorpaenichthys marmoratus*). The assessment only considered cabezon residing in the State of California and divided the population into two stocks, one north of Point Conception (NCS) and one south of Point Conception (SCS), based on different historical patterns of exploitation. The northern stock has been the primary area from which removals have occurred, principally due to a greater commercial harvest in that region. Splitting the assessment model into separate northern and southern stocks departs from the approach taken in the previous assessment that was conducted in 2003, which treated the entire State as a unit stock. In addition, six fisheries were modeled for each substock (four recreational and two commercial) and three trend indices were evaluated for each area. Results of the assessment show that exploitation rates for the NCS and SCS stocks are close to their target values (F45%). Depletion levels, however, differ among the two areas, with the NCS stock close to its target population size (B40%), while the SCS stock is close to the minimum stock size overfished threshold (B25%). Furthermore, assessment results show that spawning output from the SCS stock was very low as recently as 2002 (i.e., 5% of the unfished level), but that strong recruitment has apparently occurred due to the 2000 and 2003 year-classes. Uncertainty about the strength of the 2000 year-class, in particular, was highlighted in a decision table analysis. The stock assessment included projections for both stocks under the Council's default 40:10 harvest policy, as well as the State of California's nearshore management plan 60:20 harvest policy. The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

**June 20-24, 2005 STAR Panel, Newport, OR – Sablefish, Dover Sole, Shortspine Thornyhead, Longspine Thornyhead**

**Sablefish**

The SSC reviewed the sablefish (*Anoplopoma fimbria*) assessment and STAR Panel reports. A summary of the assessment was presented by the lead author, Dr. Michael Schirripa. This assessment extends from the southern border of the Conception INPFC area through the northern border of the U.S. Vancouver INPFC area. This stock has been assessed several times in recent years. The most recent previous full assessment was in 2001, which formed the basis of an “update” that was conducted in 2002 so that new information could be included to better estimate the abundance of the comparatively strong 1999 and 2000 year classes.

Sablefish are taken in the commercial fishery with hook and line, pot, and trawl gear. Estimates of landings by gear are available beginning in 1915, and landings were projected further back to an assumed start of the fishery in 1900 for this assessment. As in previous assessments, this assessment makes use of several abundance indices: the 1980-2004 AFSC triennial shelf survey, the 1971-1991 AFSC pot survey, the 1997-2001 AFSC slope survey, the 1984-2004 NWFSC slope survey, and the 1978-1988 logbook CPUE index. The Base Model for the assessment included use of sea level data to model recruitment deviations from the stock-recruitment function. Also, sea surface temperature data were used to model discard mortality rates which in the previous assessment were assumed to be 100%.

The Base Model spawning biomass for 2005 is estimated to be 35% of the unfished size, with an increasing trend during the past few years due to the comparatively strong 1999 and 2000 year classes. The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

*Technical notes and recommendations:*

- *There is a concern that confounding may be an issue between modeling recruitment deviations and the effect of fishing down the stock.*
- *It appears that sea level is a good indicator of recruitment success for groundfish in general, and therefore it is reasonable that it was used for sablefish.*
- *The correlation in parameters should be investigated.*
- *As new data become available, it is important to confirm that the relation between recruitment deviations and sea level continues to hold. Also, it would be appropriate to look for non-linearity in the relation.*
- *In the case of sablefish, the default groundfish harvest rate may not be sustainable, and it may be appropriate to calculate a rate separately for this species.*
- *It may be useful to look at adjacent sablefish stocks to aid in determining an appropriate M for this assessment.*
- *The assessment would benefit from the addition of a discussion of the priors for M, q and h.*
- *There is a question of the validity of using the environment as a predictor just because it was correlated with some past observations*

### Dover sole

The SSC reviewed the assessment of Dover sole (*Microstomus pacificus*) and the STAR Panel report. A summary of the assessment was presented by the author, Dr. David Sampson. Dover sole that reside in the waters off California, Oregon, and Washington were treated as a single stock in the assessment. This stock was last assessed in 2001.

The length and age composition data were separated into two fisheries: a northern fishery operating in the U.S. Vancouver and Columbia INPFC regions and a southern fishery in the Eureka, Monterey and Conception regions. The period modeled in the assessment extended from 1910 to 2004 with fishing beginning in 1911. Data in the assessment model included fishery length composition data from 1966 to 2004 and fishery age composition data from 1981 to 2004. The biomass indices were derived from trawl logbook catch rates (1978 to 1995), and biomass estimates and length and age composition data from bottom trawl research surveys of the shelf (1980 to 2004) and slope (1992 to 2004).

The size and sex distributions of Dover sole are highly variable, by depth and among INPFC areas, and have changed over time. These patterns and other size related issues, such as a tendency for the fish discarded in the south fishery being larger than those retained, were difficult to model in the assessment. Convergence issues complicated the choice of a Base Model. However the STAR Panel and STAT were able to choose one based on the preliminary Base Model and sensitivity analyses for the spawner-recruit steepness parameter (h) and natural mortality (M).

The stock has exhibited an increasing trend since about 1995, with the spawning biomass for 2005 estimated to be 63% of the unfished level. The SSC endorses the Dover sole stock assessment as providing the best available science and recommends that it form the basis for Council decision-making.

### *Technical notes and recommendations:*

- *Investigate different phasing.*

### Shortspine Thornyhead

The SSC reviewed the shortspine thornyhead (*Sebastolobus alascanus*) assessment and STAR Panel reports. A summary of the assessment was presented by the author, Dr. Owen Hamel. This stock occurs from Baja California to the Bering Sea and is most abundant in the depth range of 180-450 meters. Shortspine thornyhead have been assessed several times over the last 15 years, most recently in 2001.

The largest modeling changes from the previous assessment are that the current assessment encompasses the entire west coast and the slope surveys are modeled as having dome-shaped selectivity. The previous assessment excluded those areas south of Pt. Conception, and including the entire Conception area results in a larger basis for unfished biomass. Other changes compared to the previous assessment included the addition of catch estimates for 1901-1961, new estimates of the shortspine portion of “unspecified thornyheads” in recent landings, recalculated length compositions for the fishery in 1981-2004, and new discard rates based on the west coast groundfish observer program for 2002 and 2003.

The Base Model for this assessment describes a single stock with two fisheries, north and south. Because of the sparseness and quality of the data, natural mortality, steepness and survey efficiency ( $q$ ) were all fixed. The STAR Panel noted that the supporting data and the subsequent assessment were just marginally sufficient to estimate the resource status. Therefore the biological reference points and the forecasts in the decision table should be considered with caution. There could be regional management concerns with this stock because the assessment OY is coastwide while there are differences in historic exploitation rates north and south of Point Conception.

The spawning biomass for 2005 is estimated to be 63% of unfished abundance, with a weakly falling recent trend. The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

#### Longspine Thornyhead

The SSC reviewed the longspine thornyhead (*Sebastolobus altivelis*) assessment and STAR Panel reports. Longspine thornyhead have been assessed three times previously, most recently in 1997. The model assumed one coastwide stock (Conception to U.S. Vancouver areas), with one coastwide trawl fishery. Fishery independent survey data was combined as a single index based on a GLM of the AFSC and NWFSC slope surveys, which produced abundance indices and length compositions.

Results from the Base Model suggested that survey information (length compositions) was influencing recruitment in the model, such that the model estimated slightly higher recruitment in the early 1990s, which declined in the mid to late 1990s. The spawning biomass in 2005 was approximately 71% of unfished spawning biomass, but this estimate is highly uncertain as is evident in the comparatively large 95% confidence interval for the spawning biomass. A suite of sensitivity analyses bracketed some of the areas of uncertainty in catchability, selectivity, mortality, and steepness that formed a basis for considering and discussing major areas of uncertainty for the decision table. The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

#### *Technical notes and recommendations:*

- *There is a play-off between  $M$  and  $q$  that may result in poor estimation of both when both are estimated.*
- *By fixing  $M$  the estimate of  $q$  would have been resolved.*
- *There is an unresolved question of how time-varying selection was done with a paucity of data. With the slope fixed, was the  $L50$  allowed to change?*

**August 1-5, 2005 STAR Panel, Santa Cruz, CA – Widow Rockfish, Bocaccio, Blackgill Rockfish, Kelp Greenling**

Widow Rockfish

The SSC reviewed the assessment and STAR Panel reports for widow rockfish (*Sebastodes entomelas*). The stock, which was last assessed in 2003, is treated as a single coastwide stock harvested by four fisheries. The new assessment uses the same age-based model as the 2003 assessment with updated landings data, additional age composition data, and revised abundance indices. Although the assessment could have been treated as an update, it was reviewed as a full assessment.

In 2000 the stock was assessed as being overfished and has been subject to a rebuilding plan since 2001. The current assessment's base model estimates that spawning biomass declined steadily since the late 1980s and that spawning output in 2004 was 31% of the unexploited level, above the Council's minimum stock size threshold (MSST). Further, spawning output in the base model was estimated to have never dropped below the 25% overfished MSST. Alternative model runs, which were considered to be only slightly less plausible than the base model, however, indicated that the stock had been below the MSST. Lack of a reliable abundance index for widow rockfish is a major source of uncertainty for the assessment results.

The SSC endorses the STAR Panel conclusion that this assessment represents the best available science and that it can form the basis for Council decision-making.

*Technical notes and recommendations:*

- *The next assessment for widow rockfish should re-evaluate whether the index from the Santa Cruz juvenile rockfish survey provides a valid and informative coastwide index of widow rockfish recruitment. Also at issue is whether the index should be transformed internally or externally to the model.*

Bocaccio

The SSC reviewed the assessment and STAR Panel report for bocaccio (*Sebastodes paucispinis*), which was evaluated under the Terms of Reference for Expedited Stock Assessments. The assessment completed this year is an update, which requires close adherence to the last assessment that was conducted in 2003. Two important time series of data were extended this year, including the AFSC triennial shelf trawl survey and the CalCOFI larval abundance index, both of which were updated using a GLM analysis. In addition, fishery and survey length-distributions were updated through 2004. The STAR Panel agreed that the analysis satisfied the basic requirements for an expedited assessment, i.e., the model was identical to the 2003 assessment because SS1 was retained as the analytical framework and no structural changes to the model were made. Three runs were included in the 2003 stock assessment. The base-case model is known as STATc, which was bounded by two models known as STARB1 and STARB2. The updated base-case model estimates that current spawning output is 11% of that expected from an unfished stock. The SSC endorses the STAR Panel's conclusion that this assessment represents the best available science and can form the basis for Council decision-making.

Blackgill rockfish

The SSC reviewed the assessment and STAR Panel report for blackgill rockfish (*Sebastodes melanostomus*). The assessment pertains to the stock in the Monterey and Conception INPFC areas,

where over 90% of the landings have occurred. Blackgill rockfish extend south into Mexican waters. The assessment is based on catch and length composition data from commercial fisheries and indices of relative abundance and size composition from the AFSC shelf trawl survey and the AFSC slope survey. Estimates of stock size in 2005 ranged from 36% to 67% of mean unfished spawning stock size depending on a plausible range of assumptions for natural mortality, but are highly uncertain due to a lack of assessment data. Assessment results indicate that recent exploitation rates have been slightly below the FMSY proxy for rockfish. The SSC endorses the STAR Panel conclusions that this assessment represents the best available science and can form the basis for Council decision-making.

*Technical notes and recommendations:*

- *The SSC has concerns over the use of a likelihood profile to estimate the natural mortality of blackgill rockfish. Likelihood profiles are useful tools in the stock assessment toolbox to assess model sensitivity to fixed parameters and to evaluate consistency between data sets. Because natural mortality is strongly correlated with so many other parameters, it is doubtful a reliable model estimate of natural mortality can be obtained using a likelihood profile. This is particularly true for blackgill rockfish, given the limited assessment data.*

Kelp Greenling

The SSC reviewed the stock assessment and STAR Panel report for kelp greenling (*Hexagrammos decagrammus*), which was treated as two completely independent sub-stocks divided at the California-Oregon border. There are substantial differences between the two assessments with respect to assessment period, model assumptions, results, and uncertainties. An important difference between the two sub-stocks is the first year for which historical catch data are available (1916 for California and 1981 for Oregon). The Oregon sub-stock has some age-at-length data, which were included in the assessment and provide information on growth and variation in length-at-age. The estimate of relative stock size for the Oregon sub-stock (49% of unfished) is more certain than estimates of absolute abundance, which are highly imprecise. The SSC cautions that yield estimates from the model are very uncertain, but concluded that assessment results from the Oregon sub-stock represent the best available science and can form the basis for Council decision-making, in that region. For the California sub-stock, considerable effort was made to identify a plausible model formulation, but none could be identified. Despite providing a comprehensive summary and synthesis of available biological and fishery information, the SSC concluded that the results for the California sub-stock are inadequate to provide management advice.

**August 15-19, 2005 STAR Panel, Seattle, WA – Canary Rockfish, Lingcod, Yelloweye Rockfish, and Yellowtail Rockfish**

Canary Rockfish

The SSC reviewed the canary rockfish (*Sebastodes pinniger*) assessment document and received a verbal report from the STAR Panel chair. The final STAR Panel report will be available for the November Council meeting.

The previous canary stock assessment was conducted in 2002. The new assessment used the Stock Synthesis 2 model (SS2). It included catch, length- and age-frequency data from 10 fishing fleets, including the trawl, non-trawl, and recreational sectors. The National Marine Fisheries Service

(NMFS) triennial bottom trawl survey biomass index, length-frequency data, and age-frequency data were also included. The assessment provided estimates of stock abundance over the period 1916-2005. The principal result from the SS2 model was that the current spawning stock biomass (2005) was 5.3% of that expected in an unfished state (with a 95% confidence interval ranging from 2.7% to 7.9%). Canary rockfish are currently managed under a Council rebuilding plan, and these assessment results indicate that the stock remains in an overfished state with only a modest amount of rebuilding occurring in recent years. The STAR Panel concurred with the principal assessment conclusions, and endorsed the use of the assessment to support management decisions.

However, several technical issues were raised during the SSC's review of the canary assessment. Given the wide-ranging impact of restrictive canary harvest guidelines across many Council-managed groundfish, the SSC recommends that the canary assessment be revisited during the STAR "Mop-up" panel meeting (26-30 September 2005 in Seattle). More specifically, the SSC requests that the stock assessment team consider the following four issues, report on them, and be prepared to conduct additional runs during the "mop-up" meeting.

- (1) The survey catchability ( $q$ ) estimated in the canary assessment appears to be considerably larger than the  $q$  estimated for other rockfishes. The validity of the  $q$  estimate should be investigated.
- (2) The assumed variability associated with the spawner-recruit relationship ( $\sigma_R = 0.4$ ) is small relative to that used for other rockfish. The sensitivity of the canary assessment results to larger values of  $\sigma_R$  should be explored.
- (3) Documentation more complete than that in the draft assessment document should be provided. Minimally, the updated selectivity curves and the SS2 data and control files should be made available.
- (4) Inclusion of the Santa Cruz juvenile survey data should be considered.

#### Lingcod

The SSC received a verbal report from the STAR Panel chair. The final STAR Panel report will be available for the November Council meeting. The lingcod (*Ophiodon elongatus*) assessment applies to the full Pacific Fishery Management Council (PFMC) management zone (the US-Vancouver, Columbia, Eureka, Monterey, and Conception INPFC areas). Separate assessment models were constructed to describe population trends in the northern (LCN: U.S.-Vancouver, Columbia) and southern (LCS: Eureka, Monterey, Conception) areas. Due to issues that could not be resolved during the STAR Panel meeting, both the LCN and LCS assessments will be taken up by the STAR "Mop-up" Panel (26-30 September 2005 in Seattle). The SSC will provide comments on both lingcod assessments at the November Council meeting.

#### Yelloweye Rockfish Update

The SSC reviewed the yelloweye rockfish (*Sebastodes ruberrimus*) assessment document and received a verbal report from the STAR Panel chair. The final STAR Panel report will be available for the November Council meeting.

This assessment updates the status of the yelloweye rockfish resource off the west coast of the United States, from the Mexican border to Canadian border. This stock was treated as a single coastwide population as in the previous assessment conducted in 2002. The new assessment update extended the various data time series (as per the update ‘rules’) but did change the assessment model (using the new Stock Synthesis 2 model). This stock is being managed under a Council rebuilding plan. The assessment results indicate that current spawning stock biomass is 21% of the level expected in the unfished state. Both the STAR Panel and the SSC endorse the assessment update as the best available science and conclude that it can form the basis for Council management decisions.

The SSC notes that it will be especially difficult to monitor rebuilding progress for yelloweye due to the lack of an appropriate abundance index. There are no useful survey indices for yelloweye and the CPUE indices used in the assessment end in 2001 with the onset of restrictive regulations.

### Yellowtail Rockfish

The SSC reviewed the yellowtail rockfish (*Sebastodes flavidus*) assessment document and received a verbal report from the STAR Panel chair. The final STAR Panel report will be available for the November Council meeting.

The Council manages the U.S. fishery as two stocks separated at Cape Mendocino, California. As in the past, this assessment includes only the population between Cape Mendocino and 49° N. latitude (northern stock). The northern stock is divided into three assessment areas: South Vancouver, Northern Columbia, and Eureka/South Columbia. The northern stock areas were last assessed in 2000, and the assessment was updated in 2003. The new assessment update extended the various data time series and used the same stock assessment model as used in the 2000 full assessment and the 2003 update (i.e. an age-structured model written with AD Model Builder software). Results indicate that although abundance trends are somewhat different by area (little trend in South Vancouver and declining trends in the other areas), current spawning stock biomass is well above the overfished threshold. Both the STAR Panel and the SSC endorse the assessment update as the best available science and conclude that it can form the basis for Council management decisions.

### ***Marine Protected Areas***

#### **G.2. Channel Islands National Marine Sanctuary**

The Scientific and Statistical Committee (SSC) reviewed a document entitled, “Supporting Materials” (Agenda Item H.1.a, Attachment 1), which describes draft reserve alternatives for federal waters at Channel Islands National Marine Sanctuary (CINMS) and provides some description of the effects of these alternatives. “Supporting Materials” was an attachment to a letter submitted by Mr. Daniel Basta to Dr. Donald McIsaac (date stamped May 25, 2005) for Council consideration. According to page 3 of that letter, “Supporting Materials” addresses comments previously provided by the Council regarding a May 2004 document entitled Staff Preliminary Working Draft Document for Consideration of a Network of Marine Reserves and Marine Conservation Areas within the Channel Islands National Marine Sanctuary. The SSC was among the Council advisory bodies that provided comments regarding the May 2004 document.

The SSC understands that “Supporting Materials” is not intended to constitute a Draft Environmental Impact Statement (DEIS) - which will be completed at a later date - but rather to provide the Council

with enough information to propose fishing regulations. The SSC notes that the DEIS is the vehicle by which the Council ensures that its decisions are based on the best available information. Given that “Supporting Materials” is not intended to meet the standards of a DEIS, it would be futile for the SSC to evaluate “Supporting Materials” on that basis. Under these circumstances, the best that the SSC can do is to:

Focus on issues identified in our cumulative record of recommendations (see Attachment 1 of this statement) that are relevant to the goals and objectives identified in “Supporting Materials” and that the SSC considers salient to the information contained in that document.

Review the issues identified above as best we can, given the limited information contained in “Supporting Materials.”

“Supporting Materials” reflects an effort to recognize the potential trade-off between ecological and socioeconomic costs and benefits of the reserve alternatives. A major factor hampering the SSC’s review of “Supporting Materials” is the lack of substantiation for the socioeconomic analysis. While “Supporting Materials” includes some tabular estimates of socioeconomic effects, justification for these estimates consists largely of repeated references to an analysis by Leeworthy and Wiley (2005), which was not made available to the SSC; the name of this document is not even known, as it is not included in the “References” section of “Supporting Materials”. In June 2002, the SSC expressed substantive concerns regarding a socioeconomic analysis of CINMS reserve alternatives provided by Leeworthy and Wiley (2002). In July 2004, the SSC reviewed an updated version of that analysis - Leeworthy and Wiley (2003) - which did little to address those concerns. Given this history, the SSC considers it particularly important to have access to Leeworthy and Wiley (2005) in order to evaluate the extent to which these ongoing technical issues have found some resolution in “Supporting Materials”.

“Supporting Materials” contains very little documentation regarding the rationale underlying the description of the baseline and the methods and assumptions underlying the analysis of socioeconomic effects of the alternatives on commercial fisheries and recreational consumptive and non-consumptive activities. Attachment 2 of this statement provides more detailed comments regarding these issues. Some of these issues (particularly those pertaining to the socioeconomic analysis) are not new and were raised by the SSC in 2002 and 2004.

The letter accompanying “Supporting Materials” indicates that it addresses Council comments regarding a document previously submitted to the Council in May 2004, entitled Staff Preliminary Working Draft Document for Consideration of a Network of Marine Reserves and Marine Conservation Areas within the Channel Islands National Marine Sanctuary. As indicated in Attachment 2 of this statement, the information contained in “Supporting Materials” is not responsive to SSC comments regarding the May 2004 document. “Supporting Materials” the need for adequate documentation of methods and assumptions which is standard for any technical analysis, regardless of whether it is related to a DEIS. Given the inadequate documentation of the analysis of alternatives contained in “Supporting Materials” and technical issues pertaining to that analysis, the SSC does not see how the Council can make an informed decision regarding proposed regulations for reserves at CINMS.

## **Attachment 1. Cumulative Record of SSC Comments on Reserve Alternatives at CINMS**

Over the past four years, staff at the CINMS have periodically briefed the SSC regarding their plans and progress toward establishing marine reserves at CINMS. To facilitate the Council's consideration of this issue, the SSC has reviewed a number of technical reports pertaining to reserves in state, and now federal, waters at CINMS, as follows:

- October 1-2, 2001 review of a document pertaining to recommendations of the CINMS Science Advisory Panel regarding reserve size
  - Anonymous. May 23, 2001. *DRAFT - How large should marine reserves be?*
- June 10-11, 2002 review of two documents that analyze effects of reserve alternatives in state waters at CINMS
  - Ugoretz, J. And D. Parker. May 2002. Draft Environmental Document - Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary
  - Leeworthy, Dr. V. And P. Wiley. 2002. Socioeconomic Impact Analysis of Marine Reserve Alternatives for the Channel Islands National Marine Sanctuary
- July 19-20, 2004 review of two documents pertaining to preliminary work by CINMS on evaluating reserve alternatives in federal waters
  - CINMS. Undated. Staff Preliminary Working Draft Document for Consideration of a Network of Marine Reserves and Marine Conservation Areas within the Channel Islands National Marine Sanctuary.
  - Leeworthy, Dr. V.R. and P.C. Wiley, 2003. Socioeconomic Impact Analysis of Marine Reserve Alternatives for the Channel Islands National Marine Sanctuary

October 1-2, 2001 review: This review was the outcome of a request from the SSC to CINMS for the opportunity to review documentation underlying the CINMS Science Advisory Panel's recommendation for reserves in 30%-50% of CINMS waters. SSC comments regarding this document are contained in the SSC meeting minutes for October 29-30, 2001.

June 10-11, 2002 review: Although the Ugoretz and Parker (2002) analysis pertained to the establishment of marine reserves in state waters at CINMS, the Council requested an SSC review of that document on the basis that subsequent establishment of reserves in federal waters would be contingent on the location of these state reserves. In reviewing Ugoretz and Parker (2002), the SSC was careful to distinguish between aspects of the report that addressed state requirements for regulatory analysis under the California Environmental Quality Act (CEQA) and aspects of the report (most notably the socioeconomic analysis) that went beyond CEQA requirements but nevertheless contributed to the analysis of alternatives. Because documentation for the socioeconomic results presented by Ugoretz and Parker (2002) was contained in Leeworthy and Wiley (2002), it was necessary for the SSC to also review the latter document in order to adequately understand and review the former. The SSC's June 2002 review and its response to a letter from Dr. Leeworthy regarding this review are contained in the SSC meeting minutes for June 16-18, 2002 and September 9-10, 2002, respectively.

July 19-20, 2004 review: This review was prompted by a request from the National Ocean Service for Council input regarding the data, analytical methods and range of reserve alternatives being considered at CINMS. In order to adequately understand and review the *Staff Preliminary Working*

*Draft Document* provided by CINMS, the SSC also received and reviewed an updated version (Leeworthy and Wiley 2003) of the socioeconomic analysis reviewed in June 2002 (Leeworthy 2002). The results of this review are contained in an SSC report dated September 14, 2004 and entitled *Review of Data, Analytical Methods and Range of Alternatives Used in “Staff Preliminary Working Draft Document for Consideration of a Network of Marine Reserves and Marine Conservation Areas within the Channel Islands National Marine Sanctuary”*. This review covered issues initially identified in the SSC’s June 2002 review which had not yet been addressed as well as new issues associated with changes in the analysis since that initial review.

Together, the October 2001, June 2002 and July 2004 reviews provide a cumulative record of SSC recommendations to date regarding reserves at CINMS. These recommendations are consistent with federal regulatory guidelines and with the SSC’s 2004 white paper entitled *Marine Reserves: Objectives, Rationales, Fishery Management Implications, and Regulatory Requirements*.

## **Attachment 2. SSC Comments Regarding Specific Aspects of “Supporting Materials”**

### ***Defining range of alternatives***

- “Supporting Materials” provides useful information regarding the alternatives. For instance, figures 4-7 (pp. 17-21) describe the location of state reserves under the *status quo* and the location of federal reserves under each of the three alternatives to the *status quo*. Table 2 (p. 29) describes the extent to which different types of habitat (soft sediment, hard sediment, submarine canyons) would be protected under the *status quo* and the three alternatives. Pages 17-21 describe the size of the combined state and federal areas that would be set aside as marine reserves (MRs) and marine conservation areas (MCAs) under each alternative. Additional breakdown of these numbers to distinguish how much of these MRs and MCAs occur in state and federal waters would be helpful for better understanding the impact of the proposed regulatory action.
- Pages 10-11 (including Table 1) provide information on selected fishes and invertebrates in CINMS. If the intent of this information is to identify species that would be protected under the reserve alternatives, this should be made explicit. Clarification regarding the extent of species protection provided by the alternatives would be useful for evaluating the ecological effects of the alternatives and may also facilitate the Council’s efforts to draft appropriate regulations as they pertain to these species.

### ***Defining the baseline***

In its July 2004 review, the SSC recommended that the baseline used in the analysis of reserve alternatives for federal waters should (to the extent possible) reflect the level and geographic distribution of commercial and recreational activities in CINMS after establishment of reserves in state waters (that is, 2003 and beyond). The extent to which this is done in “Supporting Materials” is limited or, in some cases, not clear.

- The commercial fishery baseline is defined in “Supporting Materials” in terms of the annual ex-vessel value of landings in 2003 for rockfish, tuna and prawns, 2000-2003 for sheephead, and 1996-2003 for ten other species. Given that 2003 ex-vessel revenue information is available for

all species, it is not clear why this information was not consistently used to define the baseline for all species.

- No discussion is provided regarding how baseline estimates of person-days associated with consumptive and non-consumptive recreation were calculated. The actual numbers that appear in the analysis are virtually unchanged from the 1999 baseline previously used by Leeworthy and Wiley (2002, 2003).
- No information is provided regarding baseline geographic distributions of commercial and recreational activity or the assumptions underlying those distributions.
- The Sanctuary Aerial Monitoring and Spatial Analysis program (SAMSAP) is used to qualitatively characterize the extent of congestion associated with each alternative. While SAMSAP is a potentially useful source of information, the baseline for analyzing the SAMSAP data (Figure 10, p. 41) includes years before and after the establishment of state reserves (1997-2004) rather than just the “after” years (2003-2004).

### *Analyzing effects of alternatives*

- The estimates of recreational and commercial fishing activity displaced under the three alternatives and associated effects on income and employment (Tables 4-6 on pp. 35-37) depend critically on how the baseline is defined. As indicated above, “Supporting Materials” provides little description of or justification for the baseline used in the analysis.
- A retrospective analysis of SAMSAP data that compares activity distributions before (1997-2002) and after (2003-2004) the establishment of state reserves (the latter being the current status quo) may provide insights regarding what can be expected once reserves are established in federal waters.
- “Supporting Materials” references a “benefits transfer/policy analysis simulation” conducted by Leeworthy and Wiley (2005) involving use of quality elasticities from the literature to estimate benefits of the alternatives to non-consumptive recreation (p. 40). “Supporting Materials” also references Leeworthy and Wiley’s (2005) derivation of consumer surplus estimates pertaining to recreational use at CINMS (footnote 1, p. 40). Although these results are apparently available in Leeworthy and Wiley (2005) and highly relevant to the analysis of alternatives, they are not provided in “Supporting Materials”. It is not clear why available information on all analyzed effects is not included in “Supporting Materials”, given the relevance of this information to the Council’s deliberations.
- The SSC notes its longstanding concerns - raised in June 2002 and July 2004 - regarding the treatment of recreational effects in Leeworthy and Wiley (2002, 2003). These concerns include inappropriate use of price elasticities of demand from the literature as a proxy for quality elasticities of consumer surplus, and calculations of consumer surplus based on misinterpretation of results from the recreational demand literature and incorrect conversion of recreational values from a per-trip to a per-day basis. In addition to providing a fuller consideration of recreational effects in the evaluation of alternatives (which is apparently available in Leeworthy and Wiley (2005)), adequate documentation of the methods used to estimate these effects is also needed to determine whether and how SSC concerns have been resolved.

### *Pacific Halibut Management*

#### D.2. Pacific Halibut Bycatch Estimate for the International Pacific Halibut Commission

Dr. Jim Hastie (Northwest Fisheries Science Center) briefed the Scientific and Statistical Committee (SSC) on estimates of halibut bycatch for 2004 as described in the report produced by Wallace and Hastie (August 2005; D.2.a, Supplemental Attachment 1). Estimated total halibut mortalities, legal-sized halibut mortalities, and trawl effort have all declined from 1998 through 2004. The net weight of total halibut trawl-fishery bycatch mortalities in 2004 is 47% lower than in 2003. Estimated halibut bycatch and mortality in other gear types has not been updated for 2004. In previous years, bycatch estimates were derived from only a partial year of data. These previous years will be updated to reflect the entire calendar year.

The SSC again requests that 1) when the data become available, the Council should consider exploring the use of observer data to estimate halibut bycatch in other Council-managed fisheries and 2) future analyses should include variance estimates for total bycatch. Also, it would be useful to decompose bycatch rates from spatial effort shifts to better understand what drives trends in bycatch.

The SSC reviewed these new results and endorses their use in estimating the impacts of Council-managed fisheries on the Pacific halibut stock.

### ***Highly Migratory Species Management***

#### **C.3. Proposed Council Operating Procedure (COP) for Approving Exempted Fishing Permits for Highly Migratory Species**

The Scientific and Statistical Committee (SSC) discussed the proposed Protocol for Consideration of Exempted Fishing Permits (EFP) for Highly Migratory Species (HMS) Fisheries. The SSC supports the proposed protocol but suggests its review be limited to EFPs with a significant scientific component. We recommend the following changes in the draft document prior to public review.

- 1) Section C.1: change “The HMSMT and SSC will review” to “The HMSMT will review.”
- 2) Section C.5.b: change “the HMSMT can refer the application to the SSC’s HMS subcommittee for comment” to “the HMSMT can refer the application to the SSC for comment.”
- 3) Section C.5.c: change “the HMS subcommittee” to “ the SSC”.
- 4) Section E.2: change “A final written report on the results of the EFP and the data collected must be presented to the HMSMT, SSC and Council at the September meeting” to “A final report on the results of the EFP and the data collected must be presented to the HMSMT and the Council at the September meeting. Those EFPs containing data analysis that could benefit from a scientific review may be forwarded to the SSC for comment.”

## Public Comment

None.

**Adjournment** B The SSC adjourned at approximately 4 p.m., Wednesday, September 21, 2005.

PFMC  
10/14/05

### SSC Subcommittee Assignments for 2005

Salmon	Groundfish	CPS	HMS	Economic	Marine Reserves
Alan Byrne	Steve Berkeley	<b>Tom Barnes</b>	Tom Barnes	<b>Michael Dalton</b>	Tom Barnes
Robert Conrad	Ray Conser	Alan Byrne	Steve Berkeley	Hans Radtke	Steve Berkeley
Owen Hamel	Michael Dalton	Michael Dalton	Alan Byrne	Cynthia Thomson	Michael Dalton
Kevin Hill	<b>Martin Dorn</b>	Ray Conser	Robert Conrad	David Sampson	Martin Dorn
<b>Pete Lawson</b>	Owen Hamel	Tom Jagielo	<b>Ray Conser</b>		Tom Jagielo
Hans Radtke	Tom Jagielo	André Punt	Kevin Hill		Pete Lawson
David Sampson	André Punt		André Punt		André Punt
	Steve Ralston		Hans Radtke		Steve Ralston
	David Sampson				<b>Cynthia Thomson</b>

**Bold** denotes Subcommittee Chairperson