

SUMMARY MINUTES
Scientific and Statistical Committee

Pacific Fishery Management Council
Double Tree Hotel – Spokane City Center
Spokane Falls Suite A
322 North Spokane Falls Court
Spokane, WA 99201
June 12-14, 2009

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

The meeting was called to order at 8 a.m. on Friday, June 12, 2009. Mr. Mike Burner briefed the SSC on priority agenda items.

Members in Attendance

Mr. Tom Barnes, California Department of Fish and Game, La Jolla, CA
Dr. Louis Botsford, University of California, Davis, CA
Mr. Robert Conrad, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Ramon Conser, National Marine Fisheries Service, La Jolla, CA
Dr. Martin Dorn, National Marine Fisheries Service, Seattle, WA
Dr. Owen Hamel, National Marine Fisheries Service, Seattle, WA
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR
Dr. Todd Lee, National Marine Fisheries Service, Seattle, WA
Dr. Charles Petrosky, Idaho Department of Fish and Game, Boise, Idaho
Dr. Stephen Ralston, SSC Chair, National Marine Fisheries Service, Santa Cruz, CA (Friday Only)
Dr. Theresa Tsou, Washington Department of Fish and Wildlife, Olympia, WA
Dr. Shizhen Wang, Quinault Indian Nation, Mercer Island, WA
Dr. Vidar Wespestad, Research Analysts International, Seattle, WA

Members Absent

Dr. Selina Heppell, Oregon State University, Corvallis, OR
Dr. André Punt, University of Washington, Seattle, WA (Absent Monday)
Ms. Cindy Thomson, National Marine Fisheries Service, Santa Cruz, CA

Scientific and Statistical Committee Comments to the Council

The following is a compilation of June 2009 SSC reports to the Pacific Fishery Management Council (Council). (Related SSC discussion not included in written comment to the Council is provided in *italicized text*).

Groundfish Management

E.6. Stock Assessments for 2011-2012 Groundfish Fisheries

FULL STOCK ASSESSMENTS

Petrale Sole

Dr. Melissa Haltuch presented the petrale sole assessment to the Scientific and Statistical Committee (SSC). Mr. Allan Hicks was also present to respond to questions. Dr. Theresa Tsou summarized the report of the Stock Assessment and Review (STAR) Panel review of the petrale sole assessment, held in Newport, Oregon, May 4-8, 2009.

The previous petrale sole assessment was conducted in 2005. The Stock Assessment team (STAT) successfully addressed many of the issues that were raised during STAR Panel review of the 2005 assessment. The most significant change was that a single coast-wide model was used, rather than independent assessments of northern and southern components of the stock. Other changes included incorporation of discard data in the model, addressing problems with petrale sole age data and ageing error information, and estimation of different natural mortality rates for the females and the males.

Despite these changes, the new assessment estimates of stock size and trend are highly consistent with the previous assessment. The most notable exception is that the previous assessment showed a strong increase in stock size in the last years of the assessment. The current assessment now shows a recent decline in stock size that is driven by four consecutive years of decline in the Northwest Fisheries Science Center (NWFSC) survey index since 2005. Stock size is estimated to be at a depletion level of 11.6 percent in 2009.

Assessment results indicate that according to Council's proxy reference points, fishing mortality on petrale sole has continually exceeded the target of $F_{40\%}$ since the 1940s, and that the stock has been below the $B_{25\%}$ overfished threshold since about 1953. These results are to a large degree driven by two basic pieces of information: 1) the high landings of petrale sole during the 1940s and 1950s, and 2) age and size composition data that are consistent with a high exploitation rate (e.g., the recent age composition data show that very few old fish are present in the population). Sensitivity analyses with different modeling assumptions consistently showed this pattern, suggesting that it is a relatively robust result of the assessment.

While the petrale sole assessment appeared to be technically sound and thoroughly reviewed by the STAR panel, the SSC was concerned that certain assessment results were so extreme that the overall plausibility of the assessment was called into question. Attention focused primarily on the estimated catchability of the NWFSC survey, the estimate of stock-recruit steepness (0.95), and confounding of estimated model parameters.

The petrale sole assessment used two indices of abundance, the Alaska Fisheries Science Center (AFSC) triennial survey from 1980 to 2004, and NWFSC survey from 2003 to 2008. The estimated catchability of the AFSC survey was 0.52 and 0.72 for early and late periods, while the estimated catchability of the NWFSC survey was 3.07. A catchability of 1.0 would imply that the survey net captured all the fish in front of the net, and that fish density is the same in trawlable and untrawlable areas. A catchability greater than 1.0 could be a result of two general processes: herding of fish into the net, and lower densities of fish in untrawlable areas. Although it is reasonable to expect that these factors may be important for petrale sole, it is difficult to reconcile a catchability of 3.07 with likely magnitude of these factors inferred from studies of flatfish herding by research trawls in other areas, and initial estimates of trawlable and untrawlable areas off the west coast. Higher catchability of the NWFSC survey compared to the AFSC triennial survey is to be expected, given differences in survey design, survey procedures, and net configuration. Additional information on specifications of the NWFSC trawl net, such as the arrangement of discs on the trawl sweeps, may help to address this issue.

Although flatfish are, in general, productive stocks, the model-derived estimate of steepness for petrale sole (0.95) is at the 99th percentile of the distribution of steepness based on a meta-analysis of Pleuronectids stocks (the family of right-eyed flatfish), indicating that the estimate of steepness for petrale sole is very high compared to other flatfish. The SSC recommends that the STAT consider including a prior for steepness in the assessment model based on the meta-analysis of steepness for Pleuronectids. This would have the effect of constraining steepness so that it is within the range for other flatfish. Information presented to the SSC suggests that adding a prior for steepness would also have the effect of reducing the estimate of NWFSC survey catchability, though the amount of reduction is unclear.

The STAT and STAR Panel recommended that the model estimate of B_{MSY} be used for status determination. The SSC does not consider that a strong enough case has been made that the estimate of B_{MSY} is sufficiently reliable to be used for fisheries management. The STAT team reported that changes in fisheries selectivity blocking adopted during the STAR Panel lead to an increase in steepness, which would have a large influence on the estimate of B_{MSY} .

The SSC requests additional information to evaluate the reliability of the model estimate of B_{MSY} . Specifically, the SSC requests an analysis to evaluate whether changes in fishery selectivity have an influence on the estimate of B_{MSY} . The SSC also requests further evaluation of the uncertainty in the estimate of B_{MSY} , and will provide a list of specific analyses to the STAT. The requested analyses and model changes are relatively limited in scope, so the SSC does not recommend addressing these issues during the mop-up panel meeting. Instead, the SSC recommends that these analysis and model changes be reviewed by the SSC Groundfish Subcommittee at a short meeting during August. This meeting would also provide an opportunity for the Groundfish Subcommittee to develop criteria for evaluating whether species-specific B_{MSY} and F_{MSY} estimates should be used for status determination and applying the ABC and optimum yield (OY) control rules, rather than current proxies. The Groundfish Subcommittee may also consider whether a single proxy could be used for west coast flatfish stocks, since other assessed flatfish show the high productivity characteristics of petrale sole.

Splitnose Rockfish

Dr. Vladlena V. Gertseva presented the assessment of splitnose rockfish to the SSC. Dr. Jason Cope was present to respond to questions. Dr. Theresa Tsou summarized the report of the STAR Panel review of the splitnose rockfish assessment, held in Newport Oregon, May 4-8, 2009.

This was the first full assessment of splitnose rockfish; a preliminary assessment of the splitnose rockfish status was conducted in 1994. Splitnose rockfish have not been a target of commercial fisheries; rather they have been taken incidentally as bycatch in fisheries for Pacific ocean perch, mixed slope rockfish and other deepwater targets.

Splitnose rockfish were relatively lightly exploited until the 1940s, when the trawl fishery for rockfish first became important. Biomass and spawning output began to decline gradually then dropped rapidly for 3 years in the 1960s due to take by foreign trawl fleets. A more gradual decline then continued until 1998, and biomass has increased since then.

The current estimated status exhibits no cause for concern. Spawning depletion is currently at 66 percent of its unexploited level, hence this stock is not overfished or in the precautionary zone. It dropped below the 40 percent threshold for the 8 years prior to 2003. Values of spawning biomass per recruit (SPR) have been greater than 50 percent since 1999.

The STAR Panel registered some concern that tuning of σ_R during the estimation, while it produced similar trends in spawning output, also resulted in larger differences in scale between the various runs. They concluded that the model is heavily influenced by the recruitment assumptions in the analysis and the effects of tuning. They were confident that the assessment had demonstrated the population was not overfished and that overfishing was not occurring, but cautioned against allowing catch to increase until the next assessment could identify yield reference points better.

Drs. Gertseva and Cope noted there are existing otoliths from several hundred fish taken off California between 1981 and 1985, which could be aged for the next assessment, and would likely improve the confidence in the assessment. Reliable age data are particularly important for this species since length distributions are uninformative because they reach maximum size relatively more quickly than other species.

The SSC endorses the use of the splitnose rockfish assessment for status and management in the Council process, but agrees with comments by the STAR Panel that caution be used in the use of results in management actions such as setting annual catch limits (ACLs).

Note to SSC: We should revisit the issue of tuning parameters expressing variability and effective sample sizes during the estimation process. The effects of this on scaling, etc. should be discussed for every stock assessment.

UPDATED STOCK ASSESSMENTS

According to the terms of reference for stock assessment reviews (TOR), updates are appropriate in situations where a “model” has already been critically examined and the objective is to simply incorporate the most recent data. To qualify, a stock assessment must carry forward its fundamental structure from a model that was previously reviewed and endorsed by a STAR Panel. Any new information being incorporated into the assessment should be presented in enough detail that the review panel can determine whether the update satisfactorily meets the Council’s requirement to use the best available scientific information. The SSC’s review focused on two crucial questions: (1) did the assessment comply with the TORs for stock assessment updates and (2) are new input data and model results sufficiently consistent with previous data and results that the updated assessment can form the basis of Council decision-making. Generally, if either of these criteria were not met, a full stock assessment (rather than an update) would be recommended.

While an update assessment is clear in concept, in practice there are often special issues that make it difficult to determine whether an assessment qualifies as an update. For the update assessments reviewed by the SSC, several such issues needed to be considered, e.g. when “new” data were added to early years in the assessment. Despite these considerations, it was generally clear that all of this year’s update assessments were acceptable as updates.

The SSC acknowledges the efforts of the STATs in preparing complete and timely assessment documents, and for the summary presentations made at this meeting. Without these high-quality documents, informative presentations, and general cooperativeness, the SSC could not have completed its work in the available time.

Canary Rockfish

Canary rockfish is a North American transboundary rockfish species distributed from central California to Alaska. The species is patchily distributed and difficult to sample well using bottom trawl gear. From the mid-1940s until it was declared overfished (1999), the average annual harvest was 2,500 t. Since 1999, harvest has been greatly reduced with annual catches only in the range 172-287 mt.

Canary rockfish was last assessed in 2007. At that time, the depletion percentage (SSB_{2007}/SSB_0) was estimated to be 32.4 percent with 95 percent confidence bounds of 24-41 percent. The stock was under a Council rebuilding plan with recent year and projection estimates of spawning stock biomass (SSB) indicating an upward trend.

As per the *Terms of Reference for Groundfish Stock Assessments (TOR)*, fishery and survey data were updated to include the years since the last assessment. Data updates for earlier years were also made. Most of these were minor with the exception of the use of a revised historical California catch time series (1916-80). The SSC concurred with the STAT that (i) the revised catches reflected the best available data, and (ii) incorporation of the revised catches was consistent with the update assessment TOR in that the process for catch estimation had not changed (rather additional raw data became available after the last assessment).

The Stock Synthesis model, Version 3 (SS3) was used for this assessment update, whereas Version 2 (SS2) was used for the last assessment. However, the SS3 assessment model formulation was essentially the same as that used for the SS2 model used in 2007. Further, the STAT carried out comparative runs (SS2 vs. SS3) using data from the last assessment. The results were nearly identical.

The update assessment results indicate that the current depletion percentage (SSB_{2009}/SSB_0) is 23.7 percent with 95 percent confidence bounds of 9-40 percent. Stock projections show a slight increase in 2010 (24.5 percent). The STAT noted and the SSC concurs that there is a high degree of uncertainty in the parameter estimates – especially steepness. Under the range of alternatives examined by the STAT, recent-year depletion percentage is highly dependent on steepness – hence the broad confidence interval on depletion level.

Given that canary rockfish are already under a Council rebuilding plan, the management implications of the updated assessment are not qualitatively different from those of the 2007 assessment. The principal difference lies in the estimate of SSB_0 . While the overall SSB trends (over the past 50 years) are not greatly different, the updated assessment estimated a smaller SSB_0 with concomitantly lower depletion percentage in recent years.

The canary rockfish updated assessment meets the TOR for an assessment update. It represents the “best available science,” and can serve as the basis for Council management decisions.

Another update assessment is recommended for the next assessment cycle (i.e. in 2011). In conjunction with the 2011 update, the STAT should conduct sensitivity analysis to (i) examine the effects of incorporating Canadian catch (and perhaps survey data) into the assessment; and (ii) further investigate estimates of steepness since they appear to be quite influential on depletion percentage estimates. Neither of these lines of investigation would affect the base case but may demonstrate the need for a full assessment in 2013.

SSC Notes

Details of the data updates for this assessment:

Survey data: Update to include survey data through 2008

- NWFSC, Triennial trawl surveys (indices, length and conditional age-at-length data)
- Pre-recruit index

Fishery data: Update through 2008.

- trawl, non-trawl, at-sea bycatch, recreational
- Time series of catches (landings and discard combined)
- Reconstructed time series of recreational and commercial landings
- Biological data (marginal ages and lengths) from port samples and observer data

Steepness was fixed in the last full assessment and in the 2009 update assessment. If the 2011 canary assessment is again an update (as recommended by the SSC), steepness should again be fixed at the same value.

The canary update assessment demonstrates that when B_0 is a critical factor in stock status determination (e.g. when using the Council's 40:10 control rule and overfishing definitions), changes in historical data (even 50+ years ago) can affect status determinations. At some future point, it may be worth examining whether a more contemporary biomass reference might be useful

for status determination, e.g. B at the beginning of the assessment time period; B_{MSY} , etc.

Darkblotched Rockfish

Darkblotched rockfish is a long-lived (60-105 years) member of the slope rockfish assemblage. There were large removals by foreign fisheries during 1966-68, followed by moderate landings of 200-1000 t per year thereafter. The species was first fully assessed in 2000, and declared overfished as a result of that assessment.

In the previous stock assessment in 2007, darkblotched rockfish was estimated to be gradually rebuilding from a low of 10 percent of unfished stock size in 2000. The stock was estimated at 22 percent of unfished stock in 2007.

As per the *Terms of Reference for Groundfish Stock Assessments (TOR)*, fishery and survey data were updated to include the years since the last assessment. Minor updates for earlier years were also made. In contrast to the updates of cowcod and canary rockfish, the revised historical California landings were not used in the darkblotched rockfish update assessment. The SSC was concerned about this lack of consistency between updates and requested that the STAT: 1) compare the time series of total landings used in the assessment with total landings when the revised historical California landings are incorporated; and 2) provide a comparison model runs with and without the revised California landings. Total landings increased, but the percentage change in the aggregate removals was much lower than for either cowcod or canary. Comparison of model runs with and without the revised historical California landing indicated that that change in estimated stock trend and current status was miniscule (~0.1 percent). Nevertheless, for consistency with other updates, the SSC recommends that this change be incorporated in the final draft of the update.

The SS3 was used for this assessment update, whereas SS2 was used for the last assessment. However, the SS3 assessment model formulation was essentially the same as that used for the SS2 model used in 2007.

The fishing mortality rate on darkblotched rockfish has been greatly reduced, and darkblotched rockfish appear to be rebuilding gradually at close to previous rebuilding projections. In this update assessment, stock status in 2007 was estimated to be 21 percent of the unfished stock size, which is consistent with the previous assessment (22 percent). The estimate for the depletion percentage of the spawning output at the start of 2009 is 27 percent, indicating that the stock has increased by a factor of 2.7 since 2000. However, recent survey trends are noisy and relatively flat. The estimated increase in stock size is driven primarily by the assumption that darkblotched productivity is analogous to that of other similar species, and not on survey and fishery data indicating an upward trend.

The darkblotched rockfish updated assessment meets the TOR for an assessment update. It represents the “best available science,” and can serve as the basis for Council management decisions.

Another update assessment is recommended for the next assessment cycle (i.e. in 2011). When the next full assessment is conducted, the SSC suggests that the following items be addressed.

The AFSC slope survey was strongly domed-shaped, while the NWFSC slope survey was estimated

to be asymptotic. There appeared to be no obvious reason for such a large difference in selectivity for two surveys with similar nets and depths of operation. The SSC recommends that the next full assessment for darkblotched rockfish consider whether estimated selectivity patterns are consistent with known differences and similarities between the different surveys used in the assessment.

Additional ageing work should be carried out. Older darkblotched rockfish collections should be re-aged and ageing error for the full age range should be re-evaluated.

Darkblotched rockfish habitat preferences should be quantified. Information from the STAT indicated that adult darkblotched rockfish association with rock ledges may affect the ability of survey to monitor this component of the population.

SSC Notes

Details on data updates other than landings:

Fisheries length composition in 2007 and 2008

Discard estimates and discard length composition in 2006 and 2007.

GLMM-based indices for the NWFSC slope and NWFSC shelf recalculated and extended to 2008.

Conditional age-at-length fishery data were updated for 1991, 1998, and 2003-06. New 2007-2008.

Conditional age-at-length survey data were updated for 2003-06. New 2007-2008.

Pacific Ocean Perch

Pacific Ocean perch (POP) were harvested almost entirely by U.S. and Canadian vessels in the Columbia and Vancouver International North Pacific Fishery Commission (INPFC) areas prior to 1965. Large factory trawlers from the Soviet Union and Japan began fishing for POP in the Vancouver area and in the Columbia area in 1965 and 1966, respectively. Intense fishing pressure by these foreign fleets occurred from 1966 to 1975. Catches from all fleets peaked in 1966-67. Passage of the MSA in 1976 ended foreign fishing within 200 miles of the U.S. coast. NMFS formally declared POP overfished in March 1999.

In the previous stock assessment in 2007, POP was estimated to be gradually rebuilding. The estimate of depletion percentage in 2007 was 27.5 percent.

As per the *Terms of Reference for Groundfish Stock Assessments (TOR)*, fishery, survey, and observer data were updated to include the years since the last assessment. Minor updates to the data from earlier years were also made.

The last full assessment was conducted in 2003. The 2005, 2007, and this assessments were updates using the same forward projection, age-structured model as used in 2003.

Results of the updated assessment indicate that the stock continues to rebuild albeit slowly. The updated estimates of the depletion percentage are 25.2 percent, 27.4 percent, and 28.6 percent in 2007, 2008, and 2009, respectively. Exploitation rates remain at a low level. There were no significant changes in the view of stock status between the 2007 and 2009 assessment updates.

The POP updated assessment meets the TOR for an assessment update. It represents the “best available science,” and can serve as the basis for Council management decisions.

A full assessment is recommended for 2011 to incorporate reconstructed historical catches from Washington and Oregon; and to explore use of the NWFSC shelf survey index, a different survey selectivity function, and different time blocking for fishery selectivities. A full assessment would also allow consideration of the Stock Synthesis modeling platform.

Key research recommendations for the next assessment are:

1. Research on the relationship of individual female age and weight to maturity, fecundity and survival of offspring.
2. Research on the relative density of POP in trawlable and untrawlable areas and differences in age and/or length compositions between those areas.
3. Research on the relative status of the British Columbia stock of POP and sensitivity of including Canadian catch in the U.S. assessment.
4. Consider expanding the assessment area south.
5. Historical catch reconstruction mainly in WA and OR.
6. Potential use of the NWFSC shelf survey index.
7. Age the Washington Department of Fish and Wildlife samples from the 1980s.

SSC Notes

Status of the stock from the last assessment

- 2007 Depletion at 27.5%
- 2007 Spawning biomass at 10,168 mt
- Unfished spawning biomass 36,983 mt
- Steepness = 0.652
- $M = 0.053$
- $MSY = 1,411$ mt
- Increasing trend at end of time series

New data sources and data modifications since the last assessment

- *Fishery catch data*
 - Catch biomass 2007-2008
 - Age compositions 2008
 - Length compositions used for 2007 due to ageing error
- *NWFSC survey data*
 - Survey biomass 2007-2008
 - Age compositions 2008
 - Length compositions used for 2007 due to ageing error
- *Discards: no change in basic assumptions*
 - 5% through 1980
 - 16% 1981- 2001, 2008
 - Use West Coast Fishery Observer data-based total mortality estimates: 2002-2007
 - Note: Average discard rates of 12-20% from 2002-2007.

ADMB Model overview:

- Age structured forward projection model composed in ADMB
- No differentiation made between sexes
- Constant natural mortality
- Beverton-Holt spawner-recruit model
- Age varying fishery and survey selectivity
- Time varying fishery selectivity

MPD vs. Bayesian Median

MPDs of the depletion percentage were used for reporting on stock status. It was noted that for the 2009 hake assessment, the SSC recommended using the Bayesian medians for reporting the probability of overfishing. The SSS should discuss and provide general advice on best practices regarding the use of MPD vs. Bayesian median.

	Model 2009 MPD	Model 2007 MPD	Bayesian Medians (Model 2009)
Depletion in 2007	0.252	0.275	0.288
Depletion in 2008	0.274		0.317
Depletion in 2009	0.286		0.332
2007 spawning biomass	9,528	10,168	10,180
2008 spawning biomass	10,342		11,167
2009 spawning biomass	10,794		11,695
Unfished spawning biomass	37,780	36,983	35,391
B_{MSY}	15,112	14,793	13,767
MSY	1,124	1,411	1,213
MSYL	0.400	0.400	
F_{MSY} (max selectivity > 1)	0.029	0.038	0.035
Exploitation rate at MSY	0.031	0.039	0.036

Cowcod

The cowcod is a long-lived, large, heavily overfished species with a large conservation zone in the Southern California Bight (SCB). The species extends to the north, but is concentrated in SCB. In 1999, the first assessment of cowcod indicated that the stock was overfished.

The 2007 assessment estimated the depletion percentage at 3.8 percent for the base model bounded by 3.4 percent (low state of nature) and 16.3 percent (high state of nature). The trend in spawning biomass was increasing slowly mainly due to assumed low catch.

No new data sources were available for this update assessment. Catch reconstructions were done for both the commercial (1900-1968) and recreational fleets (1928-1980). However, the commercial reconstructions while slightly larger than those used in the assessment, were also for a larger area than the SCB, and therefore not directly comparable. The reconstructed recreational catches were lower than those used in the 2007 assessment and were adopted for the current update. There were no changes to the assessment model in this update.

The 2009 update assessment estimated the depletion percentage at 4.5 percent for the base model

bounded by 3.8 percent (low state of nature) and 21.0 percent (high state of nature). The stock continues to display a slow upward trend but given that no new data are available, this result is little more than a stock projection. Cowcod remain on a multi-decadal rebuilding timeline.

There is little change in the view of stock status as a result of the 2009 update assessment. However, the change in historical recreational catches did lower the estimate of B_0 and partly gave rise to the increase in the 2009 estimate of depletion percentage.

The cowcod updated assessment meets the TOR for an assessment update. It represents the “best available science,” and can serve as the basis for Council management decisions.

The next time an assessment is conducted, it should be a full assessment. However, this need not be in 2011. Rather a simple check of the catch information to see if it is still in the current range should suffice. If needed, standard stock projection software can be used to update depletion percentages. There will be no new information in the indices currently used in the assessment to warrant the effort of an update assessment.

The next full assessment, when conducted, should include an evaluation of Mexican catch data and the catch north of Pt Conception; an evaluation of the time series excluded in the 2007 full assessment (and therefore this update); and a re-evaluation of commercial passenger fishing vessel (CPFV) logbook data used to create the index of abundance. Enhanced biological sampling should also be carried out to improve estimates of the population vital rates.

Pacific Halibut Management, continued

D.1. Proposed Procedures for Estimating Bycatch in the Groundfish Setline Fisheries

Dr. Jim Hastie described the rationale behind the recommended reduction in the estimated halibut discard mortality rate in the fixed gear fishery. Halibut bycatch occurs primarily in the sablefish longline fishery. Rates are set in consultation with the International Pacific Halibut Commission (IPHC). Initially the IPHC recommended a 25 percent mortality rate based on the misperception that Council sablefish fisheries were managed as a derby. With a better understanding of Council fisheries, the IPHC now recommends a 16 percent mortality rate consistent with similar fisheries in Alaska.

The left four columns in the table in agenda item D.1.b report halibut discard estimates calculated by the National Marine Fisheries Service (NMFS) Northwest Fisheries Science Center (NWFSC) and compare mortalities using both the 25 percent and 16 percent mortality rates for the years 2002 to 2007.

The SSC understands that the NWFSC is continuing to refine these estimates. The discard estimate for 2006 is about three times higher than estimates for the other years in this time series. The reason for this is not understood, and is under investigation by the NWFSC.

The SSC supports the use of the 16 percent discard mortality rate in this fishery, although it would be helpful to see documentation of the methods used by the IPHC to arrive at this rate. Further

development and documentation of this analysis by the NWFSC is anticipated in September.

Groundfish Management, continued

E.1. Groundfish Essential Fish Habitat (EFH) Modifications

Mr. Brad Pettinger, Chairman of the Essential Fish Habitat Review Committee (EFHRC), presented the two proposals to modify EFH closed areas; 1) “Proposal to modify the northeast boundary of the Eel River EFH no-trawl area,” submitted by Peter Leipzig, Executive Director of the Fishermen’s Marketing Association; and 2) “Proposal to the Pacific Fishery Management Council To Modify Essential Fish Habitat Conservation Areas: Juan De Fuca Coral Canyons & Grays Canyon Sponge Reefs Important Ecological Areas,” submitted by Oceana. Mr. Chuck Tracy of the Council Staff was also present to answer questions, and the EFHRC evaluation of the proposals was available to inform the discussion.

The first proposal suggests reducing the size of the Eel River EFH no-trawl area by excluding the area shoreward of the 75 fm rockfish conservation area (RCA) boundary (although these lines do not closely follow the 75 fm bathymetric curve). This request was made to allow fishing on the shallow sandy areas which were included in the no-trawl area in 2005, but which are not actually part of the Eel River Canyon. There is some concern that the 75 fm RCA boundary excludes part of the canyon head from the EFH closed area. A line that more closely followed the actual 75 fm curve would lead to less concern about potential impacts to the canyon itself.

The second proposal suggests increasing the size of the Juan de Fuca and Grays Canyon EFH conservation areas (no-trawl areas) and adding no bottom contact areas within the new Juan de Fuca EFH conservation area. These changes were proposed in order to protect benthic invertebrates and associated biogenic habitat. While the proposal contains a wealth of information from research around the globe, it is not clear from the document exactly how the boundaries of the proposed closed areas were arrived at, although new data from dive sites, data on catch of corals and sponges from Northwest Fisheries Science Center (NWFSC) trawl survey, and hard substrate distribution data were all considered.

Some information is still needed before these proposals can be fully evaluated. For example, socio-economic information is lacking at this point for both proposals.

The SSC concurs that both proposals have merit, contain rational reasons for modifying EFH, and should go forward for consideration. The urgency of these proposals has yet to be evaluated. More information would be needed before the SSC could make a recommendation regarding whether the interim proposals are necessary as opposed to waiting for the scheduled 5-year EFH review process to begin. The SSC notes that the probability that the RCA would be relaxed in the next several years is quite low, so much of the Oceana proposal may not be urgent. However, the protection of glass sponges in the vicinity of Grays Canyon, given their rarity and the potential damage to habitat and organisms, is more likely to merit consideration under the interim process. Depending upon the socio-economic impacts, the proposal to modify the Eel River closed area may also merit consideration under the interim process.

Groundfish Management Continued

E.4. Amendment 23 – Implementing Annual Catch Limit Requirements

Mr. John DeVore briefed the Scientific and Statistical Committee (SSC) on development of the Council's framework for implementing Annual Catch Limits (ACLs) under the Fishery Management Plan (FMP) Amendment 23. Dr. Jim Hastie (NWFSC) also participated in the discussion.

The SSC provided a conceptual framework in April for incorporating scientific uncertainty in the Acceptable Biological Catch (ABC) rule for stocks with assessment models. Recommendations included quantifying assessment variability as a basis for evaluating the size of a scientific buffer (i.e., the difference in yield between the Overfishing Limit [OFL] and the ABC) and the risk of overfishing a stock.

The SSC proposes to convene a subgroup meeting this summer to scope approaches to quantify scientific buffers. The SSC notes that there are many challenges to developing a consistent analytical approach to characterize scientific uncertainty due to differences in data coverage and quality for assessed species (e.g., geographic boundaries, availability of age data, different time series). The scoping exercise would explore a number of possible approaches to incorporate scientific uncertainty in the ABC control rules, using data and parameter estimates from current and past stock assessments. Council staff would assist by assembling data and parameter estimates from past stock assessments. The SSC anticipates that the scoping exercise will be useful to identify preliminary ABC control rule alternatives for assessed species for Council consideration. A strategy for incorporating scientific uncertainty can be specified for the framework, but the SSC does not expect a full analysis for assessed species to be completed by November.

The SSC also discussed concepts in the Vulnerability Evaluation Work Group report (Agenda Item E.4.a., Attachment 1) on Productivity and Susceptibility Assessments (PSAs) to determine vulnerability of a stock. Stock vulnerability categorization methods, such as the PSA, will be needed for data poor species in particular. Dr. Jim Hastie stated that the NWFSC will be compiling trend data for unassessed stocks, but the compilation will not be completed by November. The SSC proposes to review the PSA methodology before the November meeting for use in the FMP Amendment 23 preliminary alternatives on ABC control rules.

The SSC also briefly discussed management uncertainty, and considered that the inseason management procedures currently employed by the Groundfish Management Team (GMT) are performing well. If documentation of the procedures is provided, the adequacy of current methodologies can be verified.

Groundfish Management Continued

E.11. Trawl Rationalization: Accumulation Limits and Divestiture

Mr. Jim Seger and Mr. Merrick Burden briefed the Scientific and Statistical Committee (SSC) on the proposed final actions being considered for accumulation limits and divestiture. The SSC reviewed

the Issue Summary (E.11.a, Attachment 1) and the GMT Report (E.11.b). Many of the issues involved in setting accumulation limits are quite complex, and the SSC commends Council Staff and the Groundfish Management Team (GMT) for carefully laying out, discussing, and analyzing a great number of these issues.

The SSC views accumulation limits and divestiture primarily as policy decisions to be made by the Council. Accumulation limits affect the trade-offs between economic efficiency and wider distribution of fishing opportunities. Higher limits will tend to encourage more fleet consolidation and economic efficiency. However, if the limits are too high, a large degree of the harvest and quota market could be controlled by a small number of entities. Lower limits will tend to spread fishing opportunities over more entities, but can limit the efficient prosecution of the fishery. In addition, accumulation limits for overfished, non-target species will affect the ability and cost required of harvesters to fully utilize target species quota, and thus impact the overall functioning of the quota market and the rationalized fishery.

Due the large amount of uncertainty associated with bycatch of overfished species, it would be prudent to design a system that is flexible and adaptable as actual conditions on the ground play out. These uncertainties include the degree of randomness of bycatch harvest, the potential for unusually large bycatch tows, the ability of harvesters to avoid bycatch, how the quota market for bycatch species may function through the fishing season, the degree to which risk pooling agreements and information sharing will be effective, and the lack of concrete data and models. Given the operational and market disruptions that could result from changing accumulation limits after rationalization occurs, fewer disruptions and more flexibility may be attained by initially setting the accumulation limits at the lower end of the range rather than upper end.

Section C of the GMT Report addresses the relationship between control limits, vessel limits and risk pools. The report posits that higher limits may discourage the formation of risk pools. The SSC does not regard this as a certain outcome, and expects that the formation of risk pools would depend on many factors. There is insufficient information to analytically select a level of control limits or vessel limits that would encourage the formation of risk pools, even though such information may be of interest to the Council.

Groundfish Management, continued

E.12 Trawl Rationalization: Adaptive Management Program

Mr. Jim Seger and Mr. Merrick Burden briefed the Scientific and Statistical Committee (SSC) on the proposed final actions being considered for the adaptive management program (AMP) of the trawl rationalization program. Previously, the SSC had noted the need for clear goals and objectives to inform the analysis of the AMP and for tightly specified qualification requirements consistent with the objectives. At its April meeting, the Council defined goals and objectives for the AMP. As specified in the Groundfish Management Team (GMT) report (Agenda Item E.12.b) they include:

- Community stability
- Processor stability
- Conservation

- Unintended/unforeseen consequences of the Trawl Individual Quota program, and
- Facilitate new entrants (both processors and harvesters).

The SSC's previous comments on these issues remain pertinent:

1. If the AMP is intended to address unintended consequences associated with rationalization, those consequences will not be fully known until after rationalization occurs. These consequences may be different in the early periods of rationalization than in later periods after the industry has adjusted to the trawl individual quota program. Therefore, flexibility is a desirable design feature.
2. Given that 10 percent of the quota is the maximum amount that may be allocated to an AMP, trying to address too many objectives with the program could lead to diminished program results.

In addition:

- It is not clear how the adaptive management program can be used to facilitate the new entrants into the fishery objective.
- The GMT report discusses several ways to change behavior by rewarding vessels that engage in “desirable” practices. The SSC notes, however, that use of indirect proxies to alter behavior or practices may have unintended consequences, some of which may be perceived as negative or undesirable. For example, in order to provide an incentive to reduce gear impacts to bottom habitats, the report offers the option of rewarding vessels with the fewest tow-hours per pound of Individual Fishing Quota. Although for some cases tow-hours may be a good proxy for habitat damage, it is just a proxy and using it may result in other, unexpected changes in fishing behavior that may be undesirable. The SSC cautions that great care and much thought should be used before implementing such policies.

Coastal Pelagic Species Management

H.1. Pacific Mackerel Management for 2009-2010

The Scientific and Statistical Committee (SSC) received a presentation on the 2009 Pacific mackerel stock assessment by Dr. Paul Crone. Dr. Owen Hamel was present to answer questions about the review of this assessment by the Stock Assessment and Review (STAR) Panel, held in La Jolla, California, during May 4-8, 2009.

The last full assessment of Pacific mackerel occurred in 2007. The 2008 assessment was an update assessment. There are two primary changes in the 2009 assessment compared to the assessments conducted recently. First, the assessments of Pacific mackerel for the past years were conducted using the ASAP model. The 2009 assessment reflects a continued effort by the Stock Assessment Team (STAT) to change the modeling platform from ASAP to the more flexible Stock Synthesis (SS). Second, unlike the assessments for the past years which were based on three indices of abundance (California Cooperative Oceanic Fisheries Investigations [CalCOFI], commercial passenger fishing vessel [CPFV], and spotter), the 2009 assessment excluded the CalCOFI and spotter indices, and used only the CPFV index due to concerns associated with potential sampling biases for Pacific mackerel.

In addition to the SS baseline model (model AA), an alternative SS model (model AB) was developed by the STAT for the purpose of comparison and sensitivity analysis.

The harvest guideline (HG) for the 2009-10 fishing year was 55,408 mt based on the baseline model and 7,729 mt based on the alternative model AB. The results of alternative models AA and AB differ for the recent years because an additional selectivity time block 2000-2008 for both the commercial and recreational fisheries was added to model AB, and the single CPFV index in model AA was split into two indices in model AB, one for 1962-1999 and another for 2000-2008. The differences in the results of models AA and AB reflect a range of uncertainty for the model estimates. The SSC endorses the use of the baseline model (AA) for setting the acceptable biological catch, but recommends that the results of model AB be taken into account when setting the HG.

Despite unresolved problems, such as a lack of biological sampling data from Mexico, and a lack of fishery-independent index of relative abundance, the current assessment represents best available science, and can serve as the basis for Council management decisions.

The SSC agrees to the research and data needs identified by the STAT and STAR Panel to improve future assessments of Pacific mackerel. These include better collaboration with Mexico and Canada in data collection, enhanced monitoring of the CPFV fleet, and increased sampling for biological data.

A new assessment for Pacific mackerel would not be a high priority if catches remain at recent low levels. A substantial increase in catch levels could potentially trigger the need for a new assessment.

Coastal Pelagic Species Management, continued

H.2. Sardine Methodology Review and Exempted Fishing Permit (EFP)

The Scientific and Statistical Committee (SSC) was briefed by Mr. Tom Jagielo on the west coast sardine survey application for an EFP in 2009. The proposed survey is an expansion of a pilot study that was conducted off the Oregon coast in 2008. Mr. Ryan Howe of the survey team was also present to answer questions about survey design. Dr. Owen Hamel represented the SSC at the May 2009 Stock Assessment Review (STAR) Panel review of the survey methodology, and briefed the SSC on the STAR Panel's report.

The 2009 EFP application is for a combined survey that would range from Monterey Bay to the US/Canada international boundary. Survey design is a two-stage sampling approach that includes: 1) a photographic aerial survey, and 2) an at-sea point set sampling to estimate species composition, school density, and biological characteristics of the fish. The applicants addressed the SSC request from March 2009 to standardize methods throughout the study area and develop a rigorous survey design. In addition, a power analysis was presented in the application to inform the discussion about adequate sample size to characterize school variability. Based upon the results of that analysis, the SSC concurs with the applicants and the STAR Panel report that an EFP set-aside of 2,400 mt would be sufficient to provide an expectation of successful calibration, which is a crucial element of the survey. If only 1,200 mt were to be available for conducting the survey, the SSC suggests that the applicants be asked to develop a revised proposal that presents the trade-offs associated with

alternative ways to conduct the study under that undesirable constraint.

The SSC concurs with the STAR Panel that the application has merit and should be approved. Current sardine assessment results are particularly uncertain with respect to the portion of the stock that occurs to the north of Monterey Bay. As discussed in the STAR Panel report, survey results would be expected to underestimate overall abundance. Therefore, the findings from the proposed study would potentially provide a lower bound for the size of the northern portion of the stock, which could inform the next assessment. In addition, the survey has the potential to make even greater improvements to the overall stock assessment if it is continued annually for sufficient years to develop a time series.

Public Comment

Mr. Steve Scheiblaue, Harbormaster of the City of Monterey, California, addressed the issue of marine protected areas within the Monterey Bay National Marine Sanctuary (Sanctuary). MR. Scheiblaue stated that he had thoroughly reviewed the Sanctuary's three identified needs for MPAs and he is seeking independent review of the science and rationale behind the proposed Sanctuary action. He acknowledged the role of the SSC and its members as reviewers and noted that he has been tasked by City of Monterey to solicit an independent review of the science behind MPAs. Mr. Scheiblaue stated the he is dissatisfied with the response of the Sanctuary's Scientific Advisory Group and is interested in completing a review of the science that is independent of the SSC or the Sanctuary. He asked the SSC to contact him with the names of any individuals who may be able to help with this endeavor. A stipend is available.

Adjournment B The SSC adjourned at approximately 1:00 p.m., Sunday June 14, 2009.

SSC Subcommittee Assignments, June 2009

Salmon	Groundfish	CPS	HMS	Economic	Ecosystem-Based Management
Bob Conrad	Owen Hamel	André Punt	Ray Conser	Cindy Thomson	Selina Heppell
Loo Botsford	Loo Botsford	Tom Barnes	Tom Barnes	Todd Lee	Tom Barnes
Owen Hamel	Ray Conser	Ray Conser	Robert Conrad		Ray Conser
Pete Lawson	Martin Dorn	Owen Hamel	Selina Heppell		Martin Dorn
Charlie Petrosky	André Punt	Selina Heppell	André Punt		Pete Lawson
Shizhen Wang	Steve Ralston	Steve Ralston	Vidar Wespestad		Todd Lee
	Theresa Tsou	Shizhen Wang			André Punt
	Vidar Wespestad				Steve Ralston
					Cindy Thomson
					Theresa Tsou

Bold denotes Subcommittee Chairperson

PFMC
08/27/09