Minutes of the Plan Team for the Groundfish Fisheries of the Gulf of Alaska

November 2009

North Pacific Fishery Management Council
605 W 4th Avenue, Suite 306
Anchorage, AK 99501

The meeting of the Gulf of Alaska groundfish Plan Team convened on November 16th, 2009 at 3pm at the Alaska Fishery Science Center, Seattle, WA. Members of the GOA Plan Team in attendance included:

Jim Ianelli	NOAA/AFSC REFM (GOA co-chair)
Diana Stram	NPFMC (GOA co-chair)
Sandra Lowe	NOAA AFSC REFM
Jeff Fujioka	NOAA AFSC ABL
Jon Heifetz	NOAA AFSC ABL
Nancy Friday	NOAA AFSC NMML
Cleo Brylinsky	ADF&G
Tom Pearson	NOAA AKRO
Nick Sagalkin	ADF&G
Mike Dalton	NOAA AFSC REFM
Leslie Slater	USFWS
Paul Spencer	NOAA AFSC REFM
Ken Goldman	ADF&G
Sarah Gaichas	NOAA AFSC REFM
Bob Foy	NOAA AFSC RACE

Team member Steven Hare (IPHC) was absent while Joint Plan Team member Yuk Cheng attended primarily the BSAI Plan Team meeting. Approximately 10 state and agency staff and members of the public also attended. The agenda and attendance for this meeting is attached to the Joint Plan Team report.

General Plan Team recommendations

The GOA Plan Team recommends the following for future developments of the SAFE report chapters (applicable to all assessments unless noted otherwise):

1. That the AFSC coordinate with the Regional Office a source for catch data to ensure that authors use the same set of reports for recent years (e.g., for the current and previous year). This also applies for prohibited species catch (PSC) tables as well as non-target species catch.
2. Resolve discrepancies in use of terms 'bycatch' and 'incidental catch' in each assessment. These terms have different perceptions and care should be taken for correct and consistent use of terminology.
3. For fisheries where bycatch in halibut fisheries apply, authors are requested to coordinate with the Regional Office or other appropriate agency to account for these removals.
4. Some rockfish assessments may have revised maturity estimates and the Team would like to review comparisons of these studies in September 2010. In particular, locations and timing of samples, and recommendations from assessment authors for approaches to modifying assessments.

Economic overview

Mike Dalton presented an overview for the SAFE introduction of changes in first wholesale revenues across species and product groups in BSAI and GOA groundfish fisheries from 2007-08. This summary of economic information represents a new contribution for the SAFE. The Plan Team questioned to what extent these trends might hold up at the ex-vessel level as well as the reported first wholesale level and noted this would be worth evaluating in the future. All data were extracted from COAR and WPR reports and reflect only annual price changes (i.e., seasonal effects are aggregated because COAR is an annual report and the WPRs do not contain information on prices or revenues). Plan Team members questioned the sensitivity of the results to the residual term used and the way it was apportioned to separate effects. Mike noted this is only an issue with respect to the sensitivity of the magnitude of each effect, and only if the residual term is large. A robust result was that price and quantity effects usually have opposite signs, presumably due to demand-side effects, which may act generally to cushion the impacts on producers of a reduction in TAC, or conversely, offset some of the benefits of increased catch. Plan Team members commented that resolution of these effects at the individual species level would be interesting. In 2007-08, total wholesale revenues from Alaska groundfish increased despite substantial reductions in pollock TACs. The increase in first-wholesale groundfish revenues in 2007-08 was seen to be driven by a strong positive first-wholesale price response for pollock surimi. The Plan Team raised questions about the role of yen-dollar exchange rates in this result. In particular, the yen strengthened against the dollar in 2008. Mike indicated that he would follow up on those questions after the meeting. An analysis of exchange rates and the Japanese surimi market in 2008 is included as an addendum at the end of these minutes.

1. Walleye Pollock

FOCI recruitment forecast model

Bern Megrey provided an overview of the recruitment forecast model for the 2009 year class of GOA pollock which included discussion of the input data to the model, the forecasting process, and new initiatives for the project. Input data include age-2 pollock abundance, spawning biomass, and physical variables. A conceptual model from adults to recruits is used with estimates of mortality (not constant). In 2009, the GOA freshwater input index, which positively corresponds to eddy formation and larval concentration in Shelikof, indicated slightly above average recruitment. Wind mixing, which corresponds to increased primary production and favorable first feeding, predicted slightly below average recruitment

for the 2009 year class. One hypothesis posits that before 2000 the environment controlled recruitment whereas predation is now the primary controller of larval pollock survival. Recruitment appears to be about average based on time series of larval abundance and distribution and the recruitment time series. The transition probability is derived from a S-R model. Weighted average of all these data elements suggests that recruitment is average to slightly below average in 2009. A number of methods have been used over the years but the forecast accuracy has been only about 60-70% using these analyses. The future plan is to make the recruitment estimation dynamic where the initial recruitment estimation is constantly refined throughout the year as data becomes available. Additional experimental work and a life stage recruitment model are being planned. The Team appreciated the presentation but noted in later discussions that this prediction had no impact on decisions made by the assessment author for management guidance. The Team noted that the FOCI work may be better applied toward medium or long-term guidance in general expectations of recruitment and asks that the SSC weigh in on the perceived value of the FOCI work on fisheries management.

Nick asked about specific data source locales and how they apply over the entire region. Jim asked and there was a discussion about the importance of a temperature inversion in the surface waters in 2007 and 2009 surveys (referencing this year's Ecosystem Considerations section). Bern said that it was not clear if the recruitment forecast was sensitive to this phenomenon.

GOA Pollock Assessment

Martin Dorn presented the stock assessment for GOA pollock. New data included updated fishery 2008 total catch and catch at age, winter 2009 Shelikof EIT survey with the Oscar Dyson correction, summer 2009 NMFS bottom trawl and ADFG survey. The 2009 NMFS bottom trawl survey biomass estimate was double the estimate from the 2007 survey. The 2009 ADFG survey biomass also increased by 43% over the 2008 estimate. The winter spawning surveys indicated a modest increase but still at near historically low levels.

Bycatch and incidental catch: the pollock target fishery catch of FMP species is mostly (95%) pollock. Bycatch of non-target species in 2009 were dominated by eulachon, grenadier, and "other". Bycatch of PSC species included halibut and salmon at levels consistent with previous years.

Trends: Biomass and yield projections indicate increases due to recent data. The initial estimate of the 07 years class is 1.7 times the average but this estimate has substantial uncertainty. The time series of total catch has been close to the TAC since the early 80s.

Spatial distribution: The 2008 fishery indicated that 4 year old pollock were mainly in area 620 whereas three-year olds dominated the catch elsewhere. There appears to be a slight upturn in Shelikof, Shumagins, and Sanak, but not in Chirikof. NMFS bottom trawl survey showed typical distributions of pollock but a general increase over recent years. ADFG survey size data indicate larger fish than normal.

Fishery catch: the trend in the percentage of females and mean age of the catch was similar to recent years whereas the proportion of age 8 and older abundance is increasing. The age-diversity was stable relative to the past year. The question arose if changes in survey availability may be due to changes in temperature. There was speculation that the temperature inversion may affect fish distribution but further investigations are needed.

There was some discussion about the pollock catch in the fishery at mouth of Shelikof and the likely substantial movement of the stock in the area.

A clarification on the increased levels of 2008 discards in Table 1 from area 610 than in previous years. It was checked and that this was from the Pacific cod fishery and perhaps from extrapolations from limited observer data. Also, industry representatives noted that in Kodiak discards (mostly flatfish) occur due to regulations. It was also noted that pollock was commonly taken incidentally in the POP and flatfish

fisheries. Trip limit regulations on pollock may also affect discards. Regulations went into effect in C and D seasons. Initially the rule was 300,000 lbs per trip. This changed so that the limit is per day and if that catch is exceeded, discards will result. The Team would like to see an accounting of the discard by gear and target to better understand sources of discards.

Model structure

Martin used an age structured model coded in ADMB as in past years. This model has been extensively evaluated under a Management Strategy Evaluation that was completed in 2009 (Dr. T. Amar's PhD dissertation). Natural mortality was fixed at 0.3. Recent annual estimates of maturity curves have been close to the long term average. In 2009 it was low for smaller animals but then tracked the long term average so the long term average was used in the model. A question was raised about why maturation schedules are different in the EBS compared to the GOA with the age at 50% mature being 1-1.5 years older in the GOA. Density dependence may play a role in addition to growth characteristics. However, the underlying cause for the difference is unknown.

Variance assumptions and statistical weighting: Future analyses may focus on assessment of effective *N* for specific data sets. Sampling errors alone were used to weight the survey biomass estimates. The Team asked the author to look at the difference sample sizes used for variance assumption among the likelihood components.

Model fits: Fishery Age composition predicted vs observed fit well. Survey age composition fits are more noisy. EIT survey biomass fit is outside the 95 % CI in recent years. Bottom trawl survey fits are lower than the survey. Martin experimented with forcing the model to fit the 2009 bottom trawl survey estimate but it resulted in a very poor fit to the Shelikof Strait data set. Fishery selectivity shifted with fishery changes in mid 80s but has been fairly stable.

Martin looked at the assumption of fixed *q* via likelihood profiles. Results indicate that a somewhat lower *q* results in better fits to the data, but only modestly so. As with previous assessments, a conservative approach was adopted which fixed *q* at a value of 1.0 for the preferred model.

Model performance: Spawning biomass has been stable in recent years and is slightly below $B_{35\%}$. The 2-year old recruitment appears to be increasing in recent years and the retrospective patterns appear to be balanced.

The Team inquired about data sources that support increases in 2 year olds compared to the 2008 assessment. Martin responded that the data is coming mainly from the Shelikof Strait survey. The Team noted that there are data on maturation rates by age for a number of years but that for reference points, a constant average was used. The author noted that annual estimates are variable. The Team asked about PWS data and if they were included and were informed that the data were included and in future, these data will appear in the Federal Catch Accounting System. The 2010 PWS GHL was rolled over from 2009 due to changes in the ADFG trawl survey. A winter acoustic survey will be done in PWS and Kenai Peninsula this next year to look at relative numbers.

Pollock ABC recommendations

The Team endorsed the author's recommended ABC of 77,150 t (up from 43,000 t in 2008) and OFLs for 2010 and 2011 noting the ABC recommendation incorporates fixed trawl catchability at 1.0, uses the average recruitment instead of the model estimate for the 2007 year class, and considers a different harvest control rule that

The ADFG GHL for PWS is 1,650 t so the actual 2009 recommended ABC is 75,500 t.

Southeast Alaska assessment:

A Tier 5 calculation is employed for the Southeast Alaska portion of the stock. The size composition was dominated by smaller fish, there is no fishery, and the biomass trend is stable.

Area apportionment

The allocation is based on the distribution from the trawl survey. A four year average is used. Chirikof numbers went up in 07 and 09 compared with Shumagin and Kodiak. Relative portion of 2+ biomass at spawning assessed in each survey and then totaled to get the apportionment by management area.

Plan Team recommendations for the next assessment:

1. The Team agreed that someone should look at impact trawling of the gear as a research priority.
2. The Team would like to see an accounting of the discard by gear and target to better understand the source of changes in recent years in the Shumagins and Kodiak.
3. The Team asked the author to look at the difference in data input sample sizes used for variance assumption among the likelihood components.
4. Continue to evaluate estimating survey catchability
5. Reevaluate bottom trawl selectivity
6. Start model at age -1 rather than age-2 (to allow for better treatment of recruitment than currently)
7. Incorporate ADF&G information on PWS as available.

2. Pacific cod

Grant Thompson provided a review of ageing data as implemented in GOA Pacific cod assessment. In September, Tom Helser presented issues surrounding age-determinations including the "edge-effect." This effect deals with otolith growth past the deposition of an annulus. This information led the Plan Team in September to ask Grant to apply a bias correction term to better accommodate using age data, which he did. In the 2008 assessment, the age data for most models were heavily down-weighted. The Team discussed developments of the model and endorsed B1, which did not down-weight the age data, for ABC recommendation purposes. The category of "A" models retained a number of issues identified last year (though the Team appreciated having them presented for comparative purposes).

Paul Spencer noted that the bias correction factor estimate may not be having the desired effect and may be due to spurious model factors rather than specific age-error bias. The Team encouraged pursuit of age-validation studies for young Pacific cod so that the correction factor can be better evaluated.

The Team discussed key differences from the "A" set of models including: cohort-specific growth, not allowing selectivity to be estimated in final year. The Team's choice of model B1 was due to discomfort in ignoring age data (particularly since some resolution of the edge-effect has been achieved). While the bias correction as applied may be imperfect, the Team recognizes this is a step in the right direction and works within the constraints of the software being used. The Team anticipates future work with ageing and application of the age data.

Population trends indicate that, based on survey results and anecdotal reports, the abundance of pre-recruit-sized Pacific cod is high. As such, the near term projections are for an increasing population biomass.

Grant provided ideas for model evaluations in future: to re-evaluate q and M (jointly), investigate alternative stock-recruit relationships, evaluate fuller specifications of process errors, and examine weights given to datasets. Mark Maunder commented on whether redefining harvest control rules so that harvest rate remained constant was tenable since if the goal of attaining $B_{40\%}$ (or B_{msy}) should occur without changing the harvest rate. This may be a Tier 1 qualification issue but could also be reexamined in conjunction with revised control rules for ACL analysis (anticipated to occur in the next few years).

The Team recommends use of model B1 for specifications for 2010 and 2011. The Team recommends use of the same apportionment methodology as per previous years by averaging the biomass distribution from the three most recent surveys.

Plan Team recommendations for the next assessment:

1. Include a model run without age data. It was noted that developing a totally age-free model may be difficult and that some things may require constraining (e.g., variability in length-at-age).
2. As a low priority, it may be useful to evaluate a model run from the preferred configuration but only advanced by one year for comparison with projections. For example, for the preferred 2010 assessment model, re-run with (expected) catch for 2010 and 2011 as new data inputs as if the assessment was being conducted in 2011. The idea being to compare projected numbers at age (for the same catch assumptions) with modeled numbers at age in 2011.

3. Sablefish

Discussion of sablefish are presented in the Joint groundfish Plan Team minutes.

4. Deep water flatfish complex (Dover sole and others)

Buck Stockhausen provided an overview of the GOA deepwater flats assessment. The deepwater flatfish complex includes Dover sole, Greenland turbot, and deepsea sole. The catch for the complex has been well below ABC and TAC. Proposed ABC and OFL are lower for 2010 based on the same model used in 2007 for Dover sole with updated data, largely driven by a change in the estimated survey selectivities from new survey age data.

The catch in the complex is almost entirely Dover sole, with some catch of deepsea sole each year and intermittent catches of turbot. Buck noted that the 8 t of deepsea sole caught was in excess of a Tier 6 OFL of 6 t for this species, but the Team commented that this is not a "functional" OFL because it is only one component in the total OFL for the complex and the complex is managed on the basis of the total OFL, not OFL's for individual species. Catch of the complex has been concentrated in CGOA. Most catches for Dover sole have been off Kodiak in 2008-09, but there were also some in the EGOA during 2007. Dover sole size compositions from the fishery have not been well sampled in recent years (and there are no fishery age compositions for any of the deepwater flatfish). The fishery size sample for 2009 was somewhat improved over 2005-2008, but coverage was still spotty. There is very little prohibited species bycatch in this fishery.

The groundfish surveys sample Dover sole well, but sample Greenland turbot and deepsea sole poorly. Size compositions from surveys for Dover sole do not show many modes indicating recruitment. Age compositions from the 2003-2007 surveys show the 2000 year class moving through the age compositions. Recent age compositions have decreased the estimate of the magnitude of the 2000 year class. Survey biomass distributions show a fairly large pool in the northeastern GOA which was not targeted by the fishery off Kodiak this year.

The model used for Dover sole was similar to that shown for flathead sole, including the new male selectivity scaling option, but also added double normal functions for selectivity options. There is no stock recruitment relationship in the model; fits are to catch history, survey biomass, size comps for fishery and survey, and age comps for the survey. Age comps from 1987 and 2007 surveys were added this year. Size comps for years with age data are downweighted. The double normal, a flexible but parametric way of describing selectivity curves that go up to asymptote but then decrease for higher ages, was used to test dome shaped selectivity functions for fishery and survey data. Seven different model configurations were examined, all with different forms for selectivity patterns. Freeform selectivities are unconstrained parametrically, smoothly varying with estimated parameters at each age. The model software (AD Model

Builder) could not calculate Hessian matrices for the models with freeform selectivities, so no estimates of uncertainty were available for models using that (perhaps flawed) approach. For the remaining models where the hessian was valid, at least one parameter ran to the bounds set on it; the base and scaled logistic models hit bounds with slopes of logistic selectivity curves, going almost vertical. Double normal models also hit parameters bounds in differing respects. Buck ended up going with the base model, although it had the worst overall likelihood, because it was the preferred model from the last full assessment (2007) and he had highest comfort level with it. Fishery selectivity curves in the base model are essentially step functions. Separate selectivity curves were estimated for shallow and deep surveys. Males were estimated to be fully selected at much younger ages than females in surveys. This pattern is the same for shallow and full (deep) surveys.

Because the recommended (base) model has parameters hitting bounds, uncertainties are underestimated. Despite differences in selectivities, all of the models estimated fairly similar trends in biomass and recruitment. Overall levels of biomass do change between models. The base model is most conservative in terms of low biomass estimates and F as well as overall model development, so the author picked that one for management recommendations. The model is predicting flat total biomass, and a spawning biomass that has been declining but has now apparently bottomed out. New parameters estimated for selectivity based on updated age data brought the whole biomass trend down even though the model is identical to the model used in the previous full assessment. Fishery selectivity curves were similar but survey curves were different between assessment years. Plan Team members asked why the shallow surveys' selectivities were asymptotic when you might expect that one to be dome shaped if they go deeper with age. Recruitment patterns are similar but the current assessment has overall lower mean than past two and the 2002 or 2003 recruitment was estimated to be smaller than previously. Dover sole are not experiencing overfishing and are not overfished.

The Plan Team discussed using Tier 5 as an alternative if selectivity issues were considered important. Tier 5 for Dover sole would be less than Tier 3 using the same M and biomass. Tier 5 estimates might also be investigated for Greenland turbot and deepsea sole. For these two species, there were concerns as to whether the bottom trawl survey would see them regularly (i.e., reliability) or whether they are at the edge of their ranges (turbot). Under ACLs these two species would not qualify as ecosystem components if they are regularly caught. The Plan Team discussed whether the standard Tier 6 catch history was meant to be over a period where we didn't have a directed fishery (as is the case for deepsea sole and Greenland turbot in the GOA). Julie Bonney remarked that there is not much of a market for Dover sole, and no real targeting on the entire complex. The Plan Team was concerned that we have a perception problem if we exceed the OFL with the catch for a subcomponent.

The Plan Team and author discussed alternative methods for selectivity estimation within the Dover sole model, and had recommendations for the author (see below). Comments on other models included discussion of whether freeform and double normal selectivity estimates are saying something dome shaped is going on in the fishery, and is there a biological basis to support this? How are assessments done for Dover sole on the West Coast? Is there any evidence that there is dome shaped selectivity or suspect a change in selectivity beyond age 20. The Team suggested trying runs with selectivity fixed for older age group or giving a rationale why it would change between age 30 and 40. Alternatively, something simpler with limited data might be good for (base model) fishery selectivity, such as fixing the slope and then estimating the inflection. The Team would like to see a model that where the parameters are away from the bounds and the Hessian matrix inverts successfully.

Plan Team recommendations for the next assessment:

1. Attempt to include fishery age data in the model where available.

2. Explore simplifications such as setting fishery selectivity to equal survey selectivity, estimating inflection parameters given a fixed slope parameter, and estimating slope parameters in later phases.
3. Investigate the interaction between the selectivity and any potential mis-specificaton of the age transition matrix.
4. Next full assessment should include survey CVs for all years as well as estimates of M (or appropriate proxies) for Greenland turbot and deepsea sole for consideration in Tier 5 calculation.

5. Shallow water flatfish

Jack Turnock presented an overview of the shallow water flatfish complex assessment. This is a managed complex of Tier 4 and Tier 5 stocks. The decrease in recommended ABCs and OFLs is due to a lower survey biomass estimate in 2009. It was noted that Dr. Teresa A'mar (recent AFSC hire) will likely be taking over the assessment next year and will be splitting out northern and southern rocksole from the remaining species in this group. Catches for rocksole were split out from survey in 1996, however splitting catch prior to this might need to be done.

Plan Team members questioned the assumed values for $F=M$ for the other species in the complex and asked what it is actually based on. No ages are available specific to those species so a default value is used. It was not yet determined how the subsequent assessment and management would be done, i.e. whether or not modeling would then be managed within complex (as per Dover sole in DWFs complex) or if rocksole would then be a separate managed category. There were questions raised on the ability to identify northern and southern rock sole. This is purportedly easier in survey identification but there may be possible complications in fishery catch identification.

Plan Team recommendations for the next assessment:

1. Include table of bycatch/incidental catch from directed fishery (see also general recommendations for all assessments).

6. Rex Sole

Buck Stockhausen presented an overview of the rex sole assessment. This assessment employs the same model and approach as for flathead sole. There are indications of observed changes in growth trends between eastern and central GOA. The author recommended the base case model but evaluated alternative models with similar male selectivity scaling as with flathead sole.

The SSC previously recommended using the maturity curve as fishery selectivity for both sexes. This results in an apparent Tier 3 calculation. The Team discussed whether there is a reliable $F_{40\%}$ using a selectivity pattern equal to the maturity. It is difficult to defend that fisheries would necessarily have a selectivity pattern approaching the maturity curve. If selectivity was a result of availability then selectivity would not change no matter how hard they fish (i.e., small fish unavailable). The Team discussed the use of a Tier 5 calculation using the modeled adult biomass (rather than survey biomass) for harvest specification purposes, or a straight Tier 5 calculation on the estimate of survey biomass.

The Team agreed that reliable reference fishing mortality rates ($F_{40\%}, F_{35\%}$) are not available. The Team recommends specifications based on a similar approach used the previous year with a Tier 5 calculation based the model results of adult biomass.

Plan Team recommendations for the next assessment:

1. Fishery age-data should be included in the model. Prioritization should be given to evaluate selectivity by age rather than size.

7. Arrowtooth flounder

Jack Turnock presented an overview of the arrowtooth flounder assessment. There were no changes to the assessment model. 2009 survey biomass and length data were added to model. No new age data were available. Population biomass estimates for the stock are finally starting to level off resulting in a slight decline in ABCs and OFLs. The Team concurred with the author's recommendation for ABCs and OFLs.

Plan Team members questioned whether there were any changes in retention in the fishery? Julie Bonney noted that due to the combination of groundfish retention standard requirements in the Bering Sea combined with amendment 80 fishing practices, vessels are retaining more flatfish in the Bering thus demand for GOA arrowtooth has declined due to higher market value for Kamchatka flounder in the Bering Sea. The Team discussion theorized that arrowtooth in the GOA might be reaching its carrying capacity. Bob Foy noted recent studies indicating potential temperature effects.

8. Flathead Sole

Buck Stockhausen presented the assessment for flathead sole. No major observed changes in the spatial distribution of the stock in the last 5 years. Size compositions have been downweighted for years where age compositions are available. Survey catchability was fixed at 1. Size compositions are consistent among years; there is no indication of recent recruitment into fishery. Age compositions from the 1990, 1999, and 2007 surveys have been added.

The Team discussed changes in selectivity and particularly the new option presented for male scaling. The base case model is the 2007 preferred model with the same asymptotic selectivity for both males and females, versus a scaling selectivity for males (fishery and survey). There are noted issues of timing of the survey vs. the fishery with the fishery occurring at different locations and times resulting in potential differences in selectivity patterns. Males appear more available to the fishery than to the survey relative to females. The estimated $F_{40\%}$ is unaffected however because it is based only on females not males.

The Team noted that alternative model 1 (with scaled male selectivity) resulted in improved fits to male size and age compositions relative to the base model. There are large changes to model by virtue of change in selectivity scaling. This was a concern to the Team as it is a borderline new model, and the Team expressed concern with the lack of age data for fishery. The author noted his plan in the future to have length or size-based selectivity curve for next assessment. The Team noted that concurring with the author's preferred model choice would be essentially an interim model in this year only with plans for another model for next year's consideration.

The Team was very interested in the new changes as shown in the assessment and the implications for selectivity changes. However, while the Team commends author for work on the model, the Team recommends the use of the base model for specifications, until a new model is developed more fully and looks forward to inclusion of additional data and model changes next year. The Team would like to review this new model iteration in September.

Plan Team recommendations for the next assessment:

1. Use of a length-based selectivity curve. The mechanism for differences in selectivity is unclear.
2. Need to obtain and utilize ages from fishery.
3. The new model should be run on the previous year's data to best represent a true retrospective comparison.
4. Evaluate fixing Q for males and solving for females as well as fixing female selectivity at 1 and scaling both males and females in the survey.

Slope Rockfish

9. Pacific ocean perch

An overview of the POP assessment was presented with an extensive change in how selectivity was modeled. The authors modeled selectivity in three time stanzas based on evidence presented for changes in the fishery. This change resulted in a better fit to fishery ages, had nine fewer parameters, and survey catchability reduced below a value 2.

The Team discussed the catch by depth, noting that depth of fishery affects age-availability of the survey (with younger fish tending shallower). In recent years, the distribution of the species appears more wide-spread in the surveys. Consequently, the survey CVs are lower (i.e., no longer dominated by few large tows). The Team discussed how survey biomass precision could affect the perception of trends.

The Team concurs with the author's changes in the model, noting this has a large effect on the reference rates. The author plans to use this model for the 2011 assessment. The projected catch for 2010 and 2011 accounts for the the TAC being unharvested in SE GOA. The Team concurs with ABCs and OFLs for 2010-2011 and apportionments based on weighted averages of survey biomass estimates.

Plan Team recommendations for the next assessment:

1. Show comparisons of ages by depth and vessel types
2. Modify figure 9-23 so clear that control changes rates at 40% (not 35% as appears).
3. Include fishery age composition by depth.
4. Evaluate potential to estimate catch uncertainty (future assessments) in management uncertainty.

10. Northern Rockfish

Dana Hanselman presented the GOA Northern rockfish assessment. This assessment featured an update to the 2007 assessment model, and updated 2008 catch data and 2009 survey biomass data.

The biomass estimate was down but there are usually highly variable surveys for northern rockfish. Catch before and after the rockfish pilot program has a similar distribution, perhaps more inshore, and the fishery was generally catching less northern rockfish since the pilot program began. Age compositions show a couple of big year classes, but we don't see young fish early on, and as with other rockfish the length frequencies are not informative. Trawl survey biomass estimates in 1999 and 2001 were driven by huge single tows. In 2003 CVs were lower with only a medium spike in catch. In 2005 and 2007 also had huge single tows, but the biomass was spread out over more stations in 2009. The age compositions suggest that old fish are relatively abundant, which could reflect poor recruitment or that fishing mortality was low enough to ensure survival of older fish.

The Northern rockfish model has changed approaches in recent years with respect to how the multinomial likelihoods are weighted (via effective sample sizes). The basic issue is due to sampling, because almost all the ages or lengths were taken from a few hauls. Previously approaches that used hauls as the sample size or the number of ages and lengths were inconsistently applied. This year a hybrid approach was adopted and standardized for all components. Haul and total sample size were included by taking the square root of the product of the two, then scaling to a maximum of 50. The change resulted in a better balance on age and length composition fitting, and the survey data fit slightly better (but still quite poor). Selectivities were specified to be logistic. The Team noted that age and length data were fitting ok, but that plus groups show a strange pattern. The effective *N* was closer to input for fishery and survey age comps, a bit off for fishery size comp, but overall better balance. The model fits the smaller more precise survey estimates well. Catch data fits well. Recruitment estimates show that 1984 and 1994 year classes were strong,

however a big plus group in age compositions may hide other recruitment information. The authors might try to move the plus group to 30 or more instead of 23, to get more recruitment info.

Model estimated total biomass dipped in the 1970s, peaked in the 1990s, and with not a lot of apparent new recruitment is dropping slowly at present. Roughly decadal recruitments have been observed but not yet in the 2000s. The swath plot incorporating model uncertainty suggests just as much uncertainty in the present as in the future, unlike for other stocks.

The authors recommend and the Plan Team agrees with using the new model to balance size and age comp weights. The 2010 ABC of 5,100 t is higher than last year, but given model projections we are expecting a decline in 2011. A new maturity publication was brought to the attention of the authors (during crunch time) which suggests that the age at maturity is much younger than that used in the model. Paul Spencer commented that AI northern rockfish and POP also have new maturity curves. This will be evaluated in full during the coming years as the information was received too late this year.

Plan Team recommendations for the next assessment:

1. The Plan Team supports the assessment authors' suggestion to change the plus group for age compositions from 23 to 30 years.
2. The Plan Team also supports investigating a recent publication which suggests changes to the maturity curve for northern rockfish, which might be considered in an upcoming model.
3. The Plan Team encourages the authors to bring relevant age data analyses and maturity comparisons forward next September during the off year for this assessment.

11. Rougheye and blackspotted rockfish

Kalei Shotwell presented an overview of the assessment for the rougheye and blackspotted rockfish complex. She noted that due to continued lack of confidence in field identification between the two species they cannot yet manage under separate specifications.

Team members expressed concern that species-specific identification data are in the survey database and that does not account for potential mis-identification. There is a clear high potential for misunderstanding recent survey data in the database (due to this mid-identification) as well as the fact that it is not clear that previous years 'rougheye' as indicated in the database included both species.

Team members questioned why rougheye catch is lower recently. Julie Boney indicated that the fleet is fishing off-bottom more now and rougheye is a bycatch species.

Plan Team recommendations for the next assessment:

1. Go through the stock structure template for rougheye and blackspotted species
2. Evaluate to what extent bycatch in the halibut fishery is an issue in terms of total removals. Note to coordinate with other authors regarding appropriate methodology for estimating bycatch from this fishery.
3. Note that a research priority should be to analyze genetic samples from the 2009 trawl survey.

12. Shortraker rockfish and other slope rockfish

Kalei Shotwell presented the assessment for shortraker rockfish and other slope rockfish. An aging methodology for shortraker rockfish has been developed in recent years, and age compositions from three GOA trawl surveys are now available. However, there is much uncertainty concerning the aging procedure, and an attempt in 2008 to validate the ages was unsuccessful. Consequently, production aging

has now been put on hold, and age-structured modeling for this species is not recommended until we have better confidence in the ages.

Shortraker rockfish and other slope rockfish are managed as bycatch only throughout the year. In recent years, catches have been less than TACs for both management categories. For other slope rockfish, TAC in the EGOA is set much lower than ABC to cover incidental catch needs only. Most of the biomass of other slope rockfish occurs in the EGOA. Team members questioned whether increases in biomass for shortraker rockfish over the past 15 years could be explained by low catches.

When shortraker rockfish were in a complex with rougheye/blackspotted rockfish, there was a higher economic incentive to take shortaker rockfish. The catch composition within the complex would likely find a higher proportion of shortraker in those years (prior to 2005).

The Team approved the author's Tier 5 recommendations for ABCs and OFLs for 2010-2011.

Plan Team recommendations for the next assessment:

1. Same recommendation for consideration of bycatch in halibut fishery as with rougheye and blackspotted rockfish.

13. Pelagic shelf rockfish

Chris Lunsford presented an overview of the pelagic shelf rockfish assessment. Changes in the assessment were in the modification in catch weighting, with more weight assigned to the more recent catch period. A split-catch weighted model for dusky is recommended. The Plan Team recommends reorganization of future chapters to pull dusky out as a separate assessment and move yellowtail and widow into an 'other rockfish' category.

The Team discussed the potential problems in future management under ACLs in that complexes must have similar life-history characteristics. The Team recommends the use of the vulnerability analysis to assist in grouping similar species. It was also noted that the minor species are primarily located in the eastern GOA and by default protected under trawl ban. Furthermore, moving yellowtail and widow in with other slope rockfish would effectively prohibit targeting on this species. Assessment would track individual species catch against species-specific ABCs and OFLs.

Plan Team recommendations for the next assessment:

The Team recommends reorganizing PSR assessment and management such that separate specifications would be established for dusky and consideration given to best groupings of complexes for the remaining species.

14. Demersal shelf rockfish

Cleo Brylinsky presented the DSR assessment overview. This is a habitat-based stock assessment. Abundance is estimated by the product of the number of adult yelloweye per square km times average weight of adult yelloweye times the total habitat area.

Surveys were conducted in EYKT during spring 2009. Survey results were used to update yelloweye density estimates in this area to 1,930 adults/square km, which is a decrease of 46% relative to the previous density estimate of 3,557 adults/square km from surveys conducted in 2003. Uncertainty estimates for density estimates (CVs) are reported in appendix B to the assessment. The assessment authors explored 2 possible reasons for this decrease. First, the 2003 surveys included only 29 transects whereas 37 transects were used in the 2009 surveys, representing a larger geographic area. However a subset comparison using the 2009 survey data did not reveal much sensitivity to the increase in area. Second, the 2009 surveys were conducted in May but previous surveys were done later in the year, in June or July. An analysis of month

to month variability did not rule out a lower density in May in comparison to the summer months. The general conclusion seems to be that EYKT could be more variable or the density actually did decline from 2003 levels. Because April-May may be a "deep period" for yelloweye, seasonal movement across habitats is possible, the Team recommends that future surveys aim for July if possible.

Data on yelloweye weights in the directed-fishery and incidental catch in halibut fishery were used to estimate average weight. The estimate of average weight increased by a small amount in EYKT and exhibits some variation in other regions, nothing too surprising.

The 2009 TAC is 362 and includes 3% for other DSR. The Alaska Board of Fisheries: subsistence 8mt, and a 84/16 commercial/sport split which implies 241mt for commercial sector. The Team notes that it recommends an ABC and the final TAC is determined at the December Council meetings. The allocation to subsistence, commercial, and sport sectors is a matter left to the state.

For incidental catch, a ratio estimator of yelloweye per halibut caught is derived from unfiltered halibut logbooks & surveys. These are stratified by depth.

The Team notes that most of the fishery occurs outside of state waters but the state is responsible for managing the fishery and conducting stock assessments. The sources of funding for surveys and other elements of the assessment have changed over time. Funding from federal government sources ended several years ago at which time the state of Alaska took it over. However federal funds are returning. Assessment author noted that more could be if funding were more secure. For example, there was a regular cycle of density surveys and mapping when federal funding was more secure.

There was a 40% decline in Fairweather density from the previous estimate in 2003. The previous biomass estimates were based on old data. The Team questioned whether that decline reflected a change in the entire population. However, the 2007 survey in the central region exhibited a roughly 12% decline which was understandable because this area is fished intensively relative to the other areas.

A recent change in State regulations for sport fishing require keeping the first 3 pelagic yelloweye. However no change in catch is evident in data from the sport sector which could be because discard is still possible. The Team questioned whether the habitat-based DSR assessment had ever been directly compared to results from an age-structured assessment model for yelloweye.

Plan Team recommendations for the next assessment:

1. Consider scheduling surveys later in summer in case that females are deeper or in different habitat at that time.
2. Consider possibility of an age-structured model for future

15. Thornyheads

Sandra Lowe presented an overview of the thornyhead rockfish assessment. There were no methodology changes from previous assessment. She provided an update on the contracted age study, noting the difficulty in aging thornyheads. Production aging is unlikely, but further aging work is necessary to estimate a reliable maximum age for natural mortality estimates. There is the possibility that production aging for younger individuals may be feasible.

The Team approved of the authors recommendation for OFL and ABC for 2010 and 2011.

Plan Team recommendations for the next assessment:

1. Consider possibility of an age-structured model for future

16. Atka mackerel

Sandra Lowe provided an overview of the Atka mackerel assessment. This remains a Tier 6 stock. Some 2 year olds were obtained in the age distribution data in 2008 (2006 year-class) similar to what was observed in the AI. The majority (99%) of the survey biomass estimate is from the Shumagin area, and was obtained in 2 hauls only. Some separation with larger females observed in the GOA that are not seen in AI.

Tier 6 is again recommended for this stock as the GOA survey biomass estimates are considered unreliable. The team continues to recommend a minimal TAC to allow for bycatch needs and minimal targeting. The catch in 2009 exceeded the TAC. It was noted that due to the rockfish pilot program, CPs in the POP fishery in the WGOA can remain in the area after the fishery closes and this contributes to the increased catch. Increased incidental catch was also in the pollock fishery in the Shumagins. Beth Stewart noted anecdotally that increased Atka mackerel catch is also prevalent in salmon fisheries There are some nesting sites in the WGOA, speculation that the increases are a result of both spawning and spill-over from the AI.

The team notes that there remains a prohibition on targeting due to SSL regulations. Team members commented that perhaps the MRA of 20% may be too low but no recommendations are made for any changes at this time.

The Team agrees with authors recommendation for 2010-2011 ABCs and OFLs and continues to recommend a TAC sufficient to meet bycatch only needs.

17. Skates

Olav Ormseth made the presentation on the GOA skate assessments. There were changes to biomass, catch, fishery retention data, and updated length compositions. A major new effort was a preliminary analysis of skate bycatch rates in the halibut fishery.

Total skate biomass increased slightly in the 2009 survey, but the 4 survey year average of biomass resulted in an ABC and OFL slightly lower than the last assessment. Using the groundfish catch data and the new preliminary halibut fishery estimates, it is unlikely the skate OFL was exceeded in 2008, but we can't determine overfished status for Tier 5 groups. Big skates still dominate the biomass in the WGOA, and there is more species diversity in WGOA. There was little change in the species composition of the biomass by area in the GOA over the past few surveys. Plan Team member asked whether species compositions were similar to the EBS. Olav said species composition is totally different in the EBS which is dominated by Alaska skates and with few big and longnose skates. In the AI biomass is dominated by white-blotched and Aleutian skates. In the GOA, longnose skates are widespread, while big skates dominate the western and central GOA biomass and are more patchy. Other skates (*Bathyraja spp*.) are widespread, mostly along the slope. Survey biomass trends for skates are fairly flat since 2005, and despite a small increase in 2009, have not hit the highs of 1999-2003.

The fishery is still catching big skates more than longnose skates, and both Raja species more than other skates, with catches holding fairly steady but with a slight increase since 2004 (the biggest fishery catch is still 2003). Most catch is still around Kodiak. Total catch is observed catch on maps, not extrapolated. Observed retention rates were reviewed, and have remained above 50% in most years. There is still a market for skates in the GOA with skate wings showing up in local markets around Seattle. A state waters 2009 skate fishery was held in the inside and outside districts of Prince William Sound. Big skate catch exceeded the established GHL, with harvests of 21.4 and 37.6 tons, for inside and outside respectively, compared to the GHL of 9.1 and 13.6 t for those regions. Ken Goldman reported that 3 observers rotated around vessels in that fishery, which was divided into three types: directed skate fishers, halibut IFQ holders targeting halibut, and halibut IFQ holders intending to target skates. Length data from that fishery is being worked up and will be provided. The Plan Team discussed whether the state water catches come

off the federal catch. It doesn't currently, but this could be changed for the future. This is a new issue for the Team which has never been discussed before as a directed state waters fishery is a new development.

Length distribution patterns were examined in detail in the assessment. The big skate length frequency is diffuse overall, with no apparent modes, but some possible differences between GOA areas. Longnose skates, in contrast, do show a mode across areas but not patterns by area. Fishery length compositions have shown apparent selection for larger skates relative to lengths in survey data. A past comparison of 2003 length frequencies from port sampling and some at sea sampling during target fisheries showed a tendency towards larger big skates in particular. New data was taken in 2009 on lengths of incidentally caught skates. Fisheries not targeting skates appear to get all skate sizes. Observer sampling would be likely to miss incidental catch in the small boat sector, so it was suggested that Olav look at fish ticket information for that fleet. It was estimated that only 2% of longline catch is observed, but it accounts for 25% of the cod quota. It was suggested that authors could explore different size measurements instead of total length, such as the interorbital distance, which is reportedly stable.

Olav reported that he and Cindy Tribuzio tried a new method for estimating the incidental catch of skates in the halibut fishery using the IPHC longline survey data. The first change in methodology from previous assessments is to stratify by area and depth. The second change is to filter the survey data by using only survey stations with upper 1/3 of halibut cpue. The idea is that the fishery operates in high halibut catch rate areas, so this filtering is intended to achieve incidental catch rates that would be most representative of what the fishery is doing. The Plan Team was informed later that the top 1/3 of stations is used by the IPHC in estimating the bycatch rate of sublegal halibut for their stock assessment. However, the Plan Team was uncomfortable with using this reportedly arbitrary rationale to represent incidental skate catch for the purposes of our assessment, especially given the large discrepancy between this and previous estimates using all IPHC survey stations. Cleo reported that the DSR assessment does area/depth stratify, but does not filter the IPHC survey stations in their area. The Plan Team suggested that the authors examine other information to determine whether and how to filter the IPHC survey data, such as the geographic distribution of halibut fishery, and or statistical distribution of halibut fishery CPUEs and take the halibut survey stations that match that most closely.

The Plan Team discussed the necessity for reliable estimates of incidental catch of skates in the halibut fishery for two reasons. First, the previously estimated catch of skates in the halibut fishery was so high that it would clearly exceed the ABC in any given year, so skates have been placed on "bycatch only" status at the start of the fishing year. The estimates from the new method would not allow "bycatch only" status to begin at the start of the year. Julie Bonney commented that small (<60 ft LOA) longliners have targeted skates before and are interested in doing it again. Therefore, if the fishery were to open for directed fishing it is likely there would be participants. Due to the uncertainty in the total catch, the Plan Team continues to recommend that skates be placed on "bycatch only" status. Second, under ACL management we will need to account for all removals of skates, but the discrepancies between the estimates do not allow this. The Plan Team suggested exploring multiple estimates and including results from a graduated approach, where there was no stratification, then with depth and area stratification, then with different methods of filtering the IPHC longline survey stations. Ultimately observers are needed in halibut fisheries.

Because information on stock structure is lacking, and adult survival is most important to stabilizing populations, area specific ABCs and OFLs were again recommended by the authors to minimize localized depletion. The Plan Team and public discussed again which other species have area specific OFLs (POP only) and why we don't have them for all species (some think we should). Given that there is currently no target fishery developing for skates, and that more information on incidental catch in halibut fisheries will be forthcoming, the Plan Team repeated previous recommendations on Gulfwide OFL and area specific ABCs for skates.

Plan Team recommendations for the next assessment:

1. Examine fish ticket information as well as observer catches for spatial distribution of skate catch.
2. Explore alternative methods for collecting length data that might increase sample size by improving efficiency of measurements during fishery operations.
3. Continue to develop alternative estimates for skate incidental catch in halibut target fisheries, including: exploring multiple estimates and including results from a graduated approach, where there was no stratification, then with depth and area stratification, then with different methods of filtering the IPHC longline survey stations (e.g., examining the geographic distribution of halibut fishery, and or statistical distribution of halibut fishery CPUEs and take the halibut survey stations that match that most closely).

18. Other Species

The other species complex in the GOA contains the following species groups: sculpins, squids, sharks, and octopus. In the past, assessments for these species in the GOA were done periodically since ABCs and OFLs were not specified, and provided as appendices to the SAFE report. The TAC calculation for other species (previously TAC=5% of the sum of target TACs), was modified in 2005 such that the Council may recommend a TAC at or below 5% of the sum of the target species TACs during the annual specifications process. Amendment 79 to the GOA FMP which is pending, provides for the specification of ABC and OFL for the other species complex. Until this is implemented, assessments are presented in the SAFE report to be used for the setting of harvest specifications for the other species complex which are the sums of the ABCs and OFLs of the individual species groups. The Plan Team encourages assessment authors to coordinate efforts for consistency in estimation methods of incidental catch in the halibut fishery.

18a. Sharks

Jon Heifetz presented an overview of the shark assessment. The Team discussed whether or not the observed decline in survey biomass of spiny dogfish is indicative of a true decline in abundance or a change in the availability to survey (between 2007 and 2009). An updated catch time series is used which results in large difference in catch in some years (especially in 2004). Bycatch in halibut fisheries was not included in official catch estimates.

The Team discussed whether to update average catch calculation to 2008 or stop at 2007. It was noted that the ACL amendment will establish individual specifications for sharks. Concerns were expressed on the potential for constraining fisheries. The Team noted that this highlights the importance of moving sharks out of Tier 6. The PWS sport fishery for salmon sharks is to be accounted for in ACLs.

Plan Team recommendations for the next assessment:

1. Need to clarify the amount of sportfish catch in state waters and whether or not it counts against ACLs
2. Evaluate how to better estimate bycatch by using both fishery and survey data from halibut (fishery and surveys).
3. Examination of raw observer data of catch (especially 2004) be done prior to extrapolation given variability in catch records.
4. Evaluate potential for a Tier 5 assessment for spiny dogfish and sleeper sharks. Note that no M estimate for sleeper sharks currently.

18b. Squid

Olav Ormseth presented an overview of the squid assessment. Biomass estimates for squid are considered unreliable. Catch is variable by year with a high percentage retained. Tom Pearson noted that often retention is due primarily to difficulty in sorting from pollock catch. Increasing trend in retention since 2004.

The Team discussed that for this complex, the trawl survey biomass estimate would represent a minimum biomass estimate, but that this is not sufficient (reliable) under the current Tier system for consideration under Tier 5. The Team recommended Tier 6 (maximum catch option) over the time period 1997-2007. The Team discussed that a rationale for Tier 6 management is that this amount of catch has been taken previously and was not a concern for the productivity of this stock.

18c. Octopus

Liz Conners presented an overview of the octopus assessment. The 2009 GOA survey biomass of 3,791 t is the largest ever recorded, but survey biomass estimates are still considered highly unreliable. There is a large differential of sizes caught in survey and the fishery. Much larger sizes are caught in fishery. Most (almost all) of the bycatch is in the Pacific cod pot fisheries. Most of the bycatch is probably giant octopus. Liz noted that there is some potential for future market interest. Some octopus are caught and retained and sold. So for classification purposes under ACLs, octopus shouldn't be taken out of the FMP. Octopuses may be a candidate for Ecosystem Component (EC) classification under new guidelines, but one of the criteria for EC is that there should be only minimal amounts for sale. Whether octopus meet this "minimal" criterion is not yet clear.

NPRB has funded a study on octopus which has 3 components 1) life history (reproductive seasons), 2) habitat pot gear trials, and 3) tagging pilot study. A new field guide has been published by Elaina Jorgenson. An observer special project is being conducted and observers are collecting weights, lengths and sex on octopus. Dr David Scheel of Alaska Pacific U. will be submitting an NPRB proposal for genetics studies to be conducted for stock structure information. Liz is also planning to continue discard mortality studies. Pot mortality is very low (possibly <5%) and pots are the major gear that octopuses are caught in. Tier 5 calculations are provided based on survey biomass and an estimate of *M* from the Hoenig method. Liz considers the biomass and the estimate of *M* to be unreliable. Tier 6 calculations for a 12 year period 1997-2008 provide an average catch = 205 t and a maximum catch = 339 t (2008 catch). These values were presented as 2 options for OFL. Liz recommended the maximum catch option which provides an ABC = 254 t. The Team agrees with the Tier 6 maximum catch option, but using the 1997-2007 time period for consistency. This time period was used for sharks and squid. Therefore, the recommended 2010 OFL is 298 t and the 2010 ABC is 224 t. The Plan Team discussed dropping the year 2008 which excludes the highest catch in the time series and affects maximum catch. The Team reiterated that Tier 6 is problematic.

18d. Sculpins

Olav Orsmeth reviewed the sculpin assessment. Survey biomass estimates are up from 2007; 31,330 t in 2007 to 40,950 t in 2009. Sculpins are assessment and managed under Tier 5. Yellow Irish lord are the most abundant species and most of the observed increase in the survey biomass is due to increases in Yellow Irish lords. Catches have been increasing due to catches in the shallow water flatfish fishery. The Team commented that there should be using a consistent method to estimate discard rates from the CAS or directly from the observer data base. Lengths will be obtained from the fishery in the future for plain sculpin, great sculpin and yellow Irish lord. Survey length compositions are very stable over time.

The Plan Team approved of the recommended ABC which uses F= 0.75M =0.143. This is the most conservative of the M's. The recommended ABC and OFL are higher than last year using the last 4 survey estimates for biomass estimates.

Forage fish

Olav Ormseth presented an overview of the forage fish (as an executive summary in Appendix 4) assessment. Catch of forage fish species were down from last year in the federal fishery. Olav noted plans to evaluate trends in eulachon abundance relative to pollock abundance. Forage fish are likely candidates to move to the ecosystem component under future actions to comply with new ACL requirements. Improved data and assessment of eulachon are likely to forthcoming through both the GOA IERP as well as the FATE proposal on forage fish energetics.

Essential Fish Habitat

Stock assessment authors reviewed current FMP text relating to EFH for each species or species complex and reported new habitat information available since the 2005 EFH EIS. The Plan Teams were requested to assist the Council in two ways. First, the Plan Team was asked to indicate whether the author's review is complete, and consider author recommendations on including new information since the 2005 EFH analysis. Second, the Teams were asked to assist the Council with its evaluation of whether the new information warrants Council action to initiate an FMP amendment(s). The Teams reviewed brief summaries of author recommendations on potential HAPC or EFH conservation recommendations and summaries of proposed revisions to FMP text. A summary of the EFH recommendations is contained in the attached table, and further explanation of recommendations for each species (as noted in table) is contained below.

Pollock:

The Team concurred with the author's recommendation for an FMP update for clarification and updates but low priority based on lack of changes to management.

The Team also concurs with authors recommended research priority for conducting research on impacts of trawling using mid-water gear on benthic habitats.

Sablefish:

The Teams concurred with the author's proposed changes to EFH description by the authors and its resulting prioritization for amendment analysis. The Teams discussed the need for additional research on the recovery rates of sensitive habitat features and their role in the survival and growth of the early juvenile life stage of sablefish and other species that inhabit those areas. This is particularly important in light of recent stock trends for sablefish and concerns with sablefish recruitment. The Teams noted that if impacts to habitat are impacting survival of younger sablefish then this would be important information, and noted that fishing intensity, especially on the Bering Sea shelf, is very high. In light of this discussion, the Teams concurred with the HAPC recommendation that small unobtrusive research closures in areas of extensive and intensive bottom trawling (i.e., trawling that hits the bottom) would be a responsible step for determining whether EFH is adversely affected. The Teams recommended this as a high priority for Council consideration.

Shallow water flatfish:

The Team discussed the recommendation to remove the AK Plaice and yellowfin sole descriptions from the GOA FMP. The Team questioned the purpose of defining EFH as to whether it is for all species in the FMP or only target species. Diana Evans clarified that the life history information currently included in

the GOA FMP for yellowfin sole is copied from the BSAI FMP and thus would need to be either removed or revised.

The Team did not believe it was appropriate to remove the EFH description and recommends updating the descriptions for both yellowfin sole and AK Plaice. Yellowfin sole was previously an abundant component of the shallow water flatfish complex, which is now in a declining trend. The Team noted that should the GOA fisheries ever become rationalized, there could be a greater ability to target these species in the future.

The Team received a verbal update on plans for modification of EFH for rocksole species. Previously under the EFH amendment in 2005 there was only one rocksole species identified, now this has been split into northern and southern rocksole. These two species have different early life histories. While the Team did not have a written recommendation from the author on the EFH changes necessary (and thus could not recommend prioritization) it seemed that these would represent a major change and would like be elevated in priority.

Deepwater flatfish:

The Team reviewed the nature of the proposed changes to Dover sole EFH including larval distribution updates, biological updates, and updates to age at maturity, spawning season, predators and prey, and updated literature citations. There were no major proposed changes to evaluation of fishing effects. These updates were considered a moderate priority for FMP amendments due primarily to the elevated priority conferred regarding larval distribution updates as this impacts actual EFH designation for this life-history stage.

The Team concurred with author's recommendation for Greenland turbot EFH deletion because it is sporadically present in the GOA and on the edge of its range.

Rex sole:

The Team recommended this as a moderate priority for an amendment analysis, primarily due to the need to update the larval distribution map. This could have broader implications for designation of EFH for this life history stage than the other minor proposed changes to EFH for this species.

Arrowtooth flounder:

The Team did not have written documentation of proposed EFH changes for arrowtooth flounder but were provided a verbal update on proposed changes. Based on this it did not sound as though major changes to EFH text were likely to be recommended, but rather minor updates to text and updated references.

Flathead sole:

The Team concurred with the author's proposed changes including: updating larvae distribution map from EcoFOCI; updates to habitat and predator prey associations, updates to spawning substrate; updates to the fishery description; updated juvenile distribution; but no changes to the evaluation of fishing effects. Team recommends this as a moderate priority for EFH, primarily due to the implications of the modifications to the EFH distribution of the larval life-history stage.

Atka mackerel:

The Team concurred with the author's proposed updates to nesting sites, habitat, biological and prey associations for various life history stages. The Team concurred that the nature of these revisions elevates this as a higher priority FMP amendment.

The Team discussed the fishing effects on habitat and the ability to assess relative impacts on stocks. This relates to the conclusions of no relative impact on Atka mackerel populations. This conclusion (from EFH

EIS) is based on increases in Atka population. Atka mackerel are associated with living structure but current information is not available to understand the linkages between habitat and requirements for feeding, growth, and spawning for Atka mackerel, hence the assumption is that impacts on living structure as it relates to Atka mackerel EFH is minimal and temporary.

The Team discussed the relative question of EFH research, and to what extent we are currently doing enough to identify and protect habitat, and if there are fishing impacts on habitat, are we doing enough to mitigate that effect. The Team recommends further studies on habitat impacts but in particular studies on the linkages of habitat to species productivity. Current studies do not seem to focus on this linkage.

Paul Spencer noted that Atka mackerel would be a good candidate to look at stock structure with the new stock structure template. The Team suggested the assessment author pursue this.

Shortraker rockfish, rougheye rockfish, blackspotted rockfish:

Previously Shortraker rockfish and rougheye rockfish EFH was defined together in the FMP. Under the author's revisions, they have been separated with separate maps and EFH descriptions by species. The Team recommends this as a higher priority for an FMP amendment as it requires specifying EFH for species for which it was not previously specified.

Octopus:

The author noted substantial EFH updates. Information for defining EFH for octopus however is still insufficient. The Team recommends this as a moderate priority for an EFH FMP updates. The Team was unclear as to whether or not adding general distribution maps changes the level of available from 'no information' to level 1 information. The authors noted however that general distribution maps are still insufficient information for designating EFH for octopus.

Forage fish:

The Team had a similar discussion as with octopus relative to the level of available distributional information necessary to designate as EFH for species rather than just providing an overview of distribution (i.e. to move from 0 to 1 in terms of availability of information). The Team recommends this as a higher priority amendment depending upon the availability of information to describe spawning streams and EFH for forage fish species.

Species/ complex as identified in GOA SAFE report	Species/ complex for which EFH is defined in GOA FMP	Plan Team review			
		Is review complete?	Recommendations for Council action		Other recommendations
			FMP amendment?	Priority?	
pollock	pollock	Y	Y	low	See discussion in text
pacific cod	pacific cod	Y	Y	low	Minor changes to FMP text,
sablefish	sablefish	Y	Y	high	See discussion in text
shallow water flatfish	yellowfin sole	N		high	Verbal update, see discussion in text
	Northern rock sole[1]	N			
	Southern rock sole[1]	N			
	Alaska plaice	N			
deep water flatfish	Dover sole	Y	Y	moderate	See discussion in text
	Greenland turbot				
rex sole	rex sole	Y	Y	moderate	See discussion in text
arrowtooth flounder	arrowtooth flounder	N			Verbal update provided, assumed minor edits
flathead sole	flathead sole	Y	Y	moderate	See discussion in text
Pacific ocean perch	Pacific ocean perch	Y	Y	low	Minor changes to FMP text
northern rockfish	northern rockfish	Y	Y	low	Minor changes to FMP text
shortraker rockfish	shortraker/ rougheye rockfish	Y	Y	high	See discussion in text
blackspotted/ rougheye rockfish					
pelagic shelf rockfish	dusky rockfish	Y	Y	low	Minor changes to FMP text
demersal shelf rockfish	yelloweye rockfish	Y	Y	low	Minor changes to text and tables
thornyhead rockfish	thornyhead rockfish	Y	Y	low	Minor changes to text and tables
Atka mackerel	Atka mackerel	Y	Y	high	See discussion in text
skates	skates	Y	Y	low	Minor changes to FMP text, unlikely to affect management
other species	octopus	Y	Y	moderate	See discussion in text
	sharks	Y	Y	high	Need to describe shark EFH
	sculpins	Y	Y	low	Minor changes to FMP text,
	squid	Y	Y	low	Minor changes to FMP text,
forage fish	forage fish complex	Y	Y	moderate	See discussion in text

[1] Note, the GOA FMP currently defines EFH for rock sole, and does not distinguish between northern and southern, as is being suggested in this review.

ADDENDUM TO ECONOMIC SUMMARY OF THE BSAI AND GOA COMMERCIAL GROUNDFISH FISHERIES IN 2007-08: CHANGES IN THE 2008 JAPANESE SURIMI MARKET AND THE EFFECT OF MARKET EXCHANGE RATES ON JAPANESE PRICES FOR U.S. SURIMI PRODUCTS

December 1, 2009

M. Dalton, AFSC

Changes in the 2008 Japanese Surimi Market

According to data from the 2009 Economics SAFE report, the average first-wholesale price of pollock surimi increased from 2.24 $/kg (1.02 $/lb) in 2007 to 4.51 $/kg (2.05 $/lb) in 2008. For these years, the market exchange rate between the Japanese yen and the U.S. dollar decreased from 119 ¥/$ in 2007 to 105 ¥/$ in 2008 (these rates are January-March averages using the Japan/U.S. foreign exchange rate series EXJPUS from the Board of Governors of the Federal Reserve System, see Table 60 in the Economics SAFE report). Based on these exchange rates (and ignoring transport margins), the average first-wholesale price for U.S. surimi in yen was 267.23 ¥/kg (121.22 ¥/lb) in 2007 and 474.32 ¥/kg (215.15 ¥/lb) in 2008. A natural question is whether this change in the U.S. first-wholesale price comports with documented changes in the Japanese market for pollock surimi in 2008.

The Food and Agriculture Organization (FAO) of the United Nations publishes a monthly groundfish market report (http://www.globefish.org). The report from July 2009 documents changes in the Japanese surimi market during 2008:

> *In last 'A' season, the import prices of US 'A' season surimi surged by JY130-150 per kilo, rising by a further JY90-100 in the 'B' season in the latter half of the year. These price hikes were due to pollock quota cutbacks in the U.S which pushed up prices of surimi from other countries as well as Japanese-produced surimi. The higher US prices stimulated producers in Japan and Asian countries to boost their surimi production.*

In other words, according to the FAO report, the Japanese import price for U.S. surimi increased by as much as 250 ¥/kg over the course of pollock A and B seasons in 2008.

For a somewhat crude comparison in dollars, this price increase is converted using the 2008 exchange rate (the average exchange rates during pollock A and B seasons are approximately the same in 2008, 105.2 ¥/$ in Jan-March and 105.9 ¥/$ in June-Oct) and then added to the 2007 average first-wholesale price of pollock surimi, giving a value of 4.61 $/kg (2.09 $/lb). This indirect value, obtained by adding documented price increases in the Japanese surimi market to the 2007 average U.S. first-wholesale price for surimi, is very close to the 2008 average U.S. first-wholesale price for surimi of 4.51 $/kg (2.05 $/lb) from the 2009 Economics SAFE report. The difference could easily be due to trade margins which have been ignored here.

Effect of Market Exchange Rates on Japanese Prices for U.S. Surimi Products in 2008

The decomposition methodology described in the appendix to GOA plan team's November 2009 report can be applied to the crude first-order approach above that treats Japanese import prices as the product of the U.S. first-wholesale price times the market exchange rate (i.e., ignoring trade margins). Instead of comparing quantity and price effects, here the comparison is between a market exchange rate effect and a U.S. price effect on the 2007-08 change in the Japanese import price. Explicitly, For the Japanese import price P^{JP} is the product of the U.S. first-wholesale price P^{US} and the market exchange rate M such that $P^{JP} = M\,P^{US}$. Let $\Delta P^{JP} = P^{JP}_{2008} - P^{JP}_{2007}$, and apply the same notation and corresponding time subscripts to P^{US} and M. Then, a "complete decomposition model" is represented by the following algebraic identity:

$$\Delta P^{JP} = (P^{US}_{2007}\,\Delta M) + (M_{2007}\,\Delta P^{US}) + (\Delta P^{US}\,\Delta M).$$

The first term is the exchange rate effect, the second is the U.S. price effect, and the third is the residual. As before, the principle of jointly created and equally distributed production justifies assigning half of the residual to each effect.

Values above for the U.S. average first-wholesale price of pollock surimi ($/kg) and the Japanese yen/U.S. dollar market exchange rate (¥/$) are used in the decomposition formula. These imply a total change in the Japanese import price (i.e., the left-hand side of the equation) of 207 ¥/kg, which decomposes into a U.S. first-wholesale price effect of 255 ¥/kg and a market exchange rate effect of -48 ¥/kg. To summarize, the first-wholesale price effect in 2007-08 was more than five times larger than the exchange rate effect in those years.

Surimi Prices in 2009

The market price of U.S. surimi products decreased in 2009 from its peak in 2008. This decrease can be attributed to i) the global recession curbing Japanese demand, ii) the 2008 price increase for U.S. surimi product had the effect of increasing supply of lower-grade products from Asia, and iii) increased supply of Russian pollock (e.g., cheap twice frozen fillet products from China).