AGENDA C-1(b)
DECEMBER 2012

MEMORANDUM

ESTIMATED TIME
6 HOURS
(All C-1 items)

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

DATE: November 27, 2012

SUBJECT: Final GOA Groundfish Specifications for 2013 and 2014

ACTION REQUIRED

Review and approve GOA SAFE report (including Ecosystem and Economic SAFEs) and approve final GOA Harvest Specifications for 2013-2014 including:

1. Acceptable Biological Catch (ABC), and annual Total Allowable Catch (TAC)
2. TAC considerations for the State Pacific cod fishery
3. Prohibited Species Catch Limits
4. Halibut Discard Mortality Rates

BACKGROUND

At this meeting, the Council makes final recommendations on groundfish and bycatch specifications as listed above to manage the 2013 and 2014 Gulf of Alaska (GOA) groundfish fisheries.

GOA SAFE Document

The groundfish Plan Teams met in Seattle November 13-16, 2012 to prepare the final SAFE reports and to review the status of groundfish stocks. The GOA SAFE report forms the basis for the recommended GOA groundfish specifications for the 2013 and 2014 fishing years. Note that there are three volumes to the SAFE report: a stock assessment volume, a fishery evaluation volume ("economic SAFE"), and an ecosystems considerations volume. The introduction to the GOA SAFE report was mailed to the Council and Advisory Panel November 20th. The full GOA SAFE report, the economic SAFE report and the ecosystem considerations volume were mailed to the SSC. The GOA Plan Team minutes are attached as Item C-1(b)(1). The Joint Plan Team minutes are included with the BSAI Plan Team minutes under Item C-1(c)(3). An overview of the GOA SAFE report and ecosystem considerations volume will be provided to you at the meeting.

Two year OFL and ABC Determinations

Amendment 48/48 to the GOA and BSAI Groundfish FMPs, implemented in 2005, removed the requirement for annual assessments of rockfishes, flatfish, and Atka mackerel since new survey data were unavailable in alternating years. This was an off-year for the GOA survey thus executive summaries are provided for most assessments this year. Full assessments will be provided in 2013 to coincide with the survey year for the GOA.

This amendment also requires proposed and final specifications for a minimum of two years thus ABC and OFL levels are provided for 2013 and 2014. In the case of stocks managed under Tier 3, 2012 and 2013 ABC and OFL projections are typically based on the output for Scenarios 1 or 2 from the standard

projection model using assumed (best estimates) of actual catch levels. For stocks managed under Tiers 4 and 5 the latest survey data (2011) was used. Tier 6 stocks may have alternatives based on updated catch information.

The 2014 ABC and OFL values recommended in next year's SAFE report are likely to differ from this year's projections for 2014 because data from 2013 surveys are anticipated and a re-evaluation on the status of stocks will improve on the current available information for recommendations.

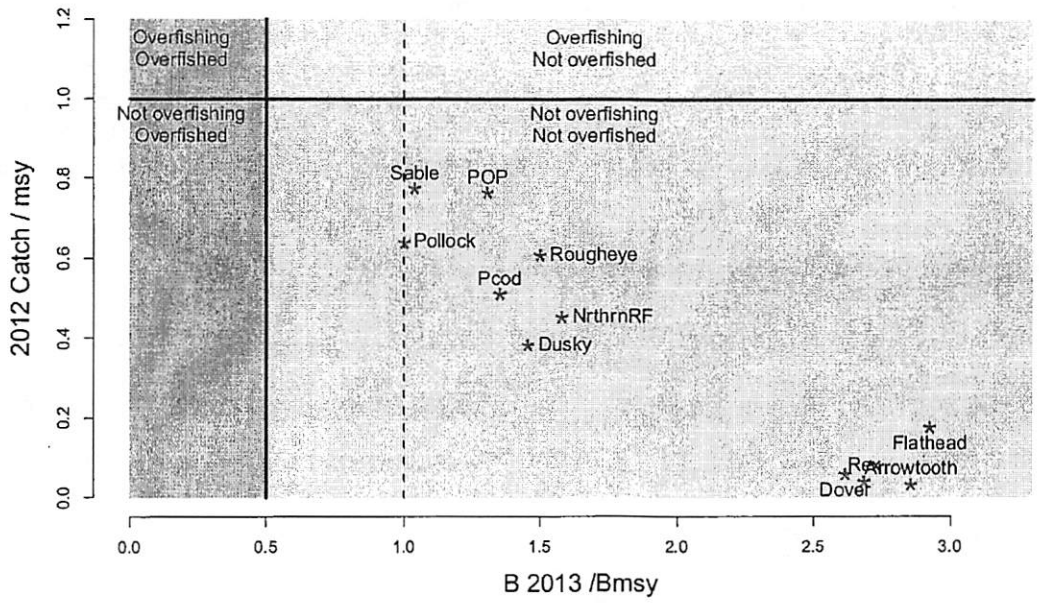
ABCs, TACs, and Apportionments

At this meeting, the Council will establish final catch specifications for the 2013 and 2014 fisheries. The SSC and AP recommendations will be provided to the Council during the meeting. Item C-1(b)(2) provides a summary of the current status of the groundfish stocks, including catch statistics, ABCs, and TACs for 2012, and recommendations for ABCs and overfishing levels (OFLs) for 2013 and 2014.

The sum of the preliminary 2013, 2014 ABCs for target species are 595,920 t (2013), 584,094 t (2014) which are within the FMP-approved optimum yield (OY) of 116,000 - 800,000 t for the Gulf of Alaska. The sum of 2013 and 2014 OFLs are 753,042 t and 737,946 t, respectively. The Team notes that because of halibut bycatch mortality considerations in the high-biomass flatfish fisheries, an overall OY for 2013 will be considerably under this upper limit. For perspective, the sum of the 2012 TACs was 438,159 t, and the sum of the ABCs was 606,048 t.

The sum of the ABCs decreased by 2% (-10,128 t) compared with last year. This is primarily driven by projected decreases in Pacific cod 6,800 t (-8 %), sablefish 450 t (-3%), shallow water flatfish 5,199 t (-10%), arrowtooth flounder 2,431 (-1%), Pacific ocean perch 506 t (-3%), northern rockfish 377 t (-7%) and Dusky rockfish 418 t (-8%). Increases were primarily in the pollock stock of 4,602 t (4%).

The abundances of Pacific cod, flathead sole, northern and southern rocksole, arrowtooth flounder, Pacific ocean perch, rougheye and blackspotted rockfish, northern rockfish, and dusky rockfish are above target stock size. The abundances of pollock, and sablefish are just below target stock size. The target biomass levels are unknown for deep-water flatfish (including Dover sole), shallow-water flatfish (excluding northern and southern rocksole), rex sole, shortraker rockfish, other rockfish (formerly other slope rockfish), demersal shelf rockfish, thornyhead rockfish, Atka mackerel, skates, sculpins, squid, octopus, and sharks.



Summary status of age-structured GOA species relative to 2012 catch levels (vertical axis) and projected 2013 spawning biomass relative to B_{msy} levels. Note that the 2012 MSY level is defined as the 2012 catch at F_{OFL}.

TAC Considerations for State Pacific Cod Fishery

Since 1997, the Council has reduced the GOA Pacific cod TAC to account for removals of not more than 25% of the Federal Pacific cod TAC from the state parallel fisheries. The relative percentage in the Central GOA was increased by the Board of Fisheries in March 2005 from 24.25 in 2004 to 25% while the relative percentage in the Eastern GOA was increased to 25% in 2010. Using the area apportionments of the 2013 and 2014 Pacific cod ABC recommended by the Plan Team, the Federal TAC for Pacific cod would be adjusted as listed below.

Plan Team recommended 2013 Gulf of Alaska Pacific cod ABCs, and resulting TACs and state Guideline Harvest Levels (GHLs) (t).

Specifications	Western	Central	Eastern	Total
ABC	28,280	49,288	3,232	80,800
State GHL	7,070	12,322	808	20,200
(%)	25	25	25	25
Federal TAC	21,210	36,966	2,424	60,600

Plan Team recommended 2014 Gulf of Alaska Pacific cod ABCs, and resulting TACs and state Guideline Harvest Levels (GHLs) (t).

Specifications	Western	Central	Eastern	Total
ABC	29,470	51,362	3,368	84,200
State GHL	7,368	12,841	842	21,050
(%)	25	25	25	25
Federal TAC	22,103	38,522	2,526	63,150

Prohibited Species Catch Limits

In the GOA, Prohibited Species Catch (PSC) limits are established for halibut. Since 1995, total halibut PSC limits for all fisheries and gear types have totaled 2,300 t. This cap was reduced from 2,750 t after the sablefish IFQ fishery was exempted from the halibut PSC requirements in 1995. The halibut PSC apportionments recommended based upon the 2012 apportionments for the Gulf of Alaska groundfish fisheries are shown below. Note that action by the Council to modify halibut PSC limits in the GOA (and to put in regulation) has not yet been implemented. The regulatory changes are expected to be implemented in 2014.

2013 and 2014 halibut PSC limits, allowances, and apportionments.

Trawl gear			Hook-and-line gear				
			Other than DSR			DSR	
Season	Percent	Amount	Season	Percent	Amount	Season	Amount
January 20 - April 1	27.5%	543	January 1 - June 10	86%	250	January 1 - December 31	10
April 1 - July 1	20%	395	June 10 - September 1	2%	5		
July 1 - September 1	30%	592	September 1 - December 31	12%	35		
September 1 - October 1	7.5%	148					
October 1 - December 31	15%	296					
Total		1,973			290		10

Note: The trawl PSC limit is reduced by 27 mt to 1,973 mt from 2,000 mt per Rockfish Program regulatory revisions in 2011.

2013 and 2014 apportionment of halibut PSC trawl limits between the trawl gear deep-water species fishery and the shallow-water species fishery.

Season	Shallow-water	Deep-water[1]	Total
January 20 - April 1	444	99	543
April 1 - July 1	99	296	395
July 1 - September 1	197	395	592
September 1 - October 1	148	Any remainder	148
Subtotal January 20 - October 1	888	789	1,677
October 1 - December 31[2]	n/a	n/a	296
Total	n/a	n/a	1,973

[1] The third season deep-water apportionment of 395 mt is reduced by 191.4 mt for the Rockfish Program Halibut PSC allocation.

2013 apportionments of the "other hook-and-line fisheries" annual Halibut PSC allowance between the hook-and-line gear catcher vessel and catcher/processor sectors.
(Values are in metric tons)

"Other than DSR" Allowance	Hook-and-Line Sector	Percent of annual amount	Sector annual amount	Season	Seasonal Percentage	Sector Seasonal Amount
290	Catcher Vessel	57.6%	167	January 1 - June 10	86%	144
				June 10 - September 1	2%	3
				September 1 - December 31	12%	20
	Catcher Processor	42.4%	123	January 1 - June 10	86%	106
				June 10 - September 1	2%	2
				September 1 - December 31	12%	15

Catch toward PSC limits in 2012 for halibut as well as newly established limits for Chinook salmon are provided below (thorough November 3, 2012):

2012 GOA Prohibited Species Catch (through November 3, 2012)

Trawl Salmon in numbers	**Limit**	**Count**	**Remaining**
Non-Chinook Salmon	n/a	1,091	n/a
Chinook Salmon	n/a	22,809	n/a
Chinook Salmon, C/D Season Pollock Fisheries	14,527	15,286	(759)
Western	5,598	7,807	(2,209)
Central	8,929	7,479	1,450
Halibut in metric tons	**Limit**	**PSC**	**Remaining**
Other than DSR Hook-and-Line Fisheries	**290**	**160**	**130**
Catcher Processor	117	42	75
Catcher Vessel	173	118	55
Trawl Fishery	**2,000**	**1,715**	**285**
Deep-water Fisheries	800	634	166
Shallow-water Fisheries	900	905	(5)
Both Fisheries October 1 - December 31	300	177	123

Adopt Pacific Halibut Discard Mortality Rates

Halibut discard mortality rates (DMRs) are set by the Council on a 3-year cycle based on recommendations by International Pacific Halibut Commission staff and the Groundfish Plan Teams. The recommended rates are based on an average of annual DMRs from the previous 10 years. Current rates will expire at the end of 2012; new rates are needed for 2013 - 2015. This procedure will be repeated in 2015 for 2016-2018. The teams and SSC endorsed IPHC staff recommendations for DMRs for the BSAI and GOA groundfish fisheries for 2013 - 2015. The Council adopted the recommended rates for the purpose of proposed specifications (based on additional information provided in Item C-1(c)(7) and in the full IPHC report that is appended to the SAFE Reports). The Council stated its intent to review the rates again at this meeting.

Recommended Pacific halibut discard mortality rates (DMRs) for the 2013-15 non-CDQ groundfish fisheries off Alaska

I. Non-CDQ

Bering Sea/Aleutians			Gulf of Alaska		
Gear/Target	Used in 2010-2012	2013-2015 Recommendation	Gear/Target	Used in 2010-2012	2013-2015 Recommendation
Trawl			*Trawl*		
Atka mack	76	77	Bottom poll	59	60
Bottom poll	73	77	Pacific cod	62	62
Pacific cod	71	71	Dpwtr flats	48	43
Other Flats	72	71	Shallwtr flats	71	67
Rockfish	81	79	Rockfish	67	66
Flathead sole	74	73	Flathead sole	65	65
Midwtr poll	89	88	Midwtr poll	76	71
Rock sole	82	85	Sablefish	65	71
Sablefish	75	75	Arr. fldr	72	73
Turbot	67	64	Rex sole	64	69
Arr. fldr	76	76			
YF sole	81	83			
Pot			*Pot*		
Pacific cod	8	8	Pacific cod	17	17
Longline			*Longline*		
Pacific cod	10	9	Pacific cod	12	11
Rockfish	9	4	Rockfish	9	9
Turbot	11	13			

Minutes of the Gulf of Alaska Groundfish Plan Team

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

Alaska Fishery Science Center, Seattle WA
November 13-16, 2012

Diana Stram	NPFMC (co-chair)	Jim Ianelli	AFSC REFM (co-chair)
Sandra Lowe	AFSC REFM	Paul Spencer	AFSC REFM
Chris Lunsford	AFSC ABL	Leslie Slater	USFWS
Jon Heifetz	AFSC ABL	Nancy Friday	AFSC NMML
Mike Dalton*	AFSC REFM	Craig Faunce	AFSC FMA
Kristen Green	ADF&G	Elisa Russ	ADF&G
Tom Pearson**	NMFS AKRO Kodiak	Mark Stichert	ADF&G
		Ian Stewart	IPHC

* Absent, substitute Stephen Kasperski (for Dalton)
** By telephone

Ecosystem Chapter Review

New to the GOA Plan Team is an FMP specific presentation on the Ecosystem Chapter instead of a joint team presentation. Stephani Zador presented pertinent indices and hot topics to the Team. A new Gulf of Alaska ecosystem assessment was delayed and is planned for 2013.

In 2011, anomalous conditions signaled poor prey availability for some marine apex predators (seabirds and halibut) in the GOA. Biologically this was evidenced by low zooplankton biomass in the Alaskan shelf region south of the Kenai Peninsula between April and September 2011, below average forage fish CPUE in the small mesh surveys, low age-1 pollock survey abundance in the acoustic Shelikof Strait survey, juvenile pink salmon CPUE in southeast Alaska that was the second lowest in 15 years, surface trawls conducted in 2011, as part of the first year of the GOA Integrated Ecosystem Research Project, caught few age-0 marine fish in both the western and eastern GOA, and low seabird reproductive success. While it is unknown whether these anomalies are climate driven, the 2010/2011 endpoint for January 2011 PAPA Trajectory Index was among the weakest (east of the release site and the southernmost endpoint since the early 1990s) indicating reduced along shelf Gulf flow and transport.

Mushy halibut Syndrome has reoccurred. This condition was first detected in 1998, was seen in 2005 and 2011 and now again in 2012. It has been proposed by some that this condition is evidence of nutritional deficiency in part because ADF&G reports that they are seeing more crab in stomachs than historical data showed. If proven correct, this would represent another biological signal of poor prey availability in the GOA.

Other indices presented included bycatch estimates and herring spawning biomass. Discard rates of non-target marine species in the GOA have varied over time but were lower than average in 2010 and 2011. Grenadiers (caught primarily in the sablefish fishery) comprised the majority of "non-specified" catch that dominated this bycatch. Bycatch of seabirds in the longline fishery showed a marked decline beginning in 2002 due to the deployment of streamer lines as bird deterrents and since then, annual bycatch has remained low. There is high variability between years however; while the 2010 bycatch was the lowest estimated in recent years, 2011 bycatch was 30% above the 2007-2010 average. In 2011,

albatross bycatch was disproportionate to overall trends; nearly 90% of albatross bycatch occurred in the GOA which accounts for only less than 20% of overall seabird bycatch. Estimates of southeast Alaska herring spawning biomass continue to increase due presumably to high survival of adult age classes. The 2010 and 2011 estimates of spawning biomass, combined for the entire region, were the two highest in the 32-year time series as reported by ADF&G.

Pollock

Martin Dorn presented an overview of the pollock assessment. The Team discussion was focused on the CIE review, SSC comments, model performance and development, apportionment, and EFP accounting.

Model performance and development

The updated model had several changes including adding ages 1 to the assessment, adding an accumulator age to the initial age composition, using selectivity blocks for fishery selectivity rather than allowing selectivity parameters to vary annually, and removing some of the historic data.

Rather than having annual selectivity curves, following CIE recommendations, the authors identified six selectivity blocks. Authors used prior management regimes (e.g. foreign, joint, domestic operations, and seasonal management measures to mitigate SSL impact) and the desire to have most recent years separate (the last block is 2007 onwards) as their rationale for blocking. The authors down-weighted the fishery age composition data to balance their approach to selectivity. The Team suggested using inter-annual smoothing instead of blocks to avoid the undesirable effect of highly correlated recruitments between years. If blocks are used, cross-validation analysis may also improve the identification of appropriate selectivity blocks to use. Despite the discussion, it was recognized by the Team that the problem of modeling selectivity presents many challenges.

The author noted that there may be some disadvantages using the multinomial error assumption for all ages, and that younger ages, age-1 and possibly age-2, might be best treated separately. There was discussion on the merits of splitting these younger fish from the rest of the distribution, since the survey estimates of these fish are more variable than the older fish. This approach (splitting out age-1 pollock as a separate index) is used for the eastern Bering Sea pollock model (for both acoustic and bottom-trawl survey data).

The authors provided comparisons between the base model (author recommended), last year's model, and the base model with estimated q using a lognormal prior distribution with a median of 0.85 and a log standard deviation of 0.1. Estimation of q with a prior results in a larger spawning biomass, an increase in the 2013 ABC and OFL, and greater uncertainty in 2013 spawning biomass. Based on the comparison of the models presented, the Team concurred with the use of the base model. The model performance was good overall, but the fit to some of the age composition data was poor, particularly for the acoustic survey. Evaluation of performance using a fishing mortality versus spawning biomass plot indicate that stock has been near or slightly over the control rule in the past, though this comparison is based on current estimates of biomass reference points. The likelihood that the stock will drop below B_{20} is near zero over the next five years.

There was general discussion between authors and the Team on how to improve relative weightings given different data sets, research to develop informative priors on survey selectivity and catchability, reconsidering selectivity parameterization, and exploring the implications of non-constant natural mortality on pollock assessment and management. For next year, the Team is anticipating that the author will present models with different approaches to selectivity, different approaches to modeling age-1 fish, and exploration of the more complex recommendations from the CIE review. The Team is hoping that a selectivity workshop in March will provide guidance on developing a robust parameterization for

selectivity. If substantial model revisions are made, the Team would expect to see a preliminary assessment at the September 2013 meeting.

The authors have included a retrospective plot and stock structure template in response to SSC requests. The Joint Plan Team recommended *status quo* methods be used for apportionment pending final working group recommendations. Therefore there were no changes to the averaging procedures to apportion the stock between management areas. The report on methodology used to derive GHL for Prince William Sound was addressed in September by the Plan Team.

Assessment CIE

Assessment authors will continue to improve on methods following CIE review recommendations. This year the author implemented recommendations which could be quickly accomplished without major changes to the model structure (e.g., the age range of the assessment was expanded to ages 1-10 from 2-10). Future assessments will explore CIE recommendations that require methodological development and substantial analysis (e.g., including predation mortality in the assessment). The Team briefly discussed a CIE review comment that the assessment be risk neutral. This comment is relevant to all stock assessments, and led to the specific question of "at what biomass is there no longer a need for the author's recommended ABC lower than the maximum permissible ABC?" The author will examine this issue, but noted that given recent positive trends in the spawning stock biomass this appears to be less of a concern than past years.

The Team also received a briefing from MACE on their response to CIE comments, most notably a rebuttal of a strong critique by a reviewer of the acoustic trawl survey methods for extracting age composition data from Shelikof Strait survey. The MACE comments will be included in the AFSC response to the review.

Apportionments

Summer apportionment among GOA NMFS areas has not changed because there have been no new surveys. Winter apportionment followed the methods used in the last assessment. There was no additional discussion. Prince William Sound GHL will be set to 2.5% of the W/C/WYAK ABC.

2013 pollock EFP

The Team examined the NSG on the definition of catch. In particular, that any catch should taken into accounted. Although the Team recognizes that the "Exempt" part of the EFP changes some regulatory properties, removals under an EFP still constitutes catch and should be accounted prior to ABC determinations. Subtracting EFP removals from the biomass prior to setting ABC accounts for these removals in the same manner as projected catch to the end of the year is done. This is common practice to ensure the best available ABCs are determined in the subsequent year. Also, 2014 ABCs are computed based on 2013 projected removals. Further, the amount of removals represented by the 2013 pollock EFP does *not* pose a risk that the OFL will be exceeded for the upcoming year and has no bearing on the uncertainty estimates related to ACLs. The Team is recommending this approach to EFP accounting to ensure that important research (on salmon bycatch) in the GOA be conducted. The Team reiterated that, this approach is not intended to set a precedent for all stocks and EFPs, and should be considered an interim approach until further guidance becomes available.

Pacific cod

Teresa Amar presented the assessment of GOA Pacific cod. As in past years she refined models based on detailed discussion and presentations given at the September 2012 meeting. At the September meeting the Team requested analysis where q is fixed at 1.0 rather than tuning to a specific size range (there was little difference between these model runs and the extra work required seemed unjustified). They also

requested models which dropped the heavily influential growth data components and the "sub-27cm" survey data. The Team discussed that the statistical weights from these likelihood components may be too high given the input sample size for the length-at-age data from NMFS surveys. It may be more appropriate to use the number of hauls instead of the raw numbers of fish. The Team suggested that the spatial aspect of available length-at-age data be evaluated, particular between years for the older/larger Pacific cod since in some years most of the apparent 'lack-of-fit' arose from the larger fish samples.

The Team suggested considering a model that had the features of Model 4 but with fixed growth (e.g., at Model 2 values), then look at constant selectivity for main survey data. Also examination of the possibility of using cubic splines over age, smoother shape and fewer parameters (in general) was recommended. Retrospective patterns should be evaluated as an additional diagnostic for alternative models (e.g., Model 4 may show an improved retrospective pattern. For communication purposes, when stock sizes change for the same year from one assessment to the next, it would be useful to evaluate the changes graphically (e.g., biomass at age for last year's model with the accepted model this year). Since the fishery is comprised of many components, the Team suggested using a general exploitation matrix such as 1-SPR for F implied over time. This provides an indication of the effective exploitation rate relative to the reproductive potential of recruits entering the population.

The quota allocations between GOA regions are provided following two methods: a new approach (Kalman filter) vs status quo (weighted survey average). The Plan Team recommended going forward with the Kalman filter approach since the survey averaging work-group notes that this method is robust. The Team suggested that the stock synthesis feature to turn off age zeros whenever sub-27 age data were included should be activated.

Flatfish

Deep water flatfish

Buck Stockhausen presented the executive summaries for deep water flatfish, Dover sole, rex sole and flathead sole. An example of the use of the random effects model for survey averaging was applied but not selected for use in this cycle. The Team requested clarification on what represented artifacts of the model versus a true reflection of the biology. The Team would like to see this further developed and applied next year. A full assessment for Dover sole will be presented in September 2013.

Arrowtooth flounder

Jack Turnock presented the executive summary of the arrowtooth flounder (ATF) assessment and an assessment of the remaining species in the Shallow water flatfish assessment (which includes northern and southern rocksole model estimates in the complex-level specifications).

For arrowtooth flounder, it was noted that the lower catch in 2012 was due to halibut bycatch constraints, not market driven despite it being the first year that an increased TAC was specified but actual catches were lower. The WGOA fleet used up their halibut allocation in the Pacific cod target fishery combined with higher rates in ATF bycatch of halibut this year. The inflated rate of bycatch applied to the unobserved WGOA fleet complicated the situation, but should be mitigated somewhat next year with restructured observer coverage.

Shallow water flatfish

The Team recommends further exploration of consistency in apportionments for complexes, in particular with two Tier 3a species combined with Tier 5 assessments for the remaining members of the complex. The Team discussed setting separate specifications for a rocksole complex (ie outside of SWFs). Issues noted with pursuing this include MRAs, and halibut bycatch. The Team discussed that individual ABCs are tracked and not currently causing any concerns with species specific catch and ABCs. The Team

recommends monitoring these catches against individual ABCs to evaluate relative catch but does not recommend separate specifications for a rocksole complex at this point.

GOA rock sole (northern and southern)

Teresa Amar (lead author) responded to a number of requests made in September/October 2012 from the Plan Team and SSC. She presented the assessment highlights and noted that the catches for 2012 were down compared to recent years (presumably due to halibut bycatch). Overall, the observed catch represented about 20% of total estimated catch. She noted that a CIE review was conducted in the summer of 2012 but only preliminary changes were made in response to their comments. Most of the model alternatives involved looking at dropping different data components to examine sensitivity of model results. These data components were mainly dealing with mean length-at-age for different years. The model results were most sensitive for northern rock sole whereas alternatives for southern rock sole were more similar over the different models.

The Team noted it was very difficult to objectively evaluate the alternative models and suggested that a refined table for evaluating model fits be presented in the future. A more objective approach towards selecting Model 3 over other models was discussed at length. The author selected Model 3 based on results being intermediate to other configurations but further justification is needed. The fit to the surveys indicated a poor residual pattern for both species and also inconsistencies were noted with southern rock sole spawning biomass peaks in late 1980s and early 1990s which was attributed to changes in survey selectivity. The Team noted that the growth curve is fixed and as such, applying likelihoods related to fitting length-at-age may be inadvisable. A presentation of the relative estimates of uncertainty (e.g., spawning biomass over time) would be useful. The Team noted that next year there will be new survey length compositions and a biomass estimate by November. The Team suggested the possibility of examining an aggregated model (completely undifferentiated with some approach to account for growth differences) as a sensitivity run.

Pacific ocean perch

Chris Lunsford presented an update on the off-year Pacific ocean perch executive summary and 2013 projection model. New data for the projection model included updated catch for 2011 and estimated catches for 2012-2014. Catch remains steady, representing about 86% of the 2012 ABC. Pacific ocean perch is a Tier 3a stock and the projection model showed the 2013 biomass decreased resulting in slightly lower ABCs and OFLs for 2013 and 2014 relative to last year. The Plan Team concurs with the assessment and recommends an ABC of 16,412 t and OFL of 18,919 for 2013.

A full assessment will be conducted in 2013 which will include updated growth and age-length matrices. No other major changes to the assessment are planned contingent upon the upcoming CIE review in March 2013. **The Plan Team generally recommends that as part of the CIE review, authors focus on aspects of the assessment model that affect estimates of survey catchability.**

Of concern this year was that the Western area OFL was exceeded by 28 t in 2012. This occurred because of higher than expected catcher processor effort (and a relatively low TAC). Exceeding the OFL constrained other trawl fisheries in the area and limited their performance. Tom Pearson mentioned a shorter opening (6 hr) may be necessary to prevent exceeding the OFL in the future. Obren Davis (NMFS AK Regional Office) noted that before a 2013 directed fishery can be considered industry must bring forward a detailed catch plan that limits catch to the TAC/ABC to avoid recurrence of reaching the OFL.

The Team discussed options for apportioning future OFLs which included apportioning by

1) management area (status quo);
2) GOA-wide; or
3) areas fished/not fished.

Team members questioned whether apportioning OFLs to the management area level is relevant given the stock is well above target levels and multiple levels of precaution are built into the current management regime to prevent regular overharvest. Exceeding the Western GOA OFL is of some concern but the Team believes the overall population is less vulnerable to such occasional overages. Therefore, **the Plan Team recommends maintaining area specific ABCs but apportioning OFLs across the area currently open to bottom trawling (Western, Central, WYAK) and the area closed to bottom trawling (EYAK/SEO).** The recommended 2013 OFL value for the Western, Central and WYAK area is therefore 16,838 t (89%). The remaining area (east Yakutat/Southeast Outside) OFL would be 2,081 t (11%). This recommendation is supported by material presented in Appendix 9A: "Evaluation of stock structure for Gulf of Alaska Pacific ocean perch."

Northern rockfish

Chris Lunsford provided a summary of the northern rockfish executive summary for lead author Pete Hulson. This assessment was updated with catch data in 2012 for projecting 2013 and 2014 ABC. The Team noted that in general for all stocks where a projection is employed, the catch projection for the current year should be the current ABC or the current technique for estimating in year catches whichever is less. The Team approved the recommended ABCs and OFLs for 2013 and 2014.

Shortraker rockfish

Chris Lunsford provided a summary of the off-year assessment for shortraker rockfish for lead author Katy Echave. An off-year shortraker assessment executive summary was provided. Catches were updated for 2011 and 2012. No new assessment information was available; therefore the 2011 estimates are rolled over for the next two years. The Team approved the recommended ABCs and OFLs for 2013 and 2014. Recent catches were well below the ABC and OFL.

A full shortraker rockfish assessment will be presented in 2013. The Plan Team recommends that in addition to the current assessment methodology, authors use the Kalman filter method to estimate survey biomass and summarize the results for comparison at the September 2013 meeting. The Plan Team did not make other recommendations for changes to the assessment model but noted that recommendations may occur as a result of the March 2013 CIE review. The Plan Team also supports ongoing efforts to validate current ageing methodology.

Dusky rockfish

Chris Lunsford provided a summary of the off-year assessment for dusky rockfish. Dusky rockfish are a Tier 3a stock, and the 2012 off-year assessment consists of updating the 2011 projection model with updated catches. The 2012 catch in the western GOA exceeded the ABC for this area, and the 2012 catch in the central GOA increased from previous years, which likely was caused from increased numbers of vessels in the western GOA and an increased northern rockfish ABC in central GOA. The 2013 ABC from the updated projection model is 4,700 and similar to the projected 2013 ABC from the two-year ahead projection in the 2011 assessment model, which was 4,762 t.

Rougheye and blackspotted rockfish complex

Chris Lunsford provided a summary of the off-year assessment for the rougheye and blackspotted rockfish stock complex for lead author Kalei Shotwell. . This complex is in Tier 3a, and the 2012 off-year assessment consists of updating the 2011 projection model with updated catches. Overall catch is steady, and only about 45% of the GOA ABC is caught annually. The rougheye and blackspotted complex is in Tier 3a and the projection model estimate shows that the 2013 biomass remains stable resulting in similar ABC and OFL projections for 2013 and 2014. The Plan Team recommends an ABC

of 16,412 t and OFL of 1,482 t for 2013 which are slight increases over 2012. A full assessment will be completed in 2013. Changes to the assessment model are contingent on the CIE review in March of 2013.

A Plan Team member commented that rougheye and blackspotted rockfish are commonly caught during hook and line fisheries and since removals are small relative to the ABC there should be no impact integrating expanded data collection from the restructured observer program.

Thornyhead rockfish

Chris Lunsford provided a summary of the off-year assessment for the thornyhead rockfish stock complex for lead author Kalei Shotwell. Thornyheads are managed as a Tier 5 stock complex, and the 2012 off-year assessment consists of "rolling over" the estimated biomass, ABC, and OFL from the 2011 assessment. The Plan Team recommends that in addition to the current assessment methodology, authors use the Kalman filter method to estimate survey biomass and summarize the results for comparison at the September 2013 meeting.

Other rockfish

Chris Lunsford provided a summary of the off-year assessment for the Other Rockfish stock complex for lead author Cindy Tribuzio. Other Rockfish are managed as a Tier 5 stock complex, and the 2012 off-year assessment consists of "rolling over" the estimated biomass from the 2011 assessment, which was based on a weighted average of the three most recent GOA trawl surveys. The recommended values of OFL and ABC are 5,305 t and 4,045 t, respectively.

The ABCs for Other Rockfish in the western and central GOA were substantially exceeded in 2012, and the 2012 catch of harlequin rockfish in the central GOA was 38% larger than the average over recent years. The GOA Plan Team recommends examining the fishery catch records in more detail to determine which areas, species, and target fisheries are contributing to the higher catch levels.

Demersal Shelf Rockfish (DSR) species (primarily yelloweye rockfish) that occur in the GOA outside of the East Yakutat/Southeast management area are considered part of the Other Rockfish complex. The assessment authors indicate that they plan to examine the catch of DSR species that occur outside of the East Yakutat/Southeast management area. In 2012, retention of Other Rockfish catch in the central and western GOA was prohibited after the ABC was attained, and this affected several fisheries. The GOA Plan Team encourages examination of the catch of DSR species, and additionally requests examination of survey data to investigate whether a separate OFL and ABC can be established for DSR species outside of the East Yakutat/Southeast management area. Sources of information include the AFSC trawl and longline surveys, the IPHC longline survey, the HFICE data, and port sampling/survey data collected by ADF&G in Homer.

Atka Mackerel

Atka mackerel are a Tier 6 species. Most of the catch occurs in the western Gulf in the second half of the year during the rockfish trawl fishery as there is no directed fishing in the GOA due to Stellar sea lion protected measures. Age data from the 2011 fishery is the only new available data and was comprised of large numbers of fish from the 2006 and 2007 year classes, which are also prevalent in the Aleutian Islands. The recommendation for Atka mackerel remains Tier 6 which uses average catch history from 1978-1995. The Plan Team agrees with the author recommended ABC of 4700 t and OFL of 6200 t. A comment from the public stated that two things drive Atka mackerel catch; rockfish quotas and Atka mackerel abundance. In 2012 the distribution of Pacific ocean perch changed across the GOA with less effort in the Western Gulf. This shift in the rockfish fishery effort reduced Atka mackerel catch so changes in the rockfish fishery should be considered when setting TAC for Atka mackerel. The Team

noted the TAC has previously been set at 2,000 t to accommodate bycatch that occurs in other fisheries and that the 2012 catch of 1,178 t was only 59% of the 2012 TAC.

Demersal shelf rockfish:

Kristen Green presented the executive summary update for the DSR assessment. The ABC increase slightly due to an increase in average weight. There was increased catch compared to previous years due to the State opening additional areas to directed fishing than have been open in the past.

The author provided a review of the ROV survey and update from September. She responded to many of the Team's requests from the September meeting including providing written documentation of the pilot survey as well as more information on the other agencies also pursuing similar ROV work. These include WDFW, and DFO but she noted that the Alaska group is likely moving forward more quickly in their efforts to move this assessment methodology along for use in calculating a biomass estimate for stock assessment.

A number of questions were posed for input from the Team (with comments from Team following):

1. Where to survey next year?

   Is it better to do intensive surveys in smaller areas or cover whole area but with less intensive survey effort? Discussion noted that the logistics of one boat doing the survey across larger area may be difficult and further evaluation of the trade-off in travel time should be done. Other ideas are to focus on areas of fishing intensity or areas on areas of higher variance.

2. How to proceed with stock assessment?
   The team made a number of suggestions for moving forward. 1-use the ROV in the same manner as submersible, noting some concern as information currently lacking about consistency with side-by-side tows between the two. 2-Investigate use of sport harvest as any form of index? The author noted that it is tracked through creel surveys and then extrapolated but is localized thus hard to use as index. It may be possible to use the IPHC survey as an index but Dave Carlile's work with the yelloweye ASA model has not shown that the IPHC survey data tracks the submersible survey data well.

3. Continue 'super year' method with ROV?
   Team members noted that DFO staff have a trawl survey set up similarly by area and likely have plan for incorporation into abundance estimates and might provide guidance on methodology. The author is encouraged to examine any trend data collected annually (e.g., IPHC survey) and not to consider smaller spatial areas than are already surveyed. Larger areas can be disaggregated but subsets of areas should be avoided.

4. How to incorporate ROV with ASA model?
5. When/how to write up ROV work?
6. What to do in 2013? ('on' year for GOA)-
   The Team requested an update and analyses for September 2013.

Team members questioned the average weight calculation. The author noted that numbers of fish are available and the average weight is applied to all. This is using commercial catch data only and no size composition data are available. Team members questioned whether weight differences could be apportioned by area. The author noted that length frequency data can be collected with the ROV. The Team recommends stratifying weight differences by area to evaluate how average weight differs by area

and to evaluate ROV weight data compared with previous data. The author noted that video analysis should be available for use in the assessment next fall.

Skates

Olav Ormseth provided an overview of the executive summary for GOA skates. This assessment is a roll-over of 2012 recommendations given the lack of a survey in 2012. He noted that there was an increase in observed retention rates. Members of the public noted that this was driven by the lower flatfish catches and good prices for skates. The Team recommends the author provide survey biomass estimates next year using the recommended survey averaging approaches. The Team continues to recommend that skates species in the GOA be managed on bycatch-only status at this time. The Plan Team noted that the State Prince William Sound fishery for skates was discontinued due to concerns with over-exploitation and conservation.

Sculpins

Ingrid Spies presented an updated chapter on GOA sculpins. Since the biennial NMFS GOA bottom trawl survey was not conducted in 2012, the assessment consists of an executive summary. For sculpins, a complex mortality rate equal to the weighted average of instantaneous natural mortality rates for the four most abundant sculpin species in the survey (bigmouth, great, plain, and yellow Irish lord) is used. The status quo assessment approach (four most recent surveys) for averaging surveys for biomass was retained. For 2013 the full assessment will evaluate and apply the Kalman filter or random effects survey averaging approach as recommended in September 2012 by the Joint Plan Team for Tier 5 stocks. An NPRB proposal was submitted to complete additional work on natural mortality rate for GOA sculpins. The Plan Team agreed with the author's OFL and ABC recommendations, which were adjusted slightly from last year reflecting corrections to the data.

Shark complex

Jon Heifetz presented an updated chapter on GOA shark complex for lead author Cindy Tribuzio. Since the biennial NMFS GOA bottom trawl survey was not conducted in 2012, the assessment consists of an Executive Summary. For GOA sharks, the status quo method is recommended which consists of a Tier 5 assessment approach used for spiny dogfish and a Tier 6 approach for Pacific sleeper shark, salmon shark, and other/unidentified sharks. GOA shark complex catches have been steady for the last couple years and show a generally declining trend since 1997. Catches have been considerably lower than ABC. Spiny dogfish catch declined slightly between 2011 and 2012, while salmon and sleeper sharks showed a bit of an increase in 2012, and other/identified shark catch has remained very low. Salmon sharks are pelagic and generally have very low catch rates and so do not turn up often in observed samples, therefore due to small sample sizes when they are present, biomass estimates are associated with high variability.

Future developments for spiny dogfish includes development of length-based and surplus production models for the 2013 assessment, an ongoing satellite tagging study (tags have been deployed recently in Puget Sound as well as during the GOA longline survey), and an ongoing NPRB ageing studywhich looks at using vertebrae instead of fin spines. A Pacific sleeper shark genetics study is also ongoing, and very preliminary results show that there may be two distinct populations for the BS and the GOA/Canada.

Squid

Olav Ormseth presented an updated chapter on GOA squid. Since the biennial NMFS GOA bottom trawl survey was not conducted in 2012, the assessment consists of an Executive Summary. Squid catch so far reported to date in 2012 is the lowest level since squid catch data are available (1990-2012). Catch has remained low since the large peak in 2006 and nearly all catch occurs in Area 620. This pattern is

consistent with the 2007 survey high squid catch., The Plan Team agreed with the author's OFL and ABC recommendations, which were unchanged from last year.

Octopus

Kerim Aydin presented an updated chapter on GOA octopus. There is no new trawl survey data for this year. Octopus are caught incidentally to other targeted fisheries. The authors provided three different Tier 6 assessment approaches to estimate OFL and ABC for GOA octopus. The status quo approach used in 2011 is a Tier 5-like calculation of OFL using survey biomass multiplied by a relatively conservative estimate of natural mortality (0.53), and provides the largest estimate of OFL (1,941 t) and ABC (1,455 t). The second assessment method is a modified Tier 6 approach which uses the maximum of 1997-2007 historical catch and provides low estimates for OFL (298 t) and ABC (224 t). The final assessment method is a new approach that estimates the total mortality of octopus by the annual amount of octopus consumed by Pacific cod. This consumption-based approach provides estimates about 20% below those provided by the status quo approach for OFL (1,560 t) and ABC (1,170 t).

In September, the consumption approach was presented by Kerim Aydin and the Plan Team recommended he develop it further for presentation at the November meeting. This approach is based on the assumption that predators may be better samplers of octopus than the survey, and Pacific cod was chosen as the proxy. The authors estimated annual consumption of octopus by Pacific cod and estimated M*B. Data was used from 1990-2009 stomach analysis of Pacific cod (2011 data not analyzed yet). These samples were distributed throughout the GOA. There is a relatively low occurrence of octopus in Pacific cod stomachs, although there is good correspondence with where Pacific cod are eating octopus and where the fishery is catching octopus. Samples showed octopus were consumed mostly at depths greater than 100 m. Presence of octopus in the diet of Pacific cod shows a steep increase associated with Pacific cod length The authors used octopus beak hood length (directly related to octopus weight) versus Pacific cod length and, as expected, larger Pacific cod are eating larger octopus. The data shows that there was very high consumption of octopus in 1990. The majority of octopus present in Pacific cod stomachs were small (<5 kg) which is similar to the size of animals caught in both commercial and survey trawls. However, most of the octopus caught in the commercial fishery (primarily pot gear) average about 15 kg.

The authors considered this a conservative approach since only about one-third of predation is being accounted for, the assessed biomass from this estimate is lower than the status quo approach, and the harmonic mean of simulated rates of consumption was used to estimate OFL. The authors preferred the consumption method rather than using the modified Tier 5-like approach which uses poor estimates of both survey biomass and natural mortality.

The Plan Team's concern was that although there was some overlap with octopus caught in the commercial fishery, most octopus present in stomachs were much smaller than the majority caught in the fishery. This means that the approach measured consumption on a different demographic than the fishery exploits. The authors said the consumption method was not robust enough yet to provide an index of recruitment. The authors also noted that there is a mismatch between trawl survey and pot gear (small versus large octopus).

The Plan Team commended the efforts of the authors, particularly in responding to requests the Team made in September. However, the Team recommended remaining with the current Tier 6 assessment method of using survey biomass since the consumption-based method seems to be at least as uncertain (if not more) as the status quo approach.

Grenadiers

Jon Heifetz presented the stock assessment for grenadiers. The document included discussions on options for moving the complex into both FMPs as well as presentation of a Kalman filter model for estimating biomass. Discussion noted that there has been recent interest in retaining giant grenadiers in the GOA given an overseas market for filets. Some previous attempts at a market occurred in 2006 and 2008.

The Kalman filter leads to substantially lower biomass estimates and ABCs but these estimates remain much larger than the average catches in recent years. The Team discussed management recommendations and progress towards an analysis of EA to move back into the GOA FMP.

The Team continues to recommend that grenadiers should be moved into the GOA FMP and managed 'in the fishery'.

Forage Fish

Olav Ormseth presented an overview of an expanded assessment for Forage Fish (per Plan Team request in off-years). Several changes in this year's report include:

1. Inclusion of additional species beyond FMP forage group
2. Focus on monitoring & conservation issues
3. Improved coordination with Ecosystem Considerations chapter

These changes were motivated by recent developments (national & international, resulting in increased interest in forage species); and a Gulf of Alaska euphausiid index (using acoustic data from pollock surveys – back scatter) developed by MACE. Emphasis in this report is on an overview of forage species & their management, distribution & abundance in the GOA.

Species included in the report:

- "FMP forage fish" group (including krill; see draft report)
- PAHE (Pacific herring)
- Juvenile groundfish & salmon
- Shrimps
- Squids

In general most of these species are poorly surveyed, and none are really appropriately surveyed (in fact, there is no directed survey effort for forage fish except ADF&G surveys for PAHE). The author summarizes trends in inshore vs. offshore distribution from trawl surveys. Eulachon was fairly evenly distributed across Gulf and was most present in bycatch, primarily in the Shelikof pollock fishery. Bycatch of PAHE & shrimp shows occasional spikes in catches of Pacific herring; shrimp caught more consistently as bycatch.

The authors intend to derive capelin & eulachon distribution by putting together multiple time-series datasets.

Capelin: small mesh survey (designed for shrimp) conducted by ADFG; refined since '70s. Shows that capelin abundant through mid-80s, have not recovered. Now absent from Unalaska area but otherwise distribution constant across time. Acoustic survey shows upsurge of capelin in 2000s (& consistently so) although still not showing up in small mesh surveys.

Eulachon: also derived from small mesh survey data. Shows 1980s & 2000s periods of abundance, low in 90s. Not entirely good match of trends between small mesh, trawl survey biomass, & acoustic survey CPUE.

Suggestions by the Team:

- Inclusion of additional background information on the development of the FMP category such that it is clear it was implemented to prohibit targeted harvest of these species.
- Specific cross-referencing of information in the forage fish assessment and the Ecosystem Considerations chapter. The intent is that this information on species indices may be distilled in the Ecosystem Chapter but will have broader scope and more detail in the forage fish appendix.
- Including this report as an expanded assessment in off-years (when the Team has additional time to discuss new information)

Stock structure suggestions for 2013

Based on discussions in relation to DSR removals in the GOA under other rockfish and the DSR assessment, the Team has already requested additional information with respect to vulnerability and relative catch by species for September 2013. Therefore, given that 2013 is a survey year, the Team recommends tabling additional stock structure assignments until next September and then possibly requesting all remaining authors who have not yet filled out their tables to proceed with that in the off year cycle for 2014.

Gulf of Alaska groundfish Plan Team recommended 2012 - 2014 OFLs and ABCs, 2012 TACs, and 2012 catches (reported through November 3rd 2012).

Stock/ Assemblage	Area	2012 OFL	2012 ABC	2012 TAC	2012 Catch	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Pollock	W (61)		30,270	30,270	27,893		28,072		25,648
	C (62)		45,808	45,808	45,050		51,443		47,004
	C (63)		26,348	26,348	25,589		27,372		25,011
	WYAK		3,244	3,244	2,380		3,385		3,093
	Subtotal	143,716	105,670	105,670	100,912	165,183	110,272	152,976	100,756
	EYAK/SEO	14,366	10,774	10,774		14,366	10,774	14,366	10,774
	Total	158,082	116,444	116,444	100,912	179,549	121,046	167,342	111,530
Pacific Cod	W		28,032	21,024	17,703		28,280		29,470
	C		56,940	42,705	34,901		49,288		51,362
	E		2,628	1,971	338		3,232		3,368
	Total	104,000	87,600	65,700	52,942	97,200	80,800	101,100	84,200
Sablefish	W		1,780	1,780	1,390		1,750		1,641
	C		5,760	5,760	5,248		5,540		5,195
	WYAK		2,247	2,247	2,028		2,030		1,902
	SEO		3,176	3,176	3,188		3,190		2,993
	Total	15,330	12,960	12,960	11,854	14,780	12,510	13,871	11,731
Shallow-water flatfish	W		21,994	13,250	153		19,489		18,033
	C		22,910	18,000	3,322		20,168		18,660
	WYAK		4,307	4,307			4,647		4,299
	EYAK/SEO		1,472	1,472			1,180		1,092
	Total	61,681	50,683	37,029	3,475	55,680	45,484	51,580	42,084
Deep-water Flatfish	W		176	176	8		176		176
	C		2,308	2,308	246		2,308		2,308
	WYAK		1,581	1,581	5		1,581		1,581
	EYAK/SEO		1,061	1,061	3		1,061		1,061
	Total	6,834	5,126	5,126	262	6,834	5,126	6,834	5,126
Rex sole	W		1,307	1,307	215		1,300		1,287
	C		6,412	6,412	1,972		6,376		6,310
	WYAK		836	836			832		823
	EYAK/SEO		1,057	1,057			1,052		1,040
	Total	12,561	9,612	9,612	2,187	12,492	9,560	12,362	9,460
Arrowtooth Flounder	W		27,495	14,500	1,331		27,181		26,970
	C		143,162	75,000	18,213		141,527		140,424
	WYAK		21,159	6,900	53		20,917		20,754
	EYAK/SEO		21,066	6,900	140		20,826		20,663
	Total	250,100	212,882	103,300	19,737	247,196	210,451	245,262	208,811
Flathead Sole	W		15,300	8,650	277		15,729		16,063
	C		25,838	15,400	1,613		26,563		27,126
	WYAK		4,558	4,558			4,686		4,785
	EYAK/SEO		1,711	1,711			1,760		1,797
	Total	59,380	47,407	30,319	1,890	61,036	48,738	62,296	49,771

Stock/ Assemblage	Area	2012 OFL	2012 ABC	2012 TAC	2012 Catch	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Pacific ocean perch	W	2,423	2,102	2,102	2,452		2,040		2,005
	C	12,980	11,263	11,263	10,741		10,926		10,740
	WYAK		1,692	1,692	1,682		1,641		1,613
	W/C/WYAK					16,838		16,555	
	SEO		1,861	1,861		2,081	1,805	2,046	1,775
	Total	19,498	16,918	16,918	14,875	18,919	16,412	18,601	16,133
Northern rockfish[3]	W		2,156	2,156	1,817		2,008		1,899
	C		3,351	3,351	3,210		3,122		2,951
	E								
	Total	6,574	5,507	5,507	5,027	6,124	5,130	5,791	4,850
Shortraker Rockfish	W		104	104	110		104		104
	C		452	452	361		452		452
	E		525	525	402		525		525
	Total	1,441	1,081	1,081	873	1,441	1081	1,441	1,081
Dusky rockfish	W		409	409	435		377		354
	C		3,849	3,849	3,558		3,533		3,317
	WYAK		542	542	2		495		465
	EYAK/SEO		318	318	6		295		277
	Total	6,257	5,118	5,118	4,001	5,746	4,700	5,395	4,413
Rougheye and blackspotted rockfish	W		80	80	39		81		83
	C		850	850	389		856		871
	E		293	293	236		295		300
	Total	1,472	1,223	1,223	664	1,482	1,232	1,508	1,254
Demersal rockfish	Total	467	293	293	178	487	303	487	303
Thornyhead Rockfish	W		150	150	186		150		150
	C		766	766	340		766		766
	E		749	749	217		749		749
	Total	2,220	1,665	1,665	743	2,220	1,665	2,220	1,665
Other Rockfish	W		44	44	255		44		44
	C		606	606	724		606		606
	WYAK		230	230	37		230		230
	EYAK/SEO		3,165	200	24		3,165		3,165
	Total	5,305	4,045	1,080	1,040	5,305	4,045	5,305	4,045
Atka mackerel	GOA-wide	6,200	4,700	2,000	1,187	6,200	4,700	6,200	4,700
Big Skate	W		469	469	60		469		469
	C		1,793	1,793	1,596		1,793		1,793
	E		1,505	1,505	38		1505		1,505
	Total	5,023	3,767	3,767	1,694	5,023	3,767	5,023	3,767
Longnose Skate	W		70	70	28		70		70
	C		1,879	1,879	656		1,879		1,879
	E		676	676	78		676		676
	Total	3,500	2,625	2,625	762	3,500	2,625	3,500	2,625
Other Skates	GOA-wide	2,706	2,030	2,030	1,110	2,706	2,030	2,706	2,030
Sculpins	GOA-wide	7,641	5,731	5,731	802	7,614	5,884	7,614	5,884
Sharks	GOA-wide	8,037	6,028	6,028	595	8,037	6,028	8,037	6,028
Squid	GOA-wide	1,530	1,148	1,146	18	1,530	1148	1,530	1,148
Octopus	GOA-wide	1,941	1,455	1,455	368	1,941	1,455	1,941	1,455
Total	Total	747,780	606,048	438,159	227,196	753,042	595,920	737,946	584,094

PUBLIC TESTIMONY SIGN-UP SHEET

Agenda Item: C7(b) GOA Groundfish Specifications

	NAME *(PLEASE PRINT)*	TESTIFYING ON BEHALF OF:
1	Merrick Burden	Marine Conservation Alliance
2	Julie Bonney	AGDB
3	Ilia Kuzmin	K-BAY Fisheries Assoc.
4		
5	Beth Stewart	Sound Seafood Alliance
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

Subject: goa sepc
From: Peggy Kircher <peggy.kircher@noaa.gov>
Date: 12/6/2012 3:27 PM
To: Maria Shawback <maria.shawback@noaa.gov>

C-1(b) GOA Groundfish SAFE and Specifications

The AP recommends that the Council adopt final Gulf of Alaska groundfish specifications for 2013-2014 OFL, ABC and TAC as shown in the attached table (**Attachment 1**). The AP recommends Pacific cod be reduced to allow for the State water fishery according the table on page 3 of the action memo. Additionally, the AP recommends that both shark and octopus be put on bycatch only status and that NMFS agency consider allowing directed fishing for sculpins. *Motion passed 20/0.*

Rationale:

* *This recommendation adopts plan team and SSC recommendations for OFLs and ABCs and industry recommendations for TACs.*
* *Sculpin are caught now but cannot be fully utilized because they are restricted by MRAs. Allowing directed fishing will allow increased utilization of this catch and will allow fishers to take advantage of developing markets for sculpin. Existing PSC limits will ensure that opening a directed sculpin fishery will not result in additional PSC.*

The AP recommends that the Council adopt GOA halibut PSC apportionments annually and seasonally for 2013-2014 as shown on pages 4-5 of the action memo. *Motion passed 20/0.*

The AP recommends that the Council approve the Gulf of Alaska Groundfish SAFE report.
Motion passed 20/0.

The AP recommends that the Council adopt halibut mortality rates for GOA for 2013-15 as shown on page 6 of action memo. *Motion passed 20/0.*

—Attachments:

GOAspecs_2013-14_AP.xlsx 27 bytes

(GOA Groundfish Specifications table continued)

Stock/ Assemblage	Area	2012 OFL	2012 ABC	2012 TAC	2012 Catch	2013 OFL	2013 ABC	2013 TAC	2014 OFL	2014 ABC	2014 TAC
Pacific Ocean Perch	W	2,423	2,102	2,102	2,452		2,040	2,040		2,005	2,005
	C	12,980	11,263	11,263	10,741		10,926	10,926		10,740	10,740
	WYAK		1,692	1,692	1,682		1,641	1,641		1,613	1,613
	W/C/WYAK					16,838			16,555		
	SEO	4,095	1,861	1,861		2,081	1,805	1,805	2,046	1,775	1,775
	Total	19,498	16,918	16,918	14,875	18,919	16,412	16,412	18,601	16,133	16,133
Northern Rockfish	W		2,156	2,156	1,817		2,008	2,008		1,899	1,899
	C		3,351	3,351	3,210		3,122	3,122		2,951	2,951
	E										
	Total	6,574	5,507	5,507	5,027	6,124	5,130	5,130	5,791	4,850	4,850
Shortraker Rockfish	W		104	104	110		104	104		104	104
	C		452	452	361		452	452		452	452
	E		525	525	402		525	525		525	525
	Total	1,441	1,081	1,081	873	1,441	1,081	1,081	1,441	1,081	1,081
Dusky Rockfish	W		409	409	435		377	377		354	354
	C		3,849	3,849	3,558		3,533	3,533		3,317	3,317
	WYAK		542	542	2		495	495		465	465
	EYAK/SEO		318	318	6		295	295		277	277
	Total	6,257	5,118	5,118	4,001	5,746	4,700	4,700	5,395	4,413	4,413
Rougheye and Blackspotted Rockfish	W		80	80	39		81	81		83	83
	C		850	850	389		856	856		871	871
	E		293	293	236		295	295		300	300
	Total	1,472	1,223	1,223	664	1,482	1,232	1,232	1,508	1,254	1,254
Demersal Rockfish	Total	467	293	293	178	487	303	303	487	303	303
Thornyhead Rockfish	W		150	150	186		150	150		150	150
	C		766	766	340		766	766		766	766
	E		749	749	217		749	749		749	749
	Total	2,220	1,665	1,665	743	2,220	1,665	1,665	2,220	1,665	1,665
Other Rockfish	W		44	44	255		44	44		44	44
	C		606	606	724		606	606		606	606
	WYAK		230	230	37		230	230		230	230
	EYAK/SEO		3,165	200	24		3,165	200		3,165	200
	Total	5,305	4,045	1,080	1,040	5,305	4,045	1,080	5,305	4,045	1,080
Atka Mackerel	GOA-wide	5,200	4,700	3,000	1,187	5,200	4,700	3,000	6,280	4,700	3,000
Big Skate	W		469	469	60		469	469		469	469
	C		1,793	1,793	1,596		1,793	1,793		1,793	1,793
	E		1,505	1,505	38		1,505	1,505		1,505	1,505
	Total	5,023	3,767	3,767	1,694	5,023	3,767	3,767	5,023	3,767	3,767
Longnose Skate	W		70	70	28		70	70		70	70
	C		1,879	1,879	656		1,879	1,879		1,879	1,879
	E		676	676	78		676	676		676	676
	Total	3,500	2,625	2,625	762	3,500	2,625	2,625	3,500	2,625	2,625
Other Skates	GOA-wide	2,706	2,030	2,030	1,110	2,706	2,030	2,030	2,706	2,030	2,030
Sculpins	GOA-wide	7,641	5,731	5,731	802	7,614	5,884	5,884	7,614	5,884	5,884
Sharks	GOA-wide	8,037	6,028	6,028	595	8,037	6,028	6,028	8,037	6,028	6,028
Squid	GOA-wide	1,530	1,148	1,146	18	1,530	1,148	1,148	1,530	1,148	1,148
Octopus	GOA-wide	1,941	1,455	1,455	368	1,941	1,455	1,455	1,941	1,455	1,455
Total	Total	747,780	606,048	438,157	227,196	738,676	595,920	436,255	723,580	584,094	427,722

1/ Catch reported through November 3, 2012.

Gulf of Alaska Groundfish recommended OFLs, ABCs and TACs for 2013-2014 and Council's adopted specifications for 2012.

Stock/ Assemblage	Area	2012 OFL	2012 ABC	2012 TAC	2012 Catch[1/]	2013 OFL	2013 ABC	2013 TAC	2014 OFL	2014 ABC	2014 TAC
Pollock	W (61)		30,270	30,270	27,893		28,072	28,072		25,648	25,648
	C (62)		45,808	45,808	45,050		51,443	51,443		47,004	47,004
	C (63)		26,348	26,348	25,589		27,372	27,372		25,011	25,011
	WYAK		3,244	3,244	2,380		3,385	3,385		3,093	3,093
	Subtotal	143,716	105,670	105,670	100,912	150,817	110,272	110,272	138,610	100,756	100,756
	EYAK/SEO	14,366	10,774	10,774		14,366	10,774	10,774	14,366	10,774	10,774
	Total	158,082	116,444	116,444	100,912	165,183	121,046	121,046	152,976	111,530	111,530
Pacific Cod	W		28,032	21,024	17,703		28,280	21,210		29,470	22,103
	C		56,940	42,705	34,901		49,288	36,966		51,362	38,522
	E		2,628	1,971	338		3,232	2,424		3,368	2,526
	Total	104,000	87,600	65,700	52,942	97,200	80,800	60,600	101,100	84,200	63,150
Sablefish	W		1,780	1,780	1,390		1,750	1,750		1,641	1,641
	C		5,760	5,760	5,248		5,540	5,540		5,195	5,195
	WYAK		2,247	2,247	2,028		2,030	2,030		1,902	1,902
	SEO		3,176	3,176	3,188		3,190	3,190		2,993	2,993
	Total	15,330	12,960	12,960	11,854	14,780	12,510	12,510	13,871	11,731	11,731
Shallow-water Flatfish	W		21,994	13,250	153		19,489	13,250		18,033	13,250
	C		22,910	18,000	3,322		20,168	18,000		18,660	18,000
	WYAK		4,307	4,307			4,647	4,647		4,299	4,647
	EYAK/SEO		1,472	1,472			1,180	1,180		1,092	1,180
	Total	61,681	50,683	37,029	3,475	55,680	45,484	37,077	51,580	42,084	37,077
Deep-water Flatfish	W		176	176	8		176	176		176	176
	C		2,308	2,308	246		2,308	2,308		2,308	2,308
	WYAK		1,581	1,581	5		1,581	1,581		1,581	1,581
	EYAK/SEO		1,061	1,061	3		1,061	1,061		1,061	1,061
	Total	6,834	5,126	5,126	262	6,834	5,126	5,126	6,834	5,126	5,126
Rex Sole	W		1,307	1,307	215		1,300	1,300		1,287	1,287
	C		6,412	6,412	1,972		6,376	6,376		6,310	6,310
	WYAK		836	836			832	832		823	1041
	EYAK/SEO		1,057	1,057			1,052	1,052		1,040	822
	Total	12,561	9,612	9,612	2,187	12,492	9,560	9,560	12,362	9,460	9,460
Arrowtooth Flounder	W		27,495	14,500	1,331		27,181	14,500		26,970	14,500
	C		143,162	75,000	18,213		141,527	75,000		140,424	75,000
	WYAK		21,159	6,900	53		20,917	6,900		20,754	6,900
	EYAK/SEO		21,066	6,900	140		20,826	6,900		20,663	6,900
	Total	250,100	212,882	103,300	19,737	247,196	210,451	103,300	245,262	208,811	103,300
Flathead Sole	W		15,300	8,650	277		15,729	8,650		16,063	8,650
	C		25,838	15,400	1,613		26,563	15,400		27,126	15,400
	WYAK		4,558	4,558			4,686	4,686		4,785	4,785
	EYAK/SEO		1,711	1,711			1,760	1,760		1,797	1,797
	Total	59,380	47,407	30,319	1,890	61,036	48,738	30,496	62,296	49,771	30,632

1/ Catch reported through November 3, 2012.

C-1(c) BSAI Groundfish SAFE and Specifications

The AP recommends that the Council approve the Bering Sea/Aleutian Islands Groundfish SAFE report.

Motion passed 18/0.

The AP recommends the Council adopt final specifications for 2013-2014 OFLs, ABCs and TACs as shown in the attached table (**Attachment 2**) which includes the SSC's revision to Blackspotted rockfish and an increase in Octopus TAC from 200 mt to 880 mt; with the difference being subtracted from the Pacific cod TAC. *Motion passed 11-8.*

Rationale:

- *These numbers allow an increase in the pollock TAC with adjustments to flatfish TACs considering the likely shift in effort from Atka mackerel to flatfish and continued participation by AFA vessels in the yellowfin sole fishery.*
- *This represents a reasonable compromise between sectors primarily focused on pollock and those primarily focused on flatfish*
- *There has been some retention of octopus in the pot fisheries, which should be accommodated at this TAC level*
- *There are concerns about potential Chinook salmon bycatch impacts with setting the pollock quota high.*
- *As a multi-species fishery operating under multiple hard caps, Am 80 sector needs sufficient flatfish to fund its fisheries.*

The AP recommends the Council adopt the revised halibut, crab and herring PSCs and sector allowances for 2013-2014 as shown in attached Tables 7-9 (**Attachment 3**) which reflect new information compared with the proposed harvest specification PSC tables in the action memo. Further, the AP recommends the Council adopt Tables 10-11 as presented in the action memo, agenda item C-1(c)(4).

Motion passed 19/0.

The AP recommends the Council adopt the Halibut Discard Mortality Rates for CDQ and non-CDQ as shown in Table 8 on page 14 of action memo, agenda item C-1(c)(7).

Motion passed 19/0.

SSC recommended OFLs and ABCs and ADVISORY PANEL recommended TACs (mt) for 2013 and 2014

		2012				2013			2014		
Species	**Area**	**OFL**	**ABC**	**TAC**	**Catch**	**OFL**	**ABC**	**TAC**	**OFL**	**ABC**	**TAC**
Pollock	EBS	2,474,000	1,220,000	1,200,000	1,202,560	2,550,000	1,375,000	1,234,000	2,730,000	1,430,000	1,236,000
	AI	39,600	32,500	19,000	972	45,600	37,300	19,000	48,600	39,800	19,000
	Bogoslof	22,000	16,500	500	79	13,400	10,100	100	13,400	10,100	100
Pacific cod	BSAI	369,000	314,000	261,000	223,939	359,000	307,000	260,270	379,000	323,000	260,270
Sablefish	BS	2,640	2,230	2,230	717	1,870	1,580	1,580	1,760	1,480	1,480
	AI	2,430	2,050	2,050	1,180	2,530	2,140	2,140	2,370	2,010	2,010
Yellowfin sole	BSAI	222,000	203,000	202,000	137,716	220,000	206,000	202,000	219,000	206,000	202,000
Greenland turbot	*Total*	11,700	9,660	8,660	4,401	2,540	2,060	2,060	3,270	2,650	2,650
	EBS	n/a	7,230	6,230	2,744	n/a	1,610	1,610	n/a	2,070	2,070
	AI	n/a	2,430	2,430	1,657	n/a	450	450	n/a	580	580
Arrowtooth flounder	BSAI	181,000	150,000	25,000	22,227	186,000	152,000	25,000	186,000	152,000	25,000
Kamchatka flounder	BSAI	24,800	18,600	17,700	9,558	16,300	12,200	11,000	16,300	12,200	11,000
Northern rock sole	BSAI	231,000	208,000	87,000	75,806	241,000	214,000	95,000	229,000	204,000	95,000
Flathead sole	BSAI	84,500	70,400	34,134	11,011	81,500	67,900	25,000	80,100	66,700	25,000
Alaska plaice	BSAI	64,600	53,400	24,000	16,124	67,000	55,200	22,429	60,200	55,800	20,773
Other flatfish	BSAI	17,100	12,700	3,200	3,452	17,800	13,300	3,500	17,800	13,300	4,000
Pacific ocean perch	*Total*	35,000	24,700	24,700	21,837	41,900	35,100	35,100	39,500	33,100	33,100
	EBS	n/a	5,710	5,710	3,280	n/a	8,130	8,130	n/a	7,680	7,680
	EAI	n/a	5,620	5,620	5,519	n/a	9,790	9,790	n/a	9,240	9,240
	CAI	n/a	4,990	4,990	4,800	n/a	6,980	6,980	n/a	6,590	6,590
	WAI	n/a	8,380	8,380	8,238	n/a	10,200	10,200	n/a	9,590	9,590
Northern rockfish	BSAI	10,500	8,610	4,700	2,474	12,200	9,850	3,000	12,000	9,320	3,000
Blackspotted/Rougheye Rockfishes	*Total*	576	475	475	204	462	378	378	524	429	429
	EBS/EAI	n/a	231	231	74		169	169		189	189
	CAI/WAI	n/a	244	244	130		209	209		240	240
Shortraker rockfish	BSAI	524	393	393	305	493	370	370	493	370	370
Other rockfish	*Total*	1,700	1,280	1,070	924	1,540	1,160	873	1,540	1,160	1,160
	EBS	n/a	710	500	191	n/a	686	400	n/a	686	686
	AI	n/a	570	570	733	n/a	473	473	n/a	473	473
Atka mackerel	*Total*	96,500	81,400	50,763	47,755	57,700	50,000	25,920	56,500	48,900	25,379
	EAI/BS	n/a	38,500	38,500	37,237	n/a	16,900	16,900	n/a	16,500	16,500
	CAI	n/a	22,900	10,763	10,323	n/a	16,000	7,520	n/a	15,700	7,379
	WAI	n/a	20,000	1,500	195	n/a	17,100	1,500	n/a	16,700	1,500
Skate	BSAI	39,100	32,600	24,700	22,338	45,800	38,800	24,000	44,100	37,300	25,000
Sculpin	BSAI	58,300	43,700	5,200	5,469	56,400	42,300	5,600	56,400	42,300	5,600
Shark	BSAI	1,360	1,020	200	81	1,360	1,020	100	1,360	1,020	100
Squid	BSAI	2,620	1,970	425	678	2,620	1,970	700	2,620	1,970	700
Octopus	BSAI	3,450	2,590	900	132	3,450	2,590	880	3,450	2,590	880
Total	BSAI	3,996,000	2,511,778	2,000,000	1,811,939	4,028,465	2,639,317	2,000,000	4,205,287	2,697,498	2,000,000

Final 2012 OFLs, ABCs, and TACs from 2012-2013 final harvest specifications; total catch updated through November 3, 2012.

Italics indicate where the Team differed from the author's recommendation.

TABLE 7-FINAL 2013 AND 2014 APPORTIONMENT OF PROHIBITED SPECIES CATCH ALLOWANCES TO NON-TRAWL GEAR, THE CDQ PROGRAM, AMENDMENT 80, AND THE BSAI TRAWL LIMITED ACCESS SECTORS

PSC species	Total non-trawl PSC	Non-trawl PSC remaining after CDQ PSQ[1]	Total trawl PSC	Trawl PSC remaining after CDQ PSQ[1]	CDQ PSQ reserve[1]	Amendment 80 sector[2]	BSAI trawl limited access fishery
Halibut mortality (mt) BSAI	900	832	3,675	3,349	393	2,325	875
Herring (mt) BSAI	n/a	n/a	2,648	n/a	n/a	n/a	n/a
Red king crab (animals) Zone 1[1]	n/a	n/a	97,000	86,621	10,379	43,293	26,489
C. opilio (animals) COBLZ[2]	n/a	n/a	10,501,333	9,377,690	1,123,643	4,609,135	3,013,990
C. bairdi crab (animals) Zone 1[2]	n/a	n/a	980,000	875,140	104,860	368,521	411,228
C. bairdi crab (animals) Zone 2	n/a	n/a	2,970,000	2,652,210	317,790	627,778	1,241,500

[1]Section 679.21(e)(3)(i)(A)(2) allocates 326 mt of the trawl halibut mortality limit and § 679.21(e)(4)(i)(A) allocates 7.5 percent, or 67 mt, of the non-trawl halibut mortality limit as the PSQ reserve for use by the groundfish CDQ program. The PSQ

[2] The Amendment 80 program reduced apportionment of the trawl PSC limits by 150 mt for halibut mortality and 20 percent for crab. These reductions are not apportioned to other gear types or sectors.

[3] Refer to § 679.2 for definitions of zones.

[4]Sector apportionments may not total precisely due to rounding.

TABLE 8-FINAL 2013 AND 2014 HERRING AND RED KING CRAB SAVINGS SUBAREA PROHIBITED SPECIES CATCH ALLOWANCES FOR ALL TRAWL SECTORS

Fishery Categories	Herring (mt) BSAI	Red king crab (animals) Zone 1
Yellowfin sole	180	n/a
Rock sole/flathead sole/other flatfish [1]	30	n/a
Turbot/arrowtooth/sablefish[2]	20	n/a
Rockfish	13	n/a
Pacific cod	40	n/a
Midwater trawl pollock	2,165	n/a
Pollock/Atka mackerel/other species[3,4]	200	n/a
Red king crab savings subarea non-pelagic trawl gear[5]	n/a	24,250
Total trawl PSC	2,648	97,000

[1]"Other flatfish" for PSC monitoring includes all flatfish species, except for halibut (a prohibited species), arrowtooth flounder, flathead sole, Greenland turbot, Kamchatka flounder, rock sole, and yellowfin sole.

[2]"Arrowtooth flounder" for PSC monitoring includes Kamchatka flounder.

[3]Pollock other than pelagic trawl pollock, Atka mackerel, and "other species" fishery category.

[4]"Other species" for PSC monitoring includes sculpins, sharks, skates, and octopuses.

[5]In December 2011 the Council recommended that the red king crab bycatch limit for non-pelagic trawl fisheries within the RKCSS be limited to 25 percent of the red king crab PSC allowance (see § 679.21(e)(3)(ii)(B)(2)).

Note: Species apportionments may not total precisely due to rounding.

TABLE 9–FINAL 2013 AND 2014 PROHIBITED SPECIES BYCATCH ALLOWANCES FOR THE BSAI TRAWL LIMITED ACCESS SECTOR

BSAI trawl limited access fisheries	Prohibited species and area[1]				
	Halibut mortality (mt) BSAI	Red king crab (animals) Zone 1	C. opilio (animals) COBLZ	C. bairdi (animals) Zone 1	C. bairdi (animals) Zone 2
Yellowfin sole	167	23,338	2,840,175	346,228	1,185,500
Rock sole/flathead sole/other flatfish[2]	0	0	0	0	0
Turbot/arrowtooth/sablefish[3]	0	0	0	0	0
Rockfish April 15 - December 31	5	0	4,828	0	1,000
Pacific cod	453	2,954	120,705	60,000	50,000
Pollock/Atka mackerel/other species[4]	250	197	48,282	5,000	5,000
Total BSAI trawl limited access PSC	875	26,489	3,013,990	411,228	1,241,500

[1] Refer to § 679.2 for definitions of areas.

[2] "Other flatfish" for PSC monitoring includes all flatfish species, except for halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, Kamchatka flounder, and arrowtooth flounder.

[3] Arrowtooth flounder for PSC monitoring includes Kamchatka flounder.

[4]"Other species" for PSC monitoring includes sculpins, sharks, skates, and octopuses.

Note: Seasonal or sector apportionments may not total precisely due to rounding.

DRAFT REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
December 3rd – December 5th, 2012

The SSC met from December 3rd through December 5th at the Hilton Hotel, Anchorage AK.

Members present were:

Pat Livingston, Chair *NOAA Fisheries—AFSC*	Robert Clark, Vice Chair *Alaska Department of Fish and Game*	Jennifer Burns *University of Alaska Anchorage*
Henry Cheng *Wash. Dept. of Fish and Wildlife*	Alison Dauble *Oregon Dept. of Fish and Wildlife*	Anne Hollowed *NOAA Fisheries—AFSC*
George Hunt *University of Washington*	Gordon Kruse *University of Alaska Fairbanks*	Seth Macinko *University of Rhode Island*
Steve Martell *International Pacific Halibut Commission*	Franz Mueter *University of Alaska Fairbanks*	Jim Murphy *University of Alaska Anchorage*
Lew Queirolo *NOAA Fisheries—Alaska Region*	Terry Quinn *University of Alaska Fairbanks*	Kate Reedy-Maschner *Idaho State University Pocatello*
Farron Wallace *NOAA Fisheries—AFSC*		

Members absent were:

Sherri Dressel *Alaska Department of Fish and Game*	Kathy Kuletz *US Fish and Wildlife Service*

C-1 (b, c) GOA and BSAI specifications and SAFE report

General SAFE Comments

The SSC reviewed the SAFE chapters and 2011 OFLs with respect to status determinations for BSAI and GOA groundfish. **The SSC accepts the status determination therein, which indicated that, with the exception of BSAI Octopus, no stocks were subject to overfishing in 2011. Also, in reviewing the status of stocks with reliable biomass reference points (all Tier 3 and above stocks and rex sole), the SSC concurs that these stocks are not overfished or approaching an overfished condition.**

Table 2. SSC recommendations for BSAI Groundfish OFLs and ABCs for 2013 and 2014 are shown with the 2012 OFL, ABC, TAC, and Catch amounts in metric tons (2012 catches through November 3 from AKR Catch Accounting include CDQ). Recommendations are marked in **bold** where SSC recommendations differ from those of the BSAI Plan Team.

		2012				2013		2014	
Species	Area	OFL	ABC	TAC	Catch	OFL	ABC	OFL	ABC
Pollock	EBS	2,474,000	1,220,000	1,186,000	1,202,560	*2,550,000*	*1,375,000*	*2,730,000*	*1,430,000*
	AI	39,600	32,500	19,000	972	45,600	37,300	48,600	39,800
	Bogoslof	22,000	16,500	500	79	13,400	10,100	13,400	10,100
Pacific cod	BSAI	369,000	314,000	275,000	223,939	359,000	307,000	379,000	323,000
Sablefish	BS	2,640	2,230	2,230	717	1,870	1,580	1,760	1,480
	AI	2,430	2,050	2,050	1,180	2,530	2,140	2,370	2,010
Yellowfin sole	BSAI	222,000	203,000	202,000	137,716	220,000	206,000	219,000	206,000
Greenland turbot	*Total*	11,700	9,660	8,660	4,401	2,540	2,060	3,270	2,650
	EBS	n/a	7,230	6,230	2,744	n/a	1,610	n/a	2,070
	AI	n/a	2,430	2,430	1,657	n/a	450	n/a	580
Arrowtooth flounder	BSAI	181,000	150,000	25,000	22,227	*186,000*	*152,000*	*186,000*	*152,000*
Kamchatka flounder	BSAI	24,800	18,600	17,700	9,558	16,300	12,200	16,300	12,200
Northern rock sole	BSAI	231,000	208,000	87,000	75,806	241,000	214,000	229,000	204,000
Flathead sole	BSAI	84,500	70,400	34,134	11,011	81,500	67,900	80,100	66,700
Alaska plaice	BSAI	64,600	53,400	24,000	16,124	67,000	55,200	60,200	55,800
Other flatfish	BSAI	17,100	12,700	3,200	3,452	17,800	13,300	17,800	13,300
Pacific ocean perch	*Total*	35,000	24,700	24,700	21,837	41,900	35,100	39,500	33,100
	EBS	n/a	5,710	5,710	3,280	n/a	8,130	n/a	7,680
	EAI	n/a	5,620	5,620	5,519	n/a	9,790	n/a	9,240
	CAI	n/a	4,990	4,990	4,800	n/a	6,980	n/a	6,590
	WAI	n/a	8,380	8,380	8,238	n/a	10,200	n/a	9,590
Northern rockfish	BSAI	10,500	8,610	4,700	2,474	12,200	9,850	12,000	9,320
Blackspotted/Rougheye	*Total*	576	475	475	204	462	378	524	429
	EBS/EAI	n/a	231	231	74	n/a	169	n/a	189
	CAI/WAI	n/a	244	244	130	n/a	209	n/a	240
Shortraker rockfish	BSAI	524	393	393	305	493	370	493	370
Other rockfish	*Total*	1,700	1,280	1,070	924	1,540	1,160	1,540	1,160
	EBS	n/a	710	500	191	n/a	686	n/a	686
	AI	n/a	570	570	733	n/a	473	n/a	473
Atka mackerel	*Total*	96,500	81,400	50,763	47,755	57,700	50,000	56,500	48,900
	EAI/BS	n/a	38,500	38,500	37,237	n/a	16,900	n/a	16,500
	CAI	n/a	22,900	10,763	10,323	n/a	16,000	n/a	15,700
	WAI	n/a	20,000	1,500	195	n/a	17,100	n/a	16,700
Skate	BSAI	39,100	32,600	24,700	22,338	45,800	38,800	44,100	37,300
Sculpin	BSAI	58,300	43,700	5,200	5,469	56,400	42,300	56,400	42,300
Shark	BSAI	1,360	1,020	200	81	1,360	1,020	1,360	1,020
Squid	BSAI	2,620	1,970	425	678	2,620	1,970	2,620	1,970
Octopus	BSAI	3,450	2,590	900	132	3,450	2,590	3,450	2,590
Total	BSAI	3,996,000	2,511,778	2,000,000	1,811,939	4,028,465	2,639,317	4,205,287	2,697,498

Final 2012 OFLs, ABCs, and TACs from 2012-2013 final harvest specifications; total catch updated through November 3, 2012.

Italics indicate where the Team differed from the author's recommendation.

BSAI Pacific cod

Mike Sigler presented results from the Pacific cod presentations and associated Plan Team recommendations. Public testimony was provided by Dave Fraser on behalf of Adak Development Corporation. He re-iterated their long-standing support for an area split for Pacific cod, but questioned model assumptions with respect to survey catchability in the Aleutians. Based on his fishing experience there are times (particularly under low-density conditions) when a low-opening net is most efficient, while at other times, a high-opening trawl is more efficient to target off-bottom concentrations. He recommended that the effectiveness of the survey trawl in the Aleutians under different conditions be closely examined.

Following review of the preliminary assessment by the plan team in September and SSC in October, four models were selected for this year's final assessment. Model 1 is last year's accepted model, updated with new information (catch data, fishery and survey size compositions, survey abundances, survey age compositions, and fishery CPUE data); Model 2 is identical to model 1 but estimates the survey catchability coefficient as a free parameter; Model 3 is identical to model 1, but does not include age composition data in the likelihood function; Model 4 is an exploratory model that incorporates a number of author-suggested changes.

The authors, as always, have been very responsive to plan team and SSC recommendations and the models brought forward in the final assessment were selected based on plan team and SSC recommendations. There was insufficient time to consider some other recommended modifications such as time varying survey catchability (SSC, Oct-12) or selectivity parameters estimated by time block, gear, and season (Plan Team Sep-12). A retrospective analysis was included as requested by the Plan Team and SST and 'other' removals were included in an appendix but not incorporated in the assessment.

The authors and plan team recommend model 1, which is last year's accepted model. **The SSC concurs with the choice of model 1 for stock status determinations in 2013** in spite of a good fit for model 4, which incorporates some desirable features but has not been fully vetted. The data and models suggest a relatively high and increasing biomass in recent years, putting the stock in Tier 3a. The SSC agrees with the current expansion of the biomass estimated for the EBS to the BSAI area based on the updated Kalman filter estimates for biomass distribution between the two areas (93% EBS and7% AI). In spite of concerns over the status of the stock in the Aleutians as noted below, **the SSC agrees with the Plan Team that there is no compelling reason to reduce the ABC from the maximum permissible value under Tier 3a as summarized below in metric tons.** Overfishing is not occurring, the stock is not overfished, and the stock is not approaching an overfished condition.

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Pacific cod	BSAI	359,000	307,000	379,000	323,000

The SSC re-iterates continuing concerns over the best value for the catchability coefficient, which by long-standing practice has been fixed at 0.77 in model 1. Based on exploratory models estimating q, catchability may well be much higher and the SSC expects to receive a report prior to next year's assessment about a comparison of the standard EBS trawl with a high-opening trawl conducted during the 2012 field season. Very preliminary results suggest that catchability is higher than the currently used value because catch rates in both trawls were not substantially different.

A second concern is the strong retrospective pattern that suggests consistent over-estimation of biomass in the most-recent year, relative to current assessment! The SSC would like to see a similar analysis of retrospective patterns for a model with an alternative estimate for q (internally estimated or updated value from field experiment) in next year's assessment.

In combination, the above concerns suggest the possibility that biomass may be substantially lower than the current model suggests. However, biomass has increased in recent years thanks in large part to above-average year classes in 2006, 2008, and 2010 and the possibility of another strong year class in 2011 (based on limited 2012 survey data).

The results for model 4 suggest that several of the new features represent an improvement over the current base model and the SSC recommends bringing forward a similar model next year that retains at least some of these promising features such as the Richards growth curve, newly parameterized seasonal changes in weight-at-length, selectivity modeled as a function of length, and estimating log-scale standard deviations for recruitment internally rather than fixing them. The appropriate treatment of selectivity remains to be determined but the simplifications introduced in model 4 (i.e. combining gear types), in combination with the other changes, appears to provide a very reasonable fit to the age composition data and other data components.

Aleutians Islands:
The author continued to explore an age-structured model for the Aleutian Islands but did not bring forward a full assessment. Model 1 for the AI is similar to model 1 for EBS Pacific cod, except that it assumes single season and fishery per year, does not include age data, and the catchability coefficient is tuned to a higher value (because of the difference in survey net configurations between the two areas, Nichol et al. 2007). Model 2 is similar to Model 1, except that it allows temporal variability in two of the growth parameters. Model 3 is identical to Model 1, except that all input sample sizes for length composition data are multiplied by 1/3 in response to a Plan Team request to use a smaller average sample size. Model 4 differs from Model 1 in that it 1) excludes US-Japanese joint survey data from before 1990 because of concerns over their reliability, 2) allows survey catchability to vary randomly among surveys, 3) forces selectivity to be asymptotic for the survey but not for the fishery, 4) estimates input sample sizes for length composition data iteratively, 5) allows several selectivity parameters to vary randomly, and 6) estimates the standard deviation for log-recruitment internally.

All models except model 4 overestimate survey abundances substantially, result in relatively poor fits to the fishery size composition data, particularly in early years when sample sizes were low. All of the models achieved a reasonable fit to the survey size composition data. Recruitment deviations differed considerably for model 4 and as the author noted the recruitment deviations are very different from those in the eastern Bering Sea and Gulf of Alaska models, while recruitment in the latter two regions is highly synchronous. It is unclear whether that reflects a true difference in recruitment dynamics or suggests a problem with the exploratory AI assessment models.

A number of issues and data gaps were identified by the author that may need to be resolved before the present model can be adopted for stock status determinations for AI Pacific cod. In particular, the authors question whether the data to support an age-structured assessment for AI Pacific cod are adequate given large survey CVs and small sample sizes for length composition data. The SSC encourages further model development but had no specific suggestions beyond those identified in plan team discussions and the possibility of obtaining additional age composition data from archived otoliths.

While these models are still exploratory, the range of models examined appears to provide strong evidence for a substantial decline in biomass in the Aleutian Islands since the early 1990s. This decline, unlike in the Eastern Bering Sea, has continued in recent years and is consistent with observed declines in fishery CPUE in the AI for both longline and trawl fisheries (Fig. 2.3b of the assessment). The model estimates of maxABC ranged from 2,990 to 8,690 for the four exploratory models fit to the AI data and were substantially below the actual catches taken in recent years (29,000 t in 2010, 10,862 t in 2011, and 12,991 t through Nov 3). Therefore the current approach of setting a single ABC for the entire BSAI area

raises potentially serious conservation concerns for Pacific cod in the AI. As noted in the SAFE introduction, the SSC has put the Council on notice for some time that it expects to adopt an area-specific ABC and OFL for the Aleutians. Given the heightened conservation concern, the SSC intends to set separate ABC/OFL for EBS Pacific cod and AI Pacific cod for the 2014 fishing season based on the best available information at that time, regardless of whether the age-structured model is adequate for stock status determinations. **Therefore the Council should initiate preparation of any background supporting documents such as a supplemental NEPA document that may be required for specification of separate ABCs/OFLs in 2014.**

GOA – BSAI Sablefish

This year the authors provided a routine update of the stock assessment model that incorporated: relative abundance and length data from the 2012 longline survey, relative abundance and length data from the 2011 longline and trawl fisheries, age data from the 2011 longline survey and 2011 fixed gear fishery, and updated 2011 catch and projected 2012 catch.

Results of the revised stock assessment show that the stock is expected to decline slightly in 2013 and 2014. The 1997 and 2000 year classes are entering into the spawning population.

Projected female spawning biomass for 2013 was 97,193 t, which is 37% of $B_{100\%}$. The stock is slightly below the estimate of $B_{40\%}$ (106,506 t), placing this stock in Tier 3b. The authors' recommended ABC and OFL are set at the maximum permissible levels under the NPFMC harvest strategy. **The SSC agrees that this stock falls in Tier 3b and accepts the Plan Team recommendations for a combined BSAI-GOA ABC of 16,230 t and OFL of 19,180 t in 2013. The SSC also accepted the author and Plan Teams' projected ABC and OFL for 2014.** The GOA and BSAI Plan Teams accepted the author's recommendation for 2013 area apportionments based on a 5-year exponential weighting of the survey and fishery abundance indices. This area apportionment includes the adjustment for the 95:5 hook-and-line:trawl split in the Eastern Gulf of Alaska.

The authors responded to the SSC's request to examine the degree of overlap between the CAS and HFICE estimate. They determined that evaluating this overlap is not possible with the available data. The SSC accepts this conclusion and agrees that, after the Observer Program restructuring is implemented, data may become available that will allow evaluation of this overlap.

The authors reported that fishery CPUE (from observer data) shows a steep drop in 2012, and the average depth fished in the fishery was deeper than previous years. The SSC encourages the authors to investigate whether these changes are due to changes in the fishing behavior (e.g., targeting larger fish) or shifts in the spatial distribution or abundance of the stock.

As requested, the authors showed retrospective plots based on the Plan Teams' retrospective working group recommended format. These plots with a plot of female spawning stock biomass and relative retrospective change show the model may be slow to respond to changes in biomass. In the upcoming year, the SSC encourages the authors to continue to explore model changes that may address this issue. Specifically, with recent shifts to deeper water to catch larger, more valuable (per pound) fish, a penalized random walk in selectivity may be more appropriate to model changes in selectivity over time.

The authors reported that they are hoping to formalize a process that would encourage the incorporation of new knowledge of recruitment processes and ecosystem influences (e.g., environmental variables and the Gulf of Alaska Project) in the Ecosystem Considerations section of the species specific SAFE chapters. The SSC looks forward to receiving updates on the progress of this effort. In particular, the SSC encourages the authors to develop a capability to project future year-class strength. These projections can be compared against realized recruitment to evaluate the forecast skill of proposed

mechanistic linkages between environmental forcing and recruitment. For example, the new paper by Shotwell *et al.* (2012) appears to hold promise as a projection framework for sablefish.

The authors reported on their efforts to update and evaluate tagging data, and to revise the movement model for BSAI/GOA sablefish. The authors plan to submit a manuscript for publication of the updated movement model and tagging results. In response to questions during the November Plan Team meeting, the authors reported that additional collections of biological samples may be required to support a movement model. The SSC continues to encourage the development of a spatial assessment model for research purposes and supports the additional collection and analysis of biological samples needed to support a movement model.

Sablefish GOA

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Sablefish	W		1,750		1,641
	C		5,540		5,195
	WYAK		2,030		1,902
	SEO		3,190		2,993
	Total	14,780	12,510	13,871	11,731

Sablefish BSAI

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Sablefish	BS	1,870	1,580	1,760	1,480
	AI	2,530	2,140	2,370	2,010
	Total	4,400	3,720	4,130	3,490

BSAI SAFE and Harvest Specifications for 2013/14

AI Assessment Author recommendations: The SSC requests that all assessment authors of AI species evaluate AI survey information to ensure that the same standardized survey time series is used.

EBS Walleye Pollock

Jim Ianelli (NMFS-AFSC) presented the pollock stock assessments and Plan Team co-chair Mike Sigler (NMFS-AFSC) presented the Plan Team recommendations. Ed Richardson (PCC) provided public testimony. He supported the Plan Team's ABC of 1.375 million t, suggested that having female spawning biomass between 2 to 3 million t usually resulted in acceptable recruitments, and felt that the risk assessment in the assessment was not appropriate for a fast-growing species like pollock.

This is a straightforward update of the stock assessment from last year, involving only new data (2011 fishery catch at age and weight at age, and 2012 preliminary catch and catch at age, acoustic trawl survey abundance at age, and bottom trawl survey abundance at age). There were no model changes.

Both the bottom trawl and acoustic trawl surveys showed increases from last year. Age composition data show strong 2006 and 2008 year-classes. This is confirmed by estimates of recruitment, but the 2006 year-class has a lower recruitment estimate (at age 1) than in last year's assessment and the opposite occurs for the 2008 recruitment estimate. Spawning biomass has increased 44% since the recent low point in 2008 and is slightly above B_{MSY}, and projected biomasses in 2013 and 2014 are projected to be about 20% above B_{MSY}.

Items of concern or observations contributing to uncertainty include: (1) about 22% of survey biomass occurred in Russsian waters and was subject to their exploitation, (2) one of the largest cold pools on record, which pollock have tended to avoid in the past (but not this year),(3) retrospective patterns that suggest that strong year-classes can be overestimated, (4) the high CV of the 2008 year-class, (5) larger fishing mortalities on older pollock, and (6) a lack of 1 year olds in the acoustic trawl survey.

New in this year's assessment is a decision table analysis of seven short-term harvest policies with respect to 12 decision metrics related to biomass, harvest, population age composition, fishing effort and mortality, and salmon PSC. Both the Plan Team and SSC encourage further work on this approach, but felt it was premature to use this method for specifications. The authors' objectives this year often considered long-term or short-term averages of biomass, fishing mortality and other variables as desirable levels (comparable to targets). The SSC prefers standard status determination criteria such as $B_{35\%}$, $F_{35\%}$, $B_{40\%}$, $F_{40\%}$, and $B_{100\%}$.

The SSC continues to place EBS pollock in Tier 1a, due to the wealth of information and the presence of a credible spawner-recruit curve and pdf for F_{MSY}. This results in the maximum permissible ABC in 2013 of 2.31 million t, which is about 0.4 million t higher than any annual catch on record. The authors, Plan Team, and SSC all agree that a reduction from the maximum permissible ABC is warranted, given the concerns listed above, in the stock assessment document, and the Plan Team summary and minutes. The authors came up with a 2013 ABC of 1.2 million t, based on a decision table entry corresponding to a 50% probability of reaching the long-term average female spawning biomass in 5 years. Because this is a new criterion based on a long-term average that may not be meaningful, the Plan Team and SSC recommend staying with the same criterion as last year: constraining fishing mortality to the most recent 5-year average. This is conservative because biomass has been increasing, which would normally produce an increase in fishing mortality. This results in the following specifications (in metric tons):

Stock/		2013		2014	
Assemblage	Area	OFL	ABC	OFL	ABC
Pollock	EBS	2,550,000	1,375,000	2,730,000	1,430,000

Research consideration

The SSC notes that the adjustment from the maximum permissible of almost 0.9 million t is very large and encourages the authors and the Plan Team seek approaches that help inform the desirable reductions based on the amount of uncertainty.

In the longer term, the SSC encourages the author to consider explicitly including predation in the assessment model to estimate reference points that better reflect the importance of walleye pollock as a key forage species in the eastern Bering Sea. For example, the approach of Moustahfid et al. (2009) or similar approaches previously pursued by the author could be used.

Aleutian Islands Walleye Pollock

The Aleutian Islands pollock assessment is a routine update of the stock assessment model used previously. A new bottom trawl survey was performed this year, so that the information for this assessment should be improving. Spawning biomass has steadily increased since its recent low in 1999 and has reached $B_{34\%}$.

The SSC affirms that this stock belongs in Tier 3b. This results in the following specifications (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
AI Pollock	AI	45,600	37,300	48,600	39,800

Bogoslof Walleye Pollock

The Bogoslof survey resulted in the lowest estimate of biomass ((67,100 t) since the survey started in 1988. The SSC affirms that this stock belongs in Tier 5. Specifications (in metric tons) are calculated from survey biomass and natural mortality M = 0.20, resulting in:

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Bogoslof Pollock	Bogoslof	13,400	10,100	13,400	10,100

Research consideration

This stock has not been fished for a long enough time that catch curve analysis could be used to estimate recent natural mortality. This would be a useful check on the assumed value.

BSAI Atka Mackerel

The assessment authors assume 64% of the BSAI-wide ABC is likely to be taken under the implemented Stellar Sea Lion Reasonable and Prudent Alternatives (SSL RPAs). This percentage was applied to the 2013 maximum permissible ABC, and that amount was assumed to be caught in order to estimate the 2014 ABCs and OFL values. In the current assessment, the authors estimated the recruitment variance, while the past assessment was fixed at a value of 0.6. The prior penalty of the parameter determining the degree of dome-shape for fishery selectivity was fixed at 0.30, while it was fixed at 0.10 in the past. The current fishery selectivity-at-age vector used for projection differs slightly (higher selectivity for ages 3-6 and lower selectivity after age 7) from the fishery selectivity pattern estimated with last year's model configuration. The projected 2013 female spawning biomass is 103,034 t, which is lower than $B_{40\%}$=111,385 t. The Plan Team and the stock assessment authors recommended changing the harvesting specification from Tier 3a to Tier 3b. The projected age 3+ biomass at the beginning of 2013 is estimated at 288,936 t, down about 29% from last year's estimate for 2012. **The SSC agrees with the Plan Team recommendations for ABC and OFLs as well as area apportionments in the table below (in tons).**

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Atka Mackerel	EAI/BS		16,900		16,500
	CAI		16,000		15,700
	WAI		17,100		16,700
	Total	57,700	50,000	56,500	48,900

The SSC observes there is a 10-12 year cycle in estimated biomass, but it disappeared in the past 10 years. SSC recommends that the authors:

i) estimate M and q directly in the model and report the correlation between these two estimates from the variance-covariance matrix of the final model, or

ii) conduct a sensitivity analysis between various input Ms around 0.20-0.40 and estimate q's.

autocorrelation parameter. It is notable that the stock would be determined to be in an overfished condition if model 3 was adopted.

The SSC appreciates the significant efforts of the assessment authors to improve this year's assessment of Greenland turbot. The SSC also appreciates the insights by the authors and Plan Team concerning the alternative models.

The SSC agrees with the selection of model 2 and application of Tier 3b to establish OFLs and ABCs in this year's assessment. The result is a significant reduction in ABC and OFL for this fishery. It was indicated that this reduction would likely prevent the conduct of a directed fishery for Greenland turbot. In response to an SSC question about bycatch of Greenland turbot in the Kamchatka flounder fishery, it was indicated that there are areas of the slope where Kamchatka flounder could be harvested with low Greenland turbot bycatch. Clearly, the bycatch of Greenland turbot will need to be closely monitored.

For next year's assessment, the SSC provides the following recommendations:

1. The SSC requests further exploration of an alternative model structure to try and resolve the extreme 1965 cohort. This may include estimating average recruitment for the initial age-structure and associated deviates, and an average recruitment for subsequent years with average deviates and a shared sigma R value. There is some concern that the estimates of average recruitment (which defines the SB_{100} value) are potentially biased due to confounding between scaling parameters (R_o, q_{shelf}) and selectivity parameters in the survey.
2. Show the parameter correlation between parameters that describe the descending limb of the survey selectivity curve and the catchability coefficient for q_{shelf}. Consider one model alternative in which early years without data are excluded from the model. The SSC noted some similarities with the eastern Bering Sea Tanner crab assessment. The impacts of the foreign catch and the change in the trawl selectivity are very dramatic.
3. Examine the amount of cryptic biomass (i.e., resulting from dome-shaped selectivity) in the survey data. There is a concern that the survey, which samples small fish on the shelf, is more of a noisy recruitment index with large observation errors.
4. Retain model 3 as an alternative model and undertake additional evaluation of the autocorrelation feature of this model. The authors might consider whether any environmentally driven mechanisms might help justify a selection of this model in future years.

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Greenland turbot	BS		1,610		2,070
	AI		450		580
	Total	2,540	2,060	3,270	2,650

Arrowtooth Flounder

No significant changes were made to assessment methodology, but several input data sets were updated or revised. The most significant change in input data appears to be replacement of Zimmerman's (1997) female size at maturity data with more recent information from Stark (2008). Because size at 50% maturity is larger in the latter study (46 cm) than the earlier study (42.2 cm), estimates of female spawning biomass are significantly lower in this year's assessment compared to last year's assessment. The Plan Team had concerns about switching from one maturity schedule to the other and also had concerns about the statistical method used to estimate maturity parameters in this year's assessment.

BSAI Flatfish

Public comment was received on the Greenland turbot assessment by John Gauvin (Alaska Seafood Cooperative) and Chad See (Freezer Longliner Coalition).

Yellowfin Sole

No changes were made to the assessment methodology. Last year, the SSC supported the Plan Team's suggestion of examining simpler or non-parametric alternative growth models. The assessment authors indicated that an alternative growth model designed to smooth the empirical weight at age data should be implemented in next year's assessment. The SSC appreciates these efforts and looks forward to the results of this analysis.

The EBS yellowfin sole stock has been gradually declining for the past 10 years and is currently just below the $B_{40\%}$ level and 1.5 times B_{msy}. **The SSC support the authors' and Team's OFL and ABC recommendations for 2013 and 2014 using Tier 1 (in metric tons).**

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Yellowfin sole	BSAI	220,000	206,000	219,000	206,000

Greenland Turbot

The SSC received public testimony expressing concerns about the significant changes in OFLs and ABCs associated with changes implemented in this year's assessment. Concerns were expressed about the effects of occasional extremely large recruitments on the assessment model and estimation of reference points. The use of mean recruitment, versus median recruitment, was questioned as an appropriate measure for calculating SB_{100} for this stock that appears to have episodic recruitment.

The Greenland turbot stock assessment has undergone many changes in the past year. These included changes in the method for parameterizing sex-specific selectivity curves, changes in the prior distributions for survey catchability, a re-examination of the weight-length relationship, a new method to weight annual fishery length compositions, and changes in the way that recruitments were estimated in the early years of the series. There were also a number of changes in the input data, including dropping pre-2002 slope survey biomass estimates and weighting the haul-by-haul fishery length composition data proportional to catch. The SSC received a progress report on these changes at the October 2012 meeting.

There were marked changes in both stock status and biological reference points since last year's assessment. Estimated female spawning biomass dropped 51% from 2012 owing to major revisions in the stock assessment model. Female spawning biomass is projected to increase from 23,500 t in 2013 to 26,500 t in 2014 as two strong year classes begin to recruit to the spawning stock. Estimated biomass reference points are larger, whereas fishing mortality reference points are lower, than those estimated in last year's assessment. **In addition to changes in the assessment model and data, input errors in the 2009-2011 projection models were discovered that resulted in large underestimates of all biomass reference points.** For instance, last year's projected stock status for 2012 was $B_{88\%}$ whereas this year's estimate of stock status is only $B_{21\%}$. As a result, the stock now falls under Tier 3b instead of Tier 3a.

Four models were considered. Model 1, the reference model fit to new datasets and weight-at-length estimates, was rejected based on unrealistic selectivity curves. The choice between models 2-4 was more difficult, but the assessment authors and Plan Team considered model 2 to be the preferred reference model. Model 3 was identical to model 2, except that recruitment was modeled with an autocorrelation parameter. Model 3 was determined to be the best fitting model, but it was not selected because of the novelty of the autocorrelation approach and the sensitivity of reference points to the assumed

The authors and Plan Team both agreed that the stock should be managed under Tier 3a. The Plan Team did not accept this year's assessment model because of the aforementioned issues with the maturity schedule. Thus, the Team recommended rolling over last year's projected ABC and OFL for 2013 for use in this year's specifications for 2013 and 2014. **Because of the concerns about the use of maturity data in this year's assessment, the SSC agrees with the Plan Team's advice to roll over last year's ABC and OFL specifications.**

In next year's assessment, the SSC requests more detailed information to be presented about the sampling for arrowtooth flounder maturity by Zimmerman (1997) and Stark (2008). In particular, the samples used to estimate both maturity curves should be considered with respect to location of sampling and possible environmental and density-dependent effects to the extent possible. For instance, changes in size at maturity might be expected under different thermal histories of the cohorts sampled and under large shifts in arrowtooth flounder density over time. This additional detail may be helpful to decisions about how to best combine results to estimate maturity for the stock assessment.

However, as both Zimmerman (1997) and Stark (2008) estimated size at maturity for arrowtooth flounder from the Gulf of Alaska, the most obvious shortcoming is the lack of maturity estimates for arrowtooth flounder from the eastern Bering Sea. Major differences in size at maturity exist for other species (e.g., Pacific herring, red king crab) between the Gulf of Alaska and eastern Bering Sea. **The SSC requests the Plan Team to include collection and analysis of maturity data of arrowtooth flounder from the eastern Bering Sea as a research priority.**

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Arrowtooth flounder	BSAI	186,000	152,000	186,000	152,000

Kamchatka Flounder

Kamchatka flounder have been managed under Tier 5 using an estimate of natural mortality (M) and 7-year averages of trawl survey biomass from the Bering Sea shelf and slope and Aleutian Islands. A provisional sex-specific length-based assessment model under Tier 3 was reviewed by the Plan Team in September 2012 and the SSC in October 2012. Given the extensiveness of the advice by both the Plan Team and SSC, a revised model will be considered in next year's assessment cycle.

The current Tier 5 assessment was updated with the latest survey data from the Aleutian Islands and the Bering Sea slope and shelf. Also, natural mortality (M) was re-evaluated using four methods, resulting in a new estimate of 0.13 compared to 0.20 in last year's assessment. Using the same method as last year, biomass was estimated to be 109,000 t. By applying the new estimate of M, OFL=16,300 t for 2013 and 2014 and ABC = 12,200 t for 2013 and 2014. **The SSC supports the author's and Plan Team recommendations OFL and ABC recommendations using Tier 5.** The SSC looks forward to next year's assessment at which time Kamchatka flounder will be reconsidered for Tier 3 status.

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Kamchatka flounder	BSAI	16,300	12,200	16,300	12,200

Northern Rock Sole

Assessment methodology for northern rock sole was unchanged from last year's assessment; only input data were updated. In last year's assessment, alternative models were explored in which survey catchability (q) was set as a function of bottom temperature. Although there was evidence of a relationship, the estimated mean value for q was unrealistically high. The SSC had requested that alternative model formulations be evaluated this year in which q was constrained to realistic values. The assessment authors implemented the SSC's recommendations from last year and considered model 1 and six alternatives (model 7 included a relationship between q and temperature). The assessment author noted that results of model 7 were very close to those of model 1, but elected to implement model 1 for purposes of this year's assessment noting that further testing was needed for model 7.

The Plan Team endorsed the use of model 1 and management of northern rock sole under Tier 1a, as spawning biomass is estimated to be 264% of B_{msy} in 2013. **The SSC supports the author's and Plan Team's recommendations for this year and looks forward to further evaluation of the potential effect of temperature on survey q in next year's assessment. The SSC recommends standardizing bottom temperature to mean of 0 and standard deviation of 1.0 (d_t), and model survey q as $q_t = q \exp(\text{lambda} * d_t)$, and estimate the correlation coefficient (lambda) internally in the model.**

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Northern rock sole	BSAI	241,000	214,000	229,000	204,000

Flathead Sole

There was no change in the assessment model from last year other than updated input survey and fishery data. **The SSC supports management of the flathead sole fishery under Tier 3a for the current assessment, as recommended by the assessment authors and Plan Team. However, for next year's assessment, the SSC request that the authors prepare an alternative assessment of flathead sole under Tier 1.** The fitted stock-recruit model (Figure 9.29) suggests that Tier 1 status may be appropriate as with yellowfin sole.

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Flathead sole	BSAI	81,500	67,900	80,100	66,700

Alaska Plaice

There were no changes in the assessment methodology from last year's assessment; only fishery and survey data were updated. **The authors and Plan Team recommend continued management of the Alaska plaice stock under Tier 3a and the SSC agrees with this approach.**

A survey in 2010 found that 38% of the biomass of Alaska plaice resides in the northern Bering Sea. A challenge to this assessment is how to incorporate this information into the assessment. Biomass estimates from the northern Bering Sea survey are not included in the current assessment, because that area has only been surveyed once and there are no current plans to resurvey this northern area. The SSC appreciates this difficulty and cannot offer meaningful advice except to advocate for additional surveys in the

northern Bering Sea. The Alaska plaice assessment is also unique in that it incorporates survey information prior to 1982 into the assessment.

The SSC understands that the assessment authors indicated that they will remove the pre-1982 survey data from next year's assessment. The SSC agrees that this is likely to be prudent, given the reported differences in survey catchability for other groundfish species associated with the switch from the 400 eastern to the 83-112 trawl in 1982. **When this is done, the SSC requests retaining a model fit with full data in next year's assessment so that the effect of this change can be evaluated.**

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Alaska plaice	BSAI	67,000	55,200	60,200	55,800

Other Flatfish

No changes in assessment methodology were implemented from last year's assessment. Survey and fishery data were updated with recent estimates. In recent years, starry flounder and rex sole have accounted for most of the "other flatfish" catch. Exploitation rates for these two species have been low (<5% during 1997 to 2012). The exploitation rates of butter sole have exceeded 14% in some years and catches exceeded survey biomass estimates in 2008. However, the assessment authors made the case that such estimates are an artifact of survey sampling. Other species in this group (Dover sole, Sakhalin sole, and English sole) occur at the edge of their distributions in the eastern Bering Sea. **The SSC recommends monitoring of survey biomass estimates (and confidence intervals) of these other flatfish species into the future.**

The assessment authors and Plan Team recommended continued management of Other Flatfish as Tier 5 based on species-specific estimates of M and biomass estimates. **The SSC supports the authors' and Plan Team's recommendations below (in metric tons) for OFL and ABC.**

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Other flatfish	BSAI	17,800	13,300	17,800	13,300

BSAI Rockfish

The authors made a significant effort to improve the POP, northern and rougheye stock assessment models. They re-estimated the ageing error matrix and conducted a sensitivity analysis on how the age and length plus groups affect the fit to various model components. SSC notes that a CIE review of rockfish assessments will be conducted at NMFS-AFSC in Juneau, April 9-11 providing for an independent evaluation of rockfish modeling and aid in future development of these models. The SSC looks forward to receiving the report from this review.

The SSC notes that MCMC methods are a class of algorithms for sampling from probability distributions based on constructing a Markov chain that has the desired distribution as its equilibrium distribution, e.g. approximate a target distribution. It is not a direct method to estimate the uncertainties of unknown parameters in the model. With the approximate posterior distribution by MCMC, the software can use either parametric or non-parametric methods to estimate the uncertainties of unknown parameters. Parametric methods are all based on the inverse of the information matrix of the likelihood of the final model and are based on the methods of optimization used. Each method will result in different variance covariance matrices but they are asymptotically the same. Most statistical software provides the

optimization method used in the estimation of the statistical model. For non-parametric methods, bootstrapping and jackknife are commonly used.

Pacific Ocean Perch (POP)

There were a number of changes to input data in this year's assessment including: 1) updated catch time series, 2) 2012 AI survey biomass estimate and length composition, 3) The 2009 and 2011 fishery age compositions and 2010 fishery length composition, and 4) biased fishery ages from 1977-1980 were removed from the model and replaced with fishery lengths. The model now incorporates a revised maturity curve that is fitted to two sets of new maturity data inside the model. The new curve estimates fish reaching maturity at a younger age than previously thought.

A series of models were run to evaluate how the age plus group affects fits to various model components and to derive the appropriate set of age bins. The author evaluated total likelihood and likelihood for the age compositions, and the standard deviation of normalized residuals for the age and length composition data. Based on this analysis, the plus group was increased from 25 to 40 years, which required updating the age-length conversion matrix and the aging error matrix. These changes improved overall model fit to the data although the model estimate of survey biomass still does not match the high 2010 and 2012 survey biomass estimates very well. Results also indicate that the model does not fit the plus age group very well and greatly under-estimates the 2010 and 2012 survey biomass. Further, based upon the MCMC integrations, the posterior distribution for M shows little overlap with the prior distribution, indicating that the prior distribution may constrain the estimate. The available data indicate that the estimate of M would be higher if a larger CV was used for the prior.

The survey biomass estimates in the Aleutian Islands and the Bering Sea slope in 2012 and 2010 were the highest since 1980. Estimated age 3+ biomass for 2013 is up substantially from the 2013 estimate projected a year ago and spawning biomass is projected to be 274,000 t in 2013 and to decline slightly to 258,000 t in 2014.

The projected OFL increased significantly since the last assessment as a result of: 1) the upward trend in survey biomass, 2) change in maturity curve, and 3) change in the plus age group. **The SSC endorses Plan Team and authors' recommendations below (in metric tons) for OFLS and area splits using maximum permissible ABC. Pacific ocean perch qualify for management under Tier 3 and spawning biomass for 2013 (274,000 t) is projected to exceed $B_{40\%}$, thereby placing POP in sub-tier "a" of Tier 3.**

Stock/ Assemblage		2013		2014	
	Area	OFL	ABC	OFL	ABC
Pacific ocean perch	EBS		8,130		7,680
	EAI		9,790		9,240
	CAI		6,980		6,590
	WAI		10,200		9,590
BSAI	Total	41,900	35,100	39,500	33,100

The SSC offers the following advice to assessment authors:

- Explore alternative selectivity patterns
- Evaluate alternative selectivity time periods
- Provide model sensitivity to Q and M
- Explore lack of fit to the plus group

- Fit to the maturity data should be evaluated for potential bias from excess data consisting of 100% and 0% maturity because the logistic model cannot predict 0 and 1. Using one data point in the two extremes is recommended in the modeling.
- Consider use of other parametric and non-parametric estimation of the uncertainties of unknown parameters such as bootstrapping and jackknife. This may result in different variance covariance matrices although asymptotically the same.

Northern Rockfish

New data in this year's assessment include: 1) updated catch time series, 2) 2012 AI survey biomass estimate and length composition, and 3) 2008, 2009 and 2011 fishery age compositions and 2010 fishery length composition. The maturity curve was also re-estimated based on recent data from the Aleutian Islands. There are also several changes to model structure that include a revised maturity curve fitted to two sets of new maturity data inside the model. The new curve estimates fish to be reaching 50% maturity at a younger age by nearly 4 years.

A model sensitivity analysis was conducted to evaluate how the age and length plus groups affect the fit to various model components. Based on this analysis, the age and length plus groups were expanded to 40 years and 38cm that represent a tradeoff between model parsimony and improved fits to the age composition data. Given changes in bins for size composition data, the age error matrix was recomputed to better account for aging error within the plus group. These changes greatly improved model performance, especially with respect to the age composition data.

Age 3+ biomass has been on an upward trend since 2002 and spawning biomass has been slowly increasing since 1977. **The SSC endorsed the Plan Team and authors' recommendations for setting the maximum permissible ABC and OFL for the Bering Sea/Aleutian Islands combined. This stock qualifies for management under Tier 3. Since female spawning biomass of 84,700 t exceeds $B_{40\%}$, sub-tier "a" is applicable, with maximum permissible $F_{ABC} = F_{40\%}$ and $FOFL = F_{35\%}$. This results in 2013 ABC and OFL of 9,850 t and 12,200 t, representing a 16% and 18% increases from the values specified last year. The 2014 ABC is 9,320 t and the 2014 OFL is 12,000 t, respectively.**

The SSC offers the following advice to assessment authors:

- Explore alternative selectivity patterns
- Evaluate alternative selectivity time periods
- Evaluate model sensitivity to Q and M
- Fit to the maturity data should be evaluated for potential bias from excess data consisting of 100% and 0% maturity because the logistic model cannot predict 0 and 1. Using one data point in the two extremes is recommended in the modeling.

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Northern rockfish	BSAI	12,200	9,850	12,000	9,320

Shortraker Rockfish

A simple surplus production model was used to model the shortraker rockfish population and the Kalman filter provided a method of statistically estimating the parameter values. The model is updated with the 2012 survey biomass and shortraker rockfish biomass is an estimated 16,400 t, which is a reduction of 1,100 t from the 2010 estimate.

Reliable estimates of biomass and natural mortality exist for shortraker rockfish, qualifying the species for management under Tier 5. **The SSC agrees with the Plan Team and author recommendations setting F_{ABC} at the maximum permissible level under Tier 5, which is 75 percent of M. The accepted value of M for this stock is 0.03, resulting in a $maxF_{ABC}$ value of 0.025.** The biomass estimate for 2013 is 16,400 t for shortraker rockfish.

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Shortraker rockfish	BSAI	493	370	493	370

The AI biomass has been slowly decreasing over the entire time period in this assessment. The SSC requests that authors provide discussion on the potential causes for this trend.

Blackspotted and Rougheye Rockfish Complex

This assessment includes rougheye rockfish (*Sebastes aleutianus*) and blackspotted rockfish (*Sebastes melanostictus*). Current information on these two species is not sufficient to support species-specific assessments. Since 2008, an age-structured model has been applied to the Aleutian Islands portion of the population whereas the EBS portion of the population are assessed with Tier 5 methods applied to survey biomass estimates.

Changes in input data in this year's assessment includes: 1) updated catch time series, 2) 2012 AI survey biomass estimate, 3) 2009 and 2011 fishery age compositions and 2010 fishery length composition, and 4) the 2010 survey age composition and 2012 survey length composition. A model sensitivity analysis was conducted to evaluate how the age and length plus groups affect the fit to various model components. Based on the analysis, the authors set the age for the plus group at 45 and recomputed the age error matrix to better account for aging error within the plus group.

The general trend in survey biomass is fit by the model indicating a gradual increase since 1999 to 13,751 t in 2010. Over this period, spawning biomass has increased from 5,382 t to 6,488 t in 2012, and the total biomass has increased from 15,109 t to 27,040 t. The increase in population size was seen in both the 2010 and 2012 assessments and is mostly due to the considerable model estimates of the 1998 and 1999 cohorts, which are increasing in age and size. These strong year classes are observed in both the survey data and in the recent harvest of immature fish, which suggests that increased abundance rather than a temporal shift in fishing selectivity is responsible for the increasing population trend. The estimated total biomass of the 1998-1999 cohorts is larger in the 2012 assessment, and currently comprises 34% of the estimated 2013 total biomass. The increase in ABC for 2012 is based largely on the estimated increase in abundance of the 1998-1999 cohorts.

The Plan Team had considerable discussion on whether it was appropriate to include model estimates of these two year classes. The Plan Team recommended that these year classes should be excluded from computation of B40% because B40% is based on spawning biomass for an equilibrium stock and the 1998 and 1999 year classes have not reached the age of 50% maturity. The Team believes that it is inappropriate to include them in the spawning biomass reference point when they are not yet part of the spawning biomass.

The SSC does not support Plan Team recommendations to exclude estimated recruitment of the 1998-2009 time period for calculation of OFLs and ABCs. Including the 1998-2009 recruits results

in recalculation of ABC and OFLs. For the Aleutian Islands, this stock qualifies for management under Tier 3b because the projected female spawning biomass of 6,848 t is less than $B_{40\%}$ (10,502 t).

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Blackspotted/ Rougheye	EBS/EAI		169		189
	CAI/WAI		209		240
BSAI	Total	462	378	524	429

The SSC offers the following advice to assessment authors:

- Evaluate priors on survey catchability and natural mortality.
- Explore alternative selectivity patterns
- Evaluate alternative selectivity time periods
- Evaluate/compare mean vs median recruitment and which time period should be used for estimating fishery bench marks and provide rationale
- A t_0=-4.7 may not be realistic and t_0=0 should be evaluated; this may improve the validity of other parameters, e.g., K, M and q, because they are highly correlated.

Other Rockfish Complex

This assessment incorporates updated catch and fishery lengths, biomass estimates from the 2012 AI trawl survey and the 2012 EBS slope survey, as well as CPUE and lengths from the 2012 AI trawl survey. There were no changes in the assessment methodology and stock biomass is similar to the 2010 assessment.

The SSC concurs with the Tier 5 approach recommended by the Plan Team and author of setting F_{ABC} at the maximum allowable under Tier 5 ($F_{ABC} = 0.75M$) and for setting OFL. Multiplying these rates by the best biomass estimates of shortspine thornyhead and other rockfish species in the "other rockfish" complex yields 2013 and 2014 ABCs of 686 t in the EBS and 473 t in the AI. This assessment uses a three survey weighted average to estimate biomass using similar methodology used in the Gulf of Alaska rockfish assessments. **The SSC agrees with Plan Team and author recommendation that OFL be set for the entire BSAI area.**

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Other rockfish	EBS		686		686
	AI		473		473
	Total	1,540	1,160	1,540	1,160

BSAI Sharks

The SSC reviewed a full assessment of the BSAI sharks. **The SSC accepts the author's and Plan Team's recommended 2013 Tier designations, ABC and OFL for BSAI sharks. The SSC also accepts the author's and Plan Team's projected 2014 ABC and OFL for this complex.**

The SSC continues to encourage authors to pursue studies to collect life history information for sharks and to identify methods for estimating abundance of species that are rarely captured in standard surveys. The SSC remains concerned that the LL RPNs for Pacific sleeper shark stock remain low.

The SSC encourages the authors to explore the possibility of advancing Pacific sleeper shark to a Tier 5 status. To accomplish this, the authors need to understand the absence of mature Pacific sleeper sharks in the surveys and fishery observations.

The authors developed a stock structure template for the BSAI shark complex. This assessment reveals the difficulty of evaluating the need for additional spatial or temporal management when data are limited. The complex includes a mix of species with different life history characteristics. For example, while knowledge of key life history parameters for Pacific sleeper sharks is lacking, the authors expect that this species has a long generation time and is slow growing. However, salmon sharks have a much shorter generation time compared to the other sharks in the complex. Little information is available regarding reproductive behavior, seasonality, and critical habitat (i.e., nursery areas) in the GOA or BSAI. There are no known growth differences among regions in the GOA or BSAI, but data are sparse in the BSAI region. No information is available regarding spawning movements although some seasonal or large-scale movement patterns have been elucidated for salmon sharks and spiny dogfish. Genetic studies have not yet evaluated whether genetic stock structure exists within Alaska.

The authors concluded that, because sharks are a non-target species complex with bycatch-only status, there is no obvious conservation need to apportion catch to areas smaller than the FMP level. The SSC agrees with this conclusion. The SSC places a high priority on continued efforts to address the data limitations revealed by the stock structure evaluation including: efforts to address inadequate catch estimation, unreliable biomass estimates, lack of size frequency collections, and a general lack of life history information for Pacific sleeper sharks throughout Alaska and also for dogfish and salmon sharks in the BSAI region.

The SSC supports the following ABC and OFL recommendations for 2013 and 2014 (in metric tons):

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Shark	BSAI	1,360	1,020	1,360	1,020

BSAI Skates

The SSC concurs with the author and the Plan Team that the Alaska skate stock should be managed as a Tier 3a stock and the other skates complex as a Tier 5 stock. The stock assessment model has been substantially modified with updated data and changes to the growth function, selectivity functions, spawner-recruit function, maximum age, and length bins. Four candidate models were evaluated following Plan Team and SSC suggestions at the September/October meetings. **The SSC agrees with the author and Plan Team that Model 3 is the best model for Alaska skates.** This model uses only the most recent length-at-age data and estimates growth parameters within the model. The following specifications (in metric tons) resulted:

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Skate	BSAI	45,800	38,800	44,100	37,300

As a research possibility, it might be fruitful to explore other measurement variables for size, e.g., IOW (inter-orbital width), in field data collection. It may be easier to measure and have smaller measurement error, particularly for large skates.

BSAI Sculpins

The author presented a new estimate of OFL and ABC for 2013 and 2014. The assessment incorporated new biomass estimates from the 2011 and 2012 Bering Sea shelf survey, the 2012 Bering Sea slope survey and the 2012 Aleutian Islands survey, in addition to partial 2012 catch and retention data. Catch data from 2003-2012 was updated as a result of changes to the Catch Accounting System. Length compositions from the 2011 and 2012 Bering Sea shelf survey were also added.

The SSC agrees with the BSAI Plan Team recommendations and supports the estimate of OFLs and ABCs for under Tier 5, as shown in the table below (metric tons).

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Sculpin	BSAI	56,400	42,300	56,400	42,300

BSAI Squid

This assessment included updated catch from 2011 and partial 2012 data, and added 2012 EBS slope survey biomass estimates and AI survey estimates. The author also included additional discussion of patterns in length compositions, and additional data and analyses to improve the understanding of squid biology and interaction with fisheries.

The SSC agrees with the continuation of Tier 6 management for this complex, with OFL set equal to the average catch from 1978-1995 and ABC set equal 75% of OFL, as shown in the table below in metric tons.

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Squids	BSAI	2,620	1,970	2,620	1,970

BSAI Octopus

The authors recommended setting harvest specifications using a predation-based estimate of octopus mortality from Pacific cod diet data from the 1984-2008 surveys, as was originally developed for the 2011 BSAI octopus assessment. The Plan Team continued to support the use of this approach for the development of 2013-2014 harvest specifications. The current assessment presented an expanded discussion of the methodology and its associated uncertainty. Survey data has also been updated in this assessment, as well as incidental catch rates.

The SSC agrees with the BSAI Plan Team recommendations and supports the estimate of OFLs and ABCs under a modified-Tier 6, as shown in the table below (metric tons).

Stock/ Assemblage	Area	2013 OFL	2013 ABC	2014 OFL	2014 ABC
Octopus	BSAI	3,450	2,590	3,450	2,590

The giant Pacific octopus is the most abundant on the Bering Sea shelf survey and commercial catch of at least seven octopus species found in the BSAI. The SSC encourages the exploration of aging techniques for this octopus species, which would help to construct a growth curve. This will help to determine a more reasonable natural mortality, and with the potential for a more reliable population estimate, a Tier 5 assessment could be considered in the future. The SSC notes the difference between the GOA and BSAI octopus stock assessment methodologies and tiers.