DRAFT REPORT
of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
December 9th – 11th, 2013

The SSC met from December 9th through December 11th 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*	Chris Anderson *University of Washington*
Alison Dauble *Oregon Dept. of Fish and Wildlife*	Sherri Dressel *Alaska Department of Fish and Game*	Anne Hollowed *NOAA Fisheries—AFSC*
George Hunt *University of Washington*	Gordon Kruse *University of Alaska Fairbanks*	Seth Macinko *University of Rhode Island*
Franz Mueter *University of Alaska Fairbanks*	Terry Quinn *University of Alaska Fairbanks*	Kate Reedy *Idaho State University Pocatello*
Matt Reimer *University of Alaska Anchorage*	Farron Wallace *NOAA Fisheries—AFSC*	

Members absent were:

Jennifer Burns *University of Alaska Anchorage*	Steve Martell *Intl. Pacific Halibut Commission*	Lew Queirolo *NOAA Fisheries—Alaska Region*

C-2 Initial review of Round Island Transit

The initial review of the EA/RIR/IRFA was presented by Steve MacLean (NPFMC). There was no public testimony. The proposed action would establish transit corridors through the walrus protection areas at Round Island and Cape Peirce in northern Bristol Bay to allow vessels with Federal Fisheries Permits (FFPs) to transit through the areas while participating in herring and salmon fisheries, as well as vessels that deliver yellowfin sole to processors in Togiak or in the Hagemeister roadstead. Previous Council action, the implementation of GOA FMP Amendment 83 in 2011, prevents vessels from surrendering their FFP and reapplying for it within a three year period. As a result, vessels that temporarily gave up their FFP to transit through these protection areas during prosecution of these fisheries are now at risk of either being out of compliance with federal regulations, or losing their FFPs. The proposed action is intended to remedy these unintended consequences, while continuing to maintain suitable protection for walruses in northern Bristol Bay.

Overall, this is an improved and responsive revision from the preliminary version seen by the SSC in April 2013. The main SSC comment regarding the preliminary draft was that the Council had not made some key decisions regarding the number, size, and shape of the potential transit corridors. This has now been remedied and, in addition to the no-action alternative, the analysis presents two alternatives. The first creates a transit corridor of variable widths, depending on which of three options is selected, through the Round Island walrus protection area. The second alternative creates a transit corridor through the Cape Peirce walrus protection area.

The SSC recommends that this draft be released for public review following the correction of a number of issues. The draft would benefit greatly from a careful proofread and edit. In several instances, errors are perpetuated throughout the draft (see p.69 and p.70; repeated from p. 10). Also, reference to

"*the Magnuson-Stevens Fishery and Conservation Act*" and the use of "bycatch" applied to halibut need to be fixed. Additional editorial matters will be communicated to the author by the SSC reviewers.

The SSC also has several suggestions for additional information that would be helpful to include, as time permits. In general, the information presented in the introduction is comprehensive. Additional information on how these specific alternatives were developed would be helpful. Information that would be important to add include: rationale for the selection of dates for the seasonal opening selected and an explanation of how the options for the different widths under Alternative 1 were developed and why no options were developed for Alternative 2. The SSC appreciates the detail of the fishery descriptions presented, particularly for the herring and the yellowfin sole fisheries. Clarification of the relevance of recreational salmon fishing to the action is needed.

The information in the EA (Section 3) is also very thorough, especially with respect to the section on marine mammals. The revised draft provides greater clarity to the issue of potential disturbance of walrus under the alternatives. Further discussion and support of the assumption that groundfish harvests will not change as a result of any of the alternatives is needed, though it should be noted that the SSC does not necessarily disagree with the conclusions presented.

The economic analysis contained in the RIR/IRFA is limited, but appropriate to the complexity of the economic arguments for and against the action alternatives. Section 4.6 on Affected Communities would benefit from a more consistent presentation of community information and a more specific characterization of community use of walrus and these walrus islands. As it stands, it is difficult to assess whether increased vessel traffic could affect local communities. Further, the subsistence numbers of marine mammals appear low, and should better reflect the methodologies and numbers of villages used to calculate the numbers.

C-4 Initial review of Grenadier management

Scott Miller (NMFS-AKR) presented the Grenadier Management amendment package. The Council will take final action on this proposed amendment in February 2014 and, if necessary, the Council will establish harvest specifications for this species complex for the 2015 fishery. Merrick Burden (MCA), Chad See (FLC), and Jon Warrenchuk (Oceana) public testimony.

The SSC reviewed the document and concluded that it is very well done and ready for release for public review. However, the SSC identified several areas where the document could be improved and requests that staff strive to make these improvements prior to release. If this cannot be accomplished owing to time constraints, the SSC requests that staff strive to include the information in the document for consideration for final action. As a general comment, the SSC requests that the authors define the term "likely" early on in the document.

The EA would benefit from the following additions.

1. It would be useful to develop a food web for the slope regions as part of the ecosystem concerns chapter. The grenadier section of the 2012 SAFE chapter includes descriptions of grenadier prey and a stable isotope analysis of giant and Pacific grenadiers was provided to the author.
2. The 2012 appendix revealed strong spatial partitioning of the sexes by depth. The SSC requests the author to estimate the sex ratio for survey biomass estimates in the assessment. The SSC requests that, if possible, the document should provide trawl and longline survey biomass estimates by sex and depth. With respect to depth, the SSC requests that the document includes a short discussion of the potential uncertainty associated with the expansion method used to estimate grenadier biomass at deeper depths in the AI.
3. For the same reason as noted in 2 above, the SSC requests that the author estimates the sex ratio for the catch estimates in the assessment where possible. As a default, the SSC requests that the

document contains an analysis of grenadier bycatch by depth. In making this and the previous comment, the SSC is striving toward a clearer understanding of the portion of the stock that is represented in the catch and the portion of the stock biomass that is assessed.

4. It would be helpful to add the diagram from the National Standard 1 Guidelines that depicts the concepts of "in the fishery" versus "Ecosystem Component" to the introductory section of the document.
5. The SSC notes that the decision tree in Figure 2-1 does not accurately portray potential actions by the Council. In some cases decisions are clearly binary but in most cases the decisions faced by the Council are probabilistic in nature where the analysts are weighing the costs and benefits of the action. The decision tree should be modified to reflect this reality; in particular the SSC is referring to the decision point about the likelihood of a stock becoming subject to overfishing or overfished according to the best available information, in the absence of conservation and management measures.
6. The SSC requests that the information regarding the nutritional content and moisture content of grenadiers is placed in context with other marketable species in a tabular format. Two publications have been provided to the author; there may be others.
7. The SSC requests that the document provides a paragraph to discuss the steps that would have to occur to transition a species from the EC category to "In the Fishery" if the Council chose to place grenadiers in the EC category in 2014.
8. The presentation by staff indicated that, if the Council elected to manage grenadiers under the EC category, they might consider managing grenadiers as part of the forage fish category. **The SSC does not recommend this alternative. The life history of grenadiers (long life span, late maturation, slow growth rate) and their trophic position in the food web are not similar to species included in the forage fish category.**

Regarding the RIR and IRFA the SSC requested the following additions to the document.

1. More information on fisheries for grenadiers world-wide. In particular information on Russian and Japanese grenadier fisheries would be a useful addition.
2. Some treatment of the feasibility of processing grenadiers as alternative product forms, such as meal. For instance, the SSC understands that the Japanese may use grenadiers to produce a gelatin product and public testimony suggested that the Russians may produce other forms, such as fish cakes.
3. With respect to National Standard 9, the document should contrast the rationale used to establish the forage fish management category with the rationale for management of grenadiers. In the case of forage fish, management by MRAs was consistent with the Council's goal of banning a target fishery for forage fish for ecological reasons.

C-5 Discussion paper on EGOA skate fishery and GOA octopus fishery

Diana Stram (NPFMC) presented a discussion paper on the potential for a directed fishery on skates in the EGOA and octopus in the GOA. Julie Bonney (AGDB) provided public testimony.

The SSC thanks the analyst for her work describing the potential and considerations for directed fisheries for these two species complexes. The paper provided the available stock assessment and management information for each complex, as well as a potential process by which the Council could consider recommending a directed octopus fishery in the GOA. The SSC found the discussion paper provided helpful background to inform the reader of what is known what knowledge is still lacking regarding the stock status of skates and octopus in the Gulf of Alaska. The author mentioned numerous biological, assessment and management concerns for skates and octopus that are important to consider before a fishery is prosecuted on these stocks. With the large number of species discussed, however, the concerns were hard to track throughout the paper. **The SSC suggests that the paper be reorganized by stock**

complex and that an executive summary be added to lay out the key points and potential concerns with creating a fishery.

Information that would be helpful to add or discuss in more detail includes:

- Longnose skate catch exceeded the EGOA ABC in 2013, so there is currently no TAC available for a directed fishery.
- Gear selectivity is an important issue that needs better description. As shown in state fisheries, it may not be possible to target big skate in the EGOA without high incidental catch of longnose skate.
- Include the stock assessment author's discussion of the issues related to the potential for a directed fishery for skates, as was brought forward for octopus.
- A graph with skate survey biomass in tons for each species by management area.
- Estimates of incidental catch from observer data show substantial interannual variation in octopus abundance, which could potentially result in large annual fluctuations in harvest.
- A discussion of the limitations of the bottom trawl survey for accurately assessing octopus biomass, including: variability of octopus survey biomass estimates, differences between the habitats swept by the survey versus where octopus are common (rocky areas and shallow areas), and the potential for different species compositions between the survey and the fishery due to size-dependent gear selectivity.

Despite the limitations of trawl survey gear for assessing octopus, **the SSC supports the Plan Team's recommendation of area apportionments for octopus harvest based on average survey biomass estimates from the three most recent surveys, if a fishery were to be instituted by the Council.** The most recent 3-year survey biomass percentages by area are: 35% in the Western, 63% in the Central, and 2% in the Eastern Gulf of Alaska.

The SSC recommends that a number of items be considered by the Council, and if possible, accomplished before instituting a directed fishery for these complexes. These include:

- Improve biomass assessments and survey techniques for octopus, potentially through an experimental fishery
- Consider whether appropriate size restrictions (particularly a minimum size limit for octopus to limit the fishery to the dominant species in the complex, Giant Pacific octopus (*Enteroctopus dofleini*) would be a useful tool for management,
- Assign a separate species code for Giant Pacific octopus to improve species-specific catch accounting,
- Develop identification guides for octopus species,
- Investigate discard mortality for both skates and octopus,
- Develop a better understanding of species vulnerability for individual species within the complexes (fecundity, age at maturity, growth rate, intrinsic rates of population growth, natural mortality rates, population structure, movement patterns),
- Consider a 100% observer program if a directed fishery were implemented,
- Research migration to determine if species in state and federal waters are part of the same population and to understand temporal and spatial movement patterns,
- Consider additional potential data sources for biomass assessment for skates and octopus in state waters,
- Develop avoidance or escapement measures for immature skates, and
- Resolve the catch accounting issue in state areas 649 and 659 (see SSC comments in C-6 on this issue).

C-6 and C-7 GOA and BSAI specifications and SAFE report
The SSC received a presentation by Grant Thompson (NMFS-AFSC) on Plan Team recommendations for BSAI groundfish OFL and ABC. Jim Ianelli (NMFS-AFSC) presented the BSAI pollock stock assessment. GOA Plan Team recommendations were summarized by Diana Stram (NPFMC) and Sandra Lowe (NMFS-AFSC).

General SAFE Comments
The SSC reviewed the SAFE chapters and 2012 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 Western GOA Pacific Ocean Perch, no stocks were subject to overfishing in 2012. 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.**

The SSC supports the GOA Plan Team recommendation that there should be an investigation into the use of different survey averaging methods, particularly with respect to estimates for species complexes. We request that both Plan Teams note when area ABCs have been exceeded in the prior year.

For assessments involving age-structured models, this year's CIE review of BSAI and GOA rockfish assessments included three main recommendations for future research: Authors should consider: (1) development of alternative survey estimators, (2) evaluating selectivity and fits to the plus group, and (3) re-evaluating natural mortality rate. The SSC recommends that authors address the CIE review during full assessment updates scheduled in 2014.

The SSC noted that different stock assessment scientists often use different methods for catch estimation to estimate catches to be taken between late October and December 31, 2013, as well as catches to be taken during 2014 and 2015 for use in the catch specification process. The SSC understands that Dana Hanselman will compile the various methods in use. The SSC looks forward to Plan Team advice on the merits of the various alternatives.

During public testimony, it was proposed that assessment authors should consider projecting the reference points for the future two years (e.g., 2014 and 2015) on the phase diagrams. It was suggested that this forecast would be useful to the public. The SSC agrees. The SSC appreciated this suggestion and asks the assessment authors to do so in the next assessment.

The SSC supports the GOA Plan Team's comment that for thornyheads and a number of other species it is critically important to the assessments that the GOA trawl surveys continue, that a full suite of stations are included in future trawl surveys (the 2013 survey was reduced by one-third), and that they extend to 1000 m to more completely cover their habitat.

Table 1. SSC recommendations for Gulf of Alaska groundfish OFLs and ABCs for 2014 and 2015, shown with 2013 OFL, ABC, TAC, and catch amounts in metric tons (2013 catches through November 9th, 2013 from AKR catch accounting system). Recommendations are marked in **bold** where SSC recommendations differ from those of the GOA Plan Team.

		2013				2014		2015	
Species	**Area**	**OFL**	**ABC**	**TAC**	**Catch**	**OFL**	**ABC**	**OFL**	**ABC**
Pollock	W (61)		28,072	28,072	7,700		36,070		40,254
	C (62)		51,443	51,443	52,863		81,784		91,272
	C (63)		27,372	27,372	29,743		39,756		44,367
	WYAK		3,385	3,385	2,940		4,741		5,291
	Subtotal	150,817	110,272	110,272	93,246	211,998	162,351	248,384	181,184
	EYAK/SEO	14,366	10,774	10,774	-	16,833	12,625	16,833	12,625
	Total	165,183	121,046	121,046	93,246	228,831	174,976	265,217	193,809
Pacific Cod	W		28,280	21,210	17,179		32,745		31,117
	C		49,288	36,966	29,044		53,100		50,460
	E		3,232	2,424	419		2,655		2,523
	Total	97,200	80,800	60,600	46,642	107,300	88,500	101,800	84,100
Sablefish	W		1,750	1,750	1,383		1,480		1,338
	C		5,540	5,540	5,118		4,681		4,230
	WYAK		2,030	2,030	2,082		1,716		1,551
	SEO		3,190	3,190	3,242		2,695		2,435
	Total	14,780	12,510	12,510	11,825	12,500	10,572	11,300	9,554
Shallow-Water Flatfish	W		19,489	13,250	154		20,376		18,728
	C		20,168	18,000	5,068		17,813		16,372
	WYAK		4,647	4,647	1		2,039		1,875
	EYAK/SEO		1,180	1,180	2		577		530
	Total	55,680	45,484	37,077	5,225	50,007	40,805	46,207	37,505
Deep-Water Flatfish	W		176	176	21		302		300
	C		2,308	2,308	196		3,727		3,680
	WYAK		1,581	1,581	4		5,532		5,462
	EYAK/SEO		1,061	1,061	4		3,911		3,861
	Total	6,834	5,126	5,126	225	16,159	13,472	15,955	13,303
Rex Sole	W		1,300	1,300	98		1,270		1,245
	C		6,376	6,376	3,475		6,231		6,106
	WYAK		832	832	-		813		796
	EYAK/SEO		1,052	1,052	-		1,027		1,008
	Total	12,492	9,560	9,560	3,573	12,207	9,341	11,963	9,155
Arrowtooth Flounder	W		27,181	14,500	836		31,142		30,217
	C		141,527	75,000	18,632		115,612		112,178
	WYAK		20,917	6,900	52		37,232		36,126
	EYAK/SEO		20,826	6,900	76		11,372		11,035
	Total	247,196	210,451	103,300	19,596	229,248	195,358	222,160	189,556
Flathead Sole	W		15,729	8,650	582		12,730		12,661
	C		26,563	15,400	2,045		24,805		24,670
	WYAK		4,686	4,686	-		3,525		3,506
	EYAK/SEO		1,760	1,760	-		171		170
	Total	61,036	48,738	30,496	2,627	50,664	41,231	50,376	41,007

Table 1. continued.

		2013				2014		2015	
Species	**Area**	**OFL**	**ABC**	**TAC**	**Catch**	**OFL**	**ABC**	**OFL**	**ABC**
Pacific	W		2,040	2,040	445		**2,399**		**2,456**
Ocean	C		10,926	10,926	10,908		**12,855**		**13,158**
Perch	WYAK		1,641	1,641	1,537		**1,931**		**1,976**
	W/C/WYAK	16,838			12,890	**19,864**		**20,334**	
	SEO	2,081	1,805	1,805	-	**2,455**	**2,124**	**2,515**	**2,174**
	E(subtotal)				1,537				
	Total	18,919	16,412	16,412	12,890	22,319	19,309	22,849	19,764
Northern	W		2,008	2,008	2,169		1,305		1,229
Rockfish	C		3,122	3,122	2,521		4,017		3,781
	E		-	-	-		-		-
	Total	6,124	5,130	5,130	4,690	6,349	5,322	5,978	5,010
	W		104	104	40		92		92
Shortraker	C		452	452	477		397		397
Rockfish	E		525	525	267		834		834
	Total	1,441	1,081	1,081	784	1,764	1,323	1,764	1,323
Dusky	W		377	377	216		317		295
Rockfish	C		3,533	3,533	2,918		3,584		3,318
	WYAK		495	495	3		1,384		1,277
	EYAK/SEO		295	295	8		201		191
	Total	5,746	4,700	4,700	3,145	6,708	5,486	6,213	5,081
Rougheye and	W		81	81	20		82		83
Blackspotted	C		856	856	415		864		877
Rockfish	E		295	295	200		298		302
	Total	1,482	1,232	1,232	635	1,497	1,244	1,518	1,262
Demersal shelf rockfish	Total	487	303	303	217	438	274	438	274
	W		150	150	298		235		235
Thornyhead	C		766	766	530		875		875
Rockfish	E		749	749	308		731		731
	Total	2,220	1,665	1,665	1,136	2,454	1,841	2,454	1,841
Other	W		44	44	196				
Rockfish	C		606	606	462				
	W/C						1,031		1,031
(Other slope)	WYAK		230	230	70		580		580
	EYAK/SEO		3,165	200	62		2,470		2,470
	Total	5,305	4,045	1,080	790	5,347	4,081	5,347	4,081
Atka mackerel	Total	6,200	4,700	2,000	1,244	6,200	4,700	6,200	4,700
Big	W		469	469	111		589		589
Skate	C		1,793	1,793	2,147		1,532		1,532
	E		1,505	1,505	71		1,641		1,641
	Total	5,023	3,767	3,767	2,329	5,016	3,762	5,016	3,762
Longnose	W		70	70	79		107		107
Skate	C		1,879	1,879	1,176		1,935		1,935
	E		676	676	395		834		834
	Total	3,500	2,625	2,625	1,650	3,835	2,876	3,835	2,876
Other Skates	Total	2,706	2,030	2,030	1,611	2,652	1,989	2,652	1,989
Sculpins	GOA-wide	7,614	5,884	5,884	1,433	7,448	5,569	7,448	5,569
Sharks	GOA-wide	8,037	6,028	6,028	2,083	7,986	5,989	7,986	5,989
Squids	GOA-wide	1,530	1,148	1,148	322	1,530	1,148	1,530	1,148
Octopuses	GOA-wide	1,941	1,455	1,455	315	2,009	1,507	2,009	1,507
Total		738,676	595,920	436,255	218,233	790,468	640,675	808,215	644,165

Sources: 2013 OFLs, ABCs, and TACs are from harvest specifications adopted by the Council in December 2012; 2013 catches through November 9, 2013 from AKR Catch Accounting.

Table 2. SSC recommendations for BSAI Groundfish OFLs and ABCs for 2014 and 2015 are shown with the 2013 OFL, ABC, TAC, and Catch amounts in metric tons (2013 catches through November 9th from AKR Catch Accounting include CDQ). None of the SSC recommendations differed from those of the BSAI Plan Team.

		2013				2014		2015	
Species	**Area**	**OFL**	**ABC**	**TAC**	**Catch**	**OFL**	**ABC**	**OFL**	**ABC**
Pollock	EBS	2,550,000	1,375,000	1,247,000	1,267,963	2,795,000	1,369,000	2,693,000	1,258,000
	AI	45,600	37,300	19,000	2,964	42,811	35,048	47,713	39,412
	Bogoslof	13,400	10,100	100	57	13,413	10,059	13,413	10,059
Pacific cod	BSAI	359,000	307,000	260,000	221,396	n/a	n/a	n/a	n/a
	BS	n/a	n/a	n/a	212,676	299,000	255,000	319,000	272,000
	AI	n/a	n/a	n/a	8,720	20,100	15,100	20,100	15,100
Sablefish	BS	1,870	1,580	1,580	640	1,584	1,339	1,432	1,210
	AI	2,530	2,140	2,140	1,090	2,141	1,811	1,936	1,636
Yellowfin sole	BSAI	220,000	206,000	198,000	156,302	259,700	239,800	268,900	248,300
Greenland turbot	BSAI	2,540	2,060	2,060	1,747	2,647	2,124	3,864	3,173
	BS	n/a	1,610	1,610	1,437	n/a	1,659	n/a	2,478
	AI	n/a	450	450	310	n/a	465	n/a	695
Arrowtooth flounder	BSAI	186,000	152,000	25,000	20,158	125,642	106,599	125,025	106,089
Kamchatka flounder	BSAI	16,300	12,200	10,000	7,794	8,270	7,100	8,500	7,300
Northern rock sole	BSAI	241,000	214,000	92,380	59,040	228,700	203,800	213,310	190,100
Flathead sole	BSAI	81,500	67,900	22,699	16,713	79,633	66,293	77,023	64,127
Alaska plaice	BSAI	67,000	55,200	20,000	23,312	66,800	55,100	66,300	54,700
Other flatfish	BSAI	17,800	13,300	3,500	1,516	16,700	12,400	16,700	12,400
Pacific ocean perch	BSAI	41,900	35,100	35,100	28,049	39,585	33,122	37,817	31,641
	BS	n/a	8,130	8,130	1,707	n/a	7,684	n/a	7,340
	EAI	n/a	9,790	9,790	9,530	n/a	9,246	n/a	8,833
	CAI	n/a	6,980	6,980	6,747	n/a	6,594	n/a	6,299
	WAI	n/a	10,200	10,200	10,065	n/a	9,598	n/a	9,169
Northern rockfish	BSAI	12,200	9,850	3,000	1,994	12,077	9,761	11,943	9,652
Blackspotted/Rougheye rockfishes	BSAI	462	378	378	341	505	416	580	478
	EBS/EAI	n/a	169	169	185	n/a	177	n/a	201
	CAI/WAI	n/a	209	209	156	n/a	239	n/a	277
Shortraker rockfish	BSAI	493	370	370	420	493	370	493	370
Other rockfish	BSAI	1,540	1,159	873	851	1,550	1,163	1,550	1,163
	BS	n/a	686	400	181	n/a	690	n/a	690
	AI	n/a	473	473	670	n/a	473	n/a	473
Atka mackerel	BSAI	57,700	50,000	25,920	23,180	74,492	64,131	74,898	64,477
	EAI/BS	n/a	16,900	16,900	15,776	n/a	21,652	n/a	21,769
	CAI	n/a	16,000	7,520	7,284	n/a	20,574	n/a	20,685
	WAI	n/a	17,100	1,500	120	n/a	21,905	n/a	22,023
Skates	BSAI	45,800	38,800	24,000	24,928	41,849	35,383	39,746	33,545
Sculpins	BSAI	56,400	42,300	5,600	5,547	56,424	42,318	56,424	42,318
Sharks	BSAI	1,360	1,020	100	85	1,363	1,022	1,363	1,022
Squids	BSAI	2,620	1,970	700	298	2,624	1,970	2,624	1,970
Octopuses	BSAI	3,450	2,590	500	195	3,450	2,590	3,450	2,590
Total	BSAI	4,028,465	2,639,317	2,000,000	1,866,580	4,196,553	2,572,819	4,107,104	2,472,832

Final 2013 OFLs, ABCs, and TACs from 2013-2014 final harvest specifications, as revised; total catch updated through November 9, 2013.

GOA – BSAI Sablefish

The 2013 sablefish stock assessment model was updated to include several new sources of data including: relative abundance and length data from the 2013 longline survey, relative abundance and length data from the 2012 longline and trawl fisheries, age data from the 2012 longline survey and 2012 fixed gear fishery, abundance and length data from the 2013 Gulf of Alaska trawl survey, updated 2012 catch, and projected 2013 catch. There were no model changes.

Several sources of information showed declining sablefish abundance and a sustained period of low recruitment. Stock projections show that the decline in abundance will continue through 2018. The 1977 and 2000 year classes were above average and have contributed to spawning biomass in the past. The 2008 year class
appears to be slightly above average.

The SSC recommends that this stock be managed under Tier 3 harvest rules. Projected female spawning biomass (combined areas) for 2014 is 91,212 t (86% of $B_{40\%}$), placing sablefish in Tier 3b. **The SSC supports the author's recommendation to use the maximum permissible value of F_{ABC} under Tier 3b (0.080), which translates into a 2014 ABC (combined areas) of 13,722 t. The OFL fishing mortality rate is 0.095, which translates into a 2014 OFL (combined areas) of 16,225 t.** Model projections indicate that this stock is not subject to overfishing, overfished, or approaching an overfished condition.

The SSC reviewed the recommended alteration to the usual algorithm of spatial apportionment. The SSC approves of the alternative apportionment for next year. However, the SSC is concerned about removing a data point (2013) without strong justification. The SSC recommends reexamining the method for spatially allocating the sablefish ABC in the next year. To the extent practicable, the SSC requests that the authors should try to include preliminary results of the spatial MSE in the 2014 assessment.

The SSC reiterates our concern that the current assessment model exhibits a strong retrospective pattern and we encourage further exploration of the factors underlying the slow response of the model to shifts in stock status.

Sablefish GOA

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Sablefish	W		1,480		1,338
	C		4,681		4,230
	WYAK		1,716		1,551
	SEO		2,695		2,435
	Total	12,500	10,572	11,300	9,554

Sablefish BSAI

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Sablefish	BS	1,584	1,339	1,432	1,210
	AI	2,141	1,811	1,936	1,636

C-6 GOA SAFE and Harvest Specifications for 2014/15

GOA Walleye Pollock

Public testimony was provided by Julie Bonney (Alaska Groundfish Data Bank), who supported the recommended increase in the walleye pollock quota and pointed out some of the conservative elements of the assessment, which include fixing survey catchability at 1 and adopting the long-established author-recommended buffer. She also supported the EFP work on a salmon excluder device.

For this assessment, last year's accepted model was updated with 2012 total catch and catch-at-age data from the fishery, 2013 acoustic survey biomass and age composition, 2013 trawl survey biomass and length composition, 2012 ADFG trawl survey age composition, and 2013 ADFG trawl survey biomass. In addition, a new assessment model configuration implementing three changes recommended by the July 2012 CIE review was presented. These changes included 1) removing two years of Biosonics acoustic survey time series (1992 and 1993) that were based on a different methodology (higher noise threshold), 2) setting the CVs for the Biosonics acoustic survey estimates equal to the nominal value (0.2) of later acoustic surveys, and 3) removing the ADFG survey length data and increasing the input sample sizes for the ADFG survey age data. A third model based on the new configuration but with 2013 recruitment (2012 year class) set to the average value for yield projections was also presented.

The author and Plan Team recommended the new model configuration with the 2013 recruitment of age-1 estimated in the model, rather than replacing it with the mean. The SSC notes that using the most recent recruitment estimate may not be consistent with recommendations by the stock recruitment working group, which includes specific criteria for how many years of recruitment should be excluded. The approach here also differs from, for example, that used in the GOA Pacific cod assessment, which fixed recruitments for the four most recent years (2010-2013) at the long-term mean (see below). However, as noted by the author and Plan Team, the strong 2012 pollock year class has been observed in three independent surveys, providing a good rationale for including it in the model. Although the SSC had some concern with this approach because previous year-classes that initially appeared strong did not always materialize, **the SSC concurs with the Plan Team to use this model for specifications**.

Based on the preferred model, the pollock stock in the Gulf of Alaska appears to be well above $B_{40\%}$ and increasing. The 2013 acoustic survey biomass was the largest since 1985 and 2.7 times larger than the 2012 estimate. However, while the NMFS bottom trawl survey resulted in the highest biomass in the time series, up 43% from the 2011 survey, the ADFG survey estimate decreased 40% from the 2012 survey. This may be related to the much larger proportion of older fish in the nearshore survey and the model estimate of survey biomass is consistent with observed trends, given the uncertainty in the data. **The spawning biomass is estimated to be 42.5% of the unfished biomass, placing the stock in Tier 3a, and there is a negligible probability that the stock will drop below the $B_{20\%}$ threshold in the next 5 years.** Projections suggest that biomass will remain stable or decrease gradually to 2015, and then increase in subsequent years.

The SSC concurs with the Plan Team and authors to reduce the maximum permissible ABC under Tier 3a based on the "constant buffer" approach that has been standard practice for this stock for over a decade. The resulting ABCs and OFLs for 2014 and 2015, after deductions for the Prince William Sound GHL (2.5%), are summarized in the table below. The SSC agrees with the Plan Team recommendation to account for EFP catches in the projections to determine an adjusted ABC. The recommended ABC reflects a considerable increase over last year's projections due to high survey biomasses in 2013 and the anticipation of a strong incoming year class. Apportionments to management areas follow a detailed seasonal and regional approach to reduce potential impacts on Steller sea lions (Appendix C). The SSC concurs with these apportionments, while re-iterating its recommendation to implement a random effects approach, which the authors intend to consider in the future.

The Southeast Alaska pollock component is recommended to be in Tier 5, with harvest specifications based on a random effects model fit to the 1990-2011 bottom trawl survey data and natural mortality (0.3), resulting in the values summarized below (in metric tons).

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Pollock	W (61)		36,070		40,254
	C (62)		81,784		91,272
	C (63)		39,756		44,367
	WYAK		4,741		5,291
	Subtotal	211,998	162,351	248,384	181,184
	EYAK/SEO	16,833	12,625	16,833	12,625
	Total	228,831	174,976	265,217	193,809

Research recommendations:
The SSC has no new recommendations at this point but looks forward to the authors' response to previous recommendations from Dec 2012 that they were unable to address in this year's assessment because of the government furlough. These include recommendations regarding the parameterization of survey selectivity, addressing concerns over the multinomial error assumption for ages 1 and 2, and spatial variability in female relative abundance.
In addition, we offer the following comments to the Plan Team and authors:

- The SSC notes the discrepancy between including the 2012 recruitment in projections but not in calculating the $B_{100\%}$ reference point. We encourage the authors to provide a justification for this approach and the Plan Team to discuss the need for a unified approach across stocks.
- The assessment discussed the high variability and obvious trends in weight-at-age. For example, weight-at-age of pollock age 6 and older has nearly doubled since the late 1980s. The authors have proposed further analyses to evaluate whether these changes are a density-dependent response to declining pollock abundance, or whether they are environmentally forced. We encourage the authors to explore possible reasons for the observed trends and their potential effects on the assessment.

GOA Pacific cod
The 2012 model (model 2 in the 2012 assessment) was updated with new catch data, fishery length composition data and 2013 survey biomass estimates and length compositions. In addition to the 2012 model configuration, an alternate model configuration was presented that estimates age-0 recruitment for the period of 1977-2009 instead of 1977-2011. The most recent recruitments are set to the median (alternate model) or the mean (2012 model) of the estimated recruitments. This modification is based on a recommendation from the "Working Group Report on Issues Related to Recruitment" for excluding recent year-class estimates based on criteria relating to low survey selectivity and natural mortality (as described in Addendum). The authors and Plan Team recommend the alternate model, in part because the 2011 recruitment was highly uncertain due to very little information on age-2 fish in the 2013 survey and fishery data. This choice is influential, with the alternate model resulting in an ABC of 88,500 t compared to 109,000 t for the 2012 base model. **The SSC agrees with the Plan Team regarding the choice of the alternate model for specifications.**

The survey total biomass estimate for GOA Pacific cod in 2013 was up slightly (1%) from the 2011 estimate (CV = 15%), but down 33% from the 2009 survey estimate, which was the highest on record. The model projected total biomass for 2014 is slightly lower than last-year's projection, while female spawning biomass is higher than last year. Estimated age-0 recruitment has been relatively strong since

2005, and stock abundance is expected to be stable in the near term. The projected spawning biomass in 2013 according to the alternate model is 120,100 t, well above $B_{40\%}$ (91,100 t); therefore this stock is determined to be in Tier 3a. **The SSC supports the author and Plan Team recommendations for OFL and ABC values summarized in the Table below.**

The area apportionment in this year's assessment used the random effects model as recommended by the Survey Averaging Working Group, replacing the Kalman filter approach used only in 2012. The SSC agrees with using the recommended new approach, resulting in apportionments of 37.63% to the Western GOA, 59.61% to the Central GOA, and 2.75% to the Eastern GOA. The resulting ABC splits are shown below (in metric tons):

Stock/ Assemblage		2014		2015	
	Area	OFL	ABC	OFL	ABC
Pacific Cod	W		32,745		31,117
	C		53,100		50,460
	E		2,655		2,523
	Total	107,300	88,500	101,800	84,100

With respect to further development of the model, the SSC endorses the Plan Team recommendations in the GOA PT minutes and also refers to last year's SSC recommendations (December 2012 SSC minutes) with regards to down-weighting size-at-age data and parameterizing fishery selectivity. In addition, the SSC recommends exploring the use of both the ADF&G bottom trawl survey time series and possibly the IPHC survey data as additional survey indices. For example, a GLM approach could be used to develop an index suitable for inclusion in the assessment model. This approach was previously proposed in the December 2005 and December 2006 minutes but was not fully explored at the time because the focus shifted to other aspects of model development.

GOA Atka Mackerel

Although a survey was conducted in the GOA during 2013, estimates of survey biomass of Atka mackerel continue to be unreliable with 68% of the survey biomass caught in a single haul. Inconsistent presence of Atka mackerel in survey hauls results in an imprecise estimate (CV = 67%) of GOA-wide biomass in 2013. **The SSC concurs with the Plan Team and the stock assessment authors that GOA Atka mackerel harvest specifications should remain in Tier 6, with OFL and ABC for both 2014 and 2015 as shown in the table below (in metric tons).**

Stock/ Assemblage		2014		2015	
	Area	OFL	ABC	OFL	ABC
Atka mackerel	GOA-wide	6,200	4,700	6,200	4,700

Consideration should be given to doing a sablefish-like assessment in which a combined BSAI and Gulf of Alaska model is constructed and partitioning to the BSAI and GOA is done. This would only work if the surveys can be effectively combined (perhaps with use of the random effects model) and the allocation proportions have reduced variance compared to those of the survey totals. However, given that there is no evidence for a genetic difference and that the GOA component is just the fringe end of the BSAI stock, it seems more biologically reasonable to do a combined assessment.

GOA Flatfish

Shallow-water Flatfish Complex

The shallow-water complex includes yellowfin sole, butter sole, starry flounder, English sole, sand sole and Alaskan plaice (all Tier 5 stocks). This complex also includes northern and southern rock sole; an

independent assessment for northern and southern rock sole is conducted and these stocks are in Tier 3a. Catches from 2012 and 2013 were updated for all stocks and survey biomass in 2013 was estimated for all Tier 5 stocks. Projections of survey biomass in 2013 were not made for northern and southern rock sole due to time constraints imposed by the government shutdown; ABCs and OFLs for these stocks are based on the 2012 assessment model updated with catches from 2012 and 2013.

The SSC supports the author and Plan Team recommendations for ABC and OFL in 2014 and 2015 and area apportionments using combined Tier 3 and Tier 5 calculations for this stock complex (see table at end of flatfish section).

The SSC reiterates its support for the further development of the rock sole model based on comments from the September and November 2013 Plan Team minutes and our October 2013 minutes. We also look forward to a full assessment of all stocks in this complex in 2014. Butter sole catches are approaching the species-specific calculation for ABC, so the SSC is particularly interested in an assessment of length frequencies and catches relative to the spatial distribution of butter sole in the survey. We agree with the Plan Team that the stock structure template should be completed for northern and southern rock sole.

Deepwater Flatfish Complex

The deepwater complex is comprised of Dover sole, Greenland turbot, and deepsea sole. Dover sole was assessed using Tier 5 methodology in 2012, but a new Tier 3 model based on the SS3 platform was presented and compared with a Tier 3 model from the 2011 assessment. The Greenland turbot and deepsea sole assessments remained unchanged at Tier 6.

Four Dover sole models were put forward by the authors, with alternative configurations that considered treatment of recruitments early in the time series, and exclusion of the 1984 and 1987 survey estimates. The authors also addressed previous SSC and Plan Team comments in their base model with regards to maximum age in the model, use of composition data in years of incomplete coverage, and use of maturity information in the model.

The SSC agrees with the assessment authors and Plan Team on the choice of Model 0 for setting Tier 3 specifications of Dover sole. The SSC supports the authors' and Plan Team's recommended 2014 and 2015 ABC and OFLs and area apportionments (see table at the end of the flatfish section).

The SSC looks forward to completion of the stock structure template for this complex next year as well as additional investigation of catchability and natural mortality in the next assessment of Dover sole.

Rex Sole

As in previous assessments, the Plan Team adopted a Tier 5 approach using a model estimated biomass for rex sole as would be done for Tier 3 stocks. There were no changes to the assessment model. Due to the government shutdown, 2013 survey data were not included in the assessment and only a simple projection of biomass using the Tier 3 approach was made with catches updated for 2012 and 2013.

The SSC supports the authors' and Plan Team's recommended ABC and OFLs for 2014 and 2015 (see table at the end of the flatfish section).

Arrowtooth Flounder

New data for arrowtooth flounder includes 2013 survey biomass, updated catch for 2011, 2012 and estimated 2013 catch. Fishery lengths for 2012 and 2013 and survey lengths for 2013 were also added into the model. There were no other underlying changes to the model structure from the previous year. Arrowtooth flounder is a Tier 3a stock.

The SSC supports the Plan Team's and authors' recommended ABC and OFLs and area apportionments for 2014 and 2015 (see table at the end of the flatfish section).

Fits to survey biomass in the current model are not very good. In this regard, the SSC looks forward to inclusion of age data from the 2013 survey in the next full assessment.

Flathead Sole

The flathead sole assessment model was transitioned over to SS3 as discussed at the September Plan Team meeting and October SSC meeting.

Four flathead sole models were put forward by the authors, with alternative configurations that evaluated estimation of natural mortality within the model and with and without estimation of early recruitment deviations. The authors addressed the majority of issues identified by the SSC and Plan Team regarding the previous model, such as the start year for the model (1978), incorporation of aging uncertainty into the model, and updating the age-length transition matrix.

The SSC agrees with the assessment authors and Plan Team choice of Model 0 for setting Tier 3 specifications of flathead sole. The SSC supports the author and Plan Team recommended 2014 and 2015 ABC and OFLs and area apportionments (see table at the end of the flatfish section).

The SSC encourages development of a stock-specific aging error matrix and encourages exploration of the extreme patterns in early recruitment deviations.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Shallow-Water Flatfish	W		20,376		18,728
	C		17,813		16,372
	WYAK		2,039		1,875
	EYAK/SEO		577		530
	Total	50,007	40,805	46,207	37,505
Deep-Water Flatfish	W		302		300
	C		3,727		3,680
	WYAK		5,532		5,462
	EYAK/SEO		3,911		3,861
	Total	16,159	13,472	15,955	13,303
Rex sole	W		1,270		1,245
	C		6,231		6,106
	WYAK		813		796
	EYAK/SEO		1,027		1,008
	Total	12,207	9,341	11,963	9,155
Arrowtooth Flounder	W		31,142		30,217
	C		115,612		112,178
	WYAK		37,232		36,126
	EYAK/SEO		11,372		11,035
	Total	229,248	195,358	222,160	189,556
Flathead Sole	W		12,730		12,661
	C		24,805		24,670
	WYAK		3,525		3,506
	EYAK/SEO		171		170
	Total	50,664	41,231	50,376	41,007

GOA Rockfish

Pacific ocean perch

The 2013 assessment was scheduled for a full assessment, but due to the government shutdown, no alternative models were explored. The 2011 model was updated with 2013 data and used to estimate ABC's and OFL's. The 2013 bottom trawl survey biomass estimate is the largest in the time series and the variance is second smallest (CV = 16%) resulting in projected increases in biomass, ABCs and OFLs. Survey length data were not included in the model. A large haul in the West Yakutat (WYAK) area had a major influence on the ABC apportionment, increasing WYAK ABC 70% relative to the 2013 ABC. The current apportionment formula is based on the "4-6-9" weighted average of the most recent three surveys. The Plan Team expressed much concern using this apportionment given the influence of a single large haul in WYAK. The random effects model is being explored and may potentially help stabilize apportionment across time.

The SSC accepts the recommendations of the Plan Team and the assessment authors that the stock is to be managed in Tier 3a with the current female spawning biomass level greater than B40%. The SSC agrees with the authors and Plan Team recommendations for OFL and ABC for 2014 and 2015. However, given concerns raised by the Plan Team on area apportionments the SSC recommends using the 2011 apportionment to apportion ABCs among GOA areas. The table below represents ABCs apportioned using the 2011 apportionments.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Pacific	W		2,399		2,456
Ocean	C		12,855		13,158
Perch	WYAK		1,931		1,976
	W/C/WYAK	19,864		20,334	
	SEO	2,455	2,124	2,515	2,174
	Total	22,319	19,309	22,849	19,764

The government shutdown prevented the development or evaluation of a full assessment model during a survey year when most recent data are used to update and inform population dynamics. Because of this, coupled with a large change in population biomass, **the SSC recommends that this stock assessment be brought forward in the 2014 assessment cycle as a full assessment.**

Julie Bonney (AGDB) gave public testimony, noting that there has been a new maturity study which suggests that POP mature at a faster rate than what is used in the model. She shared that industry would like the assessment revised and updated during the next full assessment to account for this research.

The SSC recommends the following to the assessment authors:

- Consider incorporating recommendations of the survey averaging working group for apportionment in 2014.
- Evaluate the effects of the survey length data on recruitment estimates.
- Evaluate the effect of sample size specified for age data.
- Bring forward an updated stock structure template for this stock in 2014 to evaluate the relative merits of continuing to separate OFL's.
- Evaluate new maturity data on POP that may be available and should be evaluated.
- Address past recommendations by the CIE, Plan Team, and SSC.

Northern Rockfish

Due to the government shutdown alternative models were not explored and there was no change to the assessment methodology from the 2011 assessment. The model was updated with final catches for 2012, preliminary catches for 2013, survey age compositions for 2011, and 2011 fishery length compositions. The 2013 biomass estimate was higher than the 2011 estimate, but had large uncertainty (CV = 60%) and is not fit well by the model. This is similar to other years as northern rockfish are patchily distributed and not well covered by the survey. The 2013 update shows recent recruitment is low but relatively stable. Estimates of current population abundance indicate that the population structure is dominated by older fish from the 1976 and 1984 year classes, and above average 1993 and 1997 year-classes.

The SSC agrees with continued management under Tier 3a as recommended by the authors and Plan Team. We agree with the recommendations for OFL and ABC for 2014 and 2015, as well as the geographic apportionment of the ABC to the Central and Western Gulf areas for those years, and the small Eastern Gulf apportionment, which is to be combined with the ABC for Other Rockfish in both years (so does not appear in the table below).

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Northern	W		1,305		1,229
rockfish	C		4,017		3,781
	E		-		-
	Total	6,349	5,322	5,978	5,010

The SSC recommends that the authors explore and evaluate alternative approaches to constructing the trawl survey biomass and consider recommendations from the survey averaging work group for apportionment. The SSC recommends including work on maturity for northern rockfish as a research priority.

Shortraker Rockfish

In 2013 stock assessment authors produced an executive summary of the status of GOA shortraker rockfish. The SSC agrees with the Plan Team that in 2014 the author should provide an executive summary for this stock since no new information will be available to inform the assessment.

GOA shortraker rockfish are managed in Tier 5 and the reference biomass used in the ABC and OFL calculations is based on a 3 year weighted average of survey biomass estimates. The author updated the biomass time series with the 2013 NMFS bottom trawl survey estimate which showed an increase in biomass. **The SSC accepts the authors' and Plan Team recommendations for the 2014 and 2015 ABC, OFL and the recommended area apportionment.**

In the future, the author plans to explore the possibility of using random effects models as an alternative to the survey averaging method currently used in this assessment. In addition to this potential modification, the SSC encourages the author to address comments and suggestions made by the CIE review that are relevant to this assessment.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Shortraker	W		92		92
	C		397		397
	E		834		834
	Total	1,764	1,323	1,764	1,323

Other rockfish (Combination of Slope rockfish and Pelagic shelf complex species)

The GOA other species complex was expanded to include seven species of rockfish (copper, rosethorn, quillback, China, tiger, canary and yelloweye rockfish) that occupy regions other than Area 650. Historically the catch of these seven species has been accounted for in the Other Rockfish group in Catch Accounting, but was not previously accounted for in the Other Rockfish (formerly the Other Slope Rockfish) assessments. The author provided a preliminary analysis of the inclusion of these seven species in the Other Rockfish assessment at the September 2013 Plan Team meeting. Due to the government shut down an executive summary was provided. The "split fractions" for the Eastern Gulf of Alaska (EGOA) were not updated to include these seven species. For 2014, these species were included only in the Central GOA (CGOA) and Western GOA (WGOA).

The assessment was updated to include the 2013 GOA trawl swept area biomass estimates. The Other Rockfish Complex is managed as sum of species based on and Tier 4 and 5 calculations were updated to incorporate new data. The exploitable biomass for the Other Rockfish complex is based on the average of the sum of the component species for the last three surveys (currently 2009, 2011 and 2013). Current exploitable biomass is 83,383 t (55,522 t –111,243 t, 95% CI). The 2013 survey had a reduced number of stations in all strata and the biomass estimates for the six major species were more uncertain than the 2011 estimates. Notable changes in abundance were observed in some stocks. For example, the biomass estimate of silvergray rockfish in 2011 was 100,049 t and the 2013 estimate was 19,239 t. The author noted that many of the "minor" species were near the extent of their distributional ranges or may inhabit areas not adequately sampled by the survey (e.g. near shore, untrawlable, etc.) which may account for some of the observed large percentage changes in between year biomass. With respect to species in the Eastern GOA, the SSC reiterates its recommendation that the authors attempt to examine the relationship

between biomass trends in SE Alaska with observed trends in Canada to evaluate the feasibility of estimating an availability correction for the trawl survey.

There was no change in the method used to calculate the biological reference points for this stock complex, however the parameters used to derived the estimate were updated. Natural mortality was updated for darkblotched, sharpchin, and widow rockfish. Growth parameters were updated for sharpchin rockfish, which resulted in $F_{40\%} = 0.065$ (up from 0.053) and $F_{35\%} = 0.079$ (up from 0.064). The seven DSR species noted above were added to the calculation. The ABCs and OFLs were calculated as the sum of the estimates for individual species. **The SSC accepted the author and Plan Team recommendations for 2014 and 2015 ABC and OFL for the complex.**

The SSC had an extensive discussion focused on harlequin rockfish. The ABC for the Other Rockfish complex was exceeded in the Western GOA consistently since 2009. Harlequin rockfish was the principal species in the catch during this period in the Western GOA. In 2012 the ABC was also exceeded in the Central GOA as well, and harlequin was a major component of the catch in that region as well. The author reviewed the spatial distribution of harlequin catch in the survey and found that this species was patchily distributed primarily along the continental shelf break of the entire GOA. The author noted that harlequin rockfish were known to inhabit high relief and rocky substrates, which could be deemed untrawlable, and hypothesized that these regions may not be sampled well by the NOAA groundfish bottom trawl survey. The author concluded that, since harlequin rockfish exhibit an apparent habitat preference for untrawlable areas, the biomass used for computing the ABC underestimated biomass for harlequin rockfish and therefore the observed catch overages may not represent a conservation concern. **Based on this information the author and the Plan Team recommended combining the Other Rockfish ABC for the WGOA and CGOA. After considerable discussion, the SSC accepted this recommendation for an interim period until 2015 (when the next full assessment will be provided).** In the interim period, the SSC requests that the authors carefully consider the recommendations of the rockfish CIE reviewers and that they work with NMFS Resource Assessment and Conservation Engineering division to evaluate the evidence that harlequin rockfish biomass is underestimated by the NMFS trawl and if this hypothesis is confirmed whether it is possible to develop a correction factor to improve future estimates for this species.

The author considered the implications of a western – central ABC and concluded that changes in fishing practices are not likely to occur, and reported that there is currently no market for Other Rockfish. The proposal could help to reduce waste by avoiding unnecessary placement of Other Rockfish on PSC status.

Assemblage /Stock	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Other Rockfish	W				
	C				
	W/C		1,031		1,031
	WYAK		580		580
	EYAK/SEO		2,470		2,470
	Total	5,347	4,081	5,347	4,081

Dusky rockfish

The 2013 dusky rockfish stock assessment model was updated to include several new sources of data including: 2013 biomass estimates, 2013 catch, 2011 survey age composition and 2010 fishery age composition. There were no model changes.

The 2013 biomass estimate was up 19% from 2011. As in previous years, the confidence interval on the 2013 biomass was large. Recent recruitments have been below average. The updated assessment model did not fit the recent trends in survey biomass estimate, however, the model estimates do fall within the

confidence intervals for recent data points. **Projected spawning stock biomass for 2014 is 29,256 t placing this stock in Tier 3a. The SSC accepts the author's and Plan Team's recommended 2014 and 2015 ABC and OFL for GOA dusky rockfish, as well as the area apportionments for this stock (see table below in metric tons).** The stock is projected to decline in the next few years.

The SSC concurs with the Plan Team that exploration of the impacts of extending the plus-group in the assessment, and trying the random effects models for spatial allocation, would be potentially useful enhancements to the assessment. The SSC notes that the CIE reviewers provided comments on the use of survey data in stock assessments and encourages the author to evaluate comments relevant to the dusky assessment.

Assemblage /Stock	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Dusky rockfish	W		317		295
	C		3,584		3,318
	WYAK		1,384		1,277
	EYAK/SEO		201		191
	Total	6,708	5,486	6,213	5,081

Rougheye and blackspotted rockfish

In 2013 stock assessment authors produced an executive summary of the status of GOA blackspotted and rougheye rockfish. In recognition of the amount of new information available for this assessment and the 2013 survey data that revealed evidence of declining bomass trends, the Plan Team requested that a full assessment is developed in 2014. The SSC agrees with this request.

In 2013, the rougheye and blackspotted rockfish stock assessment model was not re-run. The projection model was updated with final catch information for 2011 and 2012, and estimated 2013-2015 catches. **The SSC accepts the authors and Plan Team recommendations for the 2014 and 2015 ABC, OFL, and the recommended area apportionment.**

Assemblage /Stock	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Rougheye/Blackspotted Rockfish	W		82		83
	C		864		877
	E		298		302
	Total	1,497	1,244	1,518	1,262

The author anticipates that the 2014 full assessment will incorporate the following sources of new information: includes updated catch for 2011-2014, updated fishery ages for 2009, new fishery ages for 2010 and 2012, new fishery sizes for 2011, new trawl survey estimate for 2013, new trawl survey ages for 2009 and 2011, and fully revised longline survey estimates for the time series of RPWs and length frequencies (including updates to the longline survey database since the 2011), improvements to the model structure, and new area estimates for shallow strata from 150-200 m (Echave et al. 2013). In addition new information on maturity of rougheye and blackspotted rockfish may also be included. These additions are all welcomed by the SSC.

Demersal Shelf Rockfish (DSR)

Demersal shelf rockfish ABC and OFL estimates are made with the Tier 4 method. Biomass is estimated from submersible and ROV line-transect surveys. Submersible surveys are no longer possible, but the first ROV survey was conducted in 2012 in the CSEO region. The SSEO region was surveyed in 2013 by

ROV, but results are not yet available. ADFG plans to survey the EYAK and NSEO regions in 2014, which would result in ROV data available for all DSR management areas. For this year, catch information, habitat area (for CSEO), and average weights for yelloweye rockfish from the fishery were updated. Without any way to calibrate potential differences between submersible and ROV biomass estimates, the two types of biomass estimates were combined into a single time series directly to estimate biomass for the entire region.

As in previous assessments, the SSC agrees with the authors and Plan Team to apply precautionary measures in establishing allowable harvests, including: 1) using the 90% confidence limit of the density point estimate for each management area in biomass calculation, and 2) using a harvest rate lower than maximum under Tier 4 by applying F=M=0.02 to survey biomass. The SSC agrees with the resulting OFLs and ABCs for 2014 and 2015 (in metric tons).

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Demersal rockfish	Total	438	274	438	274

The SSC appreciates the authors' responses to previous SSC comments and appreciates the work done to estimate recreational fishery removals and to investigate the use of the random effects model. The SSC looks forward to preliminary results of the age-structured model next year and asks that the authors evaluate and include IPHC survey data as one of the data inputs. The SSC also looks forward to seeing the results of the final report by Yoklavich et al. comparing fish abundances derived from an ROV versus a submersible. The SSC shares the Plan Team's concern regarding the decreasing biomass trend in CSEO and agrees that the evaluation of catch trends in CSEO compared to other areas may be helpful.

Thornyhead Rockfish

Due to the government shutdown, this chapter was presented in executive summary format, using updated survey biomass estimates for Tier 5 ABC, OFL, and apportionment calculations. The 2013 trawl survey biomass estimate increased by 11% compared to 2011, but only depths less than 700 m were sampled. So the biomass was inflated to account for deep stations that were not sampled for a total increase of 17% compared to the 2011 trawl survey biomass estimate. The Gulf-wide thornyhead catch increased by 49%, resulting in an overage of the western GOA regional ABC, but the Gulf-wide catch was only 63% of the Gulf-wide ABC.

The SSC supports the use of Tier 5 calculations for thornyheads in the Gulf of Alaska, using the most recent trawl survey biomass estimate from 2013. The SSC agrees with the Plan Team's recommendation for the Gulf-wide OFL and ABC for 2014 and 2015, and the area apportionments of the ABC for both years, expressed in metric tons in the table below.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Thornyhead Rockfish	W		235		235
	C		875		875
	E		731		731
	Total	2,454	1,841	2,454	1,841

The SSC thanks authors for the random effects models explored and supports the Plan Team recommendation for further exploration. The SSC also supports Plan Team recommendations for exploring the effects of the trawl survey reduction in stations and depth coverage, exploring the

possibility of using the longline survey as an alternative or additional index, and for doing an executive summary next year including responses to Plan Team and SSC comments.

Sharks

The shark complex (spiny dogfish, Pacific sleeper shark, salmon shark and other/unidentified sharks) in the Gulf of Alaska (GOA) is assessed on a biennial schedule. Although a full stock assessment would normally have been developed in 2013, an off-year assessment was provided due to the government shutdown. Total catch for the GOA sharks from 2003 – 2013 was updated.

The SSC accepts the authors' and Plan Team's recommended Tier designation, and the 2014 and 2015 ABC and OFL for the GOA shark complex. As in previous years, biological reference points for GOA sharks are calculated as the sum of estimates from an "alternative Tier 6" assessment approach used for spiny dogfish and a traditional Tier 6 approach for Pacific sleeper shark, salmon shark, and Other/unidentified sharks. Trawl survey data were updated for the "alternative Tier 6" calculations for spiny dogfish. The 2013 survey biomass (160,384 t, CV = 40%) for spiny dogfish was up substantially from the 2011 survey estimate. Uncertainty for this estimate was higher that recorded in previous years. The author did not have time to fully assess the implications of the reduced number of survey stations in all strata on the estimate. The 3-year average survey biomass used in the "alternative Tier 6" estimate for spiny dogfish decreased slightly.

The SSC discussed observed increases in shark catch in 2013 and the implications of incorporating shark catches in areas 649 and 659 in the assessment. With respect to adding catch from areas 649 and 659, the SSC recognizes that if the authors account for catch from additional regions, then they will need to consider how they will adjust the historical catch time series for shark removals from areas 649 and 659. Furthermore, the authors will need to consider the connectivity of the subset of the population in areas 649 and 659 to the other regions in the GOA. Finally, the authors will need to consider whether the catch reported in 2013 is representative of the historical catch or whether it was impacted by the new observer deployment program. **The SSC requests a full stock assessment in 2014 because of the importance of these issues when estimating biological reference points for a species managed in Tier 6.**

The SSC notes that the CIE non-target review provided comments on the utility of continued exploration of the length-based and surplus production models. The SSC requests that the authors consider these comments and that they report to their justification for continuing or dropping this line of research. The SSC looks forward to the authors' responses to the CIE review comments.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Sharks	GOA-wide	7,986	5,989	7,986	5,989

GOA Skates

The GOA skate complex is managed as three stock groups. Big skates (*Raja binoculata*) and longnose skates (*Raja rhina*) each have separate harvest specifications, with ABCs specified for each GOA regulatory area (western, central, and eastern) and a GOA-wide OFL. There is also an "other skates" complex with GOA-wide harvest specifications. Skates are normally assessed on a biennial schedule, with full assessments due in odd years, but due to the 2013 government shutdown only an executive summary is provided this year. The new assessment includes 2013 survey biomass data and updated 2012-2013 catch data. An updated 3-year average survey biomass estimate based on the 2009, 2011 and 2013 surveys is used for harvest recommendations.

The SSC agrees with the Plan Team and assessment author's recommendation to continue management of GOA skates as Tier 5, with the 2013-2014 OFL and ABCs, shown in the below table in metric tons. However, incidental catch for big skates exceeded the area apportioned ABC in the CGOA for the fourth straight year and incidental catch for longnose skates exceeded the area apportioned ABC in the EGOA for the first time in 2013. The overage for longnose skate in the EGOA was due to a marked increase in incidental catch in the previously unobserved halibut IFQ fishery and a full accounting for catch in statistical areas 649 and 659, which are state waters. The additional skate catch data available from expanded observer coverage is a large component of skate catch in the EGOA, and gives rise to potential conservation concern for skates. However, survey coverage and resultant biomass estimation does not extend into areas 649 and 659 and migration patterns of skates between these areas and the rest of the GOA are unknown. Skate migration should be added as a research priority. The SSC asks the author to investigate whether there is information to support that skates in areas 649 and 659 are part of the GOA population and, if so, how to estimate skate biomass in these areas. **Until these steps are taken and the biomass and catch can both be accounted for, the SSC feels that the catch from areas 649 and 659 represents skates outside of the assessed region and should not be counted against the EGOA ABC or TAC.** The SSC supports the Plan Team recommendation that the author separate inside state waters catch in the catch table to give a clearer depiction of the proportion of skates caught between inside and outside waters. The SSC also supports the Plan Team recommendation for the author to fill out the stock structure template for GOA skates for Plan Team consideration in September 2014 and further recommends the author complete a full assessment for 2014.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Big Skate	W		589		589
	C		1,532		1,532
	E		1,641		1,641
	Total	5,016	3,762	5,016	3,762
Longnose Skate	W		107		107
	C		1,935		1,935
	E		834		834
	Total	3,835	2,876	3,835	2,876
Other skates	GOA-wide	2,652	1,989	2,652	1,989

GOA Sculpins

Due to the government shutdown, the author presented an executive summary on GOA sculpins. The author continued to use a Tier 5 approach, estimating biomass as the average biomass from the last four NMFS bottom trawl surveys (2007, 2009, 2011, and 2013) and estimating the sculpin complex mortality rate as a biomass-weighted average of the instantaneous mortality rates for the four most abundant sculpins in the GOA. The SSC supports the research priority of continued research on natural mortality for sculpins. **The SSC concurs with the Plan Team and assessment author's recommendation that GOA sculpins be managed as a Tier 5 stock with M=0.22 to be applied to the stock as an aggregate. Under Tier 5, the estimated OFL and ABC in 2014 and 2015 are shown in the table below in metric tons.** The SSC looks forward to the author addressing last year's SSC suggestions next year.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Sculpins	GOA-wide	7,448	5,569	7,448	5,569

GOA Squid

Due to the government shutdown, the author presented an executive summary on GOA squid. **The SSC agrees with the continuation of an alternative Tier 6 approach for this complex, with OFL set equal to the average catch from 1997-2007 and ABC set equal 75% of OFL, as shown in the table below in metric tons.**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Squid	GOA-wide	1,530	1,148	1,530	1,148

GOA Octopus

A full assessment was provided for this year with biomass data updated for 2013 and catch data updated for 2012 and partial data updated for 2013. The author presented two methods for estimating octopus biomass, the status quo modified Tier 6 approach that applies a conservative natural mortality estimate to a minimum biomass estimate from an average of the last three surveys, and a random effects model applied to the survey biomass. **The SSC supports the Plan Team's recommendation of using the average of the last three surveys as a minimum biomass estimate in the modified Tier 6 approach with the conservative natural mortality estimate of M=0.53 and waiting to hear from the survey averaging workgroup before applying the random effects model to a species complex. The estimated OFL and ABC in 2014 and 2015 are shown in the table below in metric tons.**

The SSC supports the Plan Team's recommendation for the author to fill out the stock structure template for octopus for the September 2014 Plan Team meeting and to not use the Pacific cod consumption index method for estimating octopus mortality until there is GOA-specific information. The SSC also supports the research priorities mentioned in the recent CIE review: estimating mortality from tagging studies, gathering and updating growth rates for octopus from ongoing studies, and investigating the use of a size-structured model. In addition, the SSC supports the Plan Team's recommended area apportionment methodology in case of directed fishery, which uses the most recent three-year survey biomass percentages by area (35% WGOA, 63% CGOA, and 2% EGOA).

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Octopus	GOA-wide	2,009	1,507	2,009	1,507

C-7 BSAI SAFE and Harvest Specifications for 2013/14

EBS Walleye Pollock

Jim Ianelli (NMFS-AFSC) presented the BSAI pollock assessments via voice-over presentations and audio-conference; this approach worked very well. Ed Richardson (Pollock Conservation Cooperative) and Donna Parker (Arctic Storm) provided public testimony. Mr. Richardson supported the Plan Team's ABC and OFL, suggested that having female spawning biomass between 2 to 3 million t usually resulted in acceptable recruitments, was concerned that recent recruitments were below the long-term average, requested a sensitivity analysis of the choices about weight-at-age, and wished to have the 2014 and 2015 biomasses and recommended F's added to the phase-plane graph (Fig. 1.35). Ms. Parker supported the Plan Team recommendations, noted that her vessel had the highest catch rates ever in 2013, and suggested that the change in weight-at-age could be due to a northward shift in the spatial distribution of the fleet to avoid Chinook salmon bycatch.

This assessment is a straightforward update of the stock assessment from last year, involving only new data (2012 and 2013 indices, age compositions, and weights-at-age). There were no model changes.

Interestingly, fishery weights-at-age have decreased, possibly due to cooler temperatures, density-dependent effects or changes in the spatial distribution of the fishery. The SSC encourages further investigation of this phenomenon and whether there have been similar changes in other life history factors, such as maturity, fecundity, and natural mortality. There are reasons to believe that other life history parameters vary. For instance, Stahl and Kruse (2008) found spatial patterns in size at maturity across the EBS shelf, as well as evidence for density-dependent effects on annual estimates of size of maturity of eastern Bering Sea pollock. In addition, the SSC supports the intent of the author to examine cohort-specific growth.

Strong recruitments from the 2006 and 2008 year classes along with reductions in fishing mortality have resulted in an increase in female spawning biomass of 71% since the low point in 2008. The 2014 and 2015 female spawning biomasses are projected to be about 20% above B_{msy}. All indications are that the stock is in good shape. This year as well as last year, pollock were found in great numbers in the cold pool, contrary to the hypothesis that pollock avoid the cold pool. This may suggest that the decrease in average weight-at-age is attributable to a metabolic response to temperature.

The SSC supports the use of Model 0.4, which updates assessment information. The SSC continues to place EBS pollock in Tier 1a, due to high abundance and the presence of a credible spawner-recruit curve and pdf for F_{MSY}. This results in the maximum permissible ABC in 2014 of 2.53 million t, one of the largest on record. The authors, Plan Team, and SSC all agree that a reduction from the maximum permissible ABC is warranted for conservation reasons. The harvest policy that has been in place since 2010 is to use the five-year average fishing mortality, which results in an ABC of 1.369 million t in 2014 and 1.258 million t in 2015. The SSC notes that an ABC over 1.1 million t is projected to result in a decrease in stock biomass; however, this is not a conservation concern because biomass is well above B_{msy}. The SSC supports the ABCs and OFLs for 2014 and 2015 (in metric tons) as recommended by the authors and Plan Team.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Pollock	EBS	2,795,000	1,369,000	2,693,000	1,258,000

The SSC agrees with Mr. Richardson that adding the 2014-2015 values in the phase-plane graph, for example with dashed lines, would be useful not only for this stock but in general. The SSC requests that the authors include survey weight-at-age in the assessment to assure that the decreases in weight-at-age are not an artifact of changes in the distribution of the fishery. The SSC also requests that the study of survey efficiency by Kotwicki be presented to the SSC next September.

Research considerations

The changes in weight-at-age and roe recovery rates suggest that there might be a better measure of reproductive output than female spawning biomass. Towards this, an ongoing UAF-NMFS study is examining implications of changes in fecundity and maturity on reproductive output of GOA pollock including a new management strategy evaluation. In the meantime, use of female spawning biomass for EBS pollock should consider the implications of variability in maturation schedules. As noted in the current assessment, for the two years considered by Stahl and Kruse (2008), variability in size at maturity had a relatively minor effect on spawning biomass estimates. However, sustained trends in maturity schedules, perhaps of the sort evident in weight-at-age for EBS pollock shown in the current assessment, could have larger effects of sufficient magnitude to warrant use of updated or annual estimates of maturity-at-age in spawning biomass calculations. As mentioned last year, the SSC encourages the authors 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 lead author could be used.

Aleutian Islands Walleye Pollock
The Aleutian Islands pollock assessment is a routine update of the stock assessment model used previously with updated catch data. Spawning biomass has steadily increased since its recent low in 1999 and has reached $B_{33\%}$ in 2014 at 79,029 t. As recruitment has not changed significantly, the increase is likely due to lower fishing mortalities in recent years.

The SSC affirms that this stock belongs in Tier 3b; the reference point $B_{40\%}$ is 96,006 t. This results in the following specifications (in metric tons):

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
AI Pollock	AI	42,811	35,048	47,713	39,412

Bogoslof Walleye Pollock
There is no new information, so this year's specifications are the same as last year:

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Bogoslof Pollock	Bogoslof	13,413	10,059	13,413	10,059

Research considerations
As mentioned last year, 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 Pacific cod
Public comments were provided by Chad See (Freezer Longliner Coalition) and Dave Fraser (Adak Community Development Corporation). Mr. See urged the SSC to postpone the area split because of anticipated consequences for the fishery, including perceived conservation concerns related to the management of the State GHL and the potential to concentrate catches in a smaller area. During questioning it was clarified that the conservation concerns are due to the decline in the ABC, rather than the split as such. Mr. Fraser supports the split and pointed out that the Council had ample opportunity to address any allocation issues arising from the area split.

The Pacific cod assessment underwent a major change in the current assessment cycle, as this is the first year in which separate ABC/OFLs will be specified for the EBS and for the Aleutians.

Bering Sea:
For this year's assessment, the 2012 accepted model, which was also used in 2011, was updated with most recent catch data, fishery size compositions, 2013 survey size composition, 2013 survey abundances, 2012 age compositions, 2012 mean length-at-age, and seasonal fishery CPUE data. Additional models were presented in the preliminary assessment in September 2013, but could not be implemented due to the government shutdown. Because the model is only used for the EBS, no expansion to the BSAI was done. **The SSC accepts the base model for catch specifications for the EBS stock.**

Based on the recommended model, survey abundance decreased somewhat from last year and, relative to last year, the model estimated a lower $B_{40\%}$ and a 2014 total projected biomass that is slightly lower than

last year's estimate for 2013 (before expansion to BSAI of last year's model results). Biomass is expected to increase in the short term due to apparent strong 2006, 2008, and 2010 year classes. The 2011 year class also appears to be well above average, although the estimate is highly uncertain.

The projected 2014 spawning biomass is above $B_{40\%}$, hence the stock is in Tier 3a. **The SSC agrees with the authors and Plan Team to set the ABCs to the maximum permissible levels. The resulting ABCs and OFLs for 2014/15 are summarized below.**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Pacific cod	BS	299,000	255,000	319,000	272,000

The SSC re-iterates its concerns over the best value for the catchability coefficient (see December 2012 and October 2013 minutes), which prompted us to request additional model runs in October with catchability fixed at 1. In addition to the models already requested by the Plan Team in September 2013, this resulted in a large number of requested models. The Plan Team reduced the suite of models to three models in addition to the current base model, implementing changes to both Q and survey selectivity simultaneously and, secondly, exploring the effect of estimating M freely. The SSC discussed the need for a more incremental approach to implementing changes to the model. The two main issues of concern at this time are the shape of the selectivity function and the appropriate value for catchability (Q). Therefore, the SSC suggests a modeling approach that evaluates changes to selectivity and Q separately and in combination. To limit the number of requested model configurations, the SSC suggests that the Plan Team request for a model that freely estimates M be deferred to a future assessment. Therefore, the SSC requests the following models to be brought forward in the 2014 assessment cycle. These recommendations pertain to the overall model structure only and would not preclude updating any of the models with new information. For example, if new estimates of catchability from the proposed analysis of acoustic data become available in time they should be included in any of the models that are tuned to an empirical estimate of catchability.

1. The **current base model** (same as 2011, 2012) for comparison
2. **Model 4 from the 2012 assessment**. Rationale: This model implemented a large number of changes relative to the base model and produced a good fit to the data in the 2012 assessment. However, the model was not accepted in 2012 because it had not been fully vetted. Re-fitting the model with 2 years of new data would allow further vetting of the model as a potential new base model and can serve as a basis for exploring the effects of modifying the shape of the survey selectivity function and changing Q.
3. **Model 4 with annually varying survey Q** (freely estimated mean and dev vector). Rationale: This follows a Plan Team recommendation reflecting the senior author's conviction that the survey data cannot be fitted with a constant survey Q. The SSC also notes that time-varying catchability was recognized at a recent international meeting as a possible avenue for improving stock assessments.
4. **Model 4 with survey catchability fixed at Q=1.** Rationale: The default assumption in most assessments is that survey catchability is 1, unless there is strong evidence to the contrary. The evidence for a lower Q has been put into question based on recent work and is more fully detailed in our October 2013 minutes. This model will allow an evaluation of the effect of fixing Q without also changing the way selectivity is parameterized to help untangle effects of changing Q and changing selectivity.
5. **Model 4 with fixed Q = 1 and asymptotic survey selectivity.** Rationale: This model was previously recommended by the SSC and recommended by the Plan Team in November 2013 to help understand the consequences of using dome-shaped versus asymptotic selectivity in the model.

To improve our understanding of survey catchability and provide better empirical estimates of selectivity, the SSC endorses the Plan Team recommendations with regard to survey catchability, specifically studies of the vertical distribution of Pacific cod, including an analysis of existing acoustic data.

Aleutian Islands:
In response to the SSC determination that Pacific cod in the Aleutian Islands should be assessed and managed separately from Pacific cod in the EBS, the authors brought forward two models for possible management under Tier 3 and two Tier 5 alternatives.

Preliminary age-structured models for AI Pacific cod were developed in 2012 and three preliminary models were prepared for the September 2013 Plan Team meeting. As requested by the Plan Team and SSC, two of these models were brought forward and were fit to updated catch data, length composition from the commercial fishery, CPUE and length frequencies from the AI trawl survey, and age composition data from the 2012 survey. The models differ in their treatment of Q and selectivity, with model 1 setting Q=1 and assuming a random walk for both the fishery and survey selectivity with respect to age, and model 2 estimating Q and assuming asymptotic selectivity for the survey.

In addition, two methods for managing the stock under Tier 5 were presented, including the Kalman filter that has been used since 2004 to expand EBS-based reference points into BSAI equivalents, along with the random effects model recommended by the Survey Averaging Working Group.

The survey time series from 1991-2012 shows a fairly consistent decline that is fit well by most of the models, except model 1. Models 1 and 2 estimate very different biomass trajectories but arrive at similar estimates for recent years. The Plan Team concluded, and the SSC concurs, that neither of the age-structured models performed adequately at this point, although both resulted in reasonable estimates of recent biomass and ABCs that are similar to those from a Tier 5 approach. Therefore, the author and the Plan Team recommend a Tier 5 approach, specifically the random effects model. **The SSC concurs with this recommendation and with the Plan Team recommendations for 2014 and 2015 ABCs and OFLs (assuming a natural mortality rate of 0.34).** This stock is not being subjected to overfishing. Under Tier 5, it is not possible to determine whether the stock is overfished or whether it is approaching an overfished condition.

The SSC encourages further work on the age-structured models. Some of the issues are very similar to those in the Bering Sea, in particular the appropriate shape of the selectivity function. The SSC notes that selectivity was modeled differently in the AI model using an empirical and more flexible approach, although the model with asymptotic selectivity (and estimated Q) produced a better fit. At this still early stage of model development, the SSC does not want to be overly prescriptive, but suggests bringing forward models that focus on exploring the effects of different shapes of selectivity-at-age, including a model with asymptotic selectivity.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Pacific cod	AI	20,100	15,100	20,100	15,100

BSAI Atka Mackerel
Two models were brought forward. The first assessment model was similar to last year (Model 1). Model 2 was similar to Model 1 except that instead of estimating fishery selectivity in time blocks, the authors allowed selectivity to vary annually, estimated the degree of inter-annual selectivity variability, and provided a method for determining the penalty. This method was adapted from that described in the 2012 BSAI Pacific cod assessment. The inclusion of 2012 age composition data, changes in selectivity using

Model 2, and the move into Tier 3a led to a substantial increase in overall ABC and OFL (28-29%). Model 2 improved fits to the fishery age compositions and reduced retrospective behavior over Model 1. Model 2 also fitted other data better overall than Model 1. Model 2 was selected by the author and Plan Team. The average fishery selectivity for the time period 2009-2013 was used for projections. The projected 2014 female spawning biomass is 117,171 t, which is slightly greater than $B_{40\%}$= 116,411 t. The Plan Team and the stock assessment authors Both models resulted in a change from Tier 3b to Tier 3a for 2014 but only barely. The projected age 3+ biomass at the beginning of 2014 is estimated at 384,364 t, up about 25% from last year's estimate for 2013. The assessment authors assumed 64% of the BSAI-wide ABC is likely to be taken under the implemented Steller Sea Lion Reasonable and Prudent Alternatives (SSL RPAs). This percentage was applied to the 2014 maximum permissible ABC, and that amount was assumed to be caught in order to estimate the 2015 ABCs and OFL values This will result in the stock returning to Tier 3b in 2015.. **The SSC agrees with the authors and Plan Team choice of Model 2 for determining specifications. We also agree with the recommendations by the authors and Plan Team for ABCs and OFLs, as well as area apportionments in the table below (in tons).**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Atka mackerel	EAI/BS		21,652		21,769
	CAI		20,574		20,685
	WAI		21,905		22,023
	Total	74,492	64,131	74,898	64,477

The SSC commends the authors for the excellent work on the development of Model 2 and the clear, in-depth presentation of changes in the assessment. The SSC continues to recommend that the authors:

- 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
- conduct a sensitivity analysis between various input *M*s around 0.20-0.40 and estimated *q*'s.

BSAI Flatfish

Yellowfin Sole

There were no changes in the assessment methods this year. A full stock assessment was presented despite the government shutdown. Changes to input data include the 2012 fishery age composition, 2012 survey age composition, 2012 fishery discards and retention estimates, 2013 trawl survey biomass estimate and standard error, and estimated 2013 catches.

Relationships between yellowfin sole and environmental conditions have been explored by the assessment authors and others. Yellowfin sole biomass is positively correlated with bottom temperatures, possibly indicating an association between temperature and sole activity or between temperature and timing of inshore migrations. Moreover, yellowfin sole growth has been shown to be positively associated with warmer temperatures using growth chronologies and analyses of interannual growth with a 2-3 year lag for the temperature effect. The authors are commended for conducting an assessment that incorporates temperature effects on survey catchability and growth. The late 1970s regime shift is also the basis for the analysis of stock-recruit data used to establish biological reference points.

The SSC notes that maturity data from 1992 and 1993 are used to estimate maturity at age. It may be prudent to reexamine maturity ogives with new data in the near future. Also, the SSC appreciates the retrospective plot of female spawning biomass (Fig. 4.21). In next year's assessment, the SSC requests some analysis of this retrospective plot, which appears to indicate increasingly optimistic biomass estimates with the addition of new data, indicating a negative bias in the model.

The projected female spawning biomass estimate for 2014 is nearly identical to the 2013 estimate from last year's assessment. This stock had been declining over the past decade, but this is now reversed owing to the influence of a moderately strong 2003 year class. Female spawning biomass is projected to increase through 2019 under recent exploitation rates, which have averaged 0.05 since 1978.

Yellowfin sole is managed under Tier 1a. **The SSC supports the authors' and Team's recommended ABCs and OFLs for 2014 and 2015.**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Yellowfin sole	BSAI	259,700	239,800	268,900	248,300

Greenland Turbot

The Greenland turbot stock assessment underwent a major revision last year. These included changes in model formulation (e.g., weight-length relationships, estimates of early recruitment estimates) and input data. As a result, there were concomitant changes in both stock status and biological reference points.

Due to the government shutdown, no new models were presented this year. However, the assessment was updated with new survey and fishery data through 2013. These included catch and length-frequency data, as well as age composition and weight-at-age data from shelf surveys in 2010, 2011 and 2012.

An update using last year's model led to a projected decline of 17% from last year's spawning biomass estimate. However, very strong 2008 and 2009 year classes are expected to enter the female spawning biomass in the near future.

As with last year's assessment, an alternative model with an autocorrelation parameter was the best fitting model. Last year, it was not selected because of the novelty of the autocorrelation approach and the sensitivity of reference points to the assumed autocorrelation parameter. This year, this autocorrelation model was again not selected because the authors felt that there was insufficient time to review its merits. It is notable that, if this model was adopted, the stock would be in an overfished condition. Not only does this autocorrelation model (this year's model 2, last year's model 3) fit the data best, but inclusion of autocorrelation may more realistically smooth the recruitment series.

The SSC looks forward to the authors' responses to SSC comments from last year's (2012) assessment, as well as a more thorough evaluation of Model 2 (model with autocorrelation) in next year's assessment. Research into potential mechanisms behind such an autocorrelation is a high priority for this depressed stock. The SSC supports the authors' and Team's ABC and OFL recommendations for 2014 and 2015 under Tier 3b.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Greenland turbot	BS		1,659		2,478
	AI		465		695
	Total	2,647	2,124	3,864	3,173

Arrowtooth Flounder

This year's assessment was presented as an executive summary with fishery size composition data updated to 2010 and 2011. Fishery catches were updated through 2012 and preliminary catch estimates were included for 2013. In addition to these updated data, new maturity-at-age estimates were included in

this year's assessment. The implementation of the new maturity data led to a substantial reduction in estimates of spawning biomass and associated catch specifications.

The SSC discussed the use of the new maturity information, given the large change in the stock assessment and given that this year's assessment did not provide alternative assessments for review using old and new data. However, as noted by the SSC last year, maturity data formerly used in the assessment of arrowtooth flounder in the Bering Sea were collected from the Gulf of Alaska (Zimmerman 1997, Stark 2008). The new maturity-at-age parameters, estimated by Stark (2012), clearly represent the best available scientific information for this stock, as they are the only maturity estimates collected for arrowtooth flounder in the Bering Sea.

Therefore, the SSC accepts the author's and Plan Team's recommended ABCs and OFLs for 2014 and 2015 under Tier 3a using the current model updated with the new maturity information. The SSC looks forward to a full analysis of the model results with the old and new data in next year's stock assessment. The assessment should compare the alternative maturity curves, along with their uncertainty.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Arrowtooth flounder	BSAI	125,642	106,599	125,025	106,089

Kamchatka Flounder

In 2011 and 2012, Kamchatka flounder was managed under Tier 5. In an attempt to move this stock to Tier 3, an age-structured model was presented to the Plan Team and SSC in September and October 2012, respectively. The Plan Team and SSC did not accept the model, and both recommended a number of changes. Management continued under Tier 5 for 2013. The authors responded to the SSC's and Plan Team's recommendations in a preliminary assessment presented to the Plan Team in September 2013. The Team recommended use of the new model for this year's assessment. At the October 2013 meeting, the SSC received a presentation on the new model, but did not conduct a review and comment on the model in anticipation of doing so during the catch-specification process at this (December 2013) meeting. Although the assessment authors intended to bring forward a full age-structured stock assessment to the Council for this year's assessment, owing to the government shutdown only an executive summary was prepared. This unfortunate situation meant that the SSC could not review the full Kamchatka flounder assessment under both Tier 3 and Tier 5 alternatives. The SSC discussed whether to accept the new Tier 3 assessment without a formal review. Because of potential conservation concerns (recent catches are similar to ABC recommendations under the new Tier 5 assessment), the SSC accepted the Tier 3 assessment for this year's catch specifications.

Therefore, the SSC supports the ABCs and OFLs for 2014 and 2015, respectively, as recommended by the authors and Plan Team using the new Tier 3 assessment. The SSC requests that the authors bring forward a full assessment under both Tier 3 and Tier 5 for review during next year's assessment.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Kamchatka flounder	BSAI	8,270	7,100	8,500	7,300

Northern Rock Sole

This stock was scheduled for a full assessment, but was presented as an executive summary owing to the government shutdown. However, results from two models were presented: last year's accepted model and an alternative model that includes a relationship between temperature and survey catchability. In last year's assessment, six alternative models were considered including one (Model 7) with a temperature-catchability relationship. Last year's Model 7 fitted the data similarly to Model 1, but Model 7 was not adopted pending further testing.

This year, the authors recommended setting catch specification with the alternative model based on a temperature-catchability relationship. However, the Plan Team had a split decision whether to recommend adoption of the baseline model or the alternative with the temperature-catchability relationship. Given the split decision, the Team reverted to the base model as the default assessment.

The SSC agrees with the Plan Team and recommends applying the base model for this year's assessment for setting ABCs and OFLs for 2014 and 2015. While the SSC anticipates ultimately accepting the alternative model with the temperature relationship, the SSC would like to see a more complete analysis of the performance of the two models in a full assessment next year.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Northern rock sole	BSAI	228,700	203,800	213,310	190,100

Flathead Sole

The flathead sole stock complex includes flathead sole and Bering flounder. This assessment was converted into a biennial stock assessment in 2012, because it has been lightly exploited. Thus, this year's flathead sole stock assessment was conducted as an off year assessment using the 2012 assessment model with updated catch information. However, this year's assessment implements a new catch estimation method, which the Team feels is an improvement over the previous method.

The SSC agrees with the authors' and Team's recommendations for ABC and OFL for 2014 and 2015. In next year's assessment, the SSC would like to see a more complete description of the new catch estimation method and looks forward to the Plan Team's planned evaluation of alternative catch estimation procedures in use by different stock assessment scientists. For the next full assessment, the SSC reiterates its request from 2012 that the authors prepare an alternative assessment of flathead sole under Tier 1. The fitted stock-recruit model suggests that Tier 1 status may be appropriate as with yellowfin sole. Finally, the SSC fully supports the research priorities identified by the authors in this year's assessment.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Flathead sole	BSAI	79,633	66,293	77,023	64,127

Alaska Plaice

Owing to the government shutdown, it was not possible to conduct a full stock assessment for Alaska plaice. The current assessment represents an executive summary using the 2012 assessment model updated with updated catch information. For 2013 the catch was rounded up to the nearest 1,000 t and for 2014 catch was estimated with the recent 5-year average. Alaska plaice are primarily taken as bycatch in the yellowfin sole fishery. A survey in 2010 indicated that 38% of the Alaska plaice biomass occurs in the northern Bering Sea.

The SSC agrees with the authors' and Team's recommended ABCs and OFLs for 2014 and 2015. In last year's assessment, the authors indicated a desire to remove pre-1982 survey data from the assessment given changes in catchability associated with the switch in survey gears. The SSC looks forward to an alternative assessment with this modified dataset and reminds the authors to retain a model fit with the full data so that the effect of this change can be evaluated. The SSC also looks forward to any new insights into how best to address the situation that a significant portion of the Alaska plaice biomass resides in the northern Bering Sea.

Stock/		2014		2015	
Assemblage	Area	OFL	ABC	OFL	ABC
Alaska plaice	BSAI	66,800	55,100	66,300	54,700

Other Flatfish

The other flatfish assessment was presented as an executive summary using last year's assessment model updated with catches and survey biomass estimates through 2013. Other flatfish include 15 species of flatfish, with catches comprised largely of starry flounder and rex sole.

Other flatfish are assessed using Tier 5 methods with F_{OFL} = M, F_{ABC} = 0.75 M and survey biomass. Although total other flatfish biomass is rather stable (Table 11.4), biomass estimates of individual species are more variable. Coefficients of variation are particularly high for butter sole. Although exploitation rates are generally low, occasionally high harvest rates are estimated for individual species. For instance, in 2008 the catch exceeded the trawl survey estimate for butter sole. It appears that biomass estimates for butter sole are not reliable as most catches are taken in unsurveyed waters less than 50 m. Nevertheless, biomass trends of component species within the other flatfish group should continue to be monitored for potential conservation concerns. In this regard, the trends in biomass, harvest and exploitation rates in Table 11.6 are helpful. This year, the SSC noted the apparent large decline in biomass of Dover sole and rex sole from 2012 to 2013.

As requested last year, the SSC requests the reporting of biomass estimates with confidence intervals to help judge trends versus uncertainty. The SSC also looks forward to a future application of a random effects model to these other flatfish data. The authors should consider the merits of applying a random effects model to the aggregate or component species data. The SSC continues to maintain interest in tracking biomass trends of individual species to the extent practical. To the extent possible, the assessment authors are requested to consider the potential effects of temperature on the variance in survey catches of other flatfish.

The SSC concurs with the authors' and Team's ABC and OFL recommendations for both 2014 and 2015.

Stock/		2014		2015	
Assemblage	Area	OFL	ABC	OFL	ABC
Other flatfish	BSAI	16,700	12,400	16,700	12,400

BSAI Rockfish

Pacific Ocean Perch (POP)

This is an "off-year" assessment and was presented in executive summary format where only the projection model was run with updated catches. New data in the 2012 assessment included updated 2012

catch and estimated 2013 and 2014 catches. Projections were very similar to last year's projections because observed catches were very similar to the estimated catches used last year. The area apportionment was based on the standard method of a weighted average of the last three surveys.

The SSC agrees with Plan Team OFL and ABC recommendations. This stock qualifies for management under Tier 3a and the 2012 and 2013 ABCs and OFLs are below in metric tons.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Pacific Ocean perch	EBS		7,684		7,340
	EAI		9,246		8,833
	CAI		6,594		6,299
	WAI		9,598		9,169
BSAI	Total	39,585	33,122	37,817	31,641

The SSC agrees with Plan Team recommendations that future POP research should include exploratory use of the EBS slope index in the model and that the authors should present the stock structure template for this stock in September 2015.

Northern Rockfish

The Aleutian Islands survey was not conducted this year. Catch data were updated and the projection model was run using results from the starting point of the 2010 assessment model.

The SSC agrees with Plan Team OFL and ABC recommendations. This stock qualifies for management under Tier 3a and the 2012 and 2013 ABCs and OFLs are below in metric tons.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Northern rockfish	BSAI	12,077	9,761	11,943	9,652

Shortraker Rockfish

The Aleutian Islands survey was not conducted this year. Catch data were updated and the projection model was run using results from the starting point of the 2010 assessment model. The Plan Team noted that total catch of 420 t exceeded the ABC of 370 t, with the highest removal occurring in the WAI. This is the first year that shortraker rockfish bycatch was reported in the IFQ halibut fishery, based on observer data collected in the restructured observer program, which may have contributed to the TAC exceeding the ABC.

The SSC agrees with Plan Team OFL and ABC recommendations. This stock qualifies for management under Tier 3a and the 2012 and 2013 ABCs and OFLs are below in metric tons.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Shortraker rockfish	BSAI	493	370	493	370

The SSC concurs with Team's recommendation that the authors provide assessment estimates from both the existing surplus production model and the random effects model, with supporting details, in September 2014.

Blackspotted and Rougheye Rockfish Complex

Jason Anderson (Alaska Seafood Cooperative) gave public testimony on bycatch avoidance measures that they plan to voluntarily implement in the trawl fishery in an effort to reduce bycatch blackspotted and rougheye rockfish complex. They plan to avoid specific areas that were identified to contain high bycatch rates of these species.

A straightforward update of the assessment was presented in a short executive summary because the Aleutian Islands survey was not conducted this year. Catch data were updated and the projection model was run using results from the starting point of the 2010 assessment model. The SSC recommends that the author pursue using the random effects model.

The SSC agrees with Plan Team OFL and ABC recommendation and area splits for ABC and the resulting ABCs and OFLs are below in metric tons.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Blackspotted/ Rougheye	EBS/EAI		177		201
	CAI/WAI		239		277
BSAI	Total	505	416	580	478

During the Plan Team meeting the authors revisited the spatial stock structure discussion with the Plan Team for this species complex. The authors presented seven reasons for concern about fishing pressure on the Western Aleutian Island (WAI) component of the population. The Plan Team also expressed "strong concern" about the WAI component of the stock. The SSC shares this concern and agrees with the Plan Team recommendation to have the authors update the seven reasons for concern and bring this forward in 2014. The SSC requests that authors include an update on species identification issues, and if possible, species composition among areas. The SSC also recommends that the authors present spatial distribution trends on catch, length frequencies, trawl survey biomass and any other pertinent information as if the authors' recommended ABC and/or OFL changes were made. The SSC recommends that the authors comment on data and research requirements that would be required to better inform stock structure and comment on any potential correlation to other species declines in the Aleutians such as Steller sea lions.

Other Rockfish Complex

A straightforward update of the assessment and a short executive summary was presented because the Aleutian Islands survey was not conducted this year. Catch data were updated.

The SSC agrees with Plan Team OFL and ABC recommendations that this stock qualifies for management under Tier 5, the resulting ABCs and OFLs are shown below in metric tons

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Other rockfish	EBS		690		690
	AI		473		473
	Total	1,550	1,163	1,550	1,163

The authors presented some evidence for high harvest of the non-SST portion of the stock. The SSC agrees with Plan Team to recommend the stock structure template be completed for this assessment by September 2014.

BSAI Sharks
As expected for stocks managed on biennial cycles, an executive summary of the status of BSAI shark was provided this year. There was no public testimony.

BSAI sharks are managed in Tier 6 based on estimates of average catch during 1997-2007. Therefore, there were no changes to the recommended harvest specifications in 2014 and 2015. The SSC recommends continued management of this stock complex in Tier 6. The biomass estimates for sharks are uncertain as evidenced by the results of the 2013 NMFS bottom trawl survey in which only one Pacific sleeper shark was caught. **The SSC accepts the authors' and Plan Team's ABC and OFL recommendations for 2014 and 2015.**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Shark	BSAI	1,363	1,022	1,363	1,022

In the future, the SSC encourages the authors to carefully consider whether the restructured observer program has impacted catch estimates for BSAI sharks, perhaps necessitating changes to the procedure for estimating average catches used in the catch specification process. The SSC also encourages the authors to address comments and suggestions made by the non-target CIE review team that are relevant to this assessment.

BSAI Skates
This chapter was presented in executive summary format as a scheduled "off-year" assessment. The model was updated with 2012 catch data and partial 2013 catch data. **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 SSC accepts Plan Team recommendations for ABC and OFL of the skate complex as a whole (in metric tons):**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Skate	BSAI	41,849	35,383	39,746	33,545

BSAI Sculpins
This chapter was presented in executive summary format as a scheduled "off-year" assessment. The BSAI sculpins ABC and OFL estimates are made under Tier 5 with an estimated biomass obtained from mean biomass estimates over the past four survey years for the six most abundant sculpin species in the BSAI. A complex mortality rate is obtained as a biomass-weighted average of the instantaneous natural mortality rates for the same six species. **The SSC agrees with the BSAI Plan Team recommendations and supports the estimate of OFLs and ABCs under Tier 5, as shown in the table below (metric tons).**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Sculpin	BSAI	56,424	42,318	56,424	42,318

The SSC asks that the 2014 assessment include recent research information on age, growth, reproduction and diet that was mentioned in the current assessment, but not discussed.

BSAI Squid
This chapter was presented in executive summary format, as a scheduled "off-year" assessment. **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. The SSC supports the Plan Team's request that the 2014 squid assessment be discussed at the Joint Plan Team meeting next year for continuity between regions.

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Squids	BSAI	2,624	1,970	2,624	1,970

BSAI Octopus

This chapter was presented in executive summary format, as a scheduled "off-year" assessment. Authors and the Plan Team 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 SSC agrees with the BSAI Plan Team recommendations and supports the estimate of OFLs and ABCs under an alternative Tier 6 approach, as shown in the table below (metric tons).**

Stock/ Assemblage	Area	2014 OFL	2014 ABC	2015 OFL	2015 ABC
Octopus	BSAI	3,450	2,590	3,450	2,590

The SSC appreciated the current research summary that was included on tagging and discard mortality and looks forward to future research. From our minutes last year, the SSC encourages the exploration of ageing techniques for these octopus species, which would help to construct growth curves. 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 looks forward to hearing responses to the recommendations from the May 2013 CIE review in next year's full assessment.

Groundfish SAFE Appendices

GOA – BSAI Grenadiers (currently outside the FMP)

An executive summary was developed for BSAI-GOA grenadier. BSAI-GOA grenadier are a non-specified species complex. The Council is exploring alternative management for grenadiers (See Comments under C-4). As a non-specified species complex the Plan Teams and the SSC are not required to provide harvest specifications for this species group. Given the potential that grenadier management may change in 2014, the SSC requests a full assessment next year.

The SSC provided comments on the last full assessment methodology in 2012. These comments should be addressed in the 2014 full assessment. The SSC provided additional comments on this assessment during their review of the Grenadier Fishery Management Amendment. Comments relevant to the grenadier appendix are repeated here. It would be useful to develop a food web for the slope regions as part of the ecosystem concerns chapter. The 2012 appendix revealed strong spatial partitioning of the sexes by depth. The SSC requests that the author estimates the sex ratio for the survey biomass and catch estimates in the assessment. The SSC requests that the appendix contains information on time trends in retention. The SSC also encourages the author to author to address comments and suggestions made by the non-target CIE review team if they are relevant to the grenadier appendix.

BSAI Forage fish

The SSC reviewed the BSAI forage fish appendix. There was no staff presentation or public testimony on this agenda item. This is the first BSAI forage fish appendix produced, and as such, is a large step forward in evaluating our understanding of the importance of forage species in the North Pacific. The

BSAI forage fish report is formatted similarly to the GOA forage fish report, including information on the species or species groups, distribution, and bycatch and potential conservation concerns. These forage fish reports now appropriately consider a wider range of species, notably for the BSAI forage fish report that includes Arctic cod.

The SSC appreciates the effort needed to develop this document and we commend the author. Further the SSC believes that this report is an excellent start. However, there are improvements that can be made for future iterations. The first suggestion originates from the 2009 SSC comments on the GOA forage fish report that note the difference in forage species compositions between the BSAI and the GOA. Currently, the list of species included in the BSAI report is very similar to those in the GOA. While understanding the need to be broad in what is considered to be a "forage species", the differences in species compositions between the two regions should be explored in more detail.

The overview of the different forage species or species groups could be substantially expanded, primarily with basic life history information. There are also several references in the overviews (e.g. with shrimps) where it is stated that additional information is available in the monitoring section. However, there is little or no information presented in that section. This information, if it exists, needs to be included or these references removed.

The information presented on the geographic distribution of forage species is very informative, particularly the figures from the bottom trawl and BASIS surveys. However, parts of this section are structured by survey (e.g. "bottom trawl survey data") while others are structured by species group (e.g. "euphausiids"). The SSC requests that this section be structured by species or species group, acknowledging that this would require synthesizing information from multiple data sources in some cases. Care should be taken to separate the apparent shifts in distribution due to the timing of surveys that may detect seasonal migrations from interannual variability in larger-scale shifts in distributions.

Finally, similar to the GOA forage species report, the SSC requests a "data gaps and research priorities" section. The SSC concurs with the Plan Team for review of the BSAI forage species report on a regular schedule during odd-numbered years.

Additionally, the SSC has these specific minor comments and questions:

- On page 1038, why do the total catches differ slightly between Table 1 and Table 2?
- On page 1040, there is larger herring PSC in 2012 and the herring PSC limit exceeded for the first time in the dataset time series. Does this spike in herring show up in any other data sets? Are there additional data from ADF&G that could be pulled into the discussion of herring in this report?
- Figures 1 and 2 (pages 1041-1042) are hard to read as currently formatted.
- Please clarify why the results of the BASIS survey are shown as numbers of individual as opposed to CPUE.
- On page 1059 (Figure 21), making the y-axis scale consistent on this set of graphs would be helpful.
- Figure 22 (page 1060) is also difficult to read and could perhaps be split out by species or species group.

Ecosystem considerations

The SSC received a report on the Ecosystem Considerations Chapter from Stephani Zador (NMFS-AFSC). No public comments were offered. The editor and authors were responsive to past SSC comments, though in many cases the implementation of the suggestions was deferred due to time missed during the furlough.

The SSC recognizes the immense amount of effort put into the Ecosystem Considerations Chapter, and its steady improvement in readability and value. The evolving format and crisp editing have made this a much more useful document than it was ten years ago. The three Hot Topics sections were very informative, though the one for the potentially large 2013 pollock year class in the Gulf was a bit too detailed regarding the methods. The SSC commends the authors and editor on a job well done.

The addition of an Editor's summary at the beginning of each trophic level (zooplankton, salmon etc) section would be very valuable for synthesizing different indices and reports. The SSC urges the Editor to implement this feature in 2014. Likewise, throughout the chapters, the Implications sections were very useful and showed continued improvement. Continued development of these sections is warranted, and section authors should be urged to use these to guide the reader.

The SSC looks forward to the development of the prediction evaluations planned for the future. The SSC will be especially interested in how the information from the two Integrated Ecosystem Studies (Bering Sea and Gulf of Alaska) can be used for informing our understanding and ability to predict ecosystem changes.

The SSC appreciated the update to the Arctic section, despite the shutdown. The general ecosystem information section and the list of potential ecosystem indicators were most useful. The SSC urges the authors to continue pursuing efforts to improve the Arctic Section and to develop an Arctic Report Card similar to those available for the Bering Sea, Gulf of Alaska and the Aleutian Islands.

The newly initiated Arctic Distributed Biological Observatory (DBO) may provide valuable information beyond that available from more traditional fisheries surveys. It would also be good to add some physical measurements, such as flow through Bering Strait, which is monitored by Dr. Rebecca Woodgate at the UW Applied Physics Laboratory. Flow rates in the period March through May may be particularly important in determining when and how much large lipid-rich zooplankton is advected to the Chukchi and Beaufort Seas. Monitoring the date of arrival of these zooplankton in Bering Strait could be valuable in predicting both seabird and fish prey availability north of Bering Strait.

When survey information is available, it would be useful to include in the Arctic Section information on fish length frequencies, growth and condition, in addition to biomass or an index of abundance. Likewise, it would be useful to include information on any subsistence harvesting of fish, because in the absence of regular fishery surveys, this might provide an early warning of changes in Arctic fish stocks. This could also provide information on the communities that harvest them.

In the eastern Bering Sea, several important trends were noted, including: 1) continued extensive sea ice and cold sea temperatures; 2) above average biomass of *Calanoid* copepods; 3) increases in pelagic foragers including pollock and capelin; 4) the first apparent increase in fur seal pup counts on St. Paul Island since 1998; the multivariate index of seabird reproductive performance showed that 2012 was a "good" year for these predators as well; and 6) In the northern Bering Sea, between 2002 and 2012, juvenile salmon were found in regions with high abundances of copepods.

Other findings of note relative to commercially important fish stocks include:

1) Despite the increase in *Calanus* copepods, the low sea temperatures in 2012 apparently led to fewer and smaller age-0 pollock, possibly because temperatures were too low for early survival;
2) The small age-0 pollock had low total energy content in 2012, suggesting that recruitment to age-1 for this year class may be weak;
3) The biomass of euphausiids in 2012 was again down, as in 2010, despite cold waters and extensive sea ice.

Bycatch of seabirds in 2012 was 40% below the 5-year running mean, supporting the conclusion that the efforts by the longline fleet to reduce bycatch are paying off. It was suggested that there may be a connection between ocean conditions and the numbers of bycaught seabirds, with more seabirds caught in years with reduced prey availability.

The information on discard rates (page 172-176) might be more helpful if broken out by industry sector. The huge, very clean pollock catch may hide the impacts of the bottom-trawl fisheries. Knowledge of how each sector is progressing toward lowered bycatch could help to improve management in this area.

In both the eastern Bering Sea and the Gulf of Alaska, there is evidence that arrowtooth flounder biomass on the shelves is down, and that pollock biomass is up. Continued effort to examine these relationships is warranted as future warming may mean a return to heavy predation on pollock by arrowtooth flounder.

In the Gulf of Alaska, the shift in the Papa Trajectory Index to conditions similar to those pre-1977 is of considerable interest, as it may presage a new regime in the Gulf with very different fishery performance than is currently the case. It would be interesting to know if sea temperatures in the Gulf have made a similar shift. Likewise, the improved survival of sablefish juveniles in warmer water suggests that there may be a potential for developing a predictive index. The SSC supports the development of an acoustic index of euphausiid abundance and distribution in the Gulf similar to that available for the Bering Sea.

There is now evidence of negative relationships between pink salmon abundance and the timing and size of sockeye salmon returning to Bristol Bay, the survival of sablefish juveniles in southeast Alaska (page 150), and the multivariate index of seabird reproductive performance at the Pribilof Islands. Is there evidence from anywhere that pink salmon interfere with survival or growth of juvenile Chinook salmon?

It is unclear how a Climate Index for the Bering Sea would be used. Perhaps determination of its use should precede its development? Similarly, an index of primary production in spring, when there are massive blooms might only give a weak indication of the possible flux of detritus to the benthos. Conversely, an index of primary production between August and September might give an indication of the food available to the large crustacean zooplankton in the upper mixed layer, and hence their likelihood of remaining near the surface and available to planktivorous predators including age-0 pollock, seabirds and cetaceans.

In the discussion of HAPC biota, it would seem possible that some return to the bottom relatively unharmed, whereas others are destroyed. In trying to separate out the relative importance of factors impacting trends in bycaught benthos, it might be helpful to know what they eat and how the availability of their prey has been changing.

The discussions of communities and subsistence were most valuable. It could be worth considering combining the sections on populations in the Bering Sea/Aleutian Islands and the Gulf of Alaska into a single section. Doing so should result in a decrease in redundancies, and the potential for comparing and contrasting the various regions and their dependencies on commercial fishing and subsistence harvest.

Research Needs:
Several recent findings suggest areas for research on the predictability of these relationships and their value for informing future management decisions:

1) It could be useful to examine the role of energy content/density in age-1 pollock to see if their condition influences their survival. Use of weights at length from the survey catches, in addition to those from the fishery, might be useful;

2) The possibility that the decline in euphausiids was driven by increasing pollock biomass needs investigation, as top-down control would suggest that in the future predators specializing on euphausiids may be in competition for a limiting resource;
3) The hypothesis that seabird bycatch differs among years in response to natural prey availability should be tested rigorously, as it suggests that there may be limits imposed on the efficacy of bycatch reduction measures when birds are starving;
4) The potential role of pink salmon as a predator and/or as a competitor of other commercially important species needs careful examination**.**
5) To assess the importance of HAPC bycatch, research is needed to determine the post release survival of the different classes of organisms that are important components of the structural epifauna.

Stock structure and management policy

The SSC received a presentation from the Joint Plan Team with respect to stock structure and spatial management of North Pacific stocks and stock complexes and the Council's Policy on Spatial Management. The SSC had discussion and recommendations to clarify the SSC's view of the process and their own role in it based on the two interpretations summarized by the Joint Plan Team. The SSC sees the process to be a combination of interpretation 1 and 2, in which stock structure evidence would be reviewed and discussed by the SSC and the SSC would make a determination as to whether the biological evidence is sufficiently strong to warrant the delineation of stocks into separate components. This determination would be made along with recommendations about types of information that might be collected and research that might be conducted in order to determine if there is a concern about fishing impacts on the stock components. This does not imply that the SSC's determination of separate stock structure is a determination that separate ABC/OFLs would be needed.

The next step of the process would be to determine if there is sufficient evidence for concern about impact on the stock structure from fishing removals. If the SSC determines there is sufficient evidence that a conservation concern exists that would warrant management action to achieve stock unit conservation, the process of evaluating possible actions that might be taken would begin. These could range from monitoring to recommending separate harvest specifications in the following year or years, depending on the urgency of the situation. If a management alternative is proposed by industry or the Council that can accomplish protection of the stocks, then that would be brought forward for consideration. The SSC would still maintain its policy of notifying the Council at least a year in advance of a possible stock split for ACL purposes.

The SSC has previously recommended that all stocks be subjected to the stock structure template and anticipates reviewing several templates per year as these are prepared. It is envisioned that completion of the template is not the only opportunity to comment on stock structure or concerns about impacts on stock structure because new evidence might come forward after a template is completed and commented on. Thus, the process is iterative and may evolve differently for different stock groupings.

State waters catch issue

For most species without a state GHL in areas 649 (Prince William Sound) and 659 (Southeast Inside), there has neither been a stock assessment, nor full catch accounting prior to 2013. The catch from areas 649 and 659 was included in the catch accounting system (CAS) for the first time in 2013, but federal stock assessments for skates and sharks do not account for populations in areas 649 and 659. In 2013, estimates of shark and skate catches in federal halibut and federal parallel Pacific cod fisheries in areas 649 and 659 increased dramatically, in part due to observer coverage of federal halibut and smaller longline vessels fishing Pacific cod in these areas.

The SSC supports the Plan Team recommendations that a review of State managed GHL fisheries and relative bycatch estimates of skates and sharks in these fisheries be conducted for comparison against the

bycatch of federal (halibut and parallel Pacific cod) fisheries in Areas 649 and 659. **In addition, the SSC requests that the observer program gather and present information on catch and observer coverage in state waters, compared to federal waters, during the June 2014 program evaluation. The SSC asks the assessment authors for GOA skates and sharks to present what is known about shark and skate movement patterns and an evaluation of whether the exchange rate between state (areas 649 and 659) and federal waters is sufficient to suggest that skate and shark populations in state waters are part of the same populations as those in federal waters. In addition, the SSC asks assessment authors for GOA skates and sharks to explore methods of accounting for sharks and skates in state waters as part of the federal assessments.** For skates (Tier 5) and spiny dogfish, methods of estimating or extrapolating biomass into state waters will need to be explored. For Pacific sleeper shark, salmon shark and other/unidentified sharks (Tier 6), if the increase in 2013 incidental catch in state waters was from observer estimates on halibut vessels being included in the Catch Accounting System, methods of estimating unaccounted for harvest in years prior to 2013 should be explored and the necessary information to do so identified. The SSC recognizes that the application of such an extrapolation method to catch would require multiple years of estimated catch based on the restructured observer program.

The SSC recommends that deducting catch from areas 649 and 659 from the Federal TACs for federally specified species (50 CFR part 679, Table 2a FMP Groundfish Species) that do not have State GHL fisheries in Areas 649 and 659 should be delayed until there is information indicating that the federal specified species in state and federal waters are part of the same stocks and until the biomass (for Tier 5) or catch (for Tier 6) in state waters can be appropriately accounted for in the stock assessment.

D-3 Develop workplan for Amendment 80 program 5-year review
The SSC received a report on the planned review from Marcus Hartley (Northern Economics) and Jon McCracken (NPFMC).

The SSC alerts the Council to the discussion in the work-plan document regarding confidentiality and fishing cooperatives. If cooperative-level data is effectively sealed off by the prevailing interpretation of cooperatives as single entities, the potential disruption to normal Council analyses is profound and troubling. In the extreme, catch data for an entire fishery could become off-limits. The SSC urges the Council to seek immediate clarification of this issue from NOAA General Counsel.

In general, the SSC believes the analysts have proposed a reasonable and comprehensive plan for the 5 year review. The SSC offers the following suggested improvements:

The work plan references Prohibited Species "Quota" and PSC "Allocation." By definition these terms are contradictory and their use here should be clarified or removed.

With reference to assessing Community Impacts of AM80, Dutch Harbor and Seattle are the focus as the community out of which the vessels operate and community out of which vessels/companies are based, respectively. The analysis should address whether this was always the case, or whether these two communities are the primary bases for these vessels as a result of AM80. The work plan also proposes to understand community/local involvement and impacts by interviewing "operators" and qualitatively assessing their impacts on the communities. A better approach to understand community impacts would start in the communities themselves and examine onshore interactions and uses of local services, for example.

The review should include a discussion of both the quality and the accessibility of the EDR data being collected in conjunction with AM80. EDR data has proven to be contentious in other programs and it would be useful to understand how the EDR program is working in the AM80 context.

To the extent that the intent of this review is to establish how the provisions of AM80 have affected the fishery, the relevant point of comparison is what the fishery would have been like today without AM80 (presumably under prior management). For some goals, this is well-proxied by pre-AM80 conditions. However, for others, this proxy is poor and it is necessary to account for changes in macroeconomics, environment, resource, and market conditions to understand the effect of AM80. For all goals, the report should make an argument supporting the qualitative reliability of the baseline against which the effect of the program is being measured. For measures based on revenues, to the extent practical, it is preferable to adjust the baseline to take into account changes in product form (cf., the shift to fresh products as a result of the halibut IFQ program) and changes in global prices (e.g., arising from the worldwide recession) during the AM80 period. For products where AM80 vessels are price takers, this may be accomplished by calculating revenues at observed current prices. If there is a significant employment or capacity effect, it would be useful to identify how much have that would have been observed in the absence of AM80.

The SSC believes the 5-year review could also include analyses informative to the Council about other items currently being addressed by the Council. For instance, since a priority focus of AM80 was the reduction of bycatch, the AM80 5-year review could provide a “lessons learned" from AM80 to inform future actions for GOA trawl bycatch management. The SSC therefore suggests that the Council consider using the AM80 5-year review to address any particular questions that are important for informing future and current Council items.