# North Pacific Fishery Management Council

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**FINAL REPORT**
**of the**
**SCIENTIFIC AND STATISTICAL COMMITTEE**
**to the**
**NORTH PACIFIC FISHERY MANAGEMENT COUNCIL**
**December 5th –December 7th, 2011**

The SSC met from December 5th through December 7th, 2011 at the Hilton Hotel, Anchorage Alaska.

Members present were:

| | | |
|---|---|---|
| Pat Livingston, Chair<br>*NOAA Fisheries—AFSC* | Farron Wallace, Vice Chair<br>*Wash. Dept. of Fish and Wildlife* | Jennifer Burns<br>*University of Alaska Anchorage* |
| Robert Clark<br>*Alaska Department of Fish and Game* | Anne Hollowed<br>*NOAA Fisheries—AFSC* | George Hunt<br>*University of Washington* |
| Gordon Kruse<br>*University of Alaska Fairbanks* | Kathy Kuletz<br>*US Fish and Wildlife Service* | Franz Mueter<br>*University of Alaska Fairbanks* |
| Jim Murphy<br>*University of Alaska Anchorage* | Lew Queirolo<br>*NOAA Fisheries—Alaska Region* | Terry Quinn<br>*University of Alaska Fairbanks* |
| Kate Reedy-Maschner<br>*Idaho State University* | Ray Webster<br>*International Halibut Commisson* | Doug Woodby<br>*Alaska Department of Fish and Game* |

Members absent were:

| | |
|---|---|
| Vacant<br>*Oregon Dept. Fish and Wildlife* | Seth Macinko<br>*University of Rhode Island* |

The SSC would like to extend our appreciation and gratitude to Doug Woodby who, after serving on the SSC for 9 years, will be retiring from ADFG.

**Miscellaneous issues addressed**

EFP catches

The GOA Plan Team requested that the SSC comment on the method for incorporating anticipated EFP and SRP catches into stock assessments. The Plan Team understanding was that EFP and SRP fish catch could be accounted for in mortality prior to determining ABC. However, upon discussion with NMFS-AKR staff at the SSC meeting, it seems that this change will not make a difference in the manner in which EFP and SRP requests are considered by NMFS-AKR. The FMP suggests that the proposed EFP and SRP catches be compared with the approved ABC (ACL) and TACs set for the stock. If there appears to be a sufficient buffer between the catch usually attained under the TAC for the species and the ABC (ACL), then an EFP or SRP would typically be approved. Thus, it appears that the main need at

present is to assure that historical total catches, including those from EFP and SRPs, are incorporated into stock assessments to properly evaluate stock productivity. The SSC heard that NMFS-AKR is planning to provide a white paper at the next Council meeting that summarizes approaches taken in other regions with respect to EFP and SRP catches under the ACL provisions of the Magnuson Act. The SSC looks forward to receiving the report.

Halibut PSC Limits

The SSC received information from Jane DiCosimo (NPFMC) regarding the Plan Team comments on the planned halibut PSC action being considered by the Council and also on the structure of a halibut workshop to be conducted later this year. Public testimony on those issues was provided by Julie Bonney (Alaska Groundfish Data Bank) and Bob Alverson (Fishing Vessel Owners Association). The SSC provided no additional comments or recommendations on these items.

**C-3 (a,b) GOA and BSAI specifications and SAFE report**

The SSC received a presentation by Grant Thompson (NMFS-AFSC) and Mike Sigler (NMFS-AFSC) on Plan Team recommendations for BSAI groundfish OFL and ABC. Grant Thompson also provided Pacific cod stock assessments for both the GOA and the BSAI, and Jim Ianelli (NMFS-AFSC) presented the BSAI pollock stock assessment. Gulf of Alaska Plan Team recommendations were summarized by Diana Stram (NPFMC) and Jim Ianelli.

**General SSC SAFE comments**

The SSC is pleased to see that many assessment authors have examined retrospective bias in the assessment and encourages the authors and Plan Teams to determine guidelines for how to best evaluate and present retrospective patterns associated with estimates of biomass and recruitment. We recommend that all assessment authors (Tier 3 and higher) bring retrospective analyses forward in next year's assessments.

The SSC concurs with the Plan Teams' recommendation that the authors consider issues for sablefish where there may be overlap between the catch-in-areas and halibut fishery incidental catch estimation (HFICE) estimates. In general, for all species, it would be good to understand the unaccounted for catches and the degree of overlap between the CAS and HFICE estimates, and to discuss these at the Plan Team meetings next September.

The SSC reviewed the SAFE chapters and received a report from the Plan Teams, with respect to status determinations for BSAI and GOA groundfish. **The SSC accepts the status determination therein, which indicated that no stock was subject to overfishing in 2010. 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.**

**Comments on GOA and BSAI Flatfish**

The SSC understands that CIE reviews are being considered for some flatfish stocks in spring 2012. For the GOA, two of the SSC's recommended priorities are the new northern and southern rock sole assessment and the current Dover sole assessment. The rock sole assessments are a priority because the assessment model is new and still under refinement. Therefore, expert CIE reviews could be invaluable at this juncture. The Dover sole assessment is a priority because of the recent failure of the model to converge to a global maximum, and rejection of the existing model for this year's assessment. Resolution of these model convergence issues for the Dover sole model is a high priority before next year's assessment, if possible. A third priority for the GOA is the rex sole assessment, which is difficult owing to the lack of a directed fishery. For the BSAI, the SSC's recommended priorities for CIE reviews are yellowfin sole, northern rock sole, and Greenland turbot. Some of the issues to address include growth, as well as attempts to incorporate environmental variability.

Table 1. SSC recommendations for Gulf of Alaska groundfish 2012 through 2013 OFLs and ABCs, shown with 2011 OFL, ABC, TAC, and Catch amounts in in metric tons (2011 catches through November 5th, 2011 from AKR Catch Accounting). Recommendations are marked in **bold** where SSC recommendations differ from those of the GOA Plan Team.

| Stock/ Assemblage | Area | 2011 OFL | ABC | TAC | Catch | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|---|---|---|---|
| Pollock | W (61) | | 27,031 | 27,031 | 20,639 | | 30,270 | | 32,816 |
| | C (62) | | 37,365 | 37,365 | 37,126 | | 45,808 | | 49,662 |
| | C (63) | | 20,235 | 20,235 | 19,769 | | 26,348 | | 28,565 |
| | WYAK | | 2,339 | 2,339 | 2,271 | | 3,244 | | 3,517 |
| | Subtotal | 118,030 | 86,970 | 86,970 | 79,805 | 143,716 | 105,670 | 155,402 | 114,560 |
| | EYAK/SEO | 12,326 | 9,245 | 9,245 | | 14,366 | 10,774 | 14,366 | 10,774 |
| | Total | 130,356 | 96,215 | 96,215 | 79,805 | 158,082 | 116,444 | 169,768 | 125,334 |
| Pacific Cod | W | | 30,380 | 22,785 | 22,104 | | 28,032 | | 29,120 |
| | C | | 53,816 | 40,362 | 36,023 | | 56,940 | | 59,150 |
| | E | | 2,604 | 1,953 | 709 | | 2,628 | | 2,730 |
| | Total | 102,600 | 86,800 | 65,100 | 58,836 | 104,000 | 87,600 | 108,000 | 91,000 |
| Sablefish | W | | 1,620 | 1,620 | 1,390 | | 1,780 | | 1,757 |
| | C | | 4,740 | 4,740 | 4,799 | | 5,760 | | 5,686 |
| | WYAK | | 1,990 | 1,990 | 1,876 | | 2,247 | | 2,219 |
| | SEO | | 2,940 | 2,940 | 2,992 | | 3,173 | | 3,132 |
| | Total | 13,340 | 11,290 | 11,290 | 11,057 | 15,330 | 12,960 | 15,129 | 12,794 |
| Shallow-water flatfish | W | | 23,681 | 4,500 | 124 | | 21,994 | | 20,171 |
| | C | | 29,999 | 13,000 | 3,819 | | 22,910 | | 21,012 |
| | WYAK | | 1,228 | 1,228 | | | 4,307 | | 3,950 |
| | EYAK/SEO | | 1,334 | 1,334 | 2 | | 1,472 | | 1,350 |
| | Total | 67,768 | 56,242 | 20,062 | 3,945 | 61,681 | 50,683 | 56,781 | 46,483 |
| Deep-water Flatfish | W | | 529 | 529 | 12 | | 176 | | 176 |
| | C | | 2,919 | 2,919 | 440 | | 2,308 | | 2,308 |
| | WYAK | | 2,083 | 2,083 | 7 | | 1,581 | | 1,581 |
| | EYAK/SEO | | 774 | 774 | 1 | | 1,061 | | 1,061 |
| | Total | 7,823 | 6,305 | 6,305 | 460 | 6,834 | 5,126 | 6,834 | 5,126 |
| Rex sole | W | | 1,516 | 1,517 | 131 | | 1,307 | | 1,283 |
| | C | | 6,293 | 6,294 | 2,721 | | 6,412 | | 6,291 |
| | WYAK | | 868 | 868 | 1 | | 836 | | 821 |
| | EYAK/SEO | | 888 | 889 | | | 1,057 | | 1,037 |
| | Total | 12,499 | 9,565 | 9,568 | 2,853 | 12,561 | 9,612 | 12,326 | 9,432 |
| Arrowtooth Flounder | W | | 34,317 | 8,000 | 1,700 | | 27,495 | | 27,386 |
| | C | | 144,559 | 30,000 | 27,787 | | 143,162 | | 142,591 |
| | WYAK | | 22,551 | 2,500 | 146 | | 21,159 | | 21,074 |
| | EYAK/SEO | | 11,723 | 2,500 | 70 | | 21,066 | | 20,982 |
| | Total | 251,068 | 213,150 | 43,000 | 29,703 | 250,100 | 212,882 | 249,066 | 212,033 |
| Flathead Sole | W | | 17,442 | 2,000 | 393 | | 15,300 | | 15,518 |
| | C | | 28,104 | 5,000 | 2,278 | | 25,838 | | 26,205 |
| | WYAK | | 2,064 | 2,064 | | | 4,558 | | 4,623 |
| | EYAK/SEO | | 1,523 | 1,523 | | | 1,711 | | 1,735 |
| | Total | 61,412 | 49,133 | 10,587 | 2,671 | 59,380 | 47,407 | 60,219 | 48,081 |

Table 1. continued.

| Stock/ Assemblage | Area | 2011 OFL | ABC | TAC | Catch | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|---|---|---|---|
| Pacific ocean perch | W | 3,221 | 2,798 | 2,798 | 1,818 | 2,423 | 2,102 | 2,364 | 2,050 |
| | C | 11,948 | 10,379 | 10,379 | 10,408 | 12,980 | 11,263 | 12,662 | 10,985 |
| | WYAK | | 1,937 | 1,937 | 1,870 | | 1,692 | | 1,650 |
| | SEO | | 1,883 | 1,883 | | | 1,861 | | 1,815 |
| | E(subtotal) | 4,397 | 3,820 | 3,820 | | 4,095 | 3,553 | 3,995 | 3,465 |
| | Total | 19,566 | 16,997 | 16,997 | 14,096 | 19,498 | 16,918 | 19,021 | 16,500 |
| Northern rockfish[3] | W | | 2,573 | 2,573 | 1,742 | | 2,156 | | 2,017 |
| | C | | 2,281 | 2,281 | 1,653 | | 3,351 | | 3,136 |
| | E | | | | | | | | |
| | Total | 5,784 | 4,854 | 4,854 | 3,395 | 6,574 | 5,507 | 6,152 | 5,153 |
| Shortraker | W | | 134 | 134 | 81 | | 104 | | 104 |
| | C | | 325 | 325 | 236 | | 452 | | 452 |
| | E | | 455 | 455 | 230 | | 525 | | 525 |
| | Total | 1,219 | 914 | 914 | 547 | 1,441 | 1,081 | 1,441 | 1,081 |
| Other rockfish (previously "Other slope") | W | | 212 | 212 | 300 | | **44** | | **44** |
| | C | | 507 | 507 | 351 | | **606** | | **606** |
| | WYAK | | 276 | 276 | 187 | | 230 | | 230 |
| | EYAK/SEO | | 2,757 | 200 | 30 | | 3,165 | | 3,165 |
| | Total | 4,881 | 3,752 | 1,195 | 868 | 5,305 | 4,045 | 5,305 | 4,045 |
| Dusky rockfish (previously "pelagic shelf rockfish") | W | | 611 | 611 | 367 | | 409 | | 381 |
| | C | | 3,052 | 3,052 | 2,089 | | 3,849 | | 3,581 |
| | WYAK | | 407 | 407 | 58 | | 542 | | 504 |
| | EYAK/SEO | | 684 | 684 | 1 | | 318 | | 296 |
| | Total | 5,570 | 4,754 | 4,754 | 2,515 | 6,257 | 5,118 | 5,822 | 4,762 |
| Rougheye and blackspotted rockfish | W | | 81 | 81 | 28 | | 80 | | 82 |
| | C | | 868 | 868 | 364 | | 850 | | 861 |
| | E | | 363 | 363 | 146 | | 293 | | 297 |
| | Total | 1,579 | 1,312 | 1,312 | 538 | 1,472 | 1,223 | 1,492 | 1,240 |
| Demersal rockfish | Total | 479 | 300 | 300 | 82 | 467 | 293 | 467 | 293 |
| Thornyhead Rockfish | W | | 425 | 425 | 151 | | 150 | | 150 |
| | C | | 637 | 637 | 295 | | 766 | | 766 |
| | E | | 708 | 708 | 163 | | 749 | | 749 |
| | Total | 2,360 | 1,770 | 1,770 | 609 | 2,220 | 1,665 | 2,220 | 1,665 |
| Atka mackerel | Total | 6,200 | 4,700 | 2,000 | 1,613 | 6,200 | 4,700 | 6,200 | 4,700 |
| Big Skate | W | | 598 | 598 | 69 | | 469 | | 469 |
| | C | | 2,049 | 2,049 | 1,949 | | 1,793 | | 1,793 |
| | E | | 681 | 681 | 98 | | 1,505 | | 1,505 |
| | Total | 4,438 | 3,328 | 3,328 | 2,116 | 5,023 | 3,767 | 5,023 | 3,767 |
| Longnose Skate | W | | 81 | 81 | 48 | | 70 | | 70 |
| | C | | 2,009 | 2,009 | 792 | | 1,879 | | 1,879 |
| | E | | 762 | 762 | 64 | | 676 | | 676 |
| | Total | 3,803 | 2,852 | 2,852 | 904 | 3,500 | 2,625 | 3,500 | 2,625 |
| Other skates | Total | 2,791 | 2,093 | 2,093 | 996 | 2,706 | 2,030 | 2,706 | 2,030 |
| Squid | GOA-wide | 1,530 | 1,148 | 1,148 | 229 | 1,530 | 1,148 | 1,530 | 1,148 |
| Sharks | GOA-wide | 8,263 | 6,197 | 6,197 | 510 | 8,037 | 6,028 | 8,037 | 6,028 |
| Octopus | GOA-wide | 1,273 | 954 | 954 | 748 | 1,941 | 1,455 | 1,941 | 1,455 |
| Sculpins | GOA-wide | 7,328 | 5,496 | 5,496 | 648 | 7,641 | 5,731 | 7,641 | 5,731 |
| **Total** | | 723,930 | 590,121 | 318,291 | 219,744 | 747,780 | 606,048 | 756,621 | 612,506 |

1 The ABC for other rockfish in the Western and Central GOA is combined for management purposes.

Table 2. SSC recommendations for BSAI Groundfish 2012 through2013 OFLs and ABCs shown with the 2011 OFL, ABC, TAC, and Catch amounts in metric tons (2011 catches through November 5 from AKR

Catch Accounting include CDQ). None of the SSC recommendations differed from the BSAI Plan Team recommendations.

Table 1. BSAI Groundfish Plan Team Recommendations for Final OFLs and ABCs (mt) for 2012 and 2013.

| | | 2011 | | | 11/05/2011 | 2012 | | 2013 | |
|---|---|---|---|---|---|---|---|---|---|
| **Species** | **Area** | **OFL** | **ABC** | **TAC** | **Catch** | **OFL** | **ABC** | **OFL** | **ABC** |
| Pollock | EBS | 2,450,000 | 1,270,000 | 1,252,000 | 1,197,578 | 2,474,000 | 1,220,000 | 2,840,000 | 1,360,000 |
| | AI | 44,500 | 36,700 | 19,000 | 1,162 | 39,600 | 32,500 | 42,900 | 35,200 |
| | Bogoslof | 22,000 | 156 | 150 | 140 | 22,000 | 16,500 | 22,000 | 16,500 |
| Pacific cod | BSAI | 272,000 | 235,000 | 227,950 | 202,785 | 369,000 | 314,000 | 374,000 | 319,000 |
| Sablefish | BS | 3,360 | 2,850 | 2,850 | 668 | 2,640 | 2,230 | 2,610 | 2,200 |
| | AI | 2,250 | 1,900 | 1,900 | 950 | 2,430 | 2,050 | 2,400 | 2,020 |
| | Total | 5,610 | 4,750 | 4,750 | 1,618 | 5,070 | 4,280 | 5,010 | 4,220 |
| Atka mackerel | EAI/BS | n/a | 40,300 | 40,300 | 40,833 | n/a | 38,500 | n/a | 31,700 |
| | CAI | n/a | 24,000 | 11,280 | 10,714 | n/a | 22,900 | n/a | 18,900 |
| | WAI | n/a | 21,000 | 1,500 | 205 | n/a | 20,000 | n/a | 16,500 |
| | Total | 101,000 | 85,300 | 53,080 | 51,752 | 96,500 | 81,400 | 78,300 | 67,100 |
| Yellowfin sole | BSAI | 262,000 | 239,000 | 196,000 | 141,399 | 222,000 | 203,000 | 226,000 | 207,000 |
| Rock sole | BSAI | 248,000 | 224,000 | 85,000 | 60,292 | 231,000 | 208,000 | 217,000 | 196,000 |
| Greenland turbot | EBS | n/a | 4,590 | 3,500 | 2,979 | n/a | 7,230 | n/a | 6,010 |
| | AI | n/a | 1,550 | 1,550 | 514 | n/a | 2,430 | n/a | 2,020 |
| | Total | 7,220 | 6,140 | 5,050 | 3,493 | 11,700 | 9,660 | 9,700 | 8,030 |
| Arrowtooth flounder | BSAI | 186,000 | 153,000 | 25,900 | 19,600 | 181,000 | 150,000 | 186,000 | 152,000 |
| Kamchatka flounder | BSAI | 23,600 | 17,700 | 17,700 | 9,242 | 24,800 | 18,600 | 24,800 | 18,600 |
| Flathead sole | BSAI | 83,300 | 69,300 | 41,548 | 13,080 | 84,500 | 70,400 | 83,100 | 69,200 |
| Other flatfish | BSAI | 19,500 | 14,500 | 3,000 | 3,116 | 17,100 | 12,700 | 17,100 | 12,700 |
| Alaska plaice | BSAI | 79,100 | 65,100 | 16,000 | 22,471 | 64,600 | 53,400 | 65,000 | 54,000 |
| Pacific Ocean perch | EBS | n/a | 5,710 | 5,710 | 2,053 | n/a | 5,710 | n/a | 6,540 |
| | EAI | n/a | 5,660 | 5,660 | 5,094 | n/a | 5,620 | n/a | 6,440 |
| | CAI | n/a | 4,960 | 4,960 | 4,768 | n/a | 4,990 | n/a | 5,710 |
| | WAI | n/a | 8,370 | 8,370 | 8,181 | n/a | 8,380 | n/a | 9,610 |
| | Total | 36,300 | 24,700 | 24,700 | 20,096 | 35,000 | 24,700 | 33,700 | 28,300 |
| Northern rockfish | BSAI | 10,600 | 8,670 | 4,000 | 2,644 | 10,500 | 8,610 | 10,400 | 8,490 |
| Shortraker rockfish | BSAI | 524 | 393 | 393 | 275 | 524 | 393 | 524 | 393 |
| Blackspotted and | EBS/EAI | n/a | 234 | 234 | 75 | n/a | 231 | n/a | 241 |
| Rougheye | CAI/WAI | n/a | 220 | 220 | 78 | n/a | 244 | n/a | 258 |
| Rockfishes | Total | 549 | 454 | 454 | 153 | 576 | 475 | 605 | 499 |
| Other rockfish | EBS | n/a | 710 | 500 | 274 | n/a | 710 | n/a | 710 |
| | AI | n/a | 570 | 500 | 610 | n/a | 570 | n/a | 570 |
| | Total | 1,700 | 1,280 | 1,000 | 884 | 1,700 | 1,280 | 1,700 | 1,280 |
| Squids | BSAI | 2,620 | 1,970 | 425 | 325 | 2,620 | 1,970 | 2,620 | 1,970 |
| Skates | BSAI | 37,800 | 31,500 | 16,500 | 21,034 | 39,100 | 32,600 | 38,300 | 32,000 |
| Sharks | BSAI | 1,360 | 1,020 | 50 | 162 | 1,360 | 1,020 | 1,360 | 1,020 |
| Octopuses | BSAI | 528 | 396 | 150 | 563 | 3,450 | 2,590 | 3,450 | 2,590 |
| Sculpins | BSAI | 58,300 | 43,700 | 5,200 | 5,095 | 58,300 | 43,700 | 58,300 | 43,700 |
| **Total** | **BSAI** | **3,954,111** | **2,534,729** | **2,000,000** | **1,778,959** | **3,996,000** | **2,511,778** | **4,341,869** | **2,639,792** |

Final 2011 OFLs, ABCs, and TACs from 2011-2012 final harvest specifications

The "other species" category was removed in 2011 and replaced with separate categories for skates, sharks, octopuses, and sculpins

**Pacific cod**
Since last year's assessment, the Pacific cod models underwent a CIE review and, as in 2010, model proposals from stakeholder were considered. These were reviewed by the Joint Plan Team in May and September, and by the SSC in June and October, to reduce the numerous recommendations from the CIE review, Plan Teams, SSC, and the public to a more manageable set of five models that were brought forward in this year's assessment.

The SSC appreciates the amount and high quality of work that went into improvements to the Pacific cod model in recent years, and thanks the author for clearly laying out the recent history of the assessment models. For next year's assessment cycle in both areas, the SSC supports the current protocol of vetting models through a public process and selecting a limited set of models to bring forward. We agree with a recommendation from the CIE review that the number of explorations and new model configurations for upcoming assessments should be reduced, to allow for a thorough evaluation of the performance of the current model over several assessment cycles.

The author proposed seven model evaluation criteria; 1) fitting the age composition data (unanimous CIE recommendation), 2) internal estimation of aging error bias (much more efficient), 3) correspondence between the model-estimated mean size-at-age and the empirical survey mean size-at-age of the first three modes of the average survey size composition, 4) correspondence of the product of survey catchability and survey selectivity (for the 61 to 80 cm size range) from the model and the values estimated by Nichol et al. (2007) for the EBS (0.47) and GOA (0.92), 5) accounting for full variability in the observed length-at-age among individuals and years, 6) low temporal variability in survey selectivity and catchability, and 7) reasonable retrospective behavior. The SSC concurs with the Plan Team endorsement of **these selection criteria, which are a distillation of past preferences and recommendations from the Plan Teams, CIE reviewers, the public, and the SSC.**

One of the largest sources of uncertainty in both assessments remains the catchability of Pacific cod in the survey. **The SSC strongly supports proposed research on the vertical distribution of Pacific cod, relative to the EBS bottom trawl and comparisons between the EBS and GOA trawl gear.**

Other comments that pertain to both areas:

- The SSC notes that weight-at-age in both regions was lowest in May-Aug. or Sept.-Oct. and highest in Jan.-Feb. These patterns seem somewhat counter-intuitive, and we encourage the authors to evaluate the biological basis for these patterns.
- The recommended models for both regions estimate ageing bias as a linear function of age, but the estimated pattern in ageing bias differs by region, increasing from approximately 0.34 at the youngest age to 0.85 at the oldest age in the BSAI assessment (model 3b), but decreasing from 0.36 to 0 at the oldest age in the GOA assessment (model 3).

**BSAI Pacific cod**
Public testimony was provided by Kenny Down (Freezer Longline Coalition), who urged the SSC to continue the current protocol of vetting models in a public process. The FLC supports continued work on determining catchability, and supports selection of model 3b and the associated ABC for 2012.

For this year's assessment, the 2010 preferred model, as accepted by the SSC in December 2010, was updated with new data and was used as the base model for 2011, as requested by the SSC. Other models were used to explore a number of incremental changes to the base model and their consequences. The author and the Plan Team recommend model 3b, which includes the following features: 1) natural mortality is fixed at M = 0.34, 2) pre-1982 trawl survey data are excluded, 3) ageing bias is estimated internally as a linear function of age (previously, bias was fixed at 0.4 across ages), 4) commercial length

composition data are fitted with length-specific selectivities, by fishery, estimated in blocks of years, 5) trawl survey age composition data are fitted with age-specific selectivities, 6) catchability is fixed at 0.77, based on limited tagging experiments, 7) standard deviations of length-at-age are estimated internally as a linear function of length-at-age, and 8) mean length-at-age data are not included in the likelihood. In addition, a number of other sensible changes were made, as previously reviewed and recommended by the Plan Team and the SSC.

Survey biomass increased substantially between 2009 and 2010, and showed a moderate increase in 2011. All model-based estimates of total biomass have been increasing for the last three years and are expected to increase further, due to above-average recruitment in 2006, 2008, and possibly in 2010, although the 2010 estimate is highly uncertain and has only been observed once in the survey.

Based on the proposed selection criteria, model 3b was the clear choice. Model diagnostics and a comparison of likelihoods suggest that model 3b provides a reasonable fit overall and the best fit to the age composition data. **The SSC agrees with the author and Plan Team to use model 3b for stock status determinations in 2012, and sees no compelling reason to reduce the ABC from the maximum permissible value under Tier 3a, as summarized below in metric tons:**

| Stock/ | | 2012 | | 2013 | |
|---|---|---|---|---|---|
| Assemblage | Area | OFL | ABC | OFL | ABC |
| Pacific cod | BSAI | 369,000 | 314,000 | 374,000 | 319,000 |

The SSC requested in its December 2010 minutes that a separate assessment for the AI be brought forward, because of concerns over diverging trends in the biomass estimates for the AI and EBS. In response, the author provided a Tier-5 assessment for AI cod as an appendix to the current assessment. The author plans to develop an age-structured model for the Aleutians in 2012. We look forward to reviewing a preliminary model in October 2012.

**GOA Pacific cod**

No public testimony was provided specific to the GOA assessment, but see the BSAI cod section above for general testimony on the cod assessments. The current GOA assessment was updated with new survey and commercial data series for CPUE, catch at age, and catch at length. The 2011 bottom trawl survey estimated a 33% decrease in abundance over the 2009 survey estimate, but this was still a 199% increase from the 2007 estimate.

Models considered for the GOA cod assessment were similar to those for the BSAI assessment. The 2010 preferred model, as accepted by the SSC in December 2010, was updated with new data and was used as the base model for 2011 (model 1). Other models (models 3, 3b, and 4) were similar to the corresponding models for the BSAI and included the following features: 1) model 3 included internal estimation of the aging bias as a linear function of age, a modification of the L1 parameter in the length-at-age equation to correspond to the length of age 1 fish at the time of the survey, and external estimation of the variability in length-at-age; 2) model 3b was similar to model 3, but estimated variability in length-at-age internally, was not fit to the mean size at age data, fixed the selectivity and catchability for the 27cm-plus size classes in the trawl survey to be constant over time, and used a normal prior distribution for the catchability deviations in the sub-27 cm size class; and 3) model 4 was similar to model 3b but excluded all age composition data and constrained the pre-1977 mean recruitment to be less than the post-1976 mean recruitment. In addition, a number of other sensible changes were made, as previously reviewed and recommended by the Plan Teams and the SSC.

Because no model met all of the selection criteria, the criteria were prioritized with the highest priority placed on criteria 1 through 4. The author recommended model 3, because of the good fit to the age composition data, estimating ageing bias internally, a good match between estimated and observed size

modes at ages 1 and 3, and a good fit to the Nichol et al. (2007) estimate of the product of survey catchability and selectivity. The Plan Team agreed with the author's choice and also noted that the retrospective patterns indicate that inclusion of additional data tend to decrease estimates of abundance, which supports models with a higher level of survey catchability, such as models 1 and 3.

Based on these considerations, model diagnostics, and an examination of the likelihood components, **the SSC accepts the Plan Team's and the authors' preferred model (model 3), Tier 3a designation, and the 2012/13 ABC and OFLs, shown below, in metric tons.** With respect to area apportionments, the SSC requested in December 2010 that the simple Kalman filter approach, which has been used to estimate the proportions of Pacific cod biomass in the EBS and AI since 2004, be applied to the GOA as well. We heard that a special working group intends to review and standardize approaches to area apportionments across stock assessments to improve consistency. Until the group makes its recommendations, the SSC endorses the status quo method for area apportionments, based on the three most recent surveys, resulting in area apportionments of 32% Western, 65% Central, and 3% Eastern:

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Pacific Cod | W | | 28,032 | | 29,120 |
| | C | | 56,940 | | 59,150 |
| | E | | 2,628 | | 2,730 |
| | Total | 104,000 | 87,600 | 108,000 | 91,000 |

The SSC raised two concerns about the current model. First, authors' use of jitter runs is intended to ensure that the model converges to a global minimum of the objective function. We note that of the 50 runs included in the final jitter runs (Fig.2.12), no two model runs resulted in the same estimate for any of the models, except model 3b, and that the objective value function (on the log-likelihood scale) differs substantially among runs. This suggests that there is still considerable uncertainty about whether the model has converged to the "best" solution. The SSC suggests that a further reduction in the number of parameters may be warranted, to improve convergence. Secondly, based on the preferred model (model 3), the estimated fishing mortalities have exceeded $F_{ABC}$ in the past 5 years ($F_{OFL}$ in 2 years), suggesting that additional scrutiny of this stock may be warranted. However, the current assessment indicates an increasing biomass trend supported by several years of above-average recruitment. Therefore, the SSC concurs that a reduction from the maximum permissible ABC is not warranted at this time.

**GOA – BSAI Sablefish**

Bob Alverson (Fishing Vessel Owners Association) gave public testimony indicating the need to place a high priority on sablefish ageing.

The assessment was updated with several new sources of fishery and survey data. Time trends in the fishery abundance index and the trawl survey biomass index decreased, while the longline survey index continued to increase. The SSC encourages the authors to examine trends to discern the cause for these differences.

Two strong year classes, 1997 and 2000, are now supporting the stock. A higher than average number of age 3 sablefish (sizes 41-49 cm) was observed in the size compositions for both the trawl and longline survey and indicates an above average 2008 year class. The authors reported that a continued investigation into recruitment processes and ecosystem influences (e.g., environmental variables and the Gulf of Alaska Project) is underway. The SSC looks forward to receiving updates on the progress of this research effort. In particular, the SSC would be interested in new information that would inform our understanding of the spawner-recruit relationship for sablefish.

The author plans to refine the survey index model to address whale depredation in the 2012 assessment model and may potentially include gully abundance data and other covariates. The SSC agrees that these would be important improvements to the assessment model.

The SSC thanks the authors for their effort to update the tagging data for BSAI/GOA sablefish. The SSC agrees with the author that these data support the continuation of single-stock management. The SSC continues to encourage the development of a spatial assessment model for research purposes. When developing this model, the authors may wish to consider updated tagging results from tags released off the coast of Canada and along the U.S. west coast.

The SSC appreciates receiving the author's analysis of differences between gully stations and slope stations in the longline survey and the evaluation of the IPHC surveys. Gully and slope station trends are similar. However, gullies are more variable and in recent years there is a slight delay in when year classes are first detected in the slope stations.
This year, the author updated the previously approved split-sex stock assessment model. The fit to the domestic longline survey RPN and longline fishery RPW appears to balance different trajectories between the two data sources. The SSC encourages authors to attempt to explain differences.

The author reported that the retrospective pattern detected in previous assessments has apparently dissipated since last year, suggesting that recent data have moderated previous patterns. The authors presented an alternative retrospective analysis. The ABCs from 2003 through 2011 from the retrospective analysis are similar to those that were historically specified, but were a little lower in 2003 and 2004.

The SSC appreciates the author's attention to methods to incorporate their best estimate of total landings that will occur for the entire year. For this year's catch, the sablefish author used the estimated seasonal ratio of past catches and TAC to project ABCs. **The SSC agrees with the author's use of this new method for estimating catch for the ending year used in the assessment.** Nearly all sablefish were caught by October, resulting in a relatively low expansion factor for this year's catch. For projected catches, the average ratio of catch/TAC was 0.8 for sablefish. These catch estimates were used to project biomass.

The SSC agrees with the joint Groundfish Plan Teams' and the author's recommended 2012 ABC of 17,240 t and 2013 ABC of 17,019 t (combined BSAI and GOA). Projected female spawning biomass was 101,325 t, which is 37% of $B_{100\%}$. The stock is slightly below the estimate of $B_{40\%}$ (108,574 t), placing this stock in Tier 3b. The author's recommended ABC and OFL are set at the maximum permissible levels under the NPFMC harvest strategy. **The SSC agrees that this stock falls in Tier 3b and accepts the Plan Team recommendations for ABC and OFL in 2012 and 2013.** The GOA and BSAI Plan Teams accepted the author's recommendation for 2012 area apportionments, based on a 5-year exponential weighting of the survey and fishery abundance indices. **The SSC also agrees with this approach and recommends the following area apportionments, expressed in metric tons below.**

**Sablefish GOA**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2012 OFL | ABC |
|---|---|---|---|---|---|
| Sablefish | W | | 1780 | | 1,757 |
| | C | | 5,760 | | 5,686 |
| | WYAK | | 2,247 | | 2,219 |
| | SEO | | 3,173 | | 3,132 |
| | Total | 15,330 | 12,960 | 15,129 | 12,794 |

**Sablefish BSAI**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Sablefish | BS | 2,640 | 2,230 | 2,610 | 2,200 |
| | AI | 2,430 | 2,050 | 2,400 | 2,020 |
| | Total | 5,070 | 4,280 | 5,010 | 4,220 |

**GOA Walleye Pollock**

There was no public testimony. This stock assessment is a routine update of last year's assessment, updated with new data. There was no new Shelikof Strait winter hydroacoustic survey this year. A CIE review is scheduled for 2012.

The stock assessment showed evidence of an increase in biomass and resulted in a 22% increase in ABC. The harvest recommendation has conservatism built into it: catchability q is set to 1, although the stock assessment model suggests a lower value, and the "constant buffer" harvest control rule reduces ABC to less than the maximum permissible.

**Because spawning biomass is slightly below $B_{40\%}$, the SSC places the stock in Tier 3b. The SSC agrees with the projected ABC and OFL levels in metric tons by area as summarized below (after subtracting 2,770t pollock GHL for Prince William Sound). For area EYAK/SEO, the calculations are done using Tier 5 methodology based on natural mortality and the increased survey biomass from the bottom trawl survey in 2011.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Pollock | W (61) | | 30,270 | | 32,816 |
| | C (62) | | 45,808 | | 49,662 |
| | C (63) | | 26,348 | | 28,565 |
| | WYAK | | 3,244 | | 3,517 |
| | Subtotal | 143,716 | 105,670 | 155,402 | 114,560 |
| | EYAK/SEO | 14,366 | 10,774 | 14,336 | 10,774 |
| | Total | 158,082 | 116,444 | 169,768 | 125,334 |

In next year's SAFE, the SSC would like to see a description of the GHL setting process in Prince William Sound. The SSC would also like to see a discussion of how many years should be used in the area apportionments. The SSC concurred with the Plan Team that the stock structure template be applied in advance of the CIE review next year and whether this could lead to an improved assessment of the Eastern Gulf in particular.

**GOA Atka Mackerel**

The SSC agrees with the Plan Team and stock assessment authors that the estimates of survey biomass continue to be unreliable for Atka mackerel in the Gulf of Alaska, and that **harvest specifications should remain under Tier 6, with OFL and ABC for both 2012 and 2013 as shown below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Atka mackerel | Total | 6,200 | 4,700 | 6,200 | 4,700 |

Despite this high variability, the survey biomass estimates have been consistently high over the past four biennial surveys, ranging from 82,000 t to 135,000 t.

The SAFE document provides a total catch of 1,613 t through November 5, 2011, which was 81% of the TAC. We reiterate our request for the catch estimates to be extrapolated through the end of the calendar year, given the recent history of TAC overages.

**GOA Flatfish**

Shallow-water Flatfish Complex

The shallow-water flatfish complex includes northern rock sole, southern rock sole, yellowfin sole, butter sole, starry flounder, English sole, sand sole, and Alaska plaice. All but the first two species are assessed using Tier 5. Previously, northern and southern rock sole had been assessed using Tier 4. The current shallow-water flatfish assessment includes an appendix with a Tier 3 assessment for northern and southern rock sole. The SSC reviewed a preliminary version of this new rock sole assessment in October 2010. All assessments were updated with the NMFS bottom trawl survey results for 2011.

The SSC appreciates the advancement of the assessment model for northern and southern rock sole, which represents a significant improvement in the assessment of these species. The SSC has a number of recommendations concerning this Tier 3 assessment. First, the SSC recommendations from the October 2010 meeting, summarized here (see SSC report for October 2010 for complete recommendations) should be formally addressed:

- Clarify recruitment definition
- Discuss more carefully the diagnostics for model fits (e.g., length at age) and whether there is evidence for changes in growth or whether small sample sizes require data weighting
- Provide information, if any, on age validation for northern and southern rock sole
- Consider whether spatial patterns in northern versus southern rock sole can be used to hindcast the classifications of historical data on unknown rock sole

To these, the SSC now adds the following comments:

- Clearly describe the seven alternative models.
- The table split between p. 452 and p. 453 requires clearer column headings to be interpretable.
- Provide graphs and tables to support the model evaluation criteria. For instance, plot the model and survey biomass estimates on the same plot. Point to these figures and tables when reporting on the bases for model selection and when evaluating the model for potential biases.
- In the current model, recruitment was taken as an average level unrelated to stock size for both species. Consider attempting to fit stock-recruit relationships to these data. At a minimum, include a plot of stock versus recruit data.

The SSC also endorses the suite of model recommendations offered by the Plan Team from their November 2011 meeting, including consideration to set separate specifications for northern and southern rock sole next year.

The assessment authors and Plan Team recommend ABCs and OFLs for 2012 and 2013 using the new Tier 3 assessment for northern and southern rock sole and Tier 5 for all other species in this complex. The SSC endorses these recommendations.

Deepwater Flatfish Complex

The deepwater flatfish complex includes Dover sole, Greenland turbot and deepsea sole. The biomass of this assemblage is dominated by Dover sole. As a result of a new Markov Chain Monte Carlo analysis of posterior uncertainties associated with the estimated parameters, it became clear that the 2009 assessment model did not converge properly. As a result, biomass estimates from this model were deemed to be unreliable and the model requires further evaluation. The assessment authors and Plan Team

recommended moving Dover sole from Tier 3 to Tier 5 until these issues can be resolved. The SSC concurs with this approach.

The Plan Team offered other recommended changes in the model for next year's assessment including new selectivity curves and re-estimation of natural mortality, given an updated estimate of maximum age. The SSC supports this Plan Team advice.

The SSC appreciates the authors' response to prior SSC comments and looks forward to additional progress on the issues raised previously. In addition, the SSC noted that fish size composition was not included in the model because of small sample sizes and also that fishery age compositions were lacking. The SSC encourages the author to endeavor to determine whether and how these sampling deficiencies can be overcome.

Rex Sole

The rex sole assessment model is identical to the 2009 version of this model. It has been updated with fishery catch and length composition data, NMFS trawl survey biomass and length composition data, and two additional years of survey age compositions.

The SSC appreciates the authors' responses to previous comments and looks forward to an analysis of new growth data that may influence the assessment and may shed light on stock structure. Ultimately, if growth data point toward more than one GOA stock, then the approved stock separation template should be applied in the future for a more complete evaluation of stock structure.

The SSC also looks forward to the incorporation of new fishery age composition data into the assessment model. The SSC supports the authors' expressed intentions to explore length-based approaches to survey and fishery selectivity, as well as alternative forms of the selectivity curve and exploration of potential environmental effects on recruitment. In this vein, environmental effects (e.g., temperature) on survey catchability might also be considered, as was done for several flatfish stocks in the Bering Sea.

As in past assessments of rex sole, the Plan Team and SSC noted that a reliable estimate of biomass is available from the assessment model, but reliable estimates of $F_{40\%}$ and $F_{35\%}$ are not. The calculations for OFL and ABC for rex sole use the Tier 5 formulas applied to the estimate of biomass from the assessment model. The SSC continues to endorse this approach.

Arrowtooth Flounder

The assessment model for arrowtooth flounder is essentially identical to that used in 2009, except that survey and fishery data were updated and a constraint on the last three years of recruitment was removed. This assessment includes some excellent ecosystem information and the SSC appreciates the thoroughness of this section.

As pointed out by the Plan Team, the SSC requests the authors to project catches to the end of the most recent year for use of total catch estimates in the model. Also, the SSC requests that the authors provide some justification for using $q = 1.0$ instead of the estimates from Somerton.

The authors and Plan Team recommend use of Tier 3a for the setting of ABCs and OFLs and the SSC endorses this approach.

Flathead Sole

The flathead sole assessment model is identical to that used in 2009, except for the incorporation of updated data on fishery catch and length compositions, NMFS trawl survey biomass and length compositions, and survey age compositions for two additional years. The SSC appreciates the authors'

responses to previous SSC comments. The SSC looks forward to graphs allowing comparisons of model fits, as well as future model developments to incorporate ADF&G survey data.

The SSC supports the authors' plans to estimate new age-length transition matrices with newly available age data. The authors expressed a need for more age samples from both the survey and the fishery and the SSC encourages the authors to determine whether this is feasible and the steps needed to secure them. The Plan Team suggested that an annual progression of year classes is not evident from age composition data. The SSC asks the authors to consider whether an analysis of aging error would be timely either by the AFSC's Age and Growth Program or internal to the model or both.

The SSC supports the authors' and Plan Team's recommendations to set ABC and OFL for 2012 and 2013 based on Tier 3a criteria.

**The SSC recommendations for GOA flatfish ABCs and OFLs and their area apportionments for 2012 and 2013 in metric tons are:**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Shallow-Water Flatfish | W | | 21,994 | | 20,171 |
| | C | | 22,910 | | 21,012 |
| | WYAK | | 4,307 | | 3,950 |
| | EYAK/SEO | | 1,472 | | 1,350 |
| | Total | 61,681 | 50,683 | 56,781 | 46,483 |
| Deep-Water Flatfish | W | | 176 | | 176 |
| | C | | 2,308 | | 2,308 |
| | WYAK | | 1,581 | | 1,581 |
| | EYAK/SEO | | 1,061 | | 1,061 |
| | Total | 6,834 | 5,126 | 6,834 | 5,126 |
| Rex sole | W | | 1,307 | | 1,283 |
| | C | | 6,412 | | 6,291 |
| | WYAK | | 836 | | 821 |
| | EYAK/SEO | | 1,057 | | 1,037 |
| | Total | 12,561 | 9,612 | 12,326 | 9,432 |
| Arrowtooth Flounder | W | | 27,495 | | 27,386 |
| | C | | 143,162 | | 142,591 |
| | WYAK | | 21,159 | | 21,074 |
| | EYAK/SEO | | 21,066 | | 20,982 |
| | Total | 250,100 | 212,882 | 249,066 | 212,033 |
| Flathead Sole | W | | 15,300 | | 15,518 |
| | C | | 25,838 | | 26,205 |
| | WYAK | | 4,558 | | 4,623 |
| | EYAK/SEO | | 1,711 | | 1,735 |
| | Total | 59,380 | 47,407 | 60,219 | 48,081 |

**GOA Rockfish**

Pacific ocean perch

The Pacific ocean perch stock assessment is based on the same model as in the previous assessment cycle (2009) with three time blocks for estimating fishery selectivity. Changes to input data include new biomass estimates from the 2011 survey, 2009 survey and 2010 fishery age compositions, a revised 2010 catch estimate, and new 2011 catch estimate. The authors also implemented extrapolation of the 2011 catch to the entire year.

The stock assessment authors addressed previous comments made by the SSC to examine and report on bycatch rates before and after implementation of the Rockfish Pilot Program, explain the methodology

used for area apportionments (weighted average of three most recent survey biomass estimates), justify different values for survey catchability for the various stocks of rockfish, including POP, and documented all non-commercial removals in a separate appendix to the SAFE.

The SSC looks forward to a review of the stock structure template applied to POP in the GOA, as well as an examination of growth data, age and length bins (including the plus group), and fishery spatial patterns during the next assessment cycle.

**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 2012 and 2013. The SSC agrees with the area apportionments of ABC and OFL for both years to the Western, Central and Eastern areas, as well as the eastern GOA split of the ABC's to the West Yakutat and Southeast Outside areas as given in the table below (amounts are in metric tons).**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Pacific Ocean Perch | W | 2,423 | 2,102 | 2,364 | 2,050 |
| | C | 12,980 | 11,263 | 12,662 | 10,985 |
| | WYAK | | 1,692 | | 1,650 |
| | SEO | | 1,861 | | 1,815 |
| | E(subtotal) | 4,095 | 3,553 | 3,995 | 3,465 |
| | Total | 19,498 | 16,918 | 19,021 | 16,500 |

Northern Rockfish

Three configurations of the model used in 2009 were evaluated for use in 2011. The first of these (model 1) simply used updated data, including new data from the biennial survey conducted in 2011. The second model configuration (model 2) internally estimated the maturity schedule using data taken from two recent studies that appear to give different results. Estimating the maturity schedule from these two data sets within the model results in a fuller expression of uncertainty. The third model configuration (model 3) used the internally estimated maturity schedule and assessed extending the plus age groups for survey and fishery data in the model from 23+ to 33+ years. The two changes implemented in model 3 resulted in better fits to the fishery and survey age compositions than models 1 and 2, leading the authors and Plan Team to recommend model 3 for assessment advice for 2012. **The SSC agrees with the recommendation to use model 3.**

The stock assessment authors addressed previous comments made by the SSC to examine and report on bycatch rates before and after implementation of the Rockfish Pilot Program, explain the methodology used for area apportionments (weighted average of three most recent survey biomass estimates), justify different values for survey catchability for the various stocks of rockfish, including Northern Rockfish, and documented all non-commercial removals in a separate appendix to the SAFE.

The SSC also looks forward to an update of weight-at-age, length and age transition matrices, ageing error matrix, and length bins for fishery length compositions during the next assessment cycle. The SSC supports the inclusion of the maturity data within the model to estimate an intermediate maturity schedule as an interim solution to dealing with two conflicting studies. However, we encourage the authors to further explore the reasons for differences seen between the two studies of maturity that formed the basis of the estimated maturity schedule in the model.

**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 2012 and 2013 (expressed in metric tons below), as well as the geographic apportionment of the ABC levels 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 | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Northern rockfish | W | | 2,156 | | 2,017 |
| | C | | 3,351 | | 3,136 |
| | E | | | | |
| | Total | 6,574 | 5,507 | 6,152 | 5,153 |

Shortraker

This year shortraker was assessed as a separate species. In previous years shortraker were considered as part of the "Other Slope Rockfish" assessment.

The assessment was updated with the biomass estimate from the 2011 trawl survey. The trawl survey biomass estimate is the highest in the time series. The estimate had the highest observed CV and wide confidence intervals, in part because of two large hauls.

**The SSC agrees with the Plan Team and Authors recommendation for continuation of Tier 5 management for this stock.** Exploitable biomass is 48,048 t which is approximately an 18% increase from the 2009 assessment. The SSC agrees with the Plan Team and Authors recommendation to apportion the ABC to the Western, Central, and Eastern Gulf of Alaska using a 4:6:9 weighting scheme. The SSC notes that methods to estimate area apportionments for shortraker will be considered in a report from the Plan Team workgroup will present in September 2012.

The assessment authors note that the trawl survey can only sample a limited proportion of the likely range of shortraker, and that the longline survey may be providing a better abundance index. The SSC encourages the authors to continue to look at ways the longline survey data can be incorporated into the assessment.

**SSC accepts the Plan Team recommendations for ABC and OFL in 2012 and 2013, expressed below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Shortraker | W | | 104 | | 104 |
| | C | | 452 | | 452 |
| | E | | 525 | | 525 |
| | Total | 1,441 | 1,081 | 1,441 | 1,081 |

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

The other rockfish complex was created in 2011 for harvest specifications beginning in 2012, and is formed by adding widow and yellowtail rockfish to the former "other slope rockfish" complex. The other slope rockfish complex includes 17 species.

The assessment incorporated new biomass estimates from the 2011 NMFS bottom trawl survey. Some stocks exhibited changes in biomass that are larger than expected for a relatively long-lived species. For example the SSC's previous concern regarding the status of silvergray rockfish was appeased by a 10-fold increase in abundance over the 2009 estimate. In contrast, the 2011 trawl biomass estimate for harlequin rockfish, which is predominantly an Alaskan species, remained at low levels. Part of the explanation for these shifts may be that these species are at the edge of their ranges. Shifts in distribution may move species into or out of the survey area in the eastern Gulf. High CV's in the survey may also occur for species of this complex that exhibit patchy distributions.

The SSC agrees with the Plan Team and author's Tier designation for this species complex. The components of the aggregate ABC and OFL are estimated by Tier 5 methods with the exception of sharpchin rockfish, for which Tier 4 methods are applied. **The SSC agrees with the author's new estimate of natural mortality for harlequin rockfish, increasing from 0.06 in previous assessments**

**to 0.09. The SSC agrees with the author's method of estimating reference points for the various species and summing them to obtain the complex-level ABC and OFL. The ABC and OFL recommendations are seen below and reported in metric tons.**

| Assemblage /Stock | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Other Rockfish | W | | 44 | | 44 |
| | C | | 606 | | 606 |
| | WYAK | | 230 | | 230 |
| | EYAK/SEO | | 3,165 | | 3,165 |
| | Total | 5,305 | 4,045 | 5,305 | 4,045 |

The SSC discussed the Plan Team's proposal to change the method for apportioning the ABC among subareas. Under the current method, the ABC is partitioned using the 4:6:9 weighting scheme for the most recent three surveys. The Plan Team was concerned that the current method of partitioning ABCs among subareas would result in an ABC of 44 t in the western GOA, a decline from the current ABC of 212 t for the other slope rockfish complex for this area. The Plan Team recommended combining the area ABC for the western and central areas (totaling 650 t) to provide some measure of spatial apportionment yet not restrict target fisheries based upon relatively uncertain recent survey estimates of spatial distributions. **After consulting with Plan Team members and Regional Office staff it became clear that harlequin rockfish are currently discarded at a high rate and therefore, maintaining the existing area partition method would not result in additional regulatory discards. Based on this input, the SSC did not recommend a change to the previously approved method for partitioning the ABC.**

The SSC supports the Plan Team request for a productivity-susceptibility analysis for the Other Rockfish complex. The SSC also encourages the authors to examine the relationship between environmental conditions and the distribution and abundance of silvergray rockfish and harlequin rockfish because the trawl survey data suggests that these stocks may move in and out of the GOA in response to changing conditions.

Dusky rockfish

This year dusky rockfish was assessed as a separate species. Dusky rockfish had been previously managed as part of the pelagic-shelf rockfish complex, along with widow rockfish and yellowtail rockfish. The latter two species will be moved to the new "other rockfish" complex beginning in 2012, resulting in single-species management for dusky rockfish.

Updates for the model include incorporation of new maturity-at-age data, and evaluation of the functional form of the fishery and survey selectivity curves.

Three models were considered:
1) Model 1 is the 2009 model;
2) Model 2 estimates the maturity curve within the model based upon data from two field studies; and
3) Model 3 is identical to Model 2 except that it estimates logistic fishery and survey selectivity curves rather than separate selectivity parameters for each age.

**The SSC agrees with the Plan Team and author's recommendation to select model 3 as the basis for estimation of this year's ABC and OFL.** Model 3 allows internal estimation of the maturity curve. This approach is desirable because it allow estimate of uncertainty in the maturity schedule. Results from model 3 showed the age at 50% maturity from model 3 was approximately 10 years, a decline from the value of approximately 11 years used in previous assessments. This resulted in an increase in the

recommended $F_{OFL}$ and $F_{ABC}$. The SSC asks the author to consider whether this downward adjustment in the age at 50% maturity is warranted.

In response to SSC comments, the authors updated the length-weight relationship and size-age transition matrix to include data through 2007 to fully utilize the best available information. The SSC agrees with the Plan Team and the author's conclusion that available information for this stock places it in Tier 3a. The increase in ABC is attributable to both changes in age at maturity estimates and to a 15% increase in the trawl survey biomass estimate in 2011 from 2009. The SSC agrees with the author and the Plan Team's recommendation to estimate area apportionments using the 4:6:9 weighting of the 2007, 2009, and 2011 trawl surveys. The corresponding reference values for dusky rockfish are summarized in the following table in metric tons.

| Assemblage /Stock | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Dusky rockfish | W | | 409 | | 381 |
| | C | | 3,849 | | 3,581 |
| | WYAK | | 542 | | 504 |
| | EYAK/SEO | | 318 | | 296 |
| | Total | 6,257 | 5118 | 5,822 | 4,762 |

Rougheye and blackspotted rockfish

The Rougheye/Blackspotted (RE/BS) rockfish assessment was updated with 2010 catch, and an estimate of 2011 catch (using a standardized approachdeveloped by Dana Hanselman), age data (2009), 2011 trawl survey biomass, longline survey 2010-2011 RPW, and 2010-2011 length composition. There is some evidence of a strong 2000 year-class.

Fishery catch increased 60% but still remains only 40% of TAC. Harvest of RE/BS occurs as bycatch in other fisheries. In response to SSC comments the author examined bycatch and found that most catches were part of normal operations. There was no evidence of topping off in the POP fishery. The authors found that bycatch was related to tow depth, with deeper hauls catching more shortraker rockfish and sablefish than RE/BS.

Surveys are showing different trajectories. Trawl survey estimates are going down while longline RPW are increasing. SSC supports the Plan Team recommendation for the author to continue to investigate difference in the longline and trawl survey to help understand the different trends.

In response to SSC comments the authors commented on the veracity of model based estimates of trawl survey catchability. The authors reported that the model based estimate of survey catchability is 1.42 compared with a submersible observations in a 2006 analysis and yielded a catchability of 0.85. The SSC encourages the author to report on the evidence to support the current model based estimate given the discrepancy between experimental and model based estimates of catchability.

The model structure was unchanged from last year, but updated with new trawl survey data. Problems with misclassification of RE and BS continue to exist. This misclassification is part of the rationale to assess the two species as a complex.

**The SSC agrees with the author and the Plan Team that RE/BS are in Tier 3a. The SSC supported the Plan Team and author's recommended ABC and OFL shown in the table below in metric tons.** The author projected ABCs and OFLs for 2012 and 2013 using estimated catch of 525 t for 2011 and projected catch of 355 t for 2012 based on realized catches from 2008-2010. The SSC agrees with the author's proposed method of calculating these catches. The SSC appreciates the author's summary of the stock structure shown in the appendix of the SAFE.

| Assemblage /Stock | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Rougheye/ Black-Spotted rockfish | W | | 80 | | 82 |
| | C | | 850 | | 861 |
| | E | | 293 | | 297 |
| | Total | 1,472 | 1,223 | 1,492 | 1,240 |

Demersal Shelf Rockfish (DSR)

Demersal shelf rockfish biomass is estimated from a habitat-based stock assessment focused on yelloweye rockfish densities estimated from visual line transects conducted from submersibles. A 2011 submersible survey was not conducted, but is planned for 2012. New information for the biomass projections are average weights and catches from the Southeast Outside Subdistrict (SEO). Exploitable biomass for 2012 (14,307 t) decreased slightly from 2011 (14,395 t).

**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% lower confidence bound, 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 OFL and ABC for 2012 and 2013, expressed in metric tons in the table below.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Demersal rockfish | Total | 467 | 293 | 467 | 293 |

The SSC wishes to thank the stock assessment authors for the additional information provided in this year's SAFE regarding the confidence intervals for catches in the recreational fisheries.

The SSC is encouraged to hear that a new survey is planned for 2012, and expresses its concern that adequate resources be devoted to assessing the stock on an ongoing basis so as to maintain a consistent series of densities in future years. We are also encouraged that there will be a comparison of the submersible survey with an ROV survey to potentially enable a less expensive and readily available alternative to the submersible survey. An optimal situation for this assessment would be to periodically conduct a district-wide survey in a single assessment year to help inform density estimates in specific subdistricts in other assessment years. We note that the Plan Team had an initial look at and offered some recommendations to the assessment authors on an age structured model for this stock. The SSC looks forward to reviewing this model in the next assessment cycle, if available.

Thornyhead Rockfish

Assessment of this stock continued as reviewed in 2009 with an update in biomass from the 2011 survey. The 2011 survey did not sample the 701-1000m depth stratum, so two alternative calculations of OFL and ABC were offered by the assessment authors. The first alternative used the biomass calculation directly from the survey with no adjustment for depths not surveyed. The second alternative adjusted the 2011 survey biomass by area to account for the depths not surveyed. The Plan Team recommended and the SSC concurs on the use of the adjusted survey biomass estimate for 2011 in the second alternative to calculate OFL and ABC. **The SSC agrees with the Plan Team recommendations and continues to support the Tier 5 calculations. The SSC also concurs with the Plan Team recommendations for 2012/13 ABCs, OFLs, and area apportionments expressed in metric tons in the table below.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Thornyhead Rockfish | W | | 150 | | 150 |
| | C | | 766 | | 766 |
| | E | | 749 | | 749 |
| | Total | 2,220 | 1,665 | 2,220 | 1,665 |

**Sharks**

There were no changes in the approach used in this year's assessment. GOA sharks are currently managed using a Tier 5 approach for spiny dogfish, in which a three-year running average of survey biomass estimates are used as minimum biomass estimates of dogfish abundance, and other sharks are managed using a Tier 6 approach based on average catch over 1997 – 2007. Updated data from the NMFS trawl and longline surveys and IPHC longline surveys were included. The SSC appreciates the assessment authors' responsiveness to SSC comments on last year's assessment.

A new demographic model of spiny dogfish was recently published in a peer-reviewed journal (Tribuzio and Kruse 2011). The assessment authors indicated that they intend to compare results from this demographic modeling analysis with results from planned biomass dynamic models and length-based models. The SSC encourages these efforts and urges the authors to incorporate these models into an improved stock assessment for spiny dogfish in the near future.

The current assessment includes an appendix with estimates of non-commercial shark catches (e.g., research, subsistence, personal use, recreational, and exempted fishing permits) and halibut fishery incidental catch estimates (HFICE). The assessment authors are also working with ADF&G to develop methods similar to HFICE to estimate shark bycatch in state groundfish fisheries (e.g., state waters Pacific cod fishery).

The goal is to incorporate best estimates of total shark catch from all sources in the annual assessment, including OFL and ABC determinations. The main hurdle is to establish the degree to which these additional incidental catch estimates duplicate any shark bycatch records in the Catch in Areas (CIA) database. A second issue is that the present HFICE estimates do not consider the effect of different timing of the IPHC survey and halibut fishery on shark bycatch rates. Once these issues have been satisfactorily resolved, the SSC recommends that total shark catches should be incorporated into the historical catch estimates and OFL/ABC determinations. This is an important issue, as HFICE estimates approach current ABCs.

**The SSC supports the recommendations of the assessment authors and Plan Team regarding the 2012 and 2013 ABC and OFL for GOA sharks in metric tons:**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Sharks | GOA-wide | 8,037 | 6,028 | 8,037 | 6,028 |

**GOA Skates**

There were no changes to the assessment methods this year, although biomass estimates and length composition data from the 2011 GOA bottom trawl survey and fishery length composition data from 2010 were added to the assessment. The 2011 survey biomass estimates for longnose skates and for many of the *Bathyraja* skates are down relative to the 2009 estimates. The 2011 biomass estimate for big skates shows an apparent increase from 2009, largely due to a single large survey catch in the eastern GOA.

**The SSC agrees with the Plan Team determinations of separate Gulf-wide OFLs for big skates, longnose skates, and other skates based on an estimate of natural mortality equal to 0.10 for all skates applied to area-specific average biomass from the most recent three GOA trawl surveys to**

**estimate the ABCs. The SSC also agrees with the area apportionments of ABCs to the Western, Central, and Eastern Gulf areas for big and longnose skates and the OFLs and ABCs are presented in the table below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Big Skate | W | | 469 | | 469 |
| | C | | 1,793 | | 1,793 |
| | E | | 1,505 | | 1,505 |
| | Total | 5,023 | 3,767 | 5,023 | 3,767 |
| Longnose Skate | W | | 70 | | 70 |
| | C | | 1,879 | | 1,879 |
| | E | | 676 | | 676 |
| | Total | 3,500 | 2,625 | 3,500 | 2,625 |
| Other skates | Total | 2,706 | 2,030 | 2,706 | 2,030 |

**GOA Sculpins**

There were no changes to Tier 5 assessment method used last year, but 2011 data have been added along with biomass estimates and length compositions from the 2011 Gulf of Alaska survey.

The sculpin complex mortality rate is based on a biomass-weighted average of the instantaneous mortality rates for the four most abundant sculpins in the GOA; bigmouth, great, plain, and yellow Irish lord sculpins from the 2011 survey. As a result, the sculpin complex M was calculated as 0.22.

**The SSC agrees with the use of the four most recent survey biomass estimates, and the calculation of a weighted average M (= 0.22) based on the four most abundant sculpin species captured in the NMFS bottom trawl survey. The SSC supports Plan Team OFL and ABC recommendations for 2012 and 2013, applied Gulf-wide for sculpins, as given in the table below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Sculpins | GOA-wide | 7,641 | 5,731 | 7,641 | 5,731 |

The Plan Team recommendation for authors to examine different number of years and weighting schemes used for species managed in Tier 5.

**GOA Squid**

There were no changes to modified Tier 6 assessment method used in 2011.

**The SSC agrees with the recommendation for a modified Tier 6 approach, with OFL for 2012 and 2013 based on maximum catch in the time period 1997-2007, and with ABC = 75% of the OFLs in each year, as shown in the table below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Squid | GOA-wide | 1,530 | 1,148 | 1,530 | 1,148 |

**GOA Octopus**

There were no changes in assessment method for GOA octopus this year. The modified Tier 6 approach involves averaging biomass estimates from the last three bottom trawl surveys in 2007, 2009 and 2011. This approach recognizes that the catch history is not appropriate for tier 6 management, and that the biomass estimates and M estimates are not sufficient for a Tier 5 approach. The author has also developed a method for estimating total mortality based on predation by Pacific cod in the BSAI. The SSC agrees

with the Plan Team that this approach be developed further for application and consideration for GOA octopus in 2012.

**The SSC accepts the Plan Team recommendation for a modified Tier 6 approach with OFL in both 2012 and 2013, and ABC = 75% of that value, applied Gulf-wide as shown in the table below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Octopus | GOA-wide | 1,941 | 1,455 | 1,941 | 1,455 |

**BSAI SAFE and Harvest Specifications for 2012/13**

**EBS Walleye Pollock**

Public testimony: Jon Warrenchuk (Oceana) was concerned that the stock assessment model is not providing good estimates and does not take into account cod predation, warranting further conservatism in ABC. Jackie Dragon (Greenpeace) agreed, noting the difficulty some harvesters had in finding pollock in the latter part of the B season and arguing that pollock are needed for the ecosystem (e.g., fur seals). Joe Plesha (Trident Seafoods) stated that 60,000 t of pollock quota went unharvested because harvesters could not find fish in the B season. Ed Richardson (Pollock Conservation Cooperative) supported the Plan Team ABC recommendation of 1.22 million t, felt that the stock assessment data and model were reasonable, and noted that no additional reduction was needed in ABC, which was recommended by the stock assessment author. He reasoned that cod and pollock have synchrony in year class strength and the 2008 year-class of Pacific cod is expected to be good. Brent Paine (United Catcher Boats) also supported the Plan Team recommendation and suggested that the reason fish were left unharvested was due to harvesters attempting to avoid chum and Chinook salmon. Donna Parker (Arctic Storm) also argued against a reduction in ABC and felt that the best estimate should be used for 2008 year-class strength rather than replacing it by average year-class strength.

The condition of the pollock resource in 2011 remained above the MSY level but recent biomass and year-class strength was revised downward compared to last year. It reached its lowest level in 2008 but increased sharply thereafter and is expected to continue increasing. Chum salmon bycatch was relatively high despite several hotspot closures. Bycatch per unit effort was also high, suggesting the increase was at least partially due to higher chum salmon abundance in the area.

Examination of environmental information suggested that 2011 was a warmer year relative to the recent cold period, suggesting that pollock may have moved farther north into Russian waters and/or the northern U.S. portion of the Bering Sea. This dispersal may partially explain why some harvesters had difficulty finding fish during the B season. Besides possible changes in distribution, no additional ecosystem concerns were identified that would require additional precaution.

The stock assessment authors were responsive to previous Plan Team and SSC suggestions. Retrospective analyses were conducted, and a workshop is planned to examine spawner-recruit relationships. The authors made use of an acoustic index from bottom trawl survey vessels, known as acoustic vessels of opportunity (AOV).

**The SSC continues to place pollock in Tier 1a, which leads to a maximum permissible ABC of 2.20 million t. The corresponding OFL from the control rule is 2.47 million t. The SSC also agrees with the authors and Plan Team on the validity of the stock assessment model and its population estimates (except as noted below).**

The authors and the Plan Team had slightly different reductions from maximum permissible ABC. The Plan Team used the same approach as it used last year: keeping the five-year average exploitation rate constant. The authors recommended keeping the 5 year average exploitation rate and replaced the 2008 estimate of year-class strength with the long-term average. **The SSC agrees with the Plan Team to use the best estimate of 2008 year-class strength,** because the 2008 year-class has been observed by the hydro-acoustic survey, the bottom trawl survey, and AOV surveys for three years, and these data sources tend to confirm that the 2008 year-class is relatively large. **This results in the following ABC's and OFL's for 2012 and 2013 in metric tons:**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Pollock | EBS | 2,470,000 | 1,220,000 | 2,840,000 | 1,360,000 |

Due to several uncertainties, the SSC agrees with the authors and the Plan Team that there is solid justification for reducing the recommended ABC from the maximum permissible. The retrospective downward adjustment from last year's assessment raises the possibility that further downward adjustments could occur. The age composition is concentrated into two primary ages and the projected future increases rely on the 2008 year-class being strong. The lack of knowledge about pollock movement means that the low CPUE that the vessels reported for the B season could be due to either movement or mortality or both. Even though a reduction in ABC is being made, there is uncertainty as to whether the adjustment is sufficient. The author mentioned that he plans to examine alternative harvest strategies in the upcoming year. The SSC is supportive of this plan and notes that the SSC's recommendation to use the 5 year average F this year, should not be interpreted as an endorsement or adoption of this approach for long term management of this stock.

**Aleutian Islands Walleye Pollock**

There is no new information for Aleutian Islands walleye pollock, except for updated catch. A stock assessment model has been used by the authors, Plan Team, and SSC to evaluate stock status and determine ABC and OFL. New this year is the use of a generalized additive model with weight-at-age data with the purpose of filling in missing data. The population increased until about 2006 and has then decreased gradually due to lack of strong recruitment. The natural mortality estimate was slightly lower than last year (down from 0.20 to 0.19).

**The SSC continues to place AI pollock into Tier 3b. The SSC recommends using maximum permissible ABC and OFL using the Tier 3b formulae. This leads to the following 2012 and 2013 ABC's and OFL's in metric tons:**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| AI Pollock | AI | 39,600 | 32,500 | 42,900 | 35,200 |

**Bogoslof Walleye Pollock**

The 2009 Bogoslof pollock acoustic-trawl survey resulted in a biomass estimate of 110,000 t, the lowest estimate on record (dating back to 1988). There has not been a more recent survey. The Plan Team evaluated alternative approaches for setting ABC and OFL. Because there has not been a single strong year-class since 1988, the SSC reluctantly abandons its target biomass level of 2,000,000 t. **Instead, it adopts a traditional Tier 5 approach using M=0.2, as recommended by the Plan Team. This results in the following OFL and ABC's in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Bogoslof Pollock | Bogoslof | 22,000 | 16,500 | 22,000 | 16,500 |

**BSAI Atka Mackerel**

There was no 2011 Aleutian Islands bottom trawl survey, so the only new data incorporated in the assessment were fishery data, and this included 2011 catch, as well as 2010 data for age composition, catch at age, and weight at age. The Executive Summary, as well as the footnote to Table 17.1, indicate that the projected total catch for 2011 was considered in the assessment, as requested in general comments by the SSC in December 2010. However, a statement on page 1089 suggests that only partial year catches were included for this year. We suspect that this was a mistake, perhaps carried forward from the prior year's SAFE, but we seek clarification.

The stock assessment model was unchanged from last year, except that a second model (Model 2) was developed using a random walk in survey catchability. Model 2 was developed in an attempt to reduce the lack of fit between survey biomass and model biomass for the past four survey years, as noted by the SSC in December 2010. The SSC appreciates this effort. We agree with the authors and Plan Team recommendation to continue to rely on Model 1 because the improvement in fit with model 2 was minor (Figure 17.16).

**The SSC agrees with continued management under Tier 3a, and supports the OFL and ABC recommendations for 2012 and 2013, with area apportionments of the ABCs as shown metric tons in the table below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Atka Mackerel | EAI/BS | | 38,500 | | 31,700 |
| | CAI | | 22,900 | | 18,900 |
| | WAI | | 20,000 | | 16,500 |
| | Total | 96,500 | 81,400 | 78,300 | 67,100 |

**BSAI Flatfish**

**The Plan Team proposed scheduling the assessments for some BSAI flatfish species to an every-other-year cycle. The SSC supports this proposal.**

Yellowfin Sole

Four alternative models for weight-at-age were examined. A model that uses the annual survey weight-at-age data as true values was recommended, although the SSC considers this to be a placeholder for this year. The SSC supports the Plan Team's suggestion of examining simpler or non-parametric alternative growth models instead of the other models (models 2 and 3) considered this year.

**The SSC agrees with the authors' and Plan Team's recommendations for management under Tier 3a and OFLs and ABCs for 2012 and 2013 expressed in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Yellowfin sole | BSAI | 222,000 | 203,000 | 226,000 | 207,000 |

Greenland Turbot

The authors considered an alternative to last year's model, in which male natural mortality was estimated internally. The authors recommended keeping the fixed male mortality model for this year, considering a change to the alternative to be premature. **SSC notes its support for an Eastern Bering Sea slope survey in 2012 for surveying this stock.**

**The SSC agrees with the authors' and Plan Team's recommendations for management under Tier 3a and OFLs and ABCs for 2012 and 2013 expressed in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Greenland turbot | BS | | 7,230 | | 6,010 |
| | AI | | 2,430 | | 2,020 |
| | Total | 11,700 | 9,660 | 9,700 | 8,030 |

Arrowtooth Flounder

There were no model changes this year, although the Plan Team recommended examining a model that estimated male natural mortality internally for next year.

**The SSC supports the authors' and Plan Team's recommendations for management under Tier 3a and ABCs and OFLs for 2012 and 2013 expressed in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Arrowtooth flounder | BSAI | 181,000 | 150,000 | 186,000 | 152,000 |

Kamchatka Flounder

This species is now separated from the arrowtooth/Kamchatka flounder complex of which it was a part prior to 2011. This species is currently in Tier 5, but an age-structured model is being developed, and the SSC looks forward to seeing results from this when they become available.

**The SSC agrees with the authors' and Plan Team's recommendation for management under Tier 5 and OFLs and ABCs for 2012 and 2013 expressed in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Kamchatka flounder | BSAI | 24,800 | 18,600 | 24,800 | 18,600 |

Northern Rock Sole

The preferred assessment model was unchanged from last year, although a set of alternatives was explored. One of these was a model that expressed survey catchability (q) as a function of annual average bottom water temperature. Although there was evidence for such a relationship, the estimated mean value of q for this model was considered unrealistically high. The SSC suggests exploring an alternative formulation of this model that allows q to be a function of bottom temperature while constraining q to realistic values. SSC also recommends that in the future, time series data for southern rock sole catches in the BSAI region be presented in this report. **The SSC endorses the authors' and Plan Team's recommendations for management under Tier 1a and OFLs and ABCs for 2012 and 2013 expressed in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Northern rock sole | BSAI | 231,000 | 208,000 | 217,000 | 196,000 |

Flathead Sole

Some progress was reported on improving understanding of the Bering flounder component of the complex, with the publication of a paper on maturity. The preferred model for this year's assessment remains unchanged from last year. This model was selected instead of the fitted stock recruitment model, which the SSC notes seems inconsistent with what is done in other stocks when a stock recruitment model is available.

**The SSC supports the authors' and Plan Team's recommendations for management under Tier 3a and ABCs and OFLs for 2012 and 2013 expressed in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Flathead sole | BSAI | 84,500 | 70,400 | 83,100 | 69,200 |

Alaska Plaice

In 2010, survey catchability, q, was adjusted downwards to 1.0, from 1.2 in previous assessments, in an attempt to account for the large additional biomass found in the northern Bering Sea survey that took place for the first time last year. The Plan Team recommended a return to q=1.2 for this year's assessment. The SSC supports this change: no significant commercial catch occurs in the northern Bering Sea, and the assessment is effectively of the southern portion of the stock.

**The SSC supports the Plan Team's Tier 3a and ABC and OFL recommendations for 2012 and 2013 using the model with q=1.2, given in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Alaska plaice | BSAI | 64,600 | 53,400 | 65,000 | 54,000 |

Other Flatfish

Apart from some data updates, there were no changes to this year's assessment. **The SSC supports the recommended Tier 5 and ABC and OFL determinations of the authors and Plan Team for 2012 and 2013 expressed in metric tons below.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Other flatfish | BSAI | 17,100 | 12,700 | 17,100 | 12,700 |

**BSAI Rockfish**

Pacific Ocean Perch (POP)

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 and the projection model was run using results from the starting point of the 2010 assessment model. The area apportionment was updated and changed slightly.

**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 | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Pacific ocean perch | EBS | | 5,710 | | 6,540 |
| | EAI | | 5,620 | | 6,440 |
| | CAI | | 4,990 | | 5,710 |
| | WAI | | 8,380 | | 9,610 |
| BSAI | Total | 35,000 | 24,700 | 33,700 | 28,300 |

Northern Rockfish

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 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 recommendation. This stock qualifies for management under Tier 3a and the resulting ABCs and OFLs are below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Northern rockfish | BSAI | 10,500 | 8,610 | 10,400 | 8,490 |

Shortraker Rockfish

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 recommendation. This stock qualifies for management under Tier 3a and the resulting ABCs and OFLs are tabled below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Shortraker rockfish | BSAI | 524 | 393 | 524 | 393 |

Blackspotted and Rougheye Rockfish Complex

A straightforward update of the assessment was presented and 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 requests that authors include an update on species identification issues, and if possible, species composition among areas during the next assessment cycle.

**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 | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| **Blackspotted/ Rougheye** | EBS/EAI | | 231 | | 241 |
| | CAI/WAI | | 244 | | 258 |
| BSAI | Total | 576 | 475 | 605 | 499 |

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 | 2012 OFL | 2012 ABC | 2013 OFL | 2013 ABC |
|---|---|---|---|---|---|
| Other rockfish | BS | | 710 | | 710 |
| | AI | | 570 | | 570 |
| | Total | 1,700 | 1,280 | 1,700 | 1,280 |

**BSAI Sharks**

BSAI sharks are a Tier 6 complex in which OFL is based on maximum historical catch over 1997 – 2007 and ABC is 75% of OFL. For the current assessment, the catch time series was updated to reflect any changes that may have occurred in the Catch in Areas (CIA) database. No changes in historical shark catches resulted. The SSC appreciates the authors' responses to previous comments.

The assessment includes an appendix with estimates of non-commercial shark catches (e.g., research, subsistence, personal use, recreational, and exempted fishing permits) and halibut fishery incidental catch estimates (HFICE). The assessment authors are also working with ADFG to develop methods similar to HFICE to estimate shark bycatch in state groundfish fisheries (e.g., state waters Pacific cod fishery).
As with GOA sharks, the goal is to incorporate best estimates of total shark catch from all sources in the annual assessment, including OFL and ABC determinations. The main hurdle is to establish the degree to which these additional incidental catch estimates duplicate any shark bycatch records in the CIA database. The BSAI Groundfish Plan Team remarked that the overlap is likely to be minimal. In any case, once any such duplication has been estimated and addressed, the SSC recommends that total shark catches should be incorporated into the historical catch estimates and OFL/ABC determinations.

**For the current assessment, the SSC supports the assessment authors' and Plan Team's recommended ABCs and OFLs of 1,360 t for both 2012 and 2013, based on Tier 6 using maximum catch (t), which remain unchanged from last year's assessment shown below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| **Shark** | BSAI | **1,360** | **1,020** | **1,360** | **1,020** |

**BSAI Skates**

With passage of Amendment 96 to the BSAI Fishery Management Plan this year, which separated the "other species" complex into constituent groups, the Plan Team presented recommendations to the SSC for OFLs and ABCs specific to BSAI skates. **The SSC agrees with the BSAI Plan Team that biomass estimates are reliable for skates in the BSAI, and notes that the biomass trend for BSAI skates has been stable. The SSC agrees with the estimate of OFLs and ABCs, shown below in metric tons, for Alaska skates under Tier 3a combined with all other skates under Tier 5, based on a natural mortality rate of 0.10 and biomass estimated as the average of the three most recent surveys**.

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| **Skate** | BSAI | **39,100** | **32,600** | **38,300** | **32,000** |

**BSAI Sculpins**

This is an off-year for the BSAI sculpins assessment and therefore only an executive summary was prepared. The only change in this year's assessment was the addition of 2010 catch. Although an EBS shelf survey occurred in 2011, the data were not included in the executive summary. Plan Team's recommendation is to rollover last year's harvest specifications for 2012 and 2013.

**The SSC agrees with the BSAI Plan Team recommendations and supports the estimate of OFLs and ABCs for under Tier 5, as shown in the table below (metric tons), based on species-specific ABC's summed to a total for the group.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| **Sculpin** | BSAI | **58,300** | **43,700** | **58,300** | **43,700** |

**BSAI Squid**

This is an off-year for the squid assessment and therefore only an executive summary was prepared. The author included new information in the assessment that described the seasonal pattern of incidental squid catches.

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

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| Squids | BSAI | **2,620** | **1,970** | **2,620** | **1,970** |

**BSAI Octopus**

The SSC received public testimony from Kenny Down (Freezer Longline Coalition) in support of the Plan Team recommendations. Jon Warrenchuck (Oceana) also supported Plan Team OFL and ABC recommendations, but expressed concerned about potential for a directed fishery on this important prey species.

The Plan Team supported the author's predation-based estimate of octopus mortality from 1984-2008 survey data of Pacific cod diets as an alternate Tier 6 estimate. The Plan Team discussed the appropriateness of this approach and concluded that cod were a better sampler of octopuses than the survey and therefore represented an improved estimate of minimum biomass. The Plan Team thought that, in the case of BSAI octopus, the estimate resulting from the predation-based approach should be conservative.

The SSC notes that estimates derived from the survey and consumption are both highly uncertain and should only be considered until more reliable estimates of biomass can be attained. The SSC would like to encourage development of alternative approaches or a survey.

**The SSC requests the authors investigate:**

- Spatial and temporal patterns in consumption
- Compare size modes in code compared to what is captured in the fishery
- Provide details on stomach contents
- Analysis of AI Pacific cod diet
- Contract observed consumption rates with cod abundance
- Consider information from other surveys and spatial-temporal catch patterns in the pot fishery.

The SSC also supports the Plan Team request for discussion of the data needed for a discard mortality rate analysis and additional research to estimate rates of non-spawning mortality and discard mortality. The SSC notes that results from a recent tag and release study by Reid Brewer suggest mark recapture methods may be useful for abundance estimation and mortality estimation.

**The SSC agrees with the Plan Team recommendation to calculate the OFL and ABC using the authors' consumption approach, and OFL and ABC's are shown in the table below in metric tons.**

| Stock/ Assemblage | Area | 2012 OFL | ABC | 2013 OFL | ABC |
|---|---|---|---|---|---|
| **Octopus** | BSAI | **3,450** | **2,590** | **3,450** | **2,590** |

**Groundfish SAFE Appendices**

**GOA – BSAI Grenadiers (currently outside the FMP)**

Grenadiers remain as "nonspecified" by the Council; hence they are not assigned levels of OFL, ABC, or TAC. We anticipate seeing a discussion paper in April on the future treatment of grenadiers within the management system. In anticipation of potential future specification as "in the fishery", the authors continue to prepare estimates of reference points for both the GOA and BSAI based on giant grenadiers,

which are the predominant grenadier species caught in the North Pacific. The SSC continues to support moving grenadiers into the FMP, noting that biomass estimates appear reliable and that the Tier 5 estimates would be appropriate.

In 2010, we requested further work on the AI grenadier reference points. The authors have provided a description of the several approaches they are now working on, which is to be presented at the September 2012 Plan Team meeting. The SSC looks forward to seeing the results of those analyses.

**GOA – BSAI Forage fish**

Since 2011, forage fish have been designated as an Ecosystem Component group and thus they are outside the stock specification process. The last full report on forage fish was in 2008. Trawl survey GOA biomass estimates (2009 and 2011) and incidental catch in the GOA groundfish fisheries (2009, 2010, 2011), were included in the report tables, but no analyses were presented and this is again an abbreviated report.

As in previous SAFE reports, the authors acknowledge the lack of good survey data for forage fish and suggest the GOA Integrated Ecosystem Research Project (IERP), with field work occurring in 2011 and 2013, will provide new information. The SSC reiterates the need to integrate related studies and implementation of long-term survey capabilities to improve our knowledge of forage fish abundance, distribution, and ecology. The lack of useful data and the lack of substantive analyses of existing data remain hindrances to meaningful integration of forage fish into ecosystem management. For example, BEST/BSIERP program has demonstrated that the NOAA acoustic survey data could be used to examine indices of abundance and distribution for species such as capelin and euphausiids. The SSC also encourages efforts to include forage fish sampling from BASIS surveys.

The authors plan to include retrospective analysis of forage fish data when the GOA-IERP data is available, but it is not clear how this will be done, given the acknowledged lack of reliable historic data. Eulachon is an exception, and the SSC suggests investigating the possibility of using eulachon as an indicator species for components of the forage fish complex. Additionally, high incidental catches of eulachon occurred in 2005 and 2008 and have been low since: Perhaps the authors can relate these fluctuations to oceanographic or zooplankton indices. The SSC continues to encourage tracking of developments in the southern eulachon DPS that might inform management actions for eulachon and other key forage species in Alaska, particularly given the importance of these species to seabird and mammal species that are endangered, threatened, or of management concern.

The authors refer to anecdotal evidence that fishermen avoid areas of high eulachon bycatch to avoid overage penalties (p. 1514), but it is not clear what this evidence is and the argument seems weak. Given that the incidental catch of forage fish appears not to be a conservation issue for the forage fish complex, the report could focus on the impacts of changes to forage fish on apex predators.

Data on forage fish might be improved by comparing NOAA sampling to other indices, such as seabird diets, to determine how various methods might be used or combined to improve monitoring and integration of data on forage species into ecosystem management. The SSC notes that the biomass estimates for forage fish reported in Table 2 (p.1518) are orders of magnitude lower than those estimated from ecosystem models (2008 report, Table 6). The underlying causes of this discrepancy, as well as the high variation in biomass estimates, were not addressed in 2008 or any subsequent updates. The SSC requests that the differences be addressed in the upcoming full report. The SSC looks forward to seeing a full report that includes GOA-IERP data and that incorporates some of these SSC suggestions.

**Economic SAFE**

The SSC wishes to express its profound appreciation to Mr. Terry Hiatt, (NMFS-AFSC) upon the announcement of his imminent retirement, for his important and sustained contribution to the Council's

analyses in management and stewardship of the living marine resources of the North Pacific and Bering Sea.

The SSC appreciates the efforts to expand the Economic SAFE to include a descriptive narrative that accompanies the tables in the document. However, the Economic SAFE documents would benefit from more focused emphasis upon changes that the authors believe deserve particular attention (e.g., methodological changes in interpreting or presenting data results, significant departures from patterns or trends experienced in recent periods). Effectively highlighting such key aspects of the expected economic performance measures could facilitate efficient utilization of the increasingly complex and extensive Economic SAFE chapters. To a large extent, a narrative that simply mentions the existence of a table or just reports values contained in the tables is unnecessary. Examples of sections that are probably superfluous include:

- Page 9, paragraph 2, which simply mentions the existence of Tables 20 and 21, without any useful narrative. Likewise for page 9, paragraph 4, which does no more than mention the presence of Tables 23 and 24.
- Page 10, first two paragraphs (Tables 30 through 34).

Some parts of the document identify important trends and include useful discussions of likely causes. For example, the last paragraph of page 7 (Table 11) highlights the large increase in PSC of 'other' king crab in 2007, describes the declining trend since 2007, and discusses likely factors contributing to these trends. Elsewhere, the uneven treatment of material is likely a product of multiple contributing authors. Selection of a single editor, responsible for checking consistency and relevancy of commentary, could potentially solve this problem.

The SSC appreciates and supports efforts to develop market indices, which will be useful in identifying trends. In the future, the SSC hopes that these indices will be accompanied by a focused narrative identifying and discussing key patterns or significant trends. For example, page 103, paragraph one, mentions the "precipitous decline in aggregate prices," but does not have any information on underlying causes or predictions about whether the trend is likely to continue.

In specific cases, when there are meaningful changes in the methodology employed, these should be mentioned in the abstract and introduction, explained in sufficient detail in the narrative, and noted at the end of each affected table. The narrative should include a discussion of how changes in methodology affect the ability to compare results with tables from previous SAFEs that used the old methodology. In the first year of a new approach, the document would also benefit from a supplemental table that shows what the values would have been, using the superseded methodology.

In February 2011, the SSC received a presentation by anthropologists from the Alaska Fisheries Science Center on the development of indices of community involvement in fisheries and community resilience. The index-based approach tracking economic parameter performance of the groundfish fisheries, included in the current Economic SAFEs, could serve as a model for comparable analysis of social indicators such as community dependency, sociocultural attributes, and resilience. These indicators would strengthen understanding of the human environment and how human communities would be expected to respond to fishery induced change. The SSC believes future Groundfish SAFE documents would benefit from greater integration, including consideration of social impacts and trends. With two anthropologists cited as SAFE authors, the goal should be progress towards comprehensive social status and trend assessments, fully integrated into the respective SAFE documents.

The SSC appreciates the careful and accurate treatment of Prohibited Species Catch removals associated with groundfish fisheries in the North Pacific and Bering Sea within the Economic SAFE. Other sections of the SAFE documents lag behind the Economic SAFE in this respect.

Following are some minor editorial notes:

- There are some cases in which the order of the narrative does not align with table sequence. For example, on page 10, Table 30 is discussed after Tables 31 through 35.
- Avoid contractions and/or the use of uncommon nomenclature in technical writing (e.g., $6.1 thousand, $.0061 million, when the common expression $6,100 suffices.)
- The authors should be consistent when presenting revenue, value, or price data to correctly identify the market level and valuation estimator (e.g., ex vessel-first wholesale-consumer market, gross revenue-net receipts).
- The SSC review revealed an arithmetic error in the BSAI SAFE Economic Summary section, page 14. The same section employs nomenclature that, if read literally, is contradictory (i.e., algebraically and grammatically, the negative of a negative is a positive). A careful proof-read would be recommended. The SSC will forward editorial suggests directly to the authors.
- In the tables presenting market indices, it would be very helpful if the vertical axis which shows the index were the same throughout all sub-graphs in the figure (e.g., Figure 3). Without comparable unit scales, appraisals of trends across sub-graph plots can be problematic.
- In the tables presenting market indices, the acronyms for each species should be defined (or simply spell out the commonly used names).

**Ecosystem Considerations**

The SSC commends the Ecosystem editors and contributors for continued improvement and for their responsiveness to SSC comments. The Eastern Bering Sea (EBS) and Aleutian Islands (AI) (new) Report Cards and the Hot Topics sections highlight interesting changes and are informative. It might be preferable to move the Hot Topics section to the report card, as it is short and provides information of immediate concern. The SSC looks forward to the preparation of a Gulf of Alaska (GOA) Report Card.

These report card and hot topics sections would be even more useful if there was a short set of paragraphs that synthesized the views of the authors and Plan Teams as to the management implications of any findings.

The Ecosystem Trends section was succinct and useful. The listing of critical information gaps and research needs for each region will be helpful for the assembly of the Research Priorities report later in the year. New indices include EBS phytoplankton biomass and size structure, GOA Chlorophyll a, Icy Strait zooplankton trends, forecasts for SE Alaska pink salmon harvests, EBS slope groundfish and invertebrate community biodiversity, a multivariate seabird index for the EBS, and an index of Alaska-wide community regime shifts. The new seabird index shows some interesting results that may be useful in future ecosystem evaluations.

The executive summaries were useful, but ordering the indicators and key points from physical through consumers in a way that aligns them with the trophic structure would improve readability. In addition, some consistency in order of the indicators across regions would be appreciated.

The SSC also appreciates the attempt (page 58) to test predictions made in the December 2010 Ecosystem Considerations chapter. In the future, it would be useful to denote all predictions in the chapter in bold, and then systematically test which ones were accurate the following year. Those predictions that prove reliable could then be moved into the individual species' assessments.

The sections on community trends in school enrollments and population size were informative. The SSC suggests adding information on trends in employment or wage-paying jobs and average wages. Because

of their importance, sections on school enrollments should be separate paragraphs at the end of each ecoregion discussion. It is also possible that these socio-economic indices should be in the Economic SAFE.

The SSC had some concern over the baseline dataset used when reporting anomalies, especially physical anomalies. Currently, the baseline period differs by parameter, and the time frame used to define the baseline is not always clear and often not legible in the figures. This makes it difficult to compare responses across variables directly. Please show the baseline over which the anomalies are determined and attempt to standardize to the extent practicable.

Leading indicators should provide predictive value and they should integrate upwards to predicted impacts on commercially important species and species of conservation concern. The SSC encourages a rigorous evaluation of which indicators provide good insight into ecosystem status. An example of an indicator with too little data to be a useful leading indicator at present is the analysis of AI tufted puffin chick diets. Those indicators that cannot be updated in a timely fashion may be more appropriately raised in the section on key data gaps.

The authors recognize the need for improved data on forage species, and the SSC reiterates its concern that lack of data on forage fish, particularly myctophids, sand lance, and squid, continues to limit the evaluation of potential changes to these important prey groups for apex fish, seabird and marine mammal predators. Equally important is the lack of data on prey species during fall, specifically euphausiid abundance and distribution. The SSC encourages efforts to incorporate forage fish sampling and acoustic surveys for euphausiids during the fall BASIS surveys.

There seems to be disagreement between the ecosystem SAFE and the forage fish chapter about the underlying reliability and utility of CPUE and stock assessment for the various forage species. Clarification of CPUE data origin (trawl, acoustic, seabird) and the limitations of these sources should be included, and some effort made to coordinate data with the authors in charge of the forage fish chapter.

Relative to marine mammals, this document seems overly focused on northern fur seals and Steller sea lions, with no mention made of recent changes in the conservation status of walrus (recently listed as a candidate species under ESA), spotted seals (the Southern Distinct Population Segment recently listed as threatened) or the pending resolution of conservation status of other ice seal species, not to mention small, piscivorous cetaceans. Many of these species rely heavily on large zooplankton, forage fish species, euphausiids, and juvenile cod/groundfishes, and their population distributions and foraging behaviors are influenced by many of the physical variables mentioned in the Ecosystem Considerations chapter. There is a need to encapsulate fully the ecosystem considerations relative to these stocks. Inclusion of ice seals and walrus in the Bering Sea Ecosystem Chapter is particularly important, as these are food resources for many coastal communities, and changes in their status may influence human behavior.

General Comments:

- It would be very helpful if all place names mentioned in the text were also displayed on a map.
- All figure legends, especially internal legends, need to be checked for readability at the size found in a printed document. Likewise, when possible, figures should be intelligible in a black and white printed version.
- It would help the SSC if tables and figures in the PowerPoint presentations include document page numbers to facilitate finding the originals.
- When feasible, the SSC would like to have the editor of the Ecosystem Considerations Chapter provide the presentation to the SSC so that questions can be answered in depth and so that the editor can have a better understanding of the comments of the SSC.

**C-5 Initial Review Freezer Longline vessel replacement**

The SSC received a presentation of the subject RIR/IRFA from Jon McCracken (NPFMC). Public testimony was offered by Kenny Down, Freezer Longline Coalition.

The question before the SSC on this agenda item is whether this document is a sufficiently complete analysis of the proposed action (i.e., amending the BSAI Groundfish FMP to permit Freezer Longline Vessel Replacement). The requirement of this document is to reasonably inform the public of the Council's purpose and need for this action (i.e., problem statement and rationale), the possible alternative means the Council believes hold some prospect or promise of resolving this problem, the costs and benefits that may reasonably be expected to derive from the amendment, the direct and indirect impacts that may be anticipated to accompany this Council action, and the distribution of these impacts across sectors, communities, and regions of those impacts. The information presented in the draft and articulated in the staff presentation strongly suggests that these requirements have not been met.

While the proposed action to amend the FMP is represented as necessary to allow freezer longline vessel owners to replace their vessels, that ability already exists without any Council action. It appears the current License Limitation Program (LLP) contains provisions that set out a "Maximum Length Over All" (MLOA) cap on vessels that may be used in association with the LLP held by the owner. For some LLP owners, the MLOA cap represents a barrier to their desire to replace their existing freezer longline vessel with a substantially larger vessel than their LLP for the fishery allows. This is a different issue from that identified as the subject of this action, namely vessel replacement.

If the conditions that motivated the Council's original decision on the current MLOA provision have changed (i.e., the Purpose and Need for an MLOA no longer applies), the Council would need to articulate the ways in which their original action now imposes unnecessary and undesirable burdens upon the LLP participants and identify potential alternative means by which the FMP amendment may achieve the action's objectives.

The draft document asserts that the proposed alternatives have no effect individually or cumulatively on the human environment. Therefore there is no need to prepare an Environmental Assessment. However, the SSC identified a number of aspects on the human environment that might be impacted by an action that restructures the LLP MLOA caps. This includes impacts to captains, crews, communities, ports and processors that may occur because larger, more efficient vessels with new capabilities and capacities will presumably require crew size and composition changes; result in fewer port calls; extend trip duration; among other changes. **There are implications for the human environment that should be more carefully explored before concluding that the action meets the criteria for a categorical exclusion from NEPA.**
Although one rationale given for the proposed action to amend the LLP MLOA is improvement in economic efficiency, the document provides no information on the extent of these potential impacts. Examples could include development of markets for ancillary products (e.g., cod heads), expansion into production of alternative "primary product" forms (e.g., fillets),competition with other fisheries for market share, and changes in crew compensation and formulation.

The ability of larger, more capable vessels to exploit new and more remote locations should be treated. It would be useful to consider what the biological and ecological impacts of greater mobility and reduced discarding would have on the environment.

**The SSC recommends that the Initial Review Draft of the FMP Amendment to allow BSAI Freezer Longline Vessel Replacement not be released for public review.** Given the substantive changes required for this document, the SSC notes that it would be difficult for the public to have a meaningful

opportunity to review and comment on the document if the Council intends to compress initial review and final action into a single meeting. The SSC requests that, should an Initial Review Draft EA/RIR/IRFA for an action to suspend or revoke the LLP MLOA be prepared, we have an opportunity to review and comment on its adequacy for release for public review.

**D-1(d) Halibut EFP**

John Gauvin from the Alaska Seafood Cooperative (ASC) gave a presentation supporting an application for an exempted fishing permit (EFP) for methods of reducing halibut bycatch on Amendment 80 vessels through modifications to fishing and catch handling practices.

The proposed study follows a smaller project undertaken in 2009. That project used three vessels operating in relatively good fishing conditions in areas of high halibut density to test the feasibility of the proposed changes. In particular, halibut were sorted on deck to minimize the amount of time they spent on the vessel, and thereby reduce mortality. This contrasts with current requirements that all fish be dumped in the stern tank to ensure availability for observer sampling, which can result in halibut remaining on deck for several hours. The results of the 2009 EFP were presented, which found that deck sorting led to a large reduction in mortality rate.

The new proposal intends to expand on the 2009 study by including a wider range of vessels operating in a variety of conditions with different target fisheries. As such, it will lead to a more realistic understanding of how the proposed changes to fishing (shorter tows) and catch handling will work in practice compared to the 2009 study.

In the 2009 study, the goal was to measure and assess all halibut for viability. The new proposal will use a subsampling design in which a random sample of halibut will be selected for assessment at a rate of 1 in 5. Compared to the 2009 study, the reduced sampling fraction will allow halibut to be returned to the water more quickly on average, and lead to further reductions in mortality. The sampling rate was chosen after an analysis of the data from the earlier study, and the SSC commends the ASC and their contracted statistician for the rigorousness of the analysis. The SSC supports this design, and agrees that it should avoid any issues of sampling bias that could result from anticipation of the next fish to sample.

The SSC finds this to be a very well designed project with the potential for important results regarding methods to reduce halibut bycatch on Amendment 80 vessels. **Therefore, the SSC recommends approval of the EFP.** The SSC also recommends the examination of safety issues that may arise from modifications to vessels to accommodate deck sorting.