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U.S. North Pacific Sablefish

4th Surveillance Audit Report

F-SCS-0019

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January 7 2016

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Glossary

ABC	Allowable Biological Catch
ABL	Auk Bay Laboratory
ADFG	Alaska Department of Fish and Game
AFSC	Alaska Fisheries Science Center
B	Biomass
BS	Bering Sea
BSAI	Bering Sea-Aleutian Islands
CAB	Certified Accreditation Body
CAS	Catch Accounting System
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EBFM	Ecosystem Based Fishery Management
EBS	Eastern Bering Sea
EM	Electronic Monitoring
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
ENP	Eastern North Pacific
ETP	Endangered, Threatened or Protected species
FAO	Food and Agriculture Organization of the United Nations
FEP	Fishery Ecosystem Plan
FCEY	Fishery Constant Exploitative Yield
FCM	Fisheries Certification Methodology
FMP	Fishery Management Plan
GOA	Gulf of Alaska
HAPC	Habitat Areas of Particular Concern
HEPR	Habitat and Ecological Research
IFQ	Individual Fishing Quota
ITQ	Individual Transferable Quota
IPHC	International Pacific Halibut Commission
IUCN	International Union for the Conservation of Nature
K	Growth Rate
Kg	kilogram
Lb.	Pound, equivalent to roughly 2.2 kg
LOA	Length Over-All
M	Million (lbs.)

MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
nm	nautical mile
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
OFL	Over-Fishing Level
PBR	Potential Biological Removal
PPA	Preliminary Preferred Alternative
REFM	Resource Ecology and Fisheries Management
RPW	Relative Population Weight
SAFE	Stock Assessment and Fishery Evaluation
SCS	SCS Global Services
SE	Southeast
SSB	Spawning Stock Biomass
SWSH	Statewide Harvest Survey
t and mt	metric ton
TAC	Total Allowable Catch
TCEY	Total Constant Exploitative Yeild
US	United States
WWF	World Wildlife Fund

General Information

Fishery name	*US North Pacific Sablefish Fishery*		
Unit(s) of assessment	*US North Pacific (AK) Sablefish Fishery Demersal Longline (Hook and line)*		
Date certified	August 10, 2011	**Date of expiry**	August 9, 2016
Surveillance level and type	*Normal Surveillance* *The fishery previously underwent off-site surveillance because there were no open conditions. However, because the 4th surveillance also coincides with the re-assessment, and there is an emerging new gear in the fishery, this surveillance was be conducted on-site in conjunction with the re-assessment.*		
Date of surveillance audit	*November 3rd - 7th, 2015*		
Justification	*This surveillance audit took place approximately 3 months after the anniversary date in order to accommodate the schedules of the assessment team and client.*		
Surveillance stage (tick one)	1st Surveillance		
	2nd Surveillance		
	3rd Surveillance		
	4th Surveillance	X	
	Other (expedited etc)		
Surveillance team	Lead assessor: Dr. Sian Morgan ***Dr. Sian Morgan, SCS Global Services, Team Leader*** *Dr. Morgan has more than a decade of experience in marine ecology and fisheries science with particular expertise in markets-based fisheries reform, certification and quantitative methods for decision analysis. She has worked in non-governmental, academic and consulting settings and brings to the team a strong background in cross-sectoral consultation. Her doctoral research at the Fisheries Center, University of British Columbia/McGill examined the population dynamics and management of a small-scale, data poor multi-species fishery in Asia. Dr. Morgan has participated standards setting and revision processes for both fisheries and aquaculture, was a past member of the MSC Stakeholder Council (public chamber) and is a current member of the Technical Advisory Group for the Aquaculture Stewardship Council. Examples of SCS client fisheries that Sian has managed include US Pacific halibut, Gulf of California Mexico low trophic levels fisheries for sardine and thread herring as well as various pre-assessment and international reform projects in data-deficient developing world fisheries. Past projects managed by Dr. Morgan include developing SeaChoice, a national seafood program for Canada, conceiving pragmatic trade tools for CITES and researching species responses to area-based management for WWF.* *Sian is trained to audit the MSC standard, various ASC standards, MSC/ASC CoC, ISO 9001 and SA 8000. She has prior experience as a surveillance team member for this sablefish fishery, is an active team leader and program manager for MSC Americas assessments, and has no conflict of interest in performing the re-assessment.*		

	Assessor(s): ***Mr. Tom Jagielo, Tom Jagielo Consulting, Principles 1 & 3*** *Tom formed his own firm in 2008 to provide consulting services in quantitative fisheries science. Previously, he served for 24 years with the Washington Department of Fish and Wildlife (WDFW), and 6 years with the Fisheries Research Institute at the University of Washington in Seattle. At WDFW, Tom specialized in groundfish stock assessment and survey design, adapting state of the art tools and methods to assess marine fish populations for sustainable fisheries management. He has produced stock assessments used by the Pacific Fishery Management Council (PFMC), including analysis of lingcod and rockfish populations. Recent consulting projects have included the design and implementation of a novel coastwide aerial survey used for assessment and management of west coast Pacific sardine, and various investigations for the Virginia Institute of Marine Science, Environmental Defense Fund, the Alliance of Communities for Sustainable Fisheries, the At Sea Processors Association, and other clients. Tom has received appointments to the Scientific and Statistical Committee of the PFMC, the Technical Subcommittee of the US-Canada Groundfish Committee, the Pacific Coast Ocean Observation System, and various other workshop panels and review bodies. Tom has published in peer-reviewed journals and presented papers at national and international meetings. Tom received a B.S. degree in Biology from the Pennsylvania State University and a M.S. degree in Fisheries from the University of Washington, where he also conducted post M.S. graduate studies in fisheries population dynamics and parameter estimation.* *With his demonstrated expertise in stock assessment and management systems for finfish in the Pacific Northwest, background as a surveillance team member for this fishery, and MSC team member training and experience, Tom is highly qualified to serve on the re-assessment team. He affirms he has no conflict of interest.* ***Todd Hallenbeck, Independent Consultant, Principle 2*** *Todd Hallenbeck has extensive experience collecting, analyzing, and managing data for research, ocean planning, and policy making. For the last three years, Todd has worked as an independent contractor helping to analyze and share geospatial data related to renewable energy planning, fishery management, and other West Coast regional ocean health priorities. Todd's background is in coastal and marine science and policy with original published research in seafloor habitats and benthic ecology to inform fishery management. Prior to his graduate work, Todd worked as a groundfish sampler and fishery observer in both Alaska and California, collecting catch and landings data, documenting fishery practices, and reporting to National Marine Fisheries Service and CA Dept. of Fish and Wildlife staff. He has localized experience highly relevant to Principle 2 evaluation, and has recently completed the MSC Training Modules to qualify as a team member for this re-assessment, and affirms he has no conflict of interest in performing the assessment.*	
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Executive Summary

This report summarizes the findings from the fourth annual surveillance audit of the US North Pacific sablefish hook and line fishery after the fishery was recertified in 2011. The fishery was first certified to the MSC requirements in 2006 and re-certified as a source of sustainable seafood using the default assessment tree in 2011 (FAM 2.1, 2010).

The 2015 fourth surveillance audit focused on changes since the most recent full assessment in 2011, the most recent 2014 surveillance audit, and monitored continued compliance with the MSC Principles and Criteria. The surveillance audit was conducted in parallel with the 2nd re-assessment of the fishery as well as the 4th annual surveillance and 2nd re-assessment of the US North Pacific halibut fishery. There were no conditions carried over from the initial 2006 certification or the 2011 re-certification of the fishery.

In 2015, the assessment team included new information in relevant sections of the report, focusing particularly on updating reference values relevant to retained and bycatch species, outlining NMFS current research objectives for sablefish and synthesizing the current status of improvements to the Alaska Observer Program. Spot checks were conducted on performance indicators where new information was available and otherwise at random or where potential risk was perceived to exist. The team chose to re-evaluate performance indicators 1.2.4, 2.2.1 and 3.2.4. The rescoring involved an update to rationale text and minor changes to scores, none of which caused scores to move outside of the SG80-100 range. Please see the Results Section for more detail.

Based on the surveillance level criteria in the fishery Certification Requirements (CR v1.3), the fishery had previously qualified for reduced surveillance. In the reduced surveillance program the 4th year surveillance audit should be conducted on-site, as part of the re-certification on-site (CR V1.3). During the 2015 audit, the team reviewed new information. Because the fishery surveillance timing coincided with the US North Pacific halibut fishery surveillance, onsite meetings were held concurrently with that audit.

The audit took place November 3rd - 7th, 2015, in Seattle, WA, and Juneau, AK, USA. On the evening of November 3rd, the team held an in-person meeting with the client representative Robert Alverson, and other members of the client group – the Fishing Vessel Owner's Association. In the days following, the

team held meetings focusing on the observer program, seabird bycatch, stock assessments, catch accounting, permitting, and compliance and enforcement, among other pertinent fishery topics. Meetings were held primarily with NOAA staff responsible for science and management at the Alaska Fisheries Science Center and Alaska Regional Office, as well as a meeting focused on seabird bycatch that included NMFS agency staff Shannon Fitzgerald, Farron Wallace, Dr. Ed Melvin of Washington Sea Grant. For a detailed on-site visit itinerary and meeting attendee list please see the "Assessment Process" section (p. 41).

There were no conditions on the fishery certification when it was re-assessed in 2011. No new conditions have been put in place in subsequent Surveillance Audits 1-3, and none are recommended based on findings from this 4th Annual Surveillance audit.

An update of recent TAC and catch in the unit of assessment is summarized in Table 1 below.

Table 1 TAC and Catch Data by year for the Alaskan Sablefish fishery.

TAC	**Year**	**2015**	**Amount**	**30,108,495 lbs[1]**
UoA share of TAC	**Year**	**2015**	**Amount**	**23,569,378 lbs [2]**
UoC* share of TAC	**Year**	**2015**	**Amount**	**23,569,378 lbs [2]**
Total green weight catch by UoC	**Year (most recent)**	**2014**	**Amount**	**23,117,645 lbs[3]**
	Year (second most recent)	**2013**	**Amount**	**27,787,030 lbs[4]**

[1]Hanselman et al 2014 Trawl and fixed gear
[2]IFQ TAC only -- Does not include CDQ. RAM (2015)
**UoC eligible product equivalent to the UoA*
[3]10486mt Total fixed gear catch (IFQ+CDQ) Hanselman et al 2014
[4]12604mt Total fixed gear catch (IFQ+CDQ) Hanselman et al 2014

Background

This is the 4th Annual Surveillance Report 2015 prepared by SCS to meet the requirements of the MSC for annual audits of certified fisheries.

It is SCS's view that the North Pacific sablefish longline fishery in AK, USA, continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification.' SCS recommends the continued use of the MSC certificate through to the end of the certificate cycle.

The sections below provide an update on the fishery since the 3rd annual surveillance audit in 2014 with a brief summary of the fishery for context.

Target Stock.

Sablefish are a bathydemersal cod-like fish and are one of only two members in the Anoplopomatidae family and the only member of the genus *Anoplopoma*. Other common names include black cod, butterfish, and coalfish. They are usually found in soft bottom muddy habitat at depths of 300 to 2,700 m. Adults are opportunistic feeders that prey on other fish and invertebrates including walleye pollock,

capelin, herring, sandlance, Pacific cod, squid, pandalid shrimp and jellyfish. Sablefish spawn in the water column at depths of 300 to 500 m near the edges of the continental slope. Eggs develop at depth, but larvae migrate to the surface off shore. In Alaska, spawning is in late March. Spawning occurs earlier in the year in the southern latitudes. The length at which 50% of the female fish are mature is 58 to 60 cm and corresponds with an age of 5 years. Young of the year (YOY) in Alaska occur in the central and eastern Gulf. Pelagic juveniles (< 20 cm) drift inshore during their first summer. By the second summer they are 30 to 40 cm thereafter migrating to deeper water and reach adult habitat at 4 to 5 years. Sablefish is a long-lived species. The oldest specimen recorded was 94 years old and 120 cm. Regarded as a mild flavored white fleshed fish, sablefish are high in omega 3 fatty acids and considered a delicacy in many parts of the world. Sablefish is also a popular sushi item in Japan. (Hanselman *et al*, 2009a; FishBase, 2010)

Current Status.

The status of the sablefish stock relative to reference points indicates the stock continues to be harvested sustainably. Reference points are reported for the combined Eastern Bering Sea (EBS), Aleutian Islands (AI), and Gulf of Alaska (GOA) (Figure 1). The updated estimates of *B40%, F40%,* and *F35%* from the 2014 assessment are 104,908 t, 0.095, and 0.112, respectively. Projected female spawning biomass for 2015 is 91,183 t (88% of *B40%*), placing sablefish in Tier 3b of the NPFMC harvest rules (Appendix 1). The maximum permissible value of *FABC* under Tier 3b is 0.082, which resulted in a 2015 ABC of 13,657 t. The OFL fishing mortality rate is 0.098 which corresponds to a 2015 OFL of 16,128 t. Model projections indicate that this stock is not subject to overfishing, is not overfished, and is not approaching an overfished condition. Spawning biomass for 2015 is estimated to be 35% of the unfished biomass reference point, and is trending downward in projections for the near future (Hanselman *et al*. 2014).

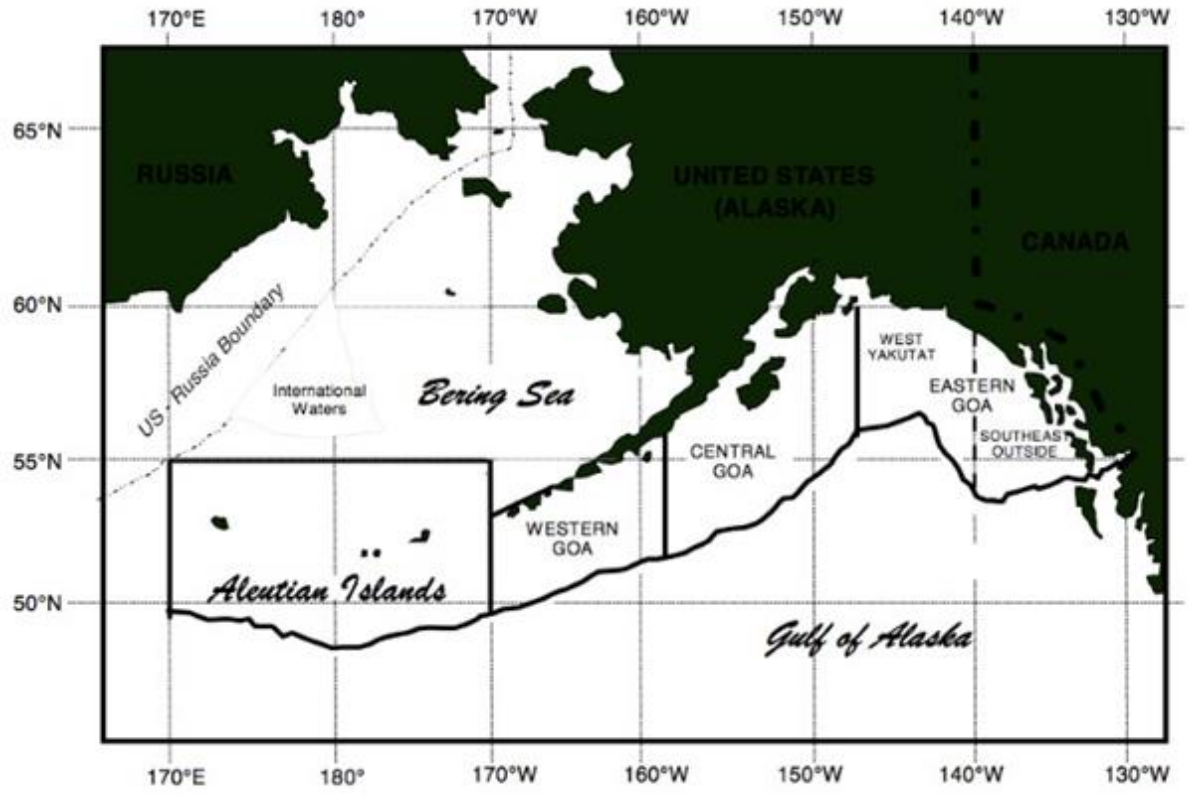

Figure 1. Sablefish Regulatory Areas and Districts (Source: http://alaskafisheries.noaa.gov/rr/figures/fig14.pdf)

Recent Trends.

Since the early 2000s, catches have declined to near 12,000 t (

Figure *1*), associated with a sustained period of lower than average recruitments (Figure 2). The trend in estimated spawning stock biomass had varied above the B40% level until the mid-1990s, and subsequently has varied between the B40% and B35% levels (Figure 3). The limit reference point defining an overfished condition for sablefish is the Minimum Stock Size Threshold (MSST), which is one half of B35% (B17.5%). The probability of the stock being below B17.5% in 2014 was estimated to be less than 5% (Figure 4). Estimated fishing mortality has been in a declining trend since the early 1990s (Figure 5). Target fishing mortality, and associated TACs have declined in recent years, as a result of the NPFMC harvest policy of reducing target fishing mortality when the spawning stock size falls below B40% (Appendix 1) (Hanselman *et al*. 2014).

Stock Assessment Update.

The sablefish stock assessment model has not changed substantively since the MSC re-assessment in 2011. Uncertainty in estimation of the reference points is evaluated with a Bayesian analysis via MCMC simulation. Additionally, a retrospective analysis has been conducted to look for evidence of potential bias in parameter estimates. For the 2014 assessment, the model showed robust performance when

the retrospective trend in spawning biomass and total biomass for ten previous assessment years (2004-2013) was compared to estimates from the current model (Hanselman *et al* 2014).

Research Update.

The 2014 SAFE Report (Hanselman *et al* 2014) identifies areas for priority research stating that "a better understanding of juvenile distributions, habitat utilization, and species interactions would improve understanding of the processes that determine the productivity of the stock. Better estimation of recruitment and year class strength would improve assessment and management of the sablefish population."

Priority research objectives for Sablefish include (Hanselman *et al* 2014):

9.2.1) Refining the survey abundance index model and accounting for whale depredation, and potentially including gully abundance data as well as other covariates

9.2.2) Refining the fishery abundance index to utilize a core fleet and identifying covariates that affect catch rates

9.2.3) Improving knowledge of sperm and killer whale depredation and quantifying depredation effects on the fishery's catch rates

9.2.4) Continuing to explore the use of environmental data to aid in determining recruitment

9.2.5) Working closely with an integrated GOA Ecosystem project funded by the North Pacific Research Board that is aiming to look at recruitment processes of major groundfish including sablefish.

9.2.6) Developing a spatially explicit research assessment model that includes movement which will help to examine smaller-scale population dynamics while retaining a single stock hypothesis in the AK-wide sablefish model.

9.2.7) Improving knowledge of maturity and fecundity

9.2.8) Improving knowledge of spawning season

The Alaska Department of Fish and Game (ADF&G) undertakes annual longline surveys using chartered commercial vessels to survey the Chatham Strait and the Clarence Strait groundfish management areas ADFG: http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.management. Biological samples are taken as well as an estimate of CPUE for sablefish. Additionally, sablefish have been part of mark/recapture studies since 1997. Sablefish are caught in pots, tagged and released. The tags send back information on location, depth, and population dynamics (ADFG: http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.research.) Objectives for the ADF&G sablefish tagging program are:

- Capture, mark, and tag 5000 or more sablefish two months prior to the Northern Southeast Inside commercial longline fishery.
- Observe and count the unmarked and marked sablefish landed by the NSEI commercial longline fishery in the major ports of Petersburg, Juneau, and Sitka, Alaska, USA.
- Collect external tags and tag recovery information from fishermen.
- Analyze mark-recapture data to estimate sablefish abundance in NSEI management area.
- Study movements of sablefish tagged in Chatham Strait and Frederick Sound.

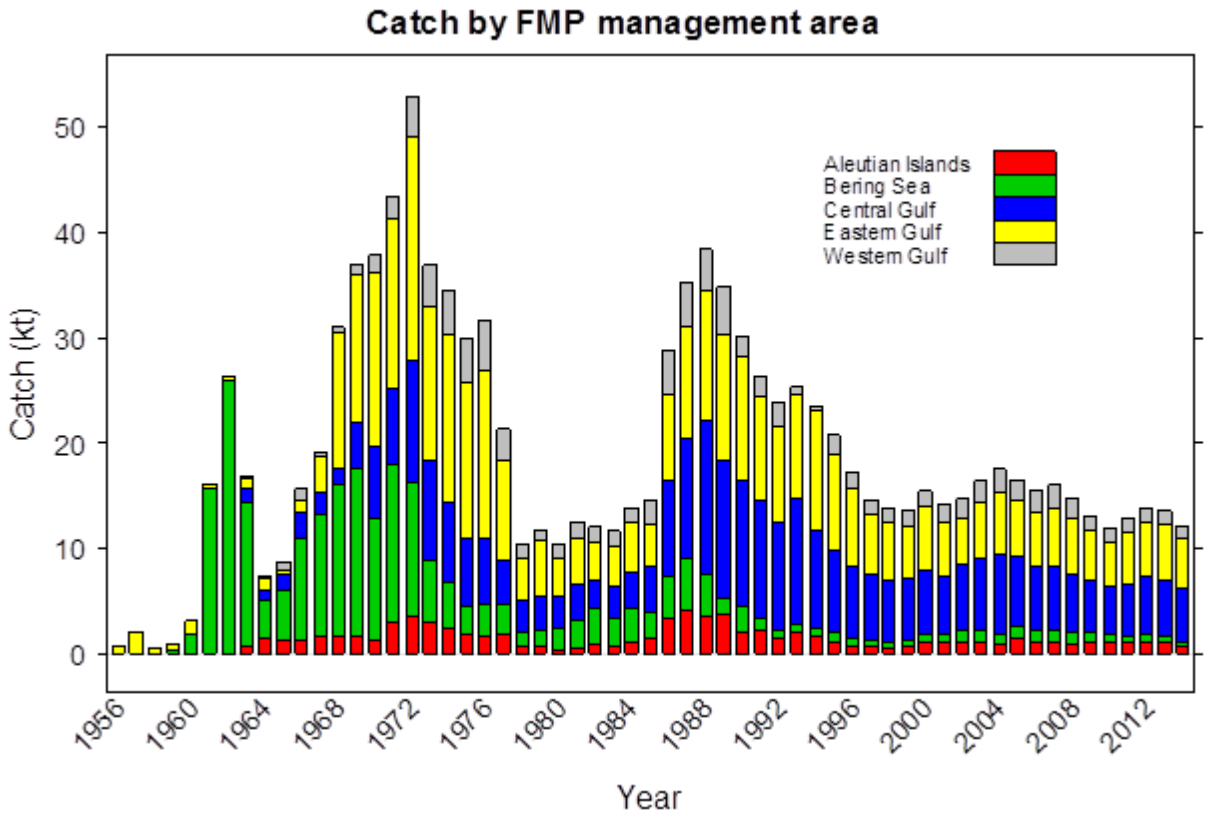

Figure 1. Sablefish fishery total reported catch (kt) by North Pacific Fishery Management Council area and year. Source: Hanselman et al 2014; Figure 3.2.

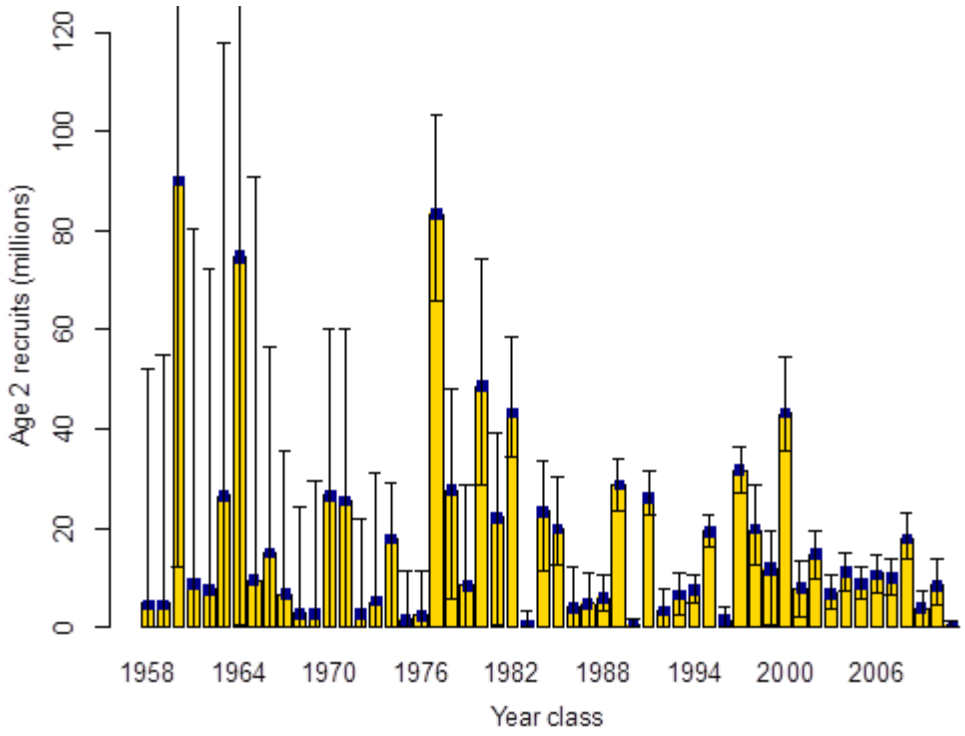

Figure 2. Estimates of the number of age-2 sablefish (millions) with 95% confidence intervals by year class. Source: Hanselman et al. 2014; Figure 3.14b.

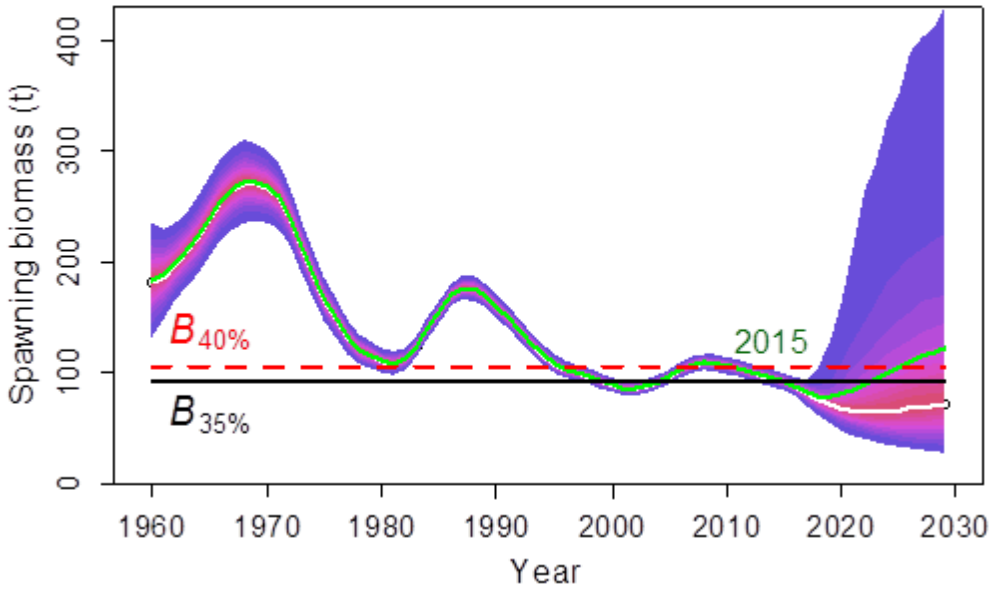

Figure 3. Estimates of female spawning biomass (thousands t) and their uncertainty. White line is the median and green line is the mean. Width of shaded area is the 95% credibility interval. Source: Hanselman et al. 2014; Figure 3.35.

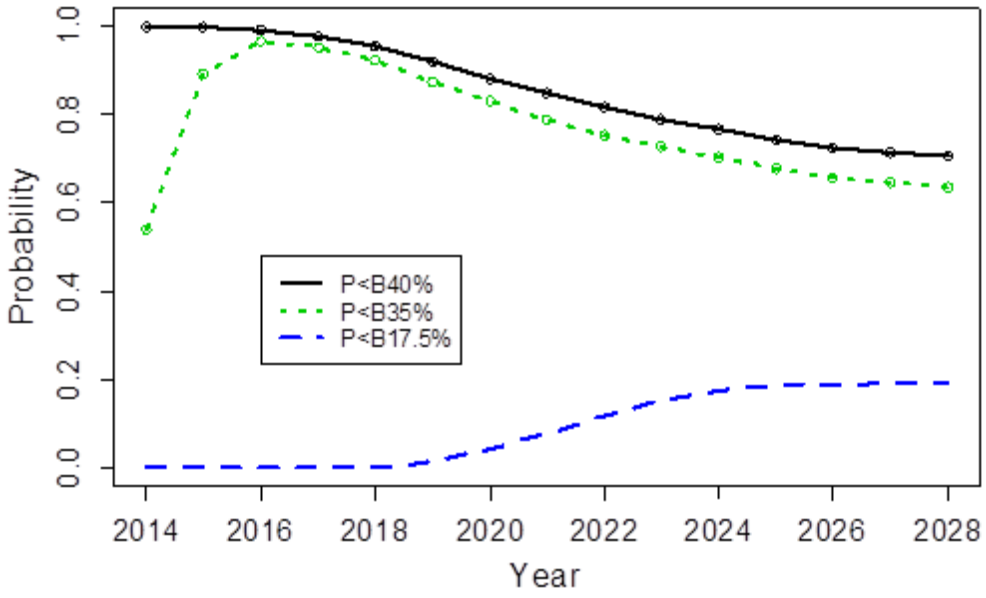

Figure 4. Probability that projected spawning biomass (from MCMC) will fall below $B_{40\%}$, $B_{35\%}$ and $B_{17.5\%}$. Source: Hanselman et al. 2014; Figure 3.34.

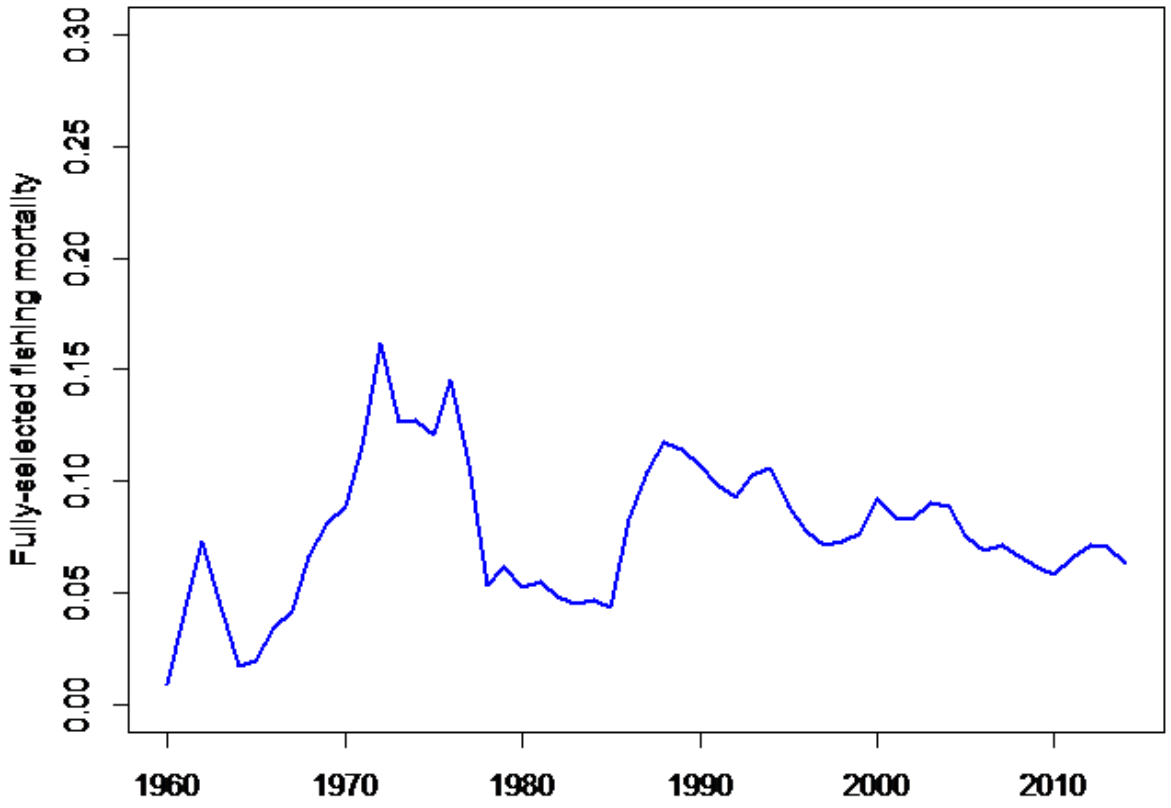

Figure 5. Time series of combined fully-selected fishing mortality for fixed (bottom longline + pots) and trawl gear for sablefish. Source: Hanselman et al 2014. Figure 3.29.

Ecosystem Impacts

There is a strategy in place to manage the non-target species associated with bottom longline gear which consists of (1) an in-season catch accounting system, (2) observer program to estimate catches of non-target species, that was heavily restructured in 2013 to better sample the full groundfish fleet, including halibut vessels which previously had minimal coverage, (3) fishery independent surveys conducted by NOAA-Fisheries, (4) statistical stock assessments for most non-target species (5) a tiered system of assessments that provides for more precautionary annual catch limits when assessments use less precise methods coupled with clear procedures for restricting catch limits if stock rebuilding is necessary, (6) mandatory use of seabird avoidance devices on all vessels larger than 55', and (7) a spatial management strategy that prohibits or restricts vessels from fishing in sensitive habits. This system is expected to keep bycatch species at levels that are highly likely to be within biological limits and to minimize impacts to habitat. The evidence for successful implementation of this management strategy is manifest by regular (often annual or alternating year) stock assessment, records

demonstrating implementation of catch accounting and observer programs, evidence of management responses based on observer and landing records as well as the healthy stock status for most non-target species relative to reference points.

Sources of Information

This fishery has significant sources of fishery dependent and fishery independent data that permit stock assessments for retained species, including a catch accounting system, fishery independent surveys, and an observer program.

1. Fishery independent surveys: NOAA- Fisheries conduct annual longline and trawl surveys in the Gulf of Alaska and in the Eastern Bering Sea / Aleutian Islands. This information is used directly in assessments.

2. Catch accounting system: The system uses information from multiple sources to provide an estimate of total groundfish catch, including at-sea discards, as well as estimates of prohibited species catch and other non-groundfish bycatch. Observer information, dealer landing reports ("fish tickets"), and at-sea production reports are combined to provide an integrated dataset for fisheries monitoring and in-season decision making. Participants in the North Pacific Groundfish fisheries, including IFQ Sablefish, are required to use one of two electronic reporting systems. The first (IFQ and CDQ on-line catch reporting) documents only landings of ITQ-species (halibut & sablefish) as a way to track each participants' annual catch. The second, e-Landings is a more comprehensive system that inputs all catches, including self-reported discards as well as other landed species. Catches can be submitted on-board, from any fishing vessel daily, so that the e-Landings system provides real time catch accounting. Landing fish in the state of Alaska requires the use of fish tickets (landing receipts) that describe the amount and composition of all fish sold. Together the fish ticket and e-Landings system provide current, precise quantitative information on the amount of fish landed. In the catch accounting system, trips are classified based on the gross weight landed. Therefore, if a trip targeted both sablefish and halibut, but landed more sablefish it would be classified as such.

3. Observers: Vessels >= 40 LOA engaged in IFQ sablefish fisheries have trips randomly selected to take on federal observers. The Observer Program underwent a significant restructuring in 2013 to expand observer coverage to nearly all catcher/processor vessels, the halibut and sablefish Individual Fishing Quota (IFQ) fisheries, and vessels between 40 feet and 60 feet length overall (LOA). In 2015, NMFS began testing Electronic Monitoring (EM) systems on vessels 40-57.5' LOA to include vessels that have traditionally been placed in a 'no-selection' pool because of safety or space constraints in order to get a better estimate of the overall sampling frame for statistical analysis. This updated sampling structure and EM testing, increases the amount and reliability

of data available to determine fishery impacts on non-target species, though data gaps with vessels < 40 feet still exist. For updated information on the Observer Program see the "Observer Program" section.

The information on retained species can be considered accurate and verifiable, and monitoring of species is sufficient to generally assess mortalities.

Updates on Non Target Species Impacts

Since the last surveillance report in 2014 (3rd Annual Surveillance) SCS was presented with an additional year of observer data from the restructured observer program and further information on bycatch of ETP species from the updated observer program. This information was used to update the list of main retained and discarded bycatch in the sablefish fishery (Table 2).

In the MSC system, species are scored as "main" (either bycatch/discards or retained) non-target species if they comprise >5% of the total landings by weight, or may also be scored as main if they comprise <5%>2% but have vulnerable life histories. Species are categorized for scoring purposes as retained versus discarded based on whether they are greater than 50% retained or discarded (Table 2).

Since the last full assessment, the composition of the non-target species assessed has changed substantially because of the more refined and representative information provided by the revised design in observer program which occurred last season. In past assessments, species composition list was extrapolated from e-landings data alone and presented a much different picture of the fishery.

In particular, records showed that the main non-target species include Pacific halibut and thornyheads as a main retained species by volume, and grenadiers, sharks, and albatross' based on their vulnerability, despite volumes <5% of cumulative landings. This assessment did not assess Pacific cod (not considered vulnerable and <5% of fishery), skates (potentially vulnerable, but <2% of fishery), and other rockfish species (potentially vulnerable, but <2% of fishery) (Table 2). The full updated species list and background on the updated species groups is provided below (Table 3). These additional species are not targeted by the fishery and recent assessments conclude that they are not being overfished.

Overview of Non-target Catch

Table 2: Summary of Non-target Species as Categorized for Evaluation in Principle 2.

Performance indicator	Species	Rationale
2.1 Retained non-target	Pacific Halibut	Main retained: Greater than 5% of catch
2.1 Retained non-target	Thornyheads	Main retained. Less than 5% of catch, but vulnerable
2.2 Discarded bycatch	Grenadiers	Main discarded. Greater than 5% of catch
2.2 Discarded bycatch	Sharks, Laysan Albatross, Black-Footed Albatross	Main discarded. Less than 5% of catch, but vulnerable
2.3 ETP species	Short-tailed Albatross	ESA Listed "Endangered"

Table 3: Catch Summary. Average species or species group catch, including retained, and discarded catch, for BSAI and GOA IFQ Sablefish Longline fishery 2013-1014. Weights are in metric tons and birds are counts. Source: NOAA Catch Accounting System, 2015.

Species	% of Sablefish Fishery	% Retained	% Discarded	Average Catch (mt/year)	Average Retained (mt/year)	Average Discarded (mt/year)
Sablefish	45.07%	96.28%	3.72%	10264.09	9882.03	382.06
Giant Grenadier	27.58%	0.00%	100%	6281.56	0	6281.56
Pacific Halibut	8.29%	58.19%	41.81%	1887.26	1098.18	789.08
Grenadier - Ratail Grenadier Unidentified	5.13%	0.00%	100%	1168.78	0	1168.78
Thornyheads	3.33%	59.31%	40.69%	757.9	449.47	308.43
Sharks	2.98%	0.00%	100%	679.72	0	679.72
Other Skates	1.24%	0.11%	99.89%	281.37	0.31	281.06
Shortraker Rockfish	1.18%	35.17%	64.83%	267.75	94.18	173.57
Longnose Skate GOA	1.04%	4.03%	95.97%	237.56	9.59	227.98
Arrowtooth Flounder	1.00%	4.28%	95.72%	227.92	9.76	218.16
Other Rockfish	0.87%	43.23%	56.77%	198.92	86	112.92
Rougheye Rockfish	0.82%	44.11%	55.89%	187.68	82.79	104.89
Pacific Cod	0.51%	34.00%	66%	115.68	39.34	76.34
GreenlandTurbot	0.25%	31.45%	68.55%	57.94	18.23	39.72
Misc fish	0.13%	0.00%	100%	29.99	0	29.99
Kamchatka Flounder BSAI	0.13%	8.72%	91.28%	28.68	2.5	26.51
Sea star	0.06%	0.00%	100%	14.26	0	14.26
Deep Water Flatfish GOA	0.06%	2.17%	97.83%	13.63	0.3	13.33
Dermersal Shelf Rockfish GOA	0.05%	92.57%	7.43%	11.51	10.66	0.86
Flatfish BSAI	0.05%	0.00%	100%	10.36	0	10.36
Octopus	0.04%	0.00%	100%	10.2	0	10.2
Large Sculpins - Hemilepidotus Unidentified	0.04%	0.00%	100%	9.3	0	9.3
Corals Bryozoans - Corals Bryozoans Unidentified	0.03%	0.00%	100%	6.85	0	6.85
Big Skate GOA	0.02%	0.00%	100%	4.9	0	4.9

Shallow Water Flatfish GOA	0.02%	0.00%	100%	3.77	0	3.77
Large Sculpins - Yellow Irish Lord	0.01%	0.00%	100%	2.47	0	2.47
Sponge unidentified	0.01%	0.00%	100%	2.04	0	2.04
Flathead Sole	0.01%	0.00%	100%	2	0	2
Sea anemone unidentified	0.01%	0.00%	100%	1.76	0	1.76
Sea pens whips	0.00%	0.00%	100%	1.13	0	1.13
Pacific Ocean Perch	0.00%	0.00%	100%	1.1	0	0.45
Dusky Rockfish GOA	0.00%	3.88%	96.12%	1.03	0.04	0.99
Birds- Black-footed Albatross*	0.00%	0.00%	100%	0.81	0	254.5
Birds - Laysan Albatross*	0.00%	0.00%	100%	0.42	0	128
Eelpouts	0.00%	0.00%	100%	0.39	0	0.39
Large Sculpins - Great Sculpin	0.00%	0.00%	100%	0.33	0	0.33
Brittle star unidentified	0.00%	0.00%	100%	0.22	0	0.22
urchins dollars cucumbers	0.00%	0.00%	100%	0.21	0	0.21
Other Sculpins	0.00%	0.00%	100%	0.21	0	0.21
Large Sculpins - Red Irish Lord	0.00%	0.00%	100%	0.16	0	0.16
Northern Rockfish	0.00%	0.00%	100%	0.16	0	0.16
Invertebrate unidentified	0.00%	0.00%	100%	0.14	0	0.14
Large Sculpins - Bigmouth Sculpin	0.00%	0.00%	100%	0.13	0	0.13
Snails	0.00%	0.00%	100%	0.12	0	0.12
Birds - Northern Fulmar*	0.00%	0.00%	100%	0.1	0	138.5
Misc Crustaceans	0.00%	0.00%	100%	0.09	0	0.09
Misc crabs	0.00%	0.00%	100%	0.08	0	0.08
Birds - Unidentified Albatross*	0.00%	0.00%	100%	0.07	0	21.39
Dark Rockfish	0.00%	0.00%	100%	0.06	0	0.06
Atka Mackeral	0.00%	0.00%	100%	0.04	0	0.04
Hermit crab unidentified	0.00%	0.00%	100%	0.04	0	0.04
Rex Sole	0.00%	0.00%	100%	0.04	0	0.04
Large Sculpins - Myoxocephalus Unidentified	0.00%	0.00%	100%	0.03	0	0.03
Birds - Gull*	0.00%	0.00%	100%	0.03	0	12
Birds - Shearwaters*	0.00%	0.00%	100%	0.03	0	67.16
Squid	0.00%	0.00%	100%	0.01	0	0.01

Species: Pacific Halibut

Biology

Pacific halibut (*Hippoglossus stenolepis*) is a demersal flatfish which inhabits the continental shelf of the United States and Canada, ranging from California to the Bering Sea, with populations extending east to Russian and Japanese waters. Pacific halibut are among the largest teleost fishes in the world with lengths reported up to 9 feet (2.7 m) and can weigh several hundred pounds. Although the average age taken in the fishery is 10 to 13 years, halibut are known to live to an age exceeding 50 years (Hoag *et al*. 1983).

Depending on life stage, they may occur from the shallow waters of the continental shelf and down the continental slope to depths of 1200 meters. Adult halibut migrate annually, moving to deeper waters on the edge of the continental shelf during the winter for spawning, and into shallow coastal waters in the summer months for feeding. Mature halibut collect on spawning grounds in the fall through spring from November to March and normally spawn along the continental slope at depths of 200 to over 450 meters (Seitz *et al*. 2007). A 50-pound female will spawn close to a half million eggs while a female over 200 pounds may spawn several million eggs. Most females reach maturity at about 12 years. Most males are mature at 8 years. Halibut are occasionally eaten by marine mammals and sharks but seem to be rarely found as prey for other fish as adults (Hoag *et al*. 1983). Pacific halibut enter the commercial fishery at about 8 years old.

Status

The results of the 2014 stock assessment indicate that the Pacific halibut stock declined continuously from the late 1990s to around 2010. That trend is estimated to have been a result of decreasing size at age, as well as recent recruitment strengths that are much smaller than those observed through the 1980s and 1990s. Since that time period, the estimated female spawning biomass appears to have stabilized near 200 million pounds (IPHC 2013). In Alaska, the IFQ sablefish fishery took an average of 1887.26 mt of halibut during the 2013 and 2014 fishing seasons. Halibut are often targeted and retained from sablefish boats that hold quota in both fisheries. Thus it if often hard to determine if a particular trip was directed at sablefish or halibut.

The 2014 IPHC stock assessment re-affirmed that the Pacific halibut stock has been declining over much of the last decade as a result of decreasing size-at-age and poor recruitment strengths (Stewart and Martell 2015). The stock trajectory has been relatively flat in recent years, and was estimated to be at 42% of the reference level (B0) in 2015. The probability of 2015 spawning biomass being below the target reference point (B30%) was estimated to be 10%; and the probability of it being below the limit reference point was less than 1% (Stewart and Martell 2015).

The status of the IFQ halibut fishery is discussed in detail in another MSC Assessment. Please see the MSC 2nd Re-Assessment of the North Pacific halibut Longline fishery for full discussion, or the most recent 4th Annual Surveillance Audit from 2015.

Management

The Pacific halibut stock is managed under the Pacific Halibut Treaty between Canada and the United States. The International Pacific Halibut Commission (IPHC) is responsible for assessing the status of the

stocks and setting harvest strategies and catch limits that provide for optimum yield. The Commission reports the results of the annual stock assessment as a range of coastwide harvest levels, each with accompanying estimates of potential risk in terms of stock and fishery trend and status metrics. The current stock assessment is performed at a coastwide scale, but IPHC sets catch limits on a regulatory area basis. The Commissioners consider the coastwide decision table and area-specific results of apportionment, as well as the current harvest policy in determining the final catch targets for each year. The current harvest policy utilizes area-specific harvest rate targets (US: 21.5% for Areas 2A-3A, 16.125% for Areas 3B-4CDE). These rates are applied to the biomass estimates to generate the Total Constant Exploitation Yield (TCEY) and Non-directed removals, including recreational removals, personal use or subsistence removals, commercial fishery wastage, and bycatch in non-target fisheries, are then subtracted from the TCEY. The result is the Fishery CEY (FCEY), which is the amount available for harvest by the directed fisheries (IPHC 2013).

Within the United States, the North Pacific Fishery Management Council (NPFMC) is responsible for allocating the halibut resource among users and user groups fishing off Alaska. The National Marine Fisheries Service (NMFS) is responsible for developing, implementing, and enforcing regulations pertaining to management of halibut fisheries in U.S. waters. The State of Alaska participates in management through the ADF&G Commissioner's seat on the North Pacific Fishery Management Council. ADF&G licenses anglers and sport fishing businesses and guides, monitors and reports on sport and subsistence harvests, and assists federal agencies with preparation of regulatory analyses (NPFMC 2013).

The Alaska commercial longline fishery has been managed under an Individual Fishery Quota (IFQ) system since 1995. The IPHC sets the seasons and catch limits annually, and the catch limit is apportioned among U.S. fishermen based on individual quota shares. The sport fishery in Alaska is generally managed under daily bag and possession limits. Sport charter fisheries may have more restrictive regulations, such as size limits, to keep harvest within allocations or guidelines set by the North Pacific Fishery Management Council. A limited entry system was implemented for the charter boat fleet in 2011, and a catch sharing plan was recently developed to allocate halibut between the commercial and charter fisheries in Alaska (NPFMC 2013).

The Commission allows for public participation in the management of the resource and regularly seeks advice from its advisory bodies and various State, Provincial, and Federal agencies. The Commission's advisory bodies include the Conference Board, the Processor Advisory Group, the Research Advisory Board, the Management Strategy Advisory Board, and the Scientific Review Board. Stakeholder comment and participation is also available through the Commission's Annual meetings (IPHC 2013).

Information

The IPHC conducts numerous projects annually to support stock assessments, including standardized longline fishing surveys from northern California to the end of the Aleutian Islands, as well as field sampling in major fishing ports to collect scientific information from the halibut fleet. This information is supplemented by the NMFS groundfish observer program, which was restructured in 2013 to include halibut IFQ vessels >40 LOA (but not vessels <40 ft LOA), and the catch accounting system.

Species Thornyheads (Shortspine Thornyhead, Longspine Thornyhead)

Biology

Thornyheads (*Sebastolobus* species) are groundfish belonging to the family Scorpanenidae, which contains the rockfishes. While thornyheads are considered rockfish, they are distinguished from the "true" rockfish, primarily by reproductive biology; all Sebastes rockfish are live-bearing (viviparous) fish, while thornyheads are oviparous, releasing fertilized eggs in floating gelatinous masses. There are three species in the genus Sebastolobus in Alaska, including the shortspine thornyhead (*Sebastolobus alascanus*), the longspine thornyhead (*Sebastolobus altivelis*), and the broadfin thornyhead (*Sebastolobus macrochir*) (Eshmeyer *et al*. 1983, Love *et al*. 2002).

Thornyheads are distributed in deep water habitats throughout the north Pacific, although juveniles can be found in shallower habitats. Once in benthic habitats, both shortspine and longspine thornyheads associate with muddy substrates, sometimes near rocks or gravel, and distribute themselves relatively evenly across this habitat, appearing to prefer minimal interactions with individuals of the same species. They have very sedentary habits and are most often observed resting on the bottom in small depressions (Love *et al*. 2002). Both shortspine and longspine thornyheads are long-lived, relatively slow-growing fishes, but shortspines appear to have the greater longevity. Shortspine thornyheads may live 80-100 years with the larger-growing females reaching sizes up to 80 cm fork length (Love *et al*. 2002). Longspine thornyheads are generally smaller, reaching maximum sizes less than 40 cm and maximum ages of at least 45 years (Love *et al*. 2002).

Diets of shortspine thornyheads are derived from food habits collections taken in conjunction with Gulf of Alaska (GOA) trawl surveys. Over 70% of adult shortspine thornyhead diet measured in the early 1990s was shrimp, including both commercial (Pandalid) shrimp and non commercial (Non-Pandalid shrimp) in equal proportions. Other important prey of shortspine thornyheads include crabs, zooplankton, amphipods, and other benthic invertebrates. Juvenile thornyheads have diets similar to adults, but in general prey more on invertebrates. Shortspine thornyheads are consumed by a variety of piscivores, including arrowtooth flounder, sablefish, "toothed whales" (sperm whales), and sharks. Juvenile shortspine thornyheads are thought to be consumed almost exclusively by adult thornyheads (Shotwell *et al*. 2014).

Status

Thornyheads (*Sebastolobus* species) are assessed using tier 5 criteria (because of the absence of age information needed for age-structured assessment models (Murphy and Ianelli, 2011; Lowe and Ianelli 2009). Three main species are in this genus (shortspine, longspine, and broadfin), but shortspine thornyheads dominate survey biomass and landings. For 2015, the total biomass for GOA thornyheads was estimated at 81,816 t a 10% increase in the observed biomass estimate in 2013. The recommended overfishing limit in for 2015 is 2,454 t. Landings rarely approach allowable biological catch status because thornyheads are not targeted and only incidentally captured by longline and trawl fisheries. The average catch in the sablefish longline fishery in both GOA and BSAI combined for 2013-2014 is 757.9 mt. For the most recent year of data available (2015), the GOA ABC was 1,841 t (Shotwell *et al*. 2014). The stock is not subject to overfishing.

Management

There is currently no directed fishery for the Thornyhead species complex, but they are commonly caught and retained as part of the groundfish trawl and sablefish (*Anoplopma fimbria*) longline fisheries. Despite thornyheads being one of the most valuable of the rockfish species, they are not subject to a directed fishery and they are still managed using a "bycatch only" fishery status in the Gulf of Alaska. All shortspine thornyheads in the Gulf of Alaska have been managed as a single stock since 1980 (Ianelli and Ito 1995;1997), and separate management has been applied to shortspine thornyheads on the U.S. west coast. Bering Sea and Aleutian Islands shortspine thornyheads are effectively managed as a separate stock from Gulf of Alaska thornyheads. In the BSAI FMP, all thornyhead species are managed within the "Other rockfish" species complex (Spies *et al*. 2014). Shortspine thornyhead in the BSAI are caught primarily in the sablefish longline fishery (48%) followed by the rockfish trawl fishery (27%), and the flatfish longline fishery (8%). The incidental catch of shortspine thornyheads in these fisheries has been sufficient to capture a substantial portion of the thornyhead quota established in recent years, so directed fishing on shortspine thornyheads exclusively is not permitted (Spies *et al*. 2014).

Information

Information on the stock status of thornyhead species is collected through both fishery dependent and fishery independent mechanisms, including the fishery independent surveys, catch accounting system, and observer program. More detail is provided in Sources of Information (Above).

Species Grenadiers (Giant Grenadier, Pacific Grenadier)

Biology

Grenadiers (family Macrouridae) are deep-sea fishes related to hakes and cods that occur world-wide in all oceans. Also known as "rattails", they are especially abundant in waters of the continental slope, but some species are found at abyssal depths. At least seven species of grenadier are known to occur in Alaskan waters, but only three are commonly found at depths shallow enough to be encountered in commercial fishing operations or in fish surveys: giant grenadier (Albatrossia pectoralis), Pacific grenadier (Coryphaenoides acrolepis), and popeye grenadier (Coryphaenoides cinereus) (Mecklenburg *et al*. 2002). Of these, giant grenadier has the shallowest depth distribution and the largest apparent biomass, and hence is by far the most frequently caught grenadier in Alaska (Rodgveller and Hulson 2014). Unlike other grenadiers species (e.g. hoki, blue grenadier), giant grenadiers have a watery flesh and soft texture. A NOAA fisheries sensory analysis panel cateogrized giant grenadier as 'unpalatable' and efforts to identify a market for the species have proven unsuccessful thus far (NOAA Fisheries).

Giant grenadier range from Baja California, Mexico, around the arc of the north Pacific Ocean to Japan, including the Bering Sea and the Sea of Okhotsk (Mecklenburg *et al*. 2002), and they are also found on seamounts in the Gulf of Alaska and on the Emperor Seamount chain in the North Pacific (Clausen 2008). In Alaska, they are especially abundant on the continental slope in waters >400 m depth.

Adults are often found in close association with the bottom, as evidenced by their large catches in bottom trawls and on longlines set on the bottom. In bottom trawl surveys conducted by NMFS in the Bering Sea and the Gulf of Alaska, this species is the most abundant fish, in terms of weight, in depths from 600 to 3,000 feet (200-1,000 meters). Giant grenadier extend much deeper than 3,000 feet (1,000 meters). Ageing studies have revealed that the species group is long-lived with the max age 58 and females not reaching 50% maturity until 23 years. Further, observed catch is mostly female. Giant grenadier have an important ecological role in their environment as an apex predator, with few apparent predators except the Pacific sleeper shark, Baird's beaked whale (Orlov and Moiseev 1999; Walker *et al*. 2002), and sperm whales which have been observed depredating longline catches. In the Aleutian Islands, the diet comprised mostly squid and bathypelagic fish (myctophids), whereas in the Gulf of Alaska, squid and pasiphaeid shrimp predominated as prey. The habitat and ecological relationships of giant grenadier relatively unknown and uncertain (Rodgveller and Hulson 2014).

Status

Due to a lack of necessary information, NMFS cannot establish a minimum stock size threshold from which to determine whether grenadiers (a Tier 5 stock) are overfished or approaching an overfished condition; however, on annual basis, NMFS can determine whether overfishing is occurring for tier 4 and 5 stocks. The Alaska Fisheries Science Center estimates the OFL in the annual Tier 5 grenadier species complex stock assessment. For 2015, the maximum allowable ABC for the BSAI is 75,274 t and for the GOA is 30,691 t. This ABC is a 12% increase for the BSAI and a 12% decrease for the GOA relative to 2014. The majority of this catch occurs in the sablefish longline fishery which landed an average of 6,281.56 mt for fishing seasons 2013 and 2014. During this same period, the halibut longline fishery accounted for an additional 643.33 mt of grenadier bycatch, although this was likely caught on trips that targeted both sablefish and halibut, because giant grenadier are rarely at the depth fished for halibut.

The inclusion of giant grenadier bycatch is a result of the artefact that the Catch Accounting System designates halibut v. sablefish trips based on the total poundage of species landed, meaning even if a trip targeted sablefish but landed more halibut, the CAS would reflect a species composition more characteristic of a sablefish trip. Overfishing is not occurring in either the BSAI or GOA. Grenadiers catch is well below OFL and ABC and thus not subject to overfishing and there is no indication that grenadier are overfished or approaching an overfished condition.

Table 4. Tier 5 computations for giant grenadier OFL and ABC are summarized as follows (AI = Aleutian Islands, EBS = Eastern Bering Sea, GOA = Gulf of Alaska; biomass, OFL, and ABC are in mt) for 2015

BSAI and GOA grenadiers

Area	Biomass	Natural mortality *M*	OFL definition	OFL	ABC definition	ABC
EBS	553,557	0.078	biom x *M*	43,177	OFL x 0.75	32,383
AI	733,177	0.078	biom x *M*	57,188	OFL x 0.75	42,891
BSAI total	1,286,734			100,365		75,274
GOA	524,624	0.078	biom x *M*	40,921	OFL x 0.75	30,691
Grand total	1,811,358			141,286		105,965

These are unofficial ABC and OFL values since grenadier are an Ecosystem Component, which do not have ABCs or OFLs.

Management

Traditionally Grenadiers have not been included in the BSAI and GOA Groundfish FMPs, despite the high level of bycatch in the longline fishery. The North Pacific Fishery Management Council recently adopted a Preliminary Preferred Alternative (PPA) to include Grenadiers in the Ecosystem Component of the FMPs. Species or species groups can be included and considered in the Ecosystem Component if they are:

- A non-targeted species or species group;
- Not subject to overfishing, overfished, or approaching an overfished condition;
- Not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and
- Not generally retained (a small amount could be retained) for sale or commercial use.

Under the Preferred Preliminary Alternative (PPA), NMFS will establish record-keeping and reporting requirements for grenadiers, and grenadiers would be closed to “directed fishing.” Further, Maximum Retainable Amount of grenadiers as an incidental catch species would be established and limit grenadier retained catch to 8% (NPFMC 2014). These measures would improve catch estimation, thereby helping to reduce scientific uncertainty, as well as preventing “unmanaged target fishing” of grenadiers. This Council action provides management measures necessary to reduce the vulnerability of grenadiers to overfishing as an incidental catch species (NMFS 2013).

FMPs may be reviewed by the Council to determine whether changing conditions have changed the applicability of the “ecosystem component” species classification criteria for a species. If viable markets for grenadiers can be developed then the “not generally retained for sale or personal use” and possibly the “a non-targeted species or species group” criteria may no longer be valid (NMFS 2013). If dramatically increased catch were to occur in the future then the “not subject to overfishing and/or overfished” criteria may no longer be valid. If such changes in criteria become a future concern the

Council could initiate analysis of whether grenadiers meet the criteria for being reclassified as "in the fishery."

Information

Information on the stock status of grenadier species is collected through both fishery dependent and fishery independent mechanisms, including the fishery independent surveys, catch accounting system, and observer program. More detail is provided in Sources of Information Section (Above).

1. Fishery independent surveys: NOAA- Fisheries conducts annual longline and trawl surveys in the Gulf of Alaska and in the Eastern Bering Sea / Aleutian Islands. The trawl survey in the BSAI has been problematic because since 1986 no trawl surveys have sampled deeper than 500 m. The AI trawl survey biomass estimates from the "shallow" depths, which are regularly sampled (1-500 m), and AI longline survey RPWs from "shallow" (200-500 m) and "deep" depths (501-1000 m). There is some evidence that trawl and longline survey abundance trends are similar. This may indicate that these surveys are sampling the same population and lend credence to the method used to extrapolate AI biomass from longline survey data.

2. Observers: Grenadiers are primarily caught in the sablefish longline directed fisheries, although some catch occurs on vessels targeting both halibut and sablefish. Vessels >= 40 LOA engaged in these fisheries have trips randomly selected to take on federal observers. The Observer Program underwent a significant restructuring in 2013 to expand observer coverage to nearly all catcher/processor vessels, the halibut and sablefish Individual Fishing Quota (IFQ) fisheries, and vessels between 40 feet and 60 feet length overall (LOA). This restructure increased the amount and reliability of data available to determine fishery impacts on non-target species, though data gaps with vessels < 40 feet still exist.

While little is presently known about the interactions of grenadiers with other groundfish species, the PPA discussed above may improve the level of scientific knowledge through, at a minimum, recording of their harvest and/or placing limits on their harvests. Thus, PPA does provide the precautionary management structure needed to sustainably manage the grenadier stock to potentially promote its sustainability and the sustainability of other groundfish species with which grenadier may have important ecological interactions.

The North Pacific Fishery Management Council has identified several research priorities (Rodgveller and Hulson 2014) for this species complex that include:

1. Because early life history information for giant grenadier is nil, studies are also needed to investigate where larvae and young juveniles reside.
2. Evaluation of the catchability of giant grenadier in the bottom trawl surveys, which would affect the accuracy of subsequent biomass estimates. Studies are needed on whether this fish is a completely benthic species or if individuals sometimes move off-bottom.

3. Validation of the AFSC Research Ecology and Fisheries Management (REFM) Division aging methodology for giant grenadier.
4. Further analysis and study of competition for hooks that may affect giant grenadier catch rates on the AFSC longline survey.
5. Continue a study to examine if the three different shapes of otoliths found in giant grenadier.
6. Represent separate species or subpopulations. This is an ongoing cooperative project between the Marine Ecology and Stock Assessment program at Auke Bay Laboratories (ABL), REFM Age and Growth Lab, and the ABL genetics lab.

Species group Sharks (Pacific Sleeper Shark, Spiny Dogfish Shark)

Biology

Sleeper sharks (*Somniosus* spp.) can attain large sizes (>7 m total length), possess a slow-growth rate and are long-lived (Compagno 1984). The Pacific sleeper shark (*Somniosus pacificus)* inhabits cold waters and ranges off the Asian coast from the Sea of Japan north to the Chukchi Sea, then south along the North American coast through the Gulf of Alaska to Mexico (Hart 1973; Compagno 1984; Orlov 1999). Pacific Sleeper sharks are versatile predators that feeds on a wide spectrum of prey, including teleosts, other sharks, cephalopods, crustaceans, marine mammals, fishery offal and carrion (Hart 1973; Compagno 1984; Orlov 1999). Tagging studies have revealed that Pacific sleeper sharks are much more mobile than previously thought, actively chasing prey and moving up in the water column (Hubert 2006).

Spiny dogfish occupy shelf and upper slope waters from the Bering Sea to the Baja Peninsula in the North Pacific. Historic estimates of spiny dogfish age-at-50%-maturity for the Eastern North Pacific (ENP) range from 20 to 34 years. Growth rates for this species are among the slowest of all shark species, κ=0.03 for females and 0.06 for males (Tribuzio *et al*. 2010). Small juveniles and young-of-the-year tend to inhabit the water column near the surface or in areas not fished commercially and are therefore not available to commercial fisheries until they grow or migrate to fished areas (McFarlane and King 2003)

Spiny dogfish are the most well-studied of the three main shark species in the Gulf of Alaska. Numerous studies have been published or are ongoing regarding this species. Spiny dogfish are longest lived and slowest growing of all shark species studied, living to 100 years or more and females do not reach maturity until they are 36 years old (Tribuzio *et al*. 2010). Reproduction is also slow for this species, gestation takes nearly 2 years and females have about 9 pups on average. Diet studies shown that spiny dogfish do not target specific prey. Instead, they are opportunistic, feeding on whatever is available. Tagging studies are showing that spiny dogfish can undertake large scale migrations, moving from Canadian waters to Japan or Mexico, and they may inhabit areas previously unknown, such as pelagic waters far from shore (Tribuzio *et al*. 2010).

Status

Shark bycatch in the sablefish fishery is primarily comprised of spiny dogfish (*Squalus suckleyi*). There are currently no directed commercial fisheries for shark species in federal or state managed waters of the GOA and most incidentally caught sharks are not retained. Spiny dogfish is also primarily captured in the flatfish trawl and cod longline fisheries (Tribuzio *et al*. 2012). For 2015, NMFS recommended the maximum allowable ABC of 5,989 t and an OFL of 7,986 t for the shark complex. For years 2013 and 2014 average shark catch in the Sablefish IFQ fisheries was 679.72 mt and total catches have been around 1,676.5 for BSAI and GOA combined. Therefore there is no indication that overfishing is occurring although the 2014 stock assessment could not conclude if the stock is overfished.

Management

Sharks are currently managed under the "other species" complex in the GOA and BSAI FMP (Pacific sleeper, salmon and other unidentified sharks) on a biennial basis: spiny dogfish is managed as a Tier 5 species while the overall "shark complex" is managed as Tier 6, with no reliable biomass estimates. Spiny dogfish ABC and OFL are calculated based on biomass estimates from the biennial trawl survey while the remaining shark species follow a traditional Tier 6 approach with the OFL = average historical catch (1997 – 2007) and the ABC = 0.75*OFL. The complex OFL is based on the sum of the Tier 5 and Tier 6 (average historical catch between the years 1997 - 2007) recommendations for the individual species (Tribuzio *et al*. 2010).

Information

Information on the stock status of shark species is collected through both fishery dependent and fishery independent mechanisms, including the fishery independent surveys, catch accounting system, and observer program. More detail is provided in Sources of Information (Above).

There are three sources of information on sport harvest: (1) the ADF&G statewide harvest survey (SWHS) provides estimates of catch (harvest plus released sharks) and harvest (sharks kept) of all shark species combined, in numbers of sharks, (2) the mandatory charter logbook provides estimates of statewide charter harvest of salmon sharks (numbers of fish) since 1998, and (3) dockside monitoring in the South central region obtains reported harvest and release and biological information for spiny dogfish, salmon shark, and Pacific sleeper shark.

Species Birds (Black-Footed and Laysan Albatross)

Biology

The main breeding colonies of the black-footed albatross (*Phoebastria nigripes*) are located in the Northwest Hawaiian Islands. They also breed on small, remote islands in Japan, and there have been reports of new black-footed albatross breeding colonies in Mexico. They utilize sandy, wind-swept beaches for their nesting sites. Outside the breeding season, the black-footed albatross is an open ocean species. They are most commonly seen over shelf breaks and along boundaries between water masses. The average age of sexual maturity for black-footed albatross is 7. The black-footed albatross is

a surface feeder. It forages by surface-seizing, contact dipping, and scavenging. Its primary prey species include squid, fish, and other invertebrates (Cousins and Cooper 2000).

Laysan Albatrosses (*Phoebastria immutabilis*) breed primarily in the Hawaiian Islands, but they inhabit Alaskan waters during the summer months to feed. In the U.S., Laysan Albatross nesting is limited to islands in the Hawaiian Archipelago. Colonies also exist on the Bonin Islands in Japan and on Guadalupe Island off the coast of Baja California. Between July and November, Laysan Albatrosses disperse widely throughout the North Pacific Ocean and adjoining seas. In Alaska, they are most commonly seen in the southern Bering Sea, Aleutian Islands, and the northwestern Gulf of Alaska. They are the most abundant of the three albatross species that visit Alaska. Laysan Albatrosses live from forty to sixty years and are capable of breeding annually. This species eats mostly fish, fish eggs, and squid often feeding at night when the prey rises to the surface. They also feed on fish waste disposed of by fishing vessels (Pttman et. al 2004)

Status

For both species, the primary threat is incidental catch in pelagic longlining (Naughton *et al*. 2007), taking 5,000 black-footed and 2,000 Laysan albatrosses annually. Thus, the rate of albatross kills in the demersal longline fishery represents a much smaller threat than these types of fisheries (Table 5). Both species were heavily depleted in the late 1800's / early 1900s by feather hunting but have been rebounding in recent years (Arata *et al* 2009).

For black-footed albatross, the observed nest counts in the Hawaiian breeding colonies indicate a stable population of 61,000 breeding pairs (Arata *et al.* 2009). Additionally, recent surveys of black-footed albatross nesting pairs at Midway came in at 28,610 for the atoll, a record high, up 18% from the 2010-2014 average (USFWS 2015b). The IUCN population status was recently changed from "endangered" to "near threatened" owing to the increases in population, but continued concern relating to sensitivity to fishing (BLI 2014). Overall, pelagic longline and gillnet have been the most important source of incidental mortality for black-footed albatrosses (Naughton *et al.* 2007). The Potential Biological Removal Level (PBR—the maximum number of mortalities, not including natural deaths, while maintaining an optimum sustainable population) is 11,980 (Arata *et al.* 2009). Matrix modeling results indicate that the black-footed albatross population, summed across all three colonies, is stable, or slightly increasing, with a population growth rate of 0.3 percent per year. The 2005 estimate of bycatch is 5,228 birds per year, but if this value is doubled, a safeguard for underestimating bycatch, it approaches the PBR of 11,980 birds per year, although the upper 95-percent confidence limit (17,486) exceeds the PBR (Arata *et al.* 2009). Other threats to black-footed albatross include sea level rise, invasive plant species on nesting island and atolls, and marine pollution. In 2013 and 2014, the sablefish fishery took an estimated average of 254.5 birds/year representing a small portion of the overall incidental take.

For Laysan albatross, pre-hunting breeding population size was as high as 2 million pairs, but was reduced to 18,000 breeding pairs by the early 1920's. 2015 surveys reveal that the number of breeding pairs far surpassed any previous documented year for nesting Laysan albatross on Midway Atoll with 666,044 pairs recorded. The current year count for Laysan albatross represents a 52% increase over the

average number for the period from hatch years 2010 to 2014 (USFWS 2015b). The population appears to be increasing at a rate of 6.7%/year. IUCN has also recently changed the designation of Laysan albatross from "vulnerable" to "near threatened" (BLI 2013). Like the black-footed albatross, incidental kills in pelagic longlining are deemed the principal threat but other threats include sea level rise, invasive plant species on nesting island and atolls, and marine pollution. Matrix models developed from stage specific demographic parameters and including bycatch mortality in fisheries suggest that current estimates of bycatch levels (2,500/year) can be sustained by the population without causing population decreases, and consequently Arata *et al.* (2009) conclude that longline fishing does not appear to be threatening the long-term viability of Laysan albatross. In 2013 and 2014, the sablefish fishery took an estimated average of 128 birds/year representing a small portion of the overall take.

Table 5. Total and average seabird bycatch in Alaskan demersal sablefish fishery 2010-2015. Data in 2015 are through October 30 only. Numbers are bird counts. Data provided by Shannon Fitzgerald of AFSC.

		Species/Species Group							All
	FMP	BFAL	LAAL	NOFU	Shear	Unid/Other	Gull Sp	Total	Alaska
Sum across years	AI	31	418	235	120	27	133	964	4717
	BS	5	56	31	12	2	21	127	
	GOA	1226	377	1040	66	86	831	3626	
	All FMP's	1262	851	1306	198	115	985		
Avg. across years	AI	5.2	69.7	39.2	20.0	4.5	22.2	160.7	786.2
	BS	0.8	9.3	5.2	2.0	0.3	3.5	21.2	
	GOA	204.3	62.8	173.3	11.0	14.3	138.5	604.3	
	All FMP's	210.3	141.8	217.7	33.0	19.2	164.2		

Management

All longline vessels >55'are required to use seabird avoidance devices (Figure 7) that have been demonstrated to markedly reduce seabird mortality. The adoption of these measures has reduced seabird takes by one-third (Fitzgerald *et al.* 2008), and albatross takes by 85% (Fitzgerald *et al*. 2008). Several other methods for reducing seabird bycatch are also used by fishers including setting at night, using weights on gear to decrease sink time, offal discharge regulations, and under water setting tubes. Although reductions in seabird catch have been significant in the last several years, some seabirds are still caught in the fishery.

Information

Information on the stock status of bird species is collected through both fishery dependent and fishery independent mechanisms, including fishery independent surveys, catch accounting system, and observer program. More detail is provided in Ecosystem Impacts (Above). Also, Laysan and Black-footed albatross population trends are monitored through nest surveys on breeding colonies, principally on three islands in the Hawaiian archipelago. These colonies account for 97% and 77% of the total breeding population for Laysan and Black-footed albatross, respectively.

Endangered, Threatened and Protected (ETP) Species

Species Short-tailed Albatross

Biology

Short-tailed albatross (*Phoebastria albatrus*) are large (body length 33 to 37 inches; wingspan 84 to 90 inches) pelagic birds in the order *Procellariiformes* (tube-nosed marine birds; USFWS 2008). Short-tailed albatross are long-lived and first breed at age five or six years, with females laying one egg each year (USFWS 2008). Nesting areas are open and treeless, with little vegetation. Most of the birds breed at the Tsubamezaki colony on Torishima Island, which is an active volcano.

In the non-breeding season, short-tailed albatross primarily range along the continental shelf and slope regions of the North Pacific (Figure 6), possibly due to the presence of squid, which are an important prey species (Figure (Suryan *et al.* 2006, Walker *et al.* 2015, *in press*). A predominate amount of post-breeding time is spent off Alaska, and large groups have been observed over the Bering Sea canyons, which serve to funnel water and food onto the shelf edge (Piatt *et al.* 2006). Short-tailed albatross are also more active during the day than night (Suryan *et al.* 2007, as cited in USFWS 2008).

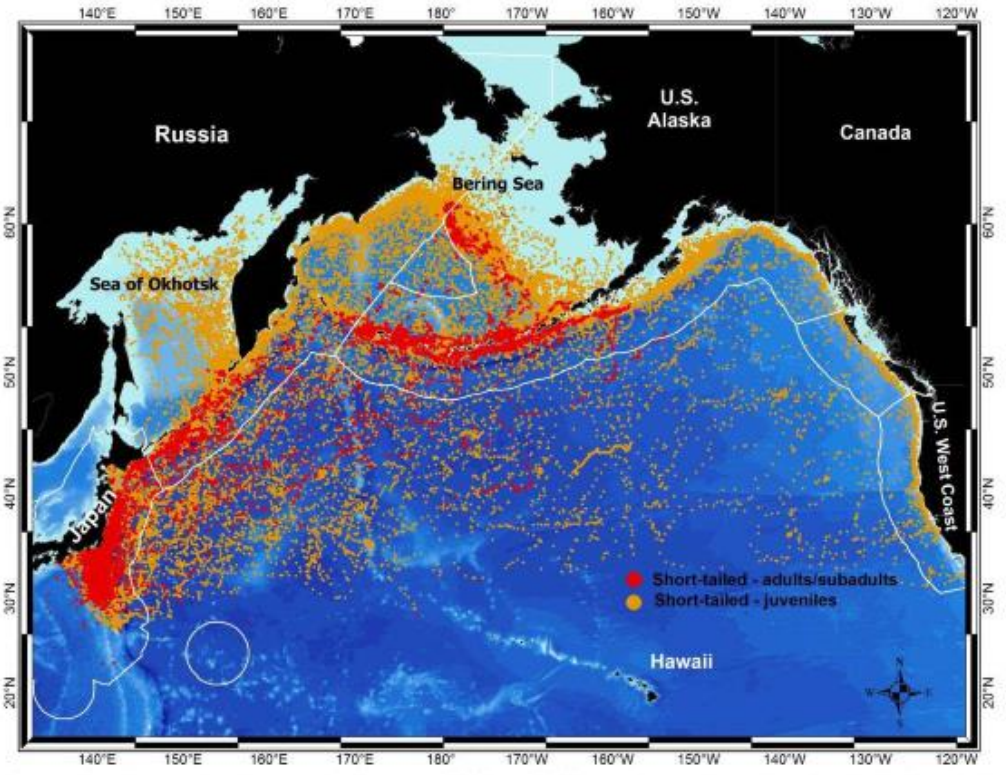

Figure 6. Short-tailed albatross locations tracked between 2002 and 2012, showing adult and juvenile distributions in the North Pacific. Where shown, white lines represent the exclusive economic zones of countries within the range of the short-tailed albatross (USFWS 2014).

Status

At the beginning of the twentieth century, the species declined to near extinction, primarily as a result of hunting at the breeding colonies in Japan. Although population estimates of short-tailed albatross before exploitation are not known, there are estimates of at least 300,000 breeding pairs on the island of Torishima, Japan alone (USFWS 2008). Historically, albatross were killed for their feathers and various body parts, and eggs were collected for food (USFWS 2008). Starting in about 1885, the feather trade contributed to the decline and near extinction of the short-tailed albatross.

Originally numbering in the millions, the worldwide population of breeding age birds is estimated to be approximately 1,928 individuals and the worldwide total population is approximately 4,354 individuals (USFWS 2014; the population was estimated at 400 in 1988, 700 in 1994). The current population status was recently reviewed in detail by USFWS (2014), which stated that "The 3-year running average population growth rate based on eggs laid at Torishima since 2000 ranges from 5.2 - 9.4 percent." There was a translocation effort at Mukojima in the Ogasawara (Bonin) Islands from 2008-2012 and early accounts seem promising. Additionally, a pair of short-tailed albatross at Midway Atoll in the Northwestern Hawaiian Islands has successfully bred during three seasons (USFWS 2014).

The incidental take levels of short-tailed albatross have not been exceeded during the current or any previous Biological Opinions. However, in 2014, NMFS confirmed that two short-tailed albatross were taken by one vessel in the AK Pacific cod hook and line groundfish fishery. These represented the second take of short-tailed albatross in a two-year period and resulted in a reinitialization of the Biological Opinion. The revised final Biological Opinion issued by the USFWS determined that activities by the north pacific groundfish fleet are not likely to jeopardize the continued existence of the Short Tailed Albatross (USFWS 2015).

Management

NMFS re-initiated consultation with USFWS because increases in the short-tailed albatross population in conjunction with increases in observer coverage and total effort (as estimated by total hooks deployed), increase the likelihood of observing short-tailed albatross interactions in the groundfish fisheries, especially where short-tailed albatross have historically been taken (NMFS 2015). Given the increase in short-tailed albatross population, there is concern from NMFS, the Council, USFWS, and the industry that exceeding the take level from the biological opinion (USFWS 2003b) could result in an interruption to fishing prior to reinitiating consultation. The revised final Biological Opinion issued by the USFWS determined that activities by the north pacific groundfish fleet are not likely to jeopardize the continued existence of the Short Tailed Albatross (USFWS 2015). The Biological Opinion stipulated several Reasonable and Prudent Measures (RPM) that are necessary and appropriate for NMFS to minimize take of short-tailed albatross:

- RPM 1: The NMFS shall minimize the risk of short-tailed albatross interacting with the hook and-line fishery. Because short-tailed albatross are caught and killed by baited hooks in the hook-and-line fishery, minimization measures shall be employed to reduce the likelihood that they will attack the baited hooks.
- RPM2: The NMFS shall establish a multi-stakeholder, Alaska Groundfish and Short-tailed Albatross Working Group as an advisory body to the NMFS and the USFWS for the purposes of reducing fishery interactions with short-tailed albatross and seabirds. This group will work toward facilitating adaptive management to minimize and avoid take of short-tailed albatross and other seabirds.
- RPM3: The NMFS shall monitor the groundfish fisheries for interactions with short-tailed albatross and report all observed, reported and estimated takes, of short-tailed albatross to the Service, and report on the efficacy of avoidance and minimization measures.
- RPM4: The NMFS shall facilitate the salvage of short-tailed albatross carcasses taken by longline or trawl fishing vessels. Every effort should be made to retain short-tailed albatross carcasses for scientific and educational purposes.

All longline vessels >55' are required to use seabird avoidance devices (Figure 7) that have been demonstrated to markedly reduce seabird mortality. The adoption of these measures has reduced seabird takes by one-third (Fitzgerald *et al*. 2008), and albatross takes by 85% (Fitzgerald *et al.* 2008). Several other methods for reducing seabird bycatch are also used by fishers including setting at night, using weights on gear to decrease sink time, offal discharge regulations, and under water setting tubes. Although reductions in seabird catch have been significant in the last several years, some seabirds are still caught in the sablefish fishery.

If a short-tailed albatross is hooked and there is a fisheries observer on board the vessel, the observer will report the short-tailed albatross take to NMFS. The USFWS will be notified of the take within 48 business day hours. If there is not an observer on board the vessel, NMFS requests that the albatross specimen be retained and reported immediately to NMFS or USFWS (NMFS 2015). For unidentified albatross species categories, seabird biologists will contact and interview the observer within a day to determine if the unidentified seabird was a sort tailed albatross (Ed Melvin, *pers com*).

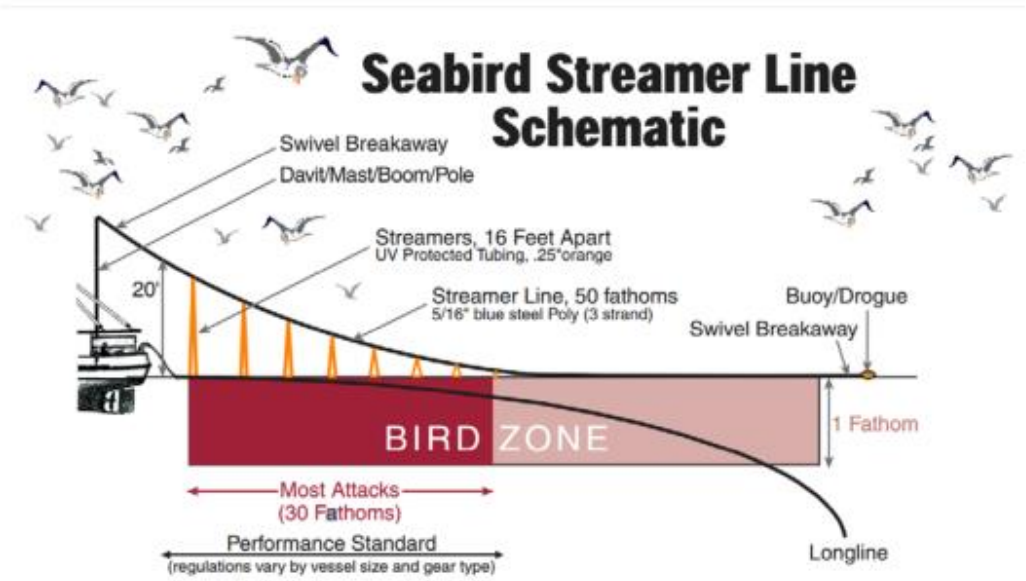

Figure 7. Streamer lines used to reduce seabird bycatch in hook-and-line fisheries (Melvin 2000).

In the short-tailed albatross incidental take statement (USFWS 2015), USFWS anticipated up to six short-tailed albatross could be reported taken bi-annually (every 2 years) as a result of the hook-and-line groundfish fishing activities in the BSAI and GOA areas regulated by NMFS. The Alaska groundfish fisheries have not exceeded the incidental take allowed by the incidental take statement. If the take was exceeded, NMFS would have to cease the activities (e.g. groundfish fishery) causing the take, until a consultation is reinitiated.

Information

The Observer Program monitors fish, bycatch, and marine mammal and seabird interactions in Alaska's federally managed groundfish fisheries and parallel groundfish fisheries in State waters. The Observer Program also monitors catch of sablefish allocated under the IFQ and CDQ Program. Information collected by observers, used in conjunction with reporting and weighing requirements, provides the foundation for in season management and for tracking species-specific catch and bycatch amounts. All observers entering the Observer Program receive training on seabird data collection responsibilities and how to identify dead seabirds, as well as specific information for the identification of species of interest including short-tailed albatross, red legged kittiwake, Steller's and spectacled eiders, and marbled and Kittlitz's murrelets (AFSC 2015). This training is provided during their initial 3-week certification course. Each subsequent year, observers receive a briefing before their first deployment that reviews seabird data collection and identifications (NMFS 2015f).

NMFS has estimated seabird bycatch using CAS in the BSAI and GOA groundfish fisheries since 2007 and in the sablefish fisheries since 2013 (Fitzgerald *et al.* 2013). Seabird estimates are based on at-sea sampling by observers (AFSC 2015). In the CAS, observer data are used to create seabird bycatch rates (a ratio of the estimated bycatch to the estimated total catch in sampled hauls). The observer information from the at-sea samples is used to create bycatch rates that are applied to unobserved

vessels. For trips that are unobserved, the bycatch rates are applied to industry supplied landings of retained catch. Expanding on the observer data that are available, the extrapolation from observed vessels to unobserved vessels is based on varying levels of aggregated data (post-stratification). Data are matched based on processing sector (e.g., CP or CV), week, target fishery, gear, and Federal reporting area (NMFS 2015).

Habitat Impacts

Status

Sablefish longlining is generally thought to have minimal impacts on the seafloor relative to other types of gear, but can impact corals by entangling and dislodging them (as evidenced by coral bycatch, Livingston 2003). The most important corals in Alaska waters are gorgonians, scleractinians and soft corals (*Gersemia* sp.). The distribution of corals has been assessed through NOAA trawl survey catch rates (Heifitze *et al*. 2002) and via smaller scale submersible surveys / observations (McConnaughey *et al*. 2009; Stone 2006). Identifying trends in these corals is difficult because they are encountered infrequently (Martin 2009), but nonetheless no discernible trend in gorgonians or scleractinians are apparent (Martin 2009). Areas of high coral density areas (coral gardens) have been identified, some in SE Alaska but most in the Aleutian Islands.

Stone (2006) and Heifetz (2009) recently conducted submersible surveys of deep water corals and sponges in the Aleutian archipelago to describe depth distributions and also the incidence of visible damage or other footprints of fishing activities. They report substantial rates of coral damage, which is greatest in areas opened to trawling and least in regions infrequently trawled. Stone (2006) compares the depth distributions of corals to those of longlining and finds that in general, longlining sets are slightly shallower than the depths with peak coral densities, but there was substantial overlap between coral and longlining depth distributions. Of course, these data do not permit one to link damage to any particular gear, as longlining, trawling and fish/crab pots were all used in these areas. The sablefish fishery encountered an average of 10.02 mt of benthic structure forming organisms in 2013 and 2014 (sponges, corals, gorgonians and sea pens combined). (NOAA CAS 2015)

Longline gears can have an impact on certain sensitive habitat as evidenced by limited underwater observations (Livingston 2003). The actual capture of gorgonian and stony corals, as examples, has been verified by commercial fisheries observers and NMFS surveys (NOAA CAS 2015). Damage can be caused to corals, sponges, and some other sessile organisms by hooking, by crushing and plowing by pots and anchors, and from shearing by groundlines upon retrieval. However, a large proportion of this gear is set on soft substrate where effects are considered negligible (Pham *et al*. 2014).

Management

There is a strategy in place for managing the impact of the fishery on coral habitats which consists of (1) closing coral garden sites to all bottom-contact fishing in the Aleutian Islands and (2) closing coral garden sites in SE Alaska to bottom-contact fishing gears; (3) monitoring trends in relative abundance

via the NOAA-Fisheries trawl surveys. There is a transparent criterion for identifying and classifying habitats as “Habitat Areas of Particular Concern” on the basis of rarity, ecological importance, sensitivity and level of disturbance (NPFMC 2010b). Coarse grain habitat mapping is already available and on-going efforts are seeking to provide finer grained, depth and habitat-specific information by sharing platforms with AFSC survey and NOAA vessels (AFSC 2008).

Additionally, six Habitat Conservation Zones with especially high density coral and sponge habitat were closed to all bottom-contact fishing gear (longlines, pots, trawls) in 2005. These “coral garden” areas total 110 nm^2 and function as de facto marine reserves. To improve monitoring and enforcement of the Aleutian Island closures, a vessel monitoring system is required for all fishing vessels in the Aleutian management area. In Southeast Alaska, three sites with large aggregations (“thickets”) of long-lived Primnoa coral are also identified as HAPCs. These sites, in the vicinity of Cape Ommaney and Fairweather grounds, total 67 nm^2. The Gulf of Alaska Coral Habitat Protection Area designates five zones within these sites where submersible observations have been made, totalling 13.5 nm^2. All bottom-contact gear (longlines, trawls, pots, dinglebar gear, etc.) is prohibited in this area (Figure 8).

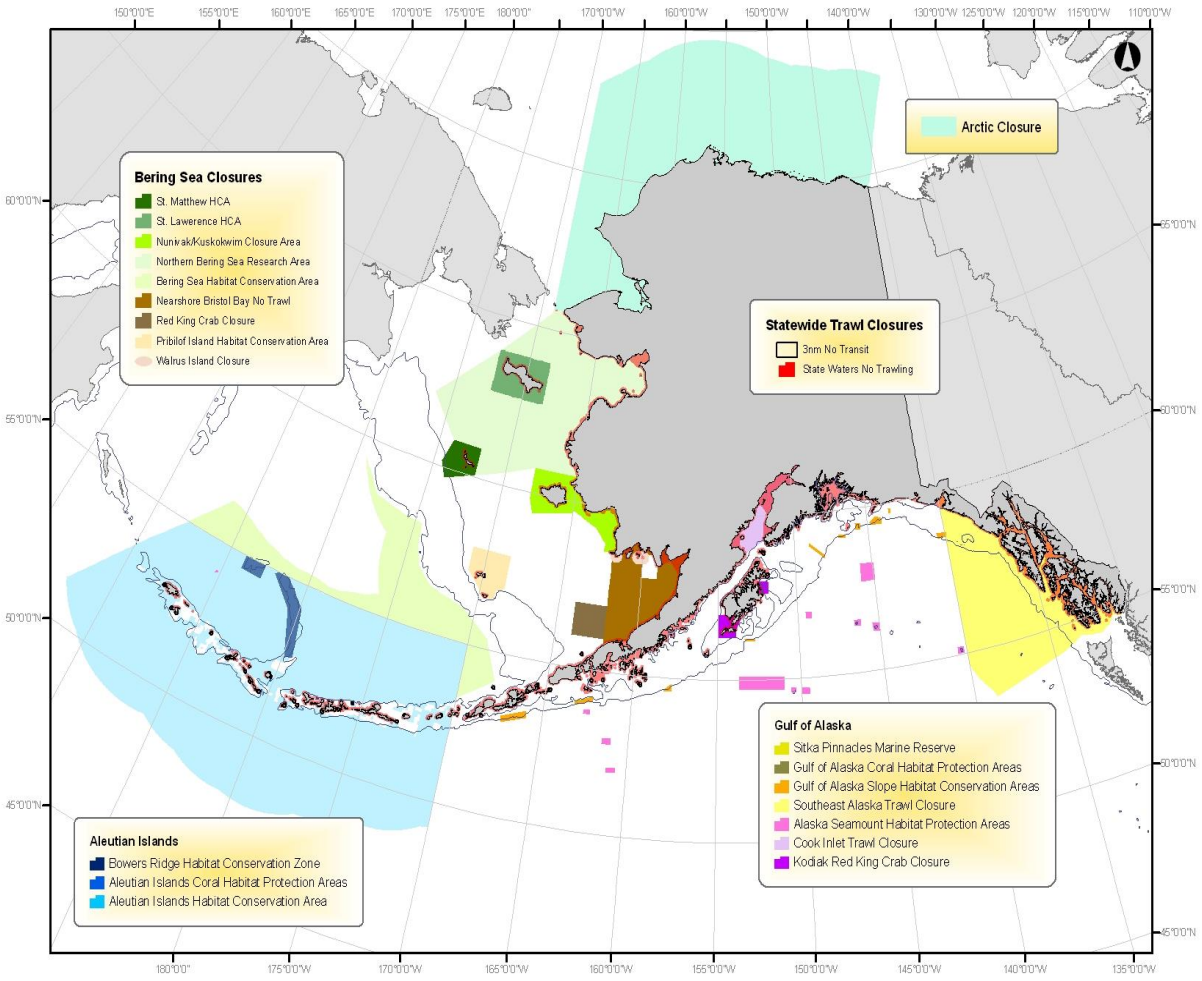

Figure 8: Map of existing habitat, species, and gear closures in Alaskan Waters. Source: NMFS.

All fishery management plans include a description and identification of essential fish habitat, adverse impacts, and actions to conserve and enhance habitat. Maps of essential fish habitat areas are used for understanding potential effects of proposed development and other activities. Each FMP contains the following EFH components: EFH identification and description for managed species, fishing and non-fishing activities that may adversely affect EFH, conservation and enhancement recommendations for EFH, and research and information needs. The EFH provisions in each FMP must be reviewed, and if appropriate, revised, every 5 years.

Information

NOAA's overarching Habitat and Ecological Processes Research (HEPR) program is responsible for research to support habitat-based and ecosystem approaches to fisheries management. Projects focus

on integrated studies that improve understanding of habitat and ecological processes. Key research areas include the loss of sea ice, essential fish habitat, ocean acidification and “The Bering Sea Project”

In 2012 the NMFS Alaska Fisheries Science Center began an Alaska Coral and Sponge initiative. The work is sponsored by NOAA and consists of a three-year field research program in the AK region for deep sea coral and sponges, in order to better understand the location, distribution, ecosystem role and status of deep sea coral and sponge habitat. The overall initiative includes eleven projects: developing a coral habitat map for the GOA and AI, and a geologically interpreted substrate map for AK; investigations of *Prinmoa* corals in the GOA; estimation of the effects of commercial fixed gear fishing on coral and sponge using underwater camera; and measurements of oxygen and pH and increased collections of coral and sponge specimens from the summer bottom trawl surveys. The initiative is intended to result in management products that can be of utility to the NPFMC, for example in the annual Ecosystem Assessment, the AI Fishery Ecosystem Plan, or the 2015 five-year Essential Fish Habitat Review (AKSCI 2013a; AKSCI 2013b; Martin 2009, NMFS 2012).

Ecosystem Impacts

Status

The primary goal of the NPFMC's ecosystem assessment is to summarize and synthesize historical climate and fishing effects on the shelf and slope regions of the eastern Bering Sea, Aleutian Islands, Gulf of Alaska, and the Arctic, from an ecosystem perspective and to provide an assessment of the possible future effects of climate and fishing on ecosystem structure and function. Research has focused on quantifying food web linkages to increase understanding of how external forces such as fishing may cause unanticipated shifts in ecosystem composition.

The two food web interactions relevant to evaluating the sablefish fisheries removal of sablefish biomass on the ecosystem are the “top down” release of sablefish prey species or the “bottom up” decline in productivity of sablefish predators. Sablefish are mid- to upper trophic level opportunistic predators. Adults consume mostly benthic invertebrates and fishes (Yang and Nelson 2000, Yang *et al.* 2006). They do not constitute a dominant component of the feeding habits of any known predator; although feeding habits of large predators such as sperm whales are not well resolved (Hanselman *et al* 2012). However, the estimated natural mortality rate of sablefish and biomass of the population indicate relatively low levels of energy flow from sablefish to other predators.

Livingston and Jurado-Molina (1999) developed an ECOPATH model of predator-prey interactions among the dominant groundfish species in the eastern Bering Sea. The goals of this multi-species model are: 1) to examine trends in mortality due to predation, 2) to examine the relative importance of predation versus climate in influencing fish recruitment, and 3) to provide a basis for evaluating how future changes in fishing intensity might affect the groundfish community. There has also been no evidence of widespread ecological change caused by fishing, as has been documented in the Ecosystem

Considerations Report. The fact that the sablefish population has not been depleted to very low levels implies that they are likely to maintain their ecological functioning.

There is some evidence that the fishery is highly unlikely to disrupt the key elements in the form of ecosystem models that have been developed for the Eastern Bering Sea, Aleutian Islands (Aydin *et al*. 2007) and the Gulf of Alaska (Gaichas and Francis 2008). The Ecosystem Consideration report provides an extensive accounting of the dynamics of key biophysical drivers and indicators of ecosystem and community structure (Zador 2014). Survey biomass of pelagic foragers has increased steadily since 2009 and is currently above its 30-year mean. Fish apex predator survey biomass is currently near its 30-year mean, driven largely by the dynamics of Pacific cod and Arrowtooth flounder (Zador 2014). Moreover, indicators of community structure in the Eastern Bering Sea (e.g. species richness, community size-spectra) do not suggest that groundfish fisheries are having significant adverse effects but instead are more responsive to changes in spatial distribution of stocks and environmental conditions (Mueter and Lauth 2009; Boldt *et al*. 2008). None suggest an obvious critical or unique role of sablefish with respect to food web structure.

Since 2014, sperm and orca whale depredation has increasingly been observed in the Bering Sea, Aleutian Islands, and Western Gulf of Alaska on halibut and sablefish longline sets (Peterson *et al*. 2015). While there is no indication that this depredation is having a negative effect on these marine mammal populations, and no interactions have resulted in animal mortality, fishers and resource managers are taking steps to limit interactions with animals to reduce costs from lost fish. The IPHC includes estimates of halibut catch due to depredation and has modified its longline survey to reduce bias due to depredation. Fishers communicate with one another to avoid deploying or retrieving gear when whales are present, so that whales do not have the opportunity to teach/learn depredation techniques or cue to the sound of line movement. Additionally, research by industry and academic partners is investigating mitigation measures to further reduce interactions, including using real time satellite tags, acoustic decoy techniques, and video cameras to better understand how whales and orca depredate on fishing gear. Currently, this trend in depredation does not have any implications on scoring in the MSC system as depredation is not known to have negative effects on whales; however, future assessments should continue to consider depredation in light of its overall impact of removals from the fishery, potential for negative impacts on ETP species, and changes in fishing behaviour.

Management

Ecosystem context and management is overseen by the North Pacific Fisheries Management Council. The North Pacific Fisheries Management Council is one of the national leaders in implementing ecosystem-based management. The council's Fishery Management Plans specify a strategy to address, monitor and regulate ecosystem impacts of the fishery. Ecosystem-level constraints also factors into management decisions via a cap in total ecosystem removals for the Eastern Bering Sea and Gulf of Alaska based on considerations of the maximum surplus production of these ecosystems (Mueter 2009). The stated ecosystem-based management goals of the NPFMC are:

1. Maintain biodiversity consistent with natural evolutionary and ecological processes, including dynamic change and variability

2. Maintain and restore habitats essential for fish and their prey
3. Maintain system sustainability and sustainable yields for human consumption and non-extractive uses
4. Maintain the concept that humans are components of the ecosystem. (Zador 2012)

The overall NPFMC Groundfish fisheries management plan also has specified ecosystem goals to: Develop indices of ecosystem health as targets for management; Improve the procedure to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors; Continue to protect the integrity of the food web through limits on harvest of forage species; Incorporate ecosystem-based considerations into fishery management decisions, as appropriate. Stock assessments include specific consideration of ecosystem impacts of each fishery, and the annual catch limits (total allowable catch) are based on scientific advice that first estimates total allowable biological catch based on single-species perspectives that are then modified downwards to account for ecosystem considerations.

Each year since 1999, NPFMC has developed an Ecosystem Considerations report including information on indicators of ecosystem status and trends. In 2002, stock assessment scientists began using indicators contained in this report to systematically assess ecosystem factors such as climate, predators, prey, and habitat that might affect a particular stock. Information regarding a particular fishery's catch, bycatch and temporal/spatial distribution can be used to assess possible impacts of that fishery on the ecosystem. Indicators of concern are highlighted within each assessment and can be used by the Groundfish Plan Teams and the NPFMC to justify modification of allowable biological catch recommendations or time/space allocations of catch.

Perhaps the most effective element that will act to prevent ecosystem impacts is a precautionary strategy to setting harvest levels: presently most stocks are well above their reference points, and only a small number of fisheries are part of overfishing rebuilding plan (e.g. king crab). Most groundfish are either near or well above biomass levels that would produce maximum sustainable yield (Worm *et al*. 2009). Across all groundfish stocks, exploitation rates are between 10 and 13 % (Mueter 2009), and that groundfish biomass is above the level that would produce total aggregate maximum sustainable yield (Mueter 2009).

In February 2014, the Council reviewed a discussion paper on the development of a Bering Sea Fishery Ecosystem Plan (FEP), and decided to seek public input on what the objectives might be for a Bering Sea FEP, and how the plan could be structured to be of benefit to fishery management decision-making. The Council heard from stakeholders and the Council's Scientific and Statistical Committee (SSC), Ecosystem Committee, and Advisory Panel between February and October 2014. The Council requested the Ecosystem Committee to continue development of the Bering Sea FEP, including developing a draft set of goals and objectives for Council consideration, and proposing an approach and format for an FEP. Given concerns about staff resources and dwindling budgets, the Council has not yet committed to tasking of the FEP, but rather has asked the Committee to investigate possible objectives and structure for a future Council discussion

- Understand and plan for impacts of climate change
- Understand tradeoffs among ecological, social, and economic factors of fishery harvest
- Identify buffers needed to mitigate uncertainty
- Create a cohesive plan for BS EBFM (rather than current piecemeal approach); define EBFM for the Council
- Precautionary management, and shifting the burden of proof
- Prioritize research, management based on ecosystem understanding, identify pathway of research to management
- Identify areas of risk and opportunities to mitigate
- Consider subsistence needs and traditional ecological knowledge
- Define the Council's management process for broader public (for transparency and accountability – social contract); fishery audience, but also include importance of food security for broader audience
- Balance the different values of Bering Sea user groups

At this same meeting the North Pacific Fisheries Management Council adopted an Ecosystem Policy that shall be given effect through all of the Council's work, including long-term planning initiatives, fishery management actions, and science planning to support ecosystem-based fishery management. The Council intends that fishery management explicitly take into account environmental variability and uncertainty, changes and trends in climate and oceanographic conditions, fluctuations in productivity for managed species and associated ecosystem components, such as habitats and non-managed species, and relationships between marine species. Implementation will be responsive to changes in the ecosystem, and our understanding of those dynamics, incorporate the best available science, including local and traditional knowledge, and engage scientists, managers, and the public.

Information

Information on ecosystem structure and effects of sablefish fishing therein derives from data collected as part of Alaska Fisheries Science Center trawl and longline surveys, an extensive annual food habits collection program that dates to the 1980s, assessments for all main retained and discarded species, and monitoring of susceptible and vulnerable seabird populations. Moreover, ongoing research has been synthesizing this information via quantitative modeling (Aydin *et al*. 2007) and via comparative analyses (Gaichas *et al*. 2009, Link *et al*. 2009).

A central ecosystem tool relevant to holistic groundfish management in AK is the "Ecosystem Considerations" Appendix that accompanies the annual compilation of stock assessment documents called the Stock Assessment and Fishery Evaluation (SAFE) reports (Boldt and Zador 2009; Zador 2012). Here, biophysical and ecological indicators relevant to ecosystem monitoring are tracked and reported annually. This Ecosystem Considerations Appendix is a significant compendium of information giving indicators and time-series that are relevant to groundfish management. In 2002, stock assessment scientist began using indicators from the appendix to systematically assess ecosystem factors such as climate, predators, prey and habitat that might affect particular stocks. Data contributors have also been asked to provide a rationale explaining the importance of indices they contribute, and explanation of impacts of any observed trends on the ecosystem or ecosystem components and how the

information can be used to inform groundfish management decisions. Many of the time series are available on the web with author permission at: http://access.afsc.noaa.gov/reem/ecoweb/index.cfm

Management systems

No significant changes to the fishery- specific management system have occurred since the re-assessment certification in 2011.

Fisheries for sablefish in Alaska are both federally and state managed. Federal management applies to sablefish within the 200 mile limit and up to within 3 miles of shore. Sablefish in the federal zone are managed by the North Pacific Fishery Management Council (NPFMC) in their Gulf of Alaska (GOA) and Bering Sea-Aleutian Islands (BSAI) Groundfish Fishery Management Plans , The NPFMC is one of eight regional fishery management councils that develops and submits management recommendations to NMFS for approval and implementation (NPFMC 2009). Federal fisheries for sablefish occur along the outer coast in the Gulf of Alaska, along the Aleutian Islands and in the Bering Sea with the majority of the harvest taken from the central Gulf and in Southeast. Sablefish within three miles of shore are managed by the Alaska Department of Fish and Game, and occur primarily in Southeast Alaska, Prince William Sound, Cook Inlet, and in the Aleutian Islands (ADFG 2013).

Observer Program

The NMFS North Pacific fishery observer program has undergone significant changes since the re-assessment certification in 2011, as part of a re-structuring effort that began in January of 2013. The re-structuring effort is intended to 1) increase the statistical reliability of data, 2) address cost equity issues for all participants, and 3) expand coverage to previously unobserved fisheries (NPFMC 2011). Incremental changes following from the re-structuring of the program have been detailed in previous Surveillance Audit reports (Morgan and Jagielo 2013; Morgan and Jagielo 2014). NPFMC Recommendations associated with observer program improvements in 2015 can be found in Appendix I.

A noteworthy change in the observer program since the last Surveillance Audit is a change in the way observers are assigned to vessels. Previously, two methods were used; a “vessel selection” method, and a “trip selection” method. As the re-structured observer program has evolved, NMFS identified sampling frame problems with the “vessel-selection” method. This issue was addressed by using only the “trip-selection” method in 2015 (NMFS 2014).

Two trip-selection pools were employed for 2015; a “small vessel trip-selection pool”, and a “large vessel trip-selection pool”. The small vessel pool is comprised of catcher vessels fishing hook-and-line or pot gear greater than or equal to 40 ft, but less than 57.5 ft in LOA (previously these vessels were in the “vessel-selection” pool). The large vessel pool is comprised of three classes of vessels: 1) all catcher vessels fishing trawl gear, 2) catcher vessels fishing hook-and-line or pot gear that are also

greater than or equal to 57.5 ft LOA, and 3) catcher-processor vessels exempted from full coverage requirements (this pool was previously termed the "trip-selection" pool). Targeted selection probabilities in 2015 are 12% for the small vessel pool and 24% for the large vessel pool. This represents no change in the selection rate for the small vessel pool and a 50% increase in the selection rate for the large vessel pool relative to the coverage rates in 2014 (NMFS 2014).

NMFS has placed vessels less than 40ft LOA and jig vessels in the "no-selection" pool for observer coverage since 2013 (NMFS 2015a). However, the Observer Program Annual Report (NMFS 2015b) and the Observer Program Supplement Environmental Assessment (NMFS 2015c) have highlighted the data gaps caused by not having any observer information on vessels less than 40 ft LOA. NMFS proposed to continue placing vessels less than 40ft LOA in the no selection pool in 2016 and recommended that vessels less than 40ft LOA be considered for testing of electronic monitoring in the future (NMFS 2015a).

In both the 2013 and 2014 observer program Annual Reports, NMFS reported that biased observer data resulted from the policy of issuing conditional releases and temporary exemptions (e.g. for small vessels with limited life raft capacity), and recommended no exemptions for 2016 (NMFS 2015a). The NPFMC supported this in a Council Motion dated October 10, 2015, given the option for these vessels to be in the electronic monitoring (EM) pool in 2016 (Appendix x).

In 2013-2014 it was also recognized that better definition of a "trip" was needed for sample selection when vessels make deliveries to tenders, rather than making landings directly on shore (Robert Alverson FVOA, pers comm). Evidence has suggested that for some vessels delivering to tenders, unobserved trips have been longer than observed trips. Apparently, some vessels not carrying observers may have made deliveries to tenders in lieu of making a landing on shore (to avoid officially starting a new "trip") and risking the chance of being selected to take an observer onboard. In September 2014, the FVOA remained concerned that NMFS and Council staff have determined that the data did not show a systematic difference in trip length between observed and unobserved vessels delivering to tenders (and associated shifts in processor delivery patterns), and presented their concerns to the council in a letter dated 26 September, 2014. Following recommendations from the OAC and SSC, the Council made a motion on June 8, 2015 to "Identify the best approach to a trip identifier tied to landings data to provide a linkage between ODDS and eLandings and improve data analysis, including those trips delivered to a tender." (Appendix 2).

The Observer Declare and Deploy System (ODDS) is used to facilitate random selection of trips in the two trip selection pools. Two issues have been identified for improvement in the 2013 and 2014 Annual Reports. One issue involved potential bias due to cancelled trips, and another pertained to lack of a shared trip identifier between ODDS and the eLandings system. The eLandings system enables the Alaska fishing industry to report landings and production of commercial fish and shellfish to the three management agencies in Alaska (NMFS, Alaska Department of Fish and Game, and the International Pacific Halibut Commission) through a single online application. NMFS has proposed two alternatives as potential modifications to ODDS to address temporal bias, and has also

proposed changes to the eLandings system in 2016, to provide better linkage between ODDS and eLandings and improve data analysis (NMFS 2015a).

The analysis and evaluation of the data collected by observers and ADP development is an on-going process. NMFS has released the Draft 2016 ADP for review by the OAC, Groundfish Plan Teams, SSC, and Council in Fall, 2015, and will finalize the 2015 ADP and release it to the public prior to the December 2015 Council meeting. In June 2016, NMFS will present the 2015 Annual Report that will form the basis for the 2016 ADP. NMFS continues to recommend trip-selection method for all vessels in 2016 (NMFS 2015a).

Electronic Monitoring.

In 2014, the Council established an Electronic Monitoring (EM) Workgroup as a Council committee, to allow industry, agency, and EM service providers a forum to collaboratively design, test, and develop EM systems that are consistent with Council goals and objectives to integrate EM into the Observer Program. Multiple research tracks are being undertaken under the EM cooperative research plan in order to collect information that will help inform future Council alternatives for EM to enable catch estimation (NMFS 2015a).

For 2016, the EM workgroup has developed a Draft EM Pre-implementation Plan for small hook-and-line vessels. As part this process, NMFS sent an "opt-in" letter to the 40-57.5 ft fixed gear vessel owners, requesting them to indicate if they are interested in participating in the 2016 EM pre-implementation program. As of August, 2015, 56 vessel owners had responded to the letter (NMFS 2015a). Descriptive information about these vessels is available on the Council's website at: http://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/Observer/EM/EM%20Selection%20Pool%20Opt-In%20Characteristics.pdf .

Relevance of the observer program and EM to the Sablefish longline fishery.

As noted in the Strategic Plan document for EM in the North Pacific (NMFS, 2013), observer coverage is 100% for the sablefish IFQ catcher-processor (CP) fleet, but not for the sablefish catcher vessel (CV) fleet. At present, VMS is used only in the Aleutian Islands IFQ fishery. Potential benefits to the sablefish fishery have been discussed that could come from the newly expanded observer program. For example, the collection of hook counts and spacing measurements of specific set segments is presently collected on observed trips, but is lacking for unobserved trips. Also, the NPFMC Groundfish Plan Team and SSC have noted that the expanded observer program could potentially help to resolve a catch accounting issue resulting from overlap between two datasets. The halibut fishery Incidental Catch Estimation (HFICE) is an estimate of the incidental catch of groundfish in the halibut IFQ fishery in Alaska, which is currently unobserved. Presently, the HFICE estimates cannot be added to the current Catch Accounting System (CAS) estimates of total catch because overlap occurs between the two datasets when sablefish are retained or discarded during an IFQ halibut trip (Hanselman *et al* 2012).

At present there is recognition by the NPFMC and the OSC of the disconnect between the intent to generate a better understanding of catch and discards via implementation of the overall observer program, and the reality of "releasing" small boats from coverage, while still facing obstacles to EM system implementation.

Enforcement activities and compliance with regulations

There have been no major changes to the way enforcement is carried out, and systematic non-compliance has not been an issue since the fishery was re-certified in 2011. Enforcement authorities operate a comprehensive monitoring, control and surveillance (MCS) system in the sablefish fishery. The MSA charges two federal agencies with the authority to implement provisions of the Act: the NMFS and the US Coast Guard (USCG). The USCG enforces fisheries law and regulations at sea in conjunction with NOAA's Office of Law Enforcement and other federal, state, tribal, interstate and international organizations. The State of Alaska Department of Public Safety (Wildlife Troopers, Marine Enforcement Section) also enforces federal regulations under the MSA and other laws through a Joint Enforcement Agreement with NMFS (RAM 2009). The most frequent types of violations in the IFQ fishery are summarized in (Table 6).

Table 6. At-sea IFQ fisheries violations (Pacific halibut and sablefish), 2005–2012. Selected violations shown are those that have persisted in the fishery over time. (Source: alaskafisheries.noaa.gov/ram/ifqreports.htm.)

Violation Type	2012 Violations (8 on 8 vessels)	2011 Violations (23 on 13 vessels)	2010 Violations (21 on 17 vessels)	2009 Violations (10 on 10 vessels)	2008 Violations (5 on 5 vessels)	2007 Violations (20 on 19 vessels)	2006 Violations (20 on 19 vessels)	2005 Violations (10 on 8 vessels)
Not maintaining continuous transit during a closed period	1	0	0	0	0	0	0	0
Failure to use Seabird Avoidance Gear	1	0	0	0	0	0	0	0
Fishing in Closed Area	0	1	1	2	0	0	0	0
FFP/IFQ Permit/Cardholder not onboard	0	7	1	1	0	2	4	5
Expired FFP	0	0	0	1	0	0	0	0
Boarding Ladder	0	0	0	1	0	0	0	0
Insufficient seabird avoidance	0	0	0	0	0	2	7	3
Logbook discrepancy	2	8	7	5	3	5	5	2
Fishing for Halibut without a Permit	3	0	0	0	0	0	0	0
Subsistence fishing with too many hooks	1	0	0	0	0	0	0	0

Relevant regulations

Since the last Surveillance Audit, a regulation change has been proposed by NPFMC to allow the use of sablefish pot gear in the GOA sablefish IFQ fishery (NMFS 2015d). Details of the proposal are included in an NPFMC motion, included in Appendix 3. The IPHC is authorized to set catch limits and define gear for halibut, among other responsibilities. Both the Council and IPHC have expressed intent that retention of halibut in sablefish pot longline gear, if approved, be limited to incidental amounts and not become a targeted halibut IFQ fishery (NPFMC 2015). Final action to allow sablefish pots in the GOA will rely on both the Council and IPHC allowing halibut IFQ retention in pot gear.

A related proposal is to allow the retention of Pacific halibut in sablefish pots in in the BSAI (IPHC Area 4A). Currently, the sablefish individual fishing quota (IFQ) fishery in the BSAI is prosecuted using hook-and-line gear and pot gear. However, halibut may be retained only with hook-and-line gear. Therefore, halibut caught in pot gear must be discarded. Participants have testified that discard of halibut caught in pot gear is being depredated by whales. The purpose of retaining incidentally caught halibut in pots fishing for sablefish is to better utilize the halibut resource provided the sablefish IFQ holders onboard the fishing vessel holds sufficient sablefish IFQ or CDQ and halibut IFQ (NPFMC 2015).

Personnel involved in science, management or industry.

At the NMFS North Pacific Observer program, Chris Riling has taken the position of now retired Martin Loefflad.

Traceability

Sablefish from the UoC are readily segregated from non-UoC fish, because an IFQ/CDQ permit number is required to be associated with every delivery at landing. This system has not changed significantly since the certification of the fishery. The certification extends only to the point of landing (where after chain of custody begins).

Vessels must give notice before leaving for a trip and before landing at a registered landing site. At landing, the catch weight is debited electronically from the holder's IFQ permit amount for that year. This data feeds into the catch accounting system described in the Sources of Information section of this report. Therefore, at the point of landing product is traceable to a specific trip and IFQ permit (which also specifies vessel category and location of fishing).

Risk of sablefish caught outside of the UoA being mixed with UoA product is generally low. Sablefish fishing takes place in a relatively focused area due to the depth distribution of the species, and the fishing grounds are well encompassed in the federal fishery. Though use of tenders at sea that may mix UoA product with non-UoA product is plausible, interviews with agency staff and client representatives indicated that product transfer of this nature is not common.

Assessment Process

Scope and History of Assessments

At each annual surveillance, the Conformity Assessment Body is responsible for evaluating whether the fishery has acted sufficiently on the required conditions set forth in the original certification report, whether a random check on the performance of the fishery verifies continued compliance with the MSC standards. CABs also have responsibilities to document relevant changes in the fishery's management or the performance of the target or associated species (e.g. annual landings, changes in management, new research, use of the label etc.).

The annual surveillance audit process is comprised of five general parts:

1. The certification body provides questions around areas of inquiry to determine if the fishery is maintaining the level of management observed during the original certification. In addition, the surveillance team requires that the client provide evidence that the fishery management system has taken the necessary actions to meet all conditions placed on the fishery during the initial certification assessment or any previous surveillance audits.

2. The certification body informs stakeholders that they have the opportunity to contribute to the surveillance audit by participating in a face-to-face interview process or by submitting comments in writing. The certification body must inform stakeholders of the opportunity to provide comment at least 30 days before the onsite meeting.

3. The surveillance assessment team meets with the fishery client in an opening meeting to allow the client to present the information gathered and to answer questions asked by the surveillance team. The surveillance team can then ask questions about the information provided to ensure full understanding of how well the fishery management system is functioning and if the fishery management system is continuing to meet the MSC standards. Additional interviews are conducted with fishery management and science personnel as well as stakeholders.

4. The surveillance team determines if any Performance Indicators should be re-scored and presents preliminary findings to the client fishery at the end of the site visit in a closing meeting. The results outline the assessment team's understanding of the information presented and its initial conclusion regarding the fishery management system's continued compliance with MSC standards.

5. The surveillance team may receive further information related to conditions, finalizes updates and progress against conditions, submits a draft report to the fishery client and a subsequent final report to the MSC for posting on the MSC website. If there are continued compliance concerns, these are presented as non-conformances that require further action or performance may be scored as behind target for particular conditions in that year. If conditions remain behind target for two consecutive years (without adjustment of timelines, which requires a strong rationale), the certificate will move into suspension and withdrawal.

Previous surveillance audits were conducted in conjunction with the US North Pacific Halibut surveillance in Seattle, with a dedicated discussion held with the relevant stock assessment researchers in Juneau. The fishery was originally certified with no conditions, and has therefore qualified for a reduced surveillance audit program.

4th Annual Surveillance Audit Process

This assessment was conducted by SCS Global Services, an accredited MSC certification body. The fishery was assessed using the MSC Certification Requirements Version 1.3 Annex CB [default tree], January 14 2013, and the latest MSC process requirements from GCR V2.1 (September 2015) and FCR V2.0 (April 2015). The surveillance was executed alongside the 2nd re-assessment of the sablefish fishery and the 4th annual surveillance and 2nd re-assessment of the halibut fishery. As such, all meetings targeted information needed for both surveillance and full re-assessment.

On-site Meetings

The assessment team selected visit sites and interviewees based on information needed to assess stock status, management operations of the unit of assessment, and known risk points related to non-target species. The client group and other relevant stakeholders helped identify and contact fisheries

management, research, compliance, and habitat protection personnel and agency representatives. Before the site visit and meetings were conducted, an audit plan was provided to the client and relevant stakeholders. The on-site meetings took place in Seattle, Washington, and Juneau, Alaska between November 3rd- 7th. The assessment team visited agency offices including the National Marine Fisheries Center Regional Office, Alaska Fisheries Science Center, IPHC, and also visited the client office and the University of Washington. Several meetings also took place at hotels and restaurants in Seattle and Juneau.

Table 7: Audit Plan: Key Meetings and Locations

Meeting number	Date	Location	Topic
Seattle, Washington			
1	November 3, 2015	Silver Cloud Inn	Team opening meeting
2	November 3, 2015	Ivar's Salmon House	Client opening meeting
3	November 4, 2015	University of Washington	Observer Program
4	November 4, 2015	University of Washington	Seabird bycatch
5	November 4, 2015	IPHC	Halibut stock assessment and management
Juneau, Alaska			
6	November 5, 2015	NMFS- Alaska Regional Office	Opening meeting
7	November 5, 2015	NMFS- Alaska Regional Office	IFQ Permitting
8	November 5, 2015	NMFS- Alaska Regional Office	Seabird bycatch
9	November 5, 2015	NMFS- Alaska Regional Office	Management and Data
10	November 6, 2015	Auke Bay Laboratories	Sablefish stock assessment
11	November 6, 2015	NMFS- Alaska Regional Office	Compliance and Enforcement
12	November 6, 2015	NMFS- Alaska Regional Office	Ecosystem Impacts
13	November 6, 2015	Westmark Baranof Hotel	Stakeholder Meeting

Table 8. 2015 Meeting Attendees by Organization in General Order of Meetings

Name	Role	Affiliation
Sian Morgan	Assessment Team Lead	SCS Global Services
Tom Jagielo	Assessment Team: Principles 1&3	Tom Jagielo Consulting
Todd Hallenbeck	Assessment Team: Principle 2	Independent Consultant
Jennifer Humberstone	Assessment Team Coordinator	SCS Global Services
Robert Alverson	Client Representative, FVOA General Manager	FVOA
Paul Clampitt	FVOA Trustee	FVOA
Ben Clampitt	FV Augustine	FVOA
Per Odegaard	FVOA President	FVOA
Shannon Fitzgerald	Resource Ecology and Ecosystem Modeling	NMFS- AFSC
Edward Melvin	Marine Fisheries Senior Scientist	Washington Sea Grant
Bruce Leaman	Director	IPHC
Steve Martell	Quantitative Scientist	IPHC
Ray Webster	Quantitative Scientist	IPHC
Anna Henry	Survey Manager	IPHC
Claude Dykstra	Research Biologist	IPHC
Kirsten MacTavish	Commercial Data Manager	IPHC
Farron Wallace	Fisheries Monitoring and Analysis Division	NMFS-AFSC
Rachel Baker	Sustainable Fisheries Supervisory Fisheries Management Specialist	NMFS-ARO
Mary Furuness	Sustainable Fisheries Supervisory Resource Management Specialist	NMFS-ARO
Kim Rivera	National Seabird Coordinator	NMFS-ARO
Glenn Merrill	Manager of Sustainable Fisheries Division	NMFS-ARO
Tracy Buck	Supervisory Permit Specialist: Restricted Access Management	NMFS-ARO
Kristin Mabry	Protected Resources Division	NMFS-ARO
Dana Hanselman	Marine Ecology & Stock Assessment	NMFS- AFSC
Chris Lunsford	Marine Ecology & Stock Assessment	NMFS- AFSC
Cara Rodgeveller	Marine Ecology & Stock Assessment	NMFS- AFSC
Ron Antaya	Alaska Enforcement Division	NMFS

Brandee Gerke	Sustainable Fisheries: Supervisory Fisheries Management Specialist	NMFS-ARO

In addition to the meetings and attendees list above, consultations have included direct email outreach to potentially interested stakeholders. A number of key organizations were contacted in advance of the fishery's formal entry into public full assessment by the team leader, by phone. SCS also worked with MSC outreach in advance of the fishery entering full assessment, to compile an extensive stakeholder list used for emailing announcements and assessment progress to stakeholders. This list contained over 40 individuals from approximately 35 organizations spanning the government, private, and non-profit sectors.

Results

There were no conditions to the re-certification of this fishery in 2011 (FAM 2.1, 2010)

Performance indicators 1.2.4, 2.2.1 and 3.2.4 were selected to review as a 'spot check.' The rescoring involved an update to rationale text and a slight adjustment of scores (95 to 100 for 1.2.4, 90 to 85 for 2.2.1, and 90 to 100 for 3.2.4).

In rescoring these PIs, the assessment team updated rationales to fit the V1.3 default assessment tree template, also being used in the current re-assessment.

Evaluation Table for PI 1.2.4

PI 1.2.4		**There is an adequate assessment of the stock status**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**		The assessment is appropriate for the stock and for the harvest control rule.	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
	Met?		Y	Y
	Justification	The sablefish population is assessed with an age-structured split-sex model using the AD Model Builder platform (Fournier *et al*. 2012). The current configuration has been essentially unchanged since 2010 (Hanselman *et al* 2014). Growth and maturity are estimated outside of the model. Survey catchability, recruitment, spawner-per-recruit levels, fishing mortality, and survey and fishery selectivity are estimated inside the model. The assessment is appropriate for the stock and HCR, and takes into account the major features relevant to the biology of the species and the nature of the fishery. All of the requirements are met at the SG 100 level for this Scoring Issue.		

PI 1.2.4		There is an adequate assessment of the stock status		
b	Guidepost	The assessment estimates stock status relative to reference points.		
	Met?	Y		
	Justification	The assessment estimates stock status relative to reference points. The spawner recruit parameters (F_{35}, F_{40}, F_{50}, $B_{40\%}$, $B_{35\%}$, $B_{17.5\%}$) are estimated inside the stock assessment model.		
c	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Y	Y	Y
	Justification	The assessment conducts a Bayesian analysis of reference points via MCMC simulation. Stock status is evaluated relative to the reference points in a probabilistic way. Stock size thresholds are defined by the NPFMC in the Council HCRs. Probabilities are reported for the spawning biomass falling below $B_{40\%}$, $B_{35\%}$, and when the spawning biomass falls below ½ MSY or $B_{17.5\%}$ which calls for a rebuilding plan under the Magnuson-Stevens Act (Hanselman et al 2014). All of the requirements for the SG100 are met for this Scoring Issue.		
d	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			Y
	Justification	The assessment has been tested using conventional diagnostics such as retrospective analysis, to look for potential bias. A pathological retrospective bias was not evident. Alternative hypotheses have been rigorously explored in the most recent assessment, to establish a set of scenarios to set reasonable boundaries on how accounting for whale depredation inside the stock assessment would affect model results. Additional investigations are underway using exploratory models to evaluate spatially explicit models (incorporating a Management Strategy Evaluation), sablefish growth, standardization of fishery relative abundance indices, maturity, and movement (Hanselman et al 2014). Scoring is warranted at the SG100 level.		

PI 1.2.4		There is an adequate assessment of the stock status		
e	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Y	Y
	Justification	The sablefish stock assessment is reviewed in the same manner as all NPFMC groundfish stock assessments. The annual assessment review process involves the NPFMCs BSAI and GOA Plan Teams, and the Scientific and Statistical Committee (SSC). The Plan Teams meet with the assessment staff before, during, and after the assessment is prepared. When the draft assessment is complete, it is submitted to the SSC for a thorough technical review. Alternative model formulations, new model runs, and additional analyses may be requested at this stage. The make-up of the SSC includes both 1) employees of NMFS and the States of Alaska, Washington, and Oregon; and 2) additional independent experts in ecological, economic and social science. Since none of the SSC members have a direct involvement in preparation of the assessment, the SSC review can be considered an external review. Additionally, the Center for Independent Experts (CIE) conducts periodic external reviews of NPFMC assessments. The next review of the sablefish assessment is scheduled for 2016 (Hanselman et al 2015). Together, this evidence shows internal and external peer review, meeting the SG80 and SG100 levels.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.2.1

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.
	Met?	Y	Y	Partially

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups
	Justification	Since the full assessment, the CAB was presented with an additional year of catch data from the restructured observer program and updated information on catch composition. This information was used to update the categorization of main bycatch species for MSC assessment (Table 2). For all main bycatch fish and seabird species, population-based stock assessments are conducted and biologically based reference points are established. However, for the main fish, bycatch species information gaps prevent us from determining with a high degree of certainty that the stocks are within those limits. Due to a lack of necessary information, NMFS cannot establish a minimum stock size threshold from which to determine whether grenadier species complex (a Tier 5 stock) are overfished or approaching an overfished condition; however, on annual basis, NMFS can determine whether overfishing is occurring for tiers 4 and 5 stocks. The Alaska Fisheries Science Center estimates the grenadier species complex OFL in the annual Tier 5 stock assessment. For 2015, the maximum allowable ABC for the BSAI is 75,274 t and for the GOA is 30,691 t. This ABC is a 12% increase for the BSAI and a 12% decrease for the GOA. The majority of this catch occurs in the sablefish longline fishery which comprised an average of 6,281.56 mt for fishing seasons 2013-2014. Overfishing is not occurring in either the BSAI or GOA. **Grenadiers catch is well below OFL and ABC and thus not subject to overfishing and there is no indication that grenadier are overfished or approaching an overfished condition (Rodgveller and Hulson 2015) and it is highly likely that stock is within biologically based limits.** Shark bycatch in the sablefish fishery is primarily comprised of spiny dogfish (*Squalus suckleyi*). For 2015, NMFS recommended the maximum allowable ABC of 5,989 t and an OFL of 7,986 t for the shark complex. For years 2013 and 2014, average shark catch in the sablefish IFQ fisheries was 679.72 mt and total catches have been around 1,676.5 for BSAI and GOA combined. Therefore, there is no indication that overfishing is occurring although the 2014 stock assessment could not conclude if the stock is overfished. **Because of this, we cannot conclude with a high degree of certainty the stock is within limits, however it is highly likely that the stocks are within biologically based limits.** For black-footed albatross, the observed nest counts in the Hawaiian breeding colonies indicate a stable population of 61,000 breeding pairs (Arata *et al*. 2009). Additionally, recent surveys of black-footed albatross nesting pairs at Midway came in at 28,610 for the atoll, a record high, up 18% from the 2010-2014 average (USFWS 2015b). The Potential Biological Removal Level (PBR) is 11,980 (Arata *et al.* 2009). Matrix modeling results indicate that the black-footed albatross population, summed across all three colonies, is stable, or slightly increasing, with a population growth rate of 0.3 percent per year. The 2005 estimate of bycatch is 5,228 birds per year, but if this value is doubled, a safeguard for underestimating bycatch, it approaches the PBR of 11,980 birds per year, although the upper 95-percent confidence limit (17,486) exceeds the PBR (Arata *et al*. 2009). In 2013 and 2014, the sablefish fishery took an estimated average of 254.5 birds/year representing a small amount of incidental take relative to the PBR that would cause the population harm. **However, given the estimates of total bycatch approaching estimated PBR we cannot conclude with a high degree of certainty that the stock is within biologically based limits.** The current year count for Laysan albatross represents a 52% increase over the average number for the period from hatch years 2010 to 2014 (USFWS 2015b). The population appears to be increasing at a rate of 6.7%/year. Matrix models developed from stage specific demographic parameters and including bycatch mortality in fisheries, suggest that current estimates of bycatch levels (2,500/year) can be sustained by the population without causing population decreases, and consequently Arata et al (2009) conclude that longline fishing does not appear to be threatening the long-term viability of Laysan albatross. In 2013 and 2014, the sablefish fishery took an estimated average of 128 birds/year representing a small portion of the overall take. **Therefore, there is a high degree of certainty that the species are within biologically based limits.**

PI 2.2.1		**The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups**		
b	**Guidepost**	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	NA	NA	
	Justification	NA		
c	**Guidepost**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.		
	Met?	NA		
	Justification	NA		
References		Rodgveller and Hulson 2015; Tribuzio *et al*. 2012; Arata *et al*. 2009; USFWS 2015b		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	Met?	Y	Y	Y

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
	Justification	The Council Operating Manual (NPFMC 2012) specifies that the Council (as required by the MSA) must develop multi-year research priorities for 1) fisheries, 2) fisheries interactions, 3) habitats, and 4) other areas of research that are necessary for management purposes. Research priorities are established for 5-year periods and are submitted to the Secretary and the regional science centers of the National Marine Fisheries Service (NMFS) for their consideration in developing research priorities and budgets for the region of the Council. The NPFMC currently has a list of 127 groundfish research topics, of which six are considered critical and 54 as high priority (NPFMC 2014). Additionally, the Pacific States Marine Fisheries Commission (PSMFC) has developed a searchable online listing of the NPFMC research priorities (PSMFC 2014). While most of the research conducted in support of the NPFMC priorities is conducted directly by NMFS, the public listing of the research priorities by PSMFC also provides academic and private researchers with a rationale for research proposals that enhances the likelihood of achieving funding. The evidence indicates that the NPFMCs 5-year plan is a prioritized, strategic approach to research, and is consistent with MSC Principals 1 and 2. The Alaska Fisheries Science Center (AFSC) of NMFS operates an active research program on sablefish and related P2 and P3 issues, such as seabird bycatch by longline fishing vessels. Sablefish research is guided by NPFMCs Groundfish Research Plan priorities, as referred to above (NPFMC 2010). The approach to sablefish research is strategic and comprehensive across P1, P2, and P3 related objectives. Priority research objectives for Sablefish (Hanselman *et al* 2014) include: 1) Refining the survey abundance index model and accounting for whale depredation, and potentially including gully abundance data as well as other covariates 2) Refining the fishery abundance index to utilize a core fleet and identifying covariates that affect catch rates 3) Improving knowledge of sperm and killer whale depredation and quantifying depredation effects on the fishery's catch rates 4) Continuing to explore the use of environmental data to aid in determining recruitment 5) Working closely with an integrated GOA Ecosystem project funded by the NPRB that is aiming to look at recruitment processes of major groundfish including sablefish. 6) Developing a spatially explicit research assessment model that includes movement which will help to examine smaller-scale population dynamics while retaining a single stock hypothesis in the AK-wide sablefish model. 7) Improving knowledge of maturity and fecundity 8) Improving knowledge of spawning season Recent research efforts have been conducted on topics highly relevant to sablefish stock assessment, ecology, and management, including 1) marine mammal depredation, 2) validation/updating of the sablefish maturity-at-age schedule, and 3) a sablefish movement analysis to aid in assessment and apportionment of the sablefish resource (Hanselman *et al* 2014). In addition, a complementary research program is operated by the North Pacific Research Board (NRPB) (www.nprb.org/). Established by Congress in 1997, the NPRB organizes and funds research to improve the understanding of the North Pacific, Bering Sea, and Arctic Ocean ecosystems and thereby support effective management and sustainable use of marine resources in the region. The results of the NPRB-funded research also support management decision-making by the NPFMC and NMFS. The collective evidence above shows that the requirements of SG 100 are met for this Scoring Issue.		
b	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
	Met?	Y	Y	Y
	Justification	The Council's research priorities are organized online through a publicly accessible database (research.psmfc.org), which can be queried for changes in research status and can also be downloaded completely for detailed information about all of the Council's research needs. All federally funded research is publically available. Research results are presented in a timely fashion on the websites of NPFMC and the AFSC. Additionally, the annual SAFE report presents results of research directly relevant to the annual stock assessment (Hanselman *et al* 2014). The current and past SAFE reports are available at: http://www.afsc.noaa.gov/REFM/Stocks/assessments.htm The evidence shows that the requirements of SG 100 are met for this Scoring Issue.		
References		PSMFC 2014. North Pacific Fishery Management Council: Research Priorities. https://research.psmfc.org/		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				

Conclusion

Based on the above, it is SCS's view that the North Pacific sablefish longline fishery in AK, USA, continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification.' SCS recommends the continued use of the MSC certificate through to the end of the certificate cycle.

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Appendix 1: North Pacific Fishery Management Council Groundfish tier system to estimate reference points

From DiCosimo *et al*, 2010

Description of the groundfish tier system used by NPFMC since 1999 for defining fishing–mortality rate related to overfishing level (F_{OFL}) and to acceptable biological catch (F_{ABC}) based on the type of information available (Info).

Tier 1	Info: reliable point estimates of B and B_{MSY} and reliable pdf of F_{MSY}	
	(1a)	Stock status: $B/B_{MSY} > 1$
		$F_{OFL} = m_A$; $F_{ABC} \times m_H$
	(1b)	Stock status: $a < B/B_{MSY} \leq 1$
		$F_{OFL} = m_A \times (B/B_{MSY} - a)/(1 - a)$; $F_{ABC} \leq m_H \leq (B/B_{MSY} - a)/(1 - a)$
	(1c)	Stock status: $B/B_{MSY} \times a$
		$F_{OFL} = F_{ABC} = 0$
Tier 2	Info: reliable point estimates of B, B_{MSY}, F_{MSY}, $F_{35\%}$, and $F_{40\%}$	
	(2a)	Stock status: $B/B_{MSY} > 1$
		$F_{OFL} = F_{MSY}$; $F_{ABC} \leq F_{MSY} \times (F_{40\%}/F_{35\%})$
	(2b)	Stock status: $a < B/B_{MSY} \times 1$
		$F_{OFL} = F_{MSY} \times (B/B_{MSY} - a)/(1 - a)$; $F_{ABC} \leq F_{MSY} \times (F_{40\%}/F_{35\%}) \times (B/B_{MSY} - a)/(1 - a)$
	(2c)	Stock status: $B/B_{MSY} \leq a$
		$F_{OFL} = F_{ABC} = 0$
Tier 3	Info: reliable point estimates of B, $B_{40\%}$, $F_{35\%}$, and $F_{40\%}$	
	(3a)	Stock status: $B/B_{40\%} > 1$
		$F_{OFL} = F_{35\%}$; $F_{ABC} \leq F_{40\%}$
	(3b)	Stock status: $a < B/B_{40\%} \leq 1$
		$F_{OFL} = F_{35\%} \times (B/B_{40\%} - a)/(1 - a)$; $F_{ABC} \leq F_{40\%} \times (B/B_{40\%} - a)/(1 - a)$
	(3c)	Stock status: $B/B_{40\%} \leq a$
		$F_{OFL} = F_{ABC} = 0$
Tier 4	Info: reliable point estimates of B, $F_{35\%}$, and $F_{40\%}$	
		$F_{OFL} = F_{35\%}$; $F_{ABC} \leq F_{40\%}$
Tier 5	Info: reliable point estimates of B and natural mortality rate M	
		$F_{OFL} = M$; $F_{ABC} \leq 0.75 \times M$
Tier 6	Info: reliable catch history from 1978 to 1995	
		OFL = average catch (1978–1995), unless otherwise established by SSC; ABC $\leq 0.75 \times$ OFL

a, 0.05 for Tiers 1–3, by applying the 10% rule (Rosenberg *et al.*, 1994) to half of the B_{MSY} reference point; B, current biomass; subscripts MSY, 35%, and 40%, biomass related to the maximum sustainable yield, or to 35% or 40% of the unexploited biomass (or to the F related to those); pdf, probability density function; m_A and m_H, arithmetic and harmonic mean of the pdf.

Appendix 2. North Pacific Fisheries Management Council -- Observer Program Council Motions in 2015

C-4 Observer Annual Report Council motion June 8, 2015

The Council approves the following recommendations in the development of the draft 2016 Annual Deployment Plan and future annual reports, including consideration of SSC comments:

- Provide additional information on observer rates and percent coverage by gear type, in addition to numbers of trips and deployment. Report the percentage and metric tons of total catch observed (Table 4-2 and subsequent). Track these key metrics over time in each annual report. (OAC)

- Identify the best approach to a trip identifier tied to landings data to provide a linkage between ODDS and eLandings and improve data analysis, including those trips delivered to a tender. (OAC/SSC)

- Evaluate and suggest modifications to ODDS to reduce temporal bias associated with the policy of allowing trip cancelation and logging multiple trips prior to departure. (OAC and SSC)

    - The Council appreciates the development of performance metrics and encourages NMFS to continue to develop tools to evaluate both the reliability of the data and deployment performance.

        - Include information on observer sampling such as percent of hauls observed vs total hauls/trip, and number of hauls with complete observer data vs partial data by vessel size and gear. (OAC)

        - Continue to develop ways to evaluate observer effects, including possible examination of potential associations of PSC with trip attributes on observed vessels. If associations are found, PSC rates in shoreside offloads from unobserved vessels could be compared for evidence of bias. (SSC)

        - Continue evaluation of and improvements in catch and bycatch estimation, including the necessary procedures for calculating the variances associated with point estimates. Consider SSC suggestions on a starting point for assessing variance. (OAC and SSC)

    - Assess inefficiencies in the program and evaluate ways to achieve cost efficiencies in the partial coverage category within the existing 5-year contract. (OAC)

    - Include information about the availability of fixed gear lead level 2 observers. (OAC)

- Incorporate some additional quantitative measures in the enforcement section of the report, especially in relation to trends by incident type. (OAC)

- The 2016 ADP should explore defining strata to deploy observers by gear (longline, pot, and trawl

gear) and FMP area and, if necessary, consider operational sector (CV vs CP).

In addition, the Council supports continued outreach by enforcement personnel regarding observer issues, especially to vessels where captains are under increasing pressure to monitor PSC. (OAC)

<u>SSC comments on variance</u>: While we agree with the analysts that it is not the sole determinant of quality of the sampling program, there is a critical need to calculate the variances associated with the point estimates (e.g. target catch, by-catch) to aid with optimization of the observer deployment sampling design and to assess uncertainty in estimates of catch. For example, the observer effect detected in landed catch in the HAL and TRW gears could have been better assessed for significance if there had been variances of these landed catches. In this way the potential for bias detected by the observed versus unobserved trips could be weighed against measurement error in the estimates of landed catch for these two gears. Variances would also aid assessment authors in their understanding of the uncertainty associated with estimates of catch. Consider, as a first-step, the calculation of variance using standard multi-stage cluster sampling (Thompson 2012), wherein the stage-specific variance is calculated along with the mean.

Talking point on ADP: Given the comment that deploying into smaller boxes requires higher rates of selection, the OAC emphasized that it will be important to retain the ability in October to evaluate trade offs between the proposed strata and alternative designs, and the information provided should support an understanding of the size of the strata in terms of both trips and catch or discards and trade offs with deployment rates. If necessary to retain larger boxes for deployment, it seems that defining strata by gear type might be more important than FMP area, within the partial coverage category (e.g., all longline in BSAI and GOA in same strata with same deployment rate).

Council Motion, agenda item C5 October 9, 2015

Electronic Monitoring 2016 Pre-implementation Plan

The Council approves the draft 2016 Electronic Monitoring Pre-implementation Plan, and supports the EM Workgroup's suggestions for next priorities for EM implementation, which are for longliners under 40 ft, longliners over 57.5 ft, and vessels fishing with pot gear.

C-6 Observer Annual Deployment Plan Council motion October 10, 2015

The Council recommends the following for the draft 2016 Annual Deployment Plan:

- Use the trip-selection method to assign observers to vessels in partial coverage in 2016.

- Deploy observers in the trip-selection pool by gear in 2016, with optimal allocation. Support the following preliminary coverage rates resulting from this stratification:

Trawl (29%) Longline (14%)
Pot (14%)

The no selection pool would include catcher vessels <40 ft LOA; vessels fishing with jig gear; and fixed gear vessels that participate in the 2016 electronic monitoring (EM) cooperative research.

- No temporary exemptions from observer coverage are allowed due to insufficient life raft capacity, given the option for these vessels to be in the electronic monitoring pool in 2016.

- Continue the policy (programming in ODDS) that prevents a 40 – 57.5' fixed gear vessel from being selected for a third consecutive observed trip.

- Maintain the ability for vessels to log up to three trips in advance in ODDS.

- Modify eLandings to enable the ODDS trip number to be entered voluntarily on groundfish landing reports to facilitate data analysis and provide a better link between ODDS and eLandings.

- Maintain the current Chinook salmon sampling protocols to identify stock of origin.

- Allow BSAI cod trawl catcher vessels to opt-in to full coverage and carry an observer at all times when fishing in the BSAI.

- Continue to conduct outreach in fall and winter 2015/2016, with efforts to meet in Kodiak earlier than the proposed April 2016.

The Council also supports the OAC's recommendations with regard to the status of analytical projects related to the observer program.

The Council requests that Observer Program staff evaluate different weighting schemes in the sampling design based on gear with optimal allocation, such that discards are weighted more heavily than retained catch, for the draft 2017 annual deployment plan.

Appendix 3. Additional NPFMC Council motions in 2015.

North Pacific Fishery Management Council C6 GOA Sablefish Longline Pots

Motion 4/12/15

The Council adopts the following Elements and Options as its preferred alternative for Agenda item C-6. The Council adopts the Purpose and Need statement.

Alternative 2. Allow the use of pot longline gear in the GOA Sablefish IFQ fishery.

Element 1 Limit of 120 pots per vessel in WY and SEO.

Limit of 300 pots per vessel for WGOA and CGOA. Option 1. Require identification tags for each pot.

Pot tags must be attached to the vessels pots before leaving port. Pots registered to one vessel must be returned to shore before being registered to another vessel

Element 2. Gear retrieval.

Option 2. Gear cannot be left for more than 5 days without being moved in the CGOA and WY. Gear cannot be left for more than 7 days without being moved in the WGOA.

In SEO gear cannot be left on the fishing grounds when the vessel to which the pots are registered leaves the grounds to make a delivery.

All sablefish pots set in GOA must be removed prior to the end of the season and cannot be set before the beginning of the season.

Element 3. Gear specifications.

Require both ends of the sablefish pot longline set to be marked with a 4-bouy cluster including a hard ball with "PL" (pot longline) marking on one buoy, flagpoles, and radar reflectors, including ADF&G number or federal fisheries permit number on buoys.

Element 4. Retention of incidentally caught halibut.

Require the retention of halibut caught incidentally in sablefish pots, provided the sablefish IFQ holder also holds sufficient halibut IFQ, and provided that the IPHC adopts complementary regulations that would allow NMFS to authorize retention of halibut caught incidentally in the sablefish longline pot fishery under the requirements of regulations implementing this program.

Additionally, all vessels using longline pot gear are required to use logbooks and VMS. Add a data field, or fields, to the Prior Notice of Landing for a pot longline vessel to declare the number of pots fished, lost, and/or still fishing.

IFQ holders fishing sablefish pots are encouraged to work co-operatively to develop electronic reporting protocols for reporting the location of pots being fished and/or pots left on the fishing grounds as well as any other methods or methodology that may enhance the sablefish pot longline fishery.

A review on the effects of allowing GOA Sablefish longline pot gear will be conducted 3 years after implementation and that NMFS include pot gear effort in their management report to the Council.