U.S. North Pacific Sablefish
MSC Fishery 2nd Re-assessment Report

Public Certification Report

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Glossary

ABC	Allowable Biological Catch
ADP	Annual Deployment Plan
ADF&G	Alaska Department of Fish and Game
AFSC	Alaska Fishery Science Center
BSAI	Bering Sea & Aleutian Islands
CAS	Catch Accounting System
CDQ	Community Development Quota
CEY	Constant Exploitation Yield
CITC	Individual Transferable Catch Quotas
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPUE	Catch Per Unit Effort
CSP	Catch-Sharing Plan
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EM	Electronic Monitoring
EOWS	Eat on the Wild Side
ESA	Endangered Species Act
ETP	Endangered, Threatened or Protected species
DPS	Distinct Population Segment
FAO	Food and Agriculture Organization of the United Nations
FCM	Fisheries Certification Methodology
FEP	Fishery Ecosystem Plan
FMP	Fishery Management Plan
Ft	feet
FVOA	Fishing Vessel Owners Association
GOA	Gulf of Alaska
GHL	Guideline Harvest Levels
HAPC	Habitat Areas of Particular Concern
IFQ	Individual Fishing Quota
IFC	International Fisheries Commission
IPHC	International Pacific Halibut Commission
ITQ	Individual Transferable Quota
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unregulated, Unreported
Kg	kilogram
Lb.	Pound, equivalent to roughly 2.2 kg
LME	Large Marine Ecosystem
LOA	Length Over-All
LTL	Low Trophic Level
M	Million (lbs.), Mortality
MSA	Magnusson Stevens Act
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
MSAB	Management Strategy Advisory Board
MSY	Maximum Sustainable Yeild
NEPA	National Environmental Protection Act
nm	nautical mile
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fishery Management Council

OAC	Observer Advisory Committee
ODDS	Observer Declare and Deploy System
OFL	Over-Fishing Level
OLE	Office of Law Enforcement
OSC	Observer Science Committee
PBR	Potential Biological Removal
PPA	Preferred Preliminary Alternative
PFMC	Pacific Fishery Management Council
SCS	SCS Global Services
SRB	Scientific Review Board
SSB	Spawning Stock Biomass
SSC	Science and Statistical Committee
TAC	Total Allowable Catch
t and mt	metric ton
TAC	Total Allowable Catch
UoA	Unit of Assessment
UoC	Unit of Certification
USCG	United Stated Coast Guard
USFWS	US Fish and Wildlife Service
VMS	Vessel Monitoring System
WCGOP	West Coast Groundfish Observer Program
WPUE	Weight Per Unit Effort
WWF	World Wildlife Fund

1 Executive Summary

This report discloses the results of a Marine Stewardship Council 2nd re-assessment of two Units of Assessment (UoA): US North Pacific sablefish (*Anoplopoma fimbria)* harvested with bottom-set longline 1) hook and line and 2) pot gear permitted under the federally managed IFQ program in the US Alaskan EEZ.

Unit of Assessment	Species & Stock (FCR V2.0 7.4.7.1)	Fleets or groups of vessels (FCR V2.0 7.4.7.3)	Method of Capture (FCR V2.0 7.4.7.2)
1	US North Pacific sablefish (*Anoplopoma fimbria)*	Federal IFQ* quota-holding vessels, fishing in US North Pacific: Alaska EEZ waters including: Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA)	Bottom-set Longline hook and line
2	US North Pacific sablefish (*Anoplopoma fimbria)*	Federal IFQ* quota-holding vessels, fishing in US North Pacific: Alaska EEZ waters including: Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA)	Botom-set longline pots

**IFQ considered to include the portion allocated to the Community Development Quota (CDQ), which for sablefish is permitted separately under the Groundfish CDQ program. CDQ is allocated at 20% of the total hook and line/pot quota allocation for the Bering Sea and Aleutian Island management areas, respectively. In 2016, the quota allocation for hook and line/pot CDQ represents less than 4% of the combined total IFQ and CDQ quota (including IFQ allocation to GOA).*

History of US North Pacific Sablefish Fishery and MSC Certification

Sablefish are part of a complex of predatory groundfish that inhabit soft sediments at considerable depth. Adult sablefish occur along the continental slope, shelf gullies, and in deep fjords, generally at depths greater than 200 m. In this fishery effort is concentrated at the shelf break where bottom set longline hook and line and bottom set longline pot gear are deployed.

At the end of the 19th century and the first half of the 20th century, sablefish were utilized primarily by US and Canadian fishermen from California to Alaska. Catches were relatively small and averaged less than 2,000 t from 1930 to 1957. Thereafter, Japanese and Russian longliners began to fish the eastern Bering Sea and expanded the fishery. In 1962, catches peaked at 25,989 t. In the 1960s Japanese trawl fleets moved in and the longline fishery moved to the Aleutian Islands and Gulf of Alaska. In 1972 another peak was reached at 36,776 t. Populations declined and in the 1970s regulations were adopted and reduced the total catch. Relying on the Fisheries Conservation and Management Act of 1977, and later the Magnuson-Stevens Act of 1996, catches were restricted to about one fifth of the 1972 peak. Foreign and domestic fleet gear types were similar to each other and most utilized squid for bait. In 1984 the foreign fleets were eliminated from sablefish fishing and 95% of the TAC was allocated to bottom longline harvest. The sablefish season was gradually reduced, so much so, that in some years the season was open only for a few days resulting in “derby” style fishing through the mid-1990s. Individual Fishery Quotas (IFQ) were adopted in 1995 and the season length increased to 8 months/year. The

fishery is now 8.5 months from March to November and corresponds with the timing of the Pacific halibut fishery.

The scope of this report includes waters off the coast of Alaska including the Gulf of Alaska, Bering Sea, and the Aleutian Islands. Fisheries for sablefish in Alaska are both federally (in UoA) and state managed (not in UoA). Federal management applies to sablefish within the Exclusive Economic Zone (EEZ), which extends from 3 to 200 miles from 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. 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.

Pots have historically been banned in the federal sablefish fishery in the Gulf of Alaska, but have been allowed in the BSAI fishery since 1996 (Hanselman et al, 2009a). There has been increased pressure to permit pots in order to avoid whale depredation, which has increased in recent years. In April 2015, the NPFMC passed a resolution that will permit use of pots in the sablefish IFQ fishery in the GOA. The re-assessment scope has been expanded to include pots as a gear type.

The first MSC assessment of the US North Pacific sablefish was initiated in 2003, with the fishery achieving certification in May of 2006. The fishery was re-certified in August 2011, and is now undergoing its 2nd re-assessment, initiated in October 2015. There were no conditions on the fishery certification when it was re-assessed in 2011. No new conditions were put in place in subsequent Surveillance Audits 1-3, and none were recommended based on findings from the 4th Annual Surveillance audit.

2nd Re-assessment Overview

SCS Global Services (SCS) is an independent third party certification body that has undertaken the MSC assessment of two units of US North Pacific sablefish from Alaskan EEZ waters in accordance with the MSC Principles and Criteria for sustainable fishing. The assessment complies with the MSC Certification Requirements V1.3 Annex CB [Default Assessment Tree] (January 2013) and the MSC General Certification Requirements V2.1 (September 2015) and Fisheries Certification Requirements [processes] V2.0 (April 2015).

The team selected to undertake the assessment includes three team members that collectively meet the requirements for MSC assessment teams. These are:

- Dr. Sian Morgan, Team Leader
- Mr. Tom Jagielo, Principle 1 and 3 Expert
- Mr. Todd Hallenbeck, Principle 2 Expert

The original announcement for the assessment (posted to MSC on October 1, 2015), indicated that the Risk Based Framework (RBF) for data-limited fisheries would not need to be used and this was confirmed from information provided prior to and during the site visit. The re-assessment proceeded without the RBF. The announcement of the fishery re-assessment coincided with the announcement of the 4th annual surveillance audit under the current certificate, and the 4th annual surveillance and 2nd re-assessment of the US North Pacific halibut fishery.

The team met with fishery representatives, scientists and stakeholders in Seattle, Washington, and Juneau, Alaska, November 3-7th, 2015. 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 Fisheries (also called National Marine Fisheries Service (NMFS) 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 Methodologies section.

Summary of Findings

In this report we provide the rationales for all scores proposed, which support the assessment that the fishery is recommended for certification. A summary of recommended scores are as follows:

Table 1: Summary of scores for the US North Pacific sablefish fishery (2 UoAs: longline hook and line and pot gear)

Final Principle Scores		
Principle	**Longline Hook and Line**	**Longline Pots**
Principle 1 – Target Species	95.6	95.6
Principle 2 – Ecosystem	89.0	84.3
Principle 3 – Management System	99.5	99.5

Overall, the North Pacific sablefish fishery continues to perform strongly against the MSC Standard, particularly so in regards to Principles 1 and 3. The fishery is governed via the NPFMC and supporting NOAA Alaska Regional Office (ARO) and Alaska Fisheries Science Center (AFSC), which manage the fishery via the well-established IFQ program. The NPFMC has well defined and inclusive decision-making processes, with strong science and policy implementation support from associated NOAA institutions.

Sustainable management of the sablefish stock is supported by stock assessments conducted by the NMFS Sustainable Fisheries Division, Auke Bay, Alaska. The stock assessment model configuration has been essentially unchanged since 2010, though new information is incorporated. Model projections indicate that the stock is not subject to overfishing, is not overfished, and is not approaching an overfished condition. Catches and fishing mortality have generally declined since the late 1980s-early 1990s, associated with a sustained period of lower than average recruitments. Since 2000, the percent of annual TAC taken in the catch has averaged 81% indicating good management performance.

The fishery information management system via the Catch Accounting System (CAS) is robust, incorporating multiple forms of data- observer data, enforcement records, vessel and shore-side production reports, and fish tickets- into a consolidated database to provide consistent information on fisheries in Alaskan waters. NMFS uses this data, along with substantial fishery independent research and biological data, to manage sablefish and other fishery species via a tier system, which assigns HCRs

based on the availability of various types of information. This supports a consistent and transparent stock assessment and management process for all managed species under NPFMC jurisdiction.

There were five conditions placed on the fishery that pertain to two key issues: lack of information on bait type, volume, and provenance; and lack of non-target species impact data from the pot gear unit in the Gulf of Alaska (GOA), as the new regulations permitting the gear type are not yet in effect and there is therefore no pot fishing taking place.

In the UoA, bait type and volume are not recorded or quantified in a systematic way. During on-site meetings the assessment team was able to ascertain typical bait species used in the fishery as well as a ball-park volume estimate from fishery managers and industry members. However, this information was anecdotal and qualitative in nature, not verifiable, and not sufficient to determine whether bait in aggregate or on a species-specific level qualifies as 'main.' According to CR V1.3 CB3.5.5 and MSC guidance bait is to be treated as a 'retained' species, regardless of provenance. The assessment team has determined that the species will be classified as 'main' as a precautionary measure and to ensure that scoring on the "information PI 2.1.3" may reflect the deficiency in information on bait. For further detail, see: Bait considerations: hook and line & pot gear.

There is a lack of fishery-dependent data on pot gear usage in the Gulf of Alaska because pots were only approved for use in the Gulf of Alaska by the North Pacific Fisheries Management Council (NPFMC) in Spring of 2015. Regulations are not yet in effect, and it is expected that 2017 will be the first season that pot gear is used in Gulf of Alaska. This lack of information is relevant to PIs 2.1.3, 2.2.3, and 2.3.3; however, given the Catch Accounting System in place and the proven sufficiency of data from the hook and line longline UoA, it is expected that sufficient data will be provided once pot fishing commences in the GoA (expected in 2017).

Peer Review of the assessment was conducted by Dr. Susan Hanna and Dr. John D. Neilson. Peer Reviewers were selected through the Peer Review College as part of a pilot of the emerging Peer Review College program. Peer Reviewers were provided the assessment on May 16th, and responses were received by the assessment team on June 1, 2016. No scores were changed as a result of Peer Reviewer comments, but the commentary provided useful feedback to increase report clarity and strengthen rationales.

The report was posted for Public Comment to the MSC website on June 23, 2016, with the public comment period closing on July 24, 2016. No comments were received. The positive certification determination was finalized, and final report posted to MSC on July 26, 2016 with an objection period open through August 18, 2016. No objections were received, and the certification decision is now final. Over this time period the current certificate was set to expire, and a variation request from SCS was granted in order to extend the certificate until September 9, 2016, such that there would be no lapse.

2 Authorship and Peer Reviewers

2.1.1 Audit Team

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.

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 research, stock assessments, 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. 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.

Mr. 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.

2.1.2 Peer Reviewers

The North Pacific sablefish and halibut UoAs were selected for participation in the MSC Peer Review College pilot. In this process, SCS provided MSC the project timeline and stakeholder information. MSC selected 5 peer reviewer candidates from a shortlist of peer reviewers enrolled in the College that were deemed to hold appropriate qualifications relevant to the UoA. From the shortlist of five, two peer reviewers were selected:

Dr. Susan Hanna

Susan Hanna is professor emeritus of marine economics at Oregon State University. Her research and publications are in the area of marine economics and policy, with an emphasis on fishery management, ecosystem-based fishery management, property rights and institutional design. Dr. Hanna has served as a scientific advisor to the U.S. Commission on Ocean Policy, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Minerals Management Service, Northwest Power and Conservation Council and the Pacific Fishery Management Council. She served on the Ocean Studies Board of the National Research Council (NRC), National Academy of Sciences, and several NRC Committees, including the Committee to Review Individual Quotas in Fisheries and the Committee on Protection and Management of Pacific Northwest Anadromous Salmonids. She has conducted reviews for the Center for Independent Experts (CIE) and is a current member of the CIE Steering Committee. Dr. Hanna has been a member of Marine Stewardship Council assessment teams for West Coast Dungeness crab, Oregon pink shrimp, West Coast groundfish, Alaska Pollock, Alaska flatfish, and Alaska Pacific cod fisheries, and has served as a peer reviewer of several MSC assessment reports.

Dr. John D. Neilson

John D. Neilson is an internationally-recognized fisheries scientist, who has published more than 200 scientific and technical papers. His studies have taken place on all three of Canada's coasts, as well as throughout the Atlantic Ocean, and the Caribbean Sea. His work is highly cited (eight papers cited > 100 times), with one included in the top 100 cited papers in fisheries science.
His specialties include population ecology, age and growth, and stock assessment. He is considered by his peers to have good skills in consensus building, and he have taken on demanding and high profile roles chairing Canada's National Marine Mammal Peer Review Committee (2000-2003), and coordinating all swordfish stock assessments conducted by the International Commission for the Conservation of Atlantic Tunas (2003 - 2013). He also has experience as a scientific editor. He also has considerable experience with fisheries development work, having conducted a two year long mission in St. Vincent and the Grenadines, where he mentored national biologists, and helped to establish a

regional program of data collection and stock assessment in the Eastern Caribbean. Thus, he has a broad range of experience with stock assessments ranging from data rich to data poor situations.
Although now retired from the Canadian federal government after a 30 year long career, he remains involved with voluntary scientific work (including serving on Canada's national committee dealing with species at risk (marine fish), community initiatives, and fisheries consultancies with clients including the International Commission for the Conservation of Atlantic Tunas, the European Community, and the US Center for Independent Experts.

Acknowledgements

The Assessment team would like to acknowledge several people who provided information, data, and guidance which greatly helped team members to conduct a quality assessment with best available information. NMFS was key in providing many of the scientific analyses, figures, as well as operational and regulatory information: both were helpful and cooperative throughout the process. Ed Melvin of the Washington Sea Grant Extension also provided data analysis and meeting space at the University of Washington campus in Seattle, novel data were also shared by Shannon Fitzgerald. Mary Furuness of NMFS-ARO provided generous time and effort to ensure the team had the appropriate and most thorough data available from the catch accounting system. Farron Wallace provided the team ongoing explanation of the observer program design and evolution, as he has every year since the new observer program began. Dana Hanselman provided key information on the status of sablefish stocks. FVOA members kindly hosted the team the first night of the onsite visit and provided ongoing support throughout the audit.

3 Description of the Fishery

3.1 Unit(s) of Assessment (UoA) and Scope of Certification Sought

3.1.1 UoA and Unit of Certification (UoC) – Final at Public Certification Report

The Unit of Assessment includes the US North Pacific sablefish (*Anoplopoma fimbria*) caught by the IFQ permit holders in Alaskan EEZ waters in Bering Sea Aleutian Islands and Gulf of Alaska using bottom-set longline (hook and line) and pot gear. There are 2 units of assessment (one for longline hook and line gear and one for longline pot gear).

In compliance with section 7.4 in FCR V2.0 April 2015 SCS confirms that the US North Pacific sablefish IFQ fishery conforms to the scope elements defining eligibility for full assessment against the MSC standard. The fishery:

- Does not operate under a controversial unilateral exemption to an international agreement, use destructive fishing practices, target amphibians, birds, reptiles or mammals and is not overwhelmed by dispute; (FCR 7.4.1.1, 7.4.1.2, 7.4.1.3, 7.4.2)
- The fishery does not engage in shark finning, has mechanisms for resolving disputes (FCR 7.4.2.1), and has not previously failed assessment or had a certificate withdrawn.
- Is not an enhanced or IPI fishery, is not based on an introduced species (FCR 7.4.3, 7.4.4, 7.4.13-15)
- Does not overlap with another MSC certified or applicant fishery on the same stock. The Canadian British Columbia sablefish fishery, which is part of the same biological population as the AK sablefish stock, exited MSC assessment in 2013) (7.4.16),
- And does not include an entity successfully prosecuted for violating forced labor laws (7.4.1.4)
- The units of assessment, certification, and eligible fishers have been defined, traceability risks characterized, and certificate sharing mechanisms decided (7.4.6-7.4.12)

The unit does partially overlap with the scope of several currently certified fisheries (7.4.16). All units relevant to harmonization considerations are given in Section 3.1, as Units of Assessment that P3 management via the NPFMC.

The fishery is entering its second re-assessment with no outstanding conditions.

Table 2. Unit of Assessment (UoA) and Unit of Certification (UoC). Considered Final at Public Certification Report stage.

Unit of Assessment 1	
Stock (species) (FCR V2.0 7.4.7.1)	*North Pacific Sablefish (Anoplopoma fimbria)*
Method of Capture (FCR V2.0 7.4.7.2)	*Bottom-set longline (fixed hook and line)*
Fleets or groups of vessels assessed (FCR V2.0 7.4.7.3)	*Federal IFQ (& CDQ) quota-holding vessels, fishing in US North Pacific: Alaska EEZ waters including: Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA)*

Unit of Certification 1:	
Certificate Includes	*All UoA product landed at processors approved by the Client (as given in the certificate addendum on the MSC website) is considered included in the certificate and permitted to use the MSC ecolabel.*
Client	*Fishing Vessel Owner's Association and Deep Sea Fishermen's Union of the Pacific: for MSC purposes, Eat on the Wild Side*
Other Eligible Fishers	*All product landed from vessels permitted with federal IFQ and CDQ in Alaskan EEZ waters fishing Sablefish using bottom set longline or bottom set pots is eligible to join the unit via Certificate Sharing.*

Unit of Assessment 2:	
Species (FCR V2.0 7.4.7.1)	*Sablefish (Anoplopoma fimbria)*
Method of Capture (FCR V2.0 7.4.7.2)	*Bottom-set longline (pots)*
Fleets or groups of vessels (FCR V2.0 7.4.7.3)	*Federal IFQ (& CDQ) quota-holding vessels, fishing in US North Pacific: Alaska EEZ waters including: Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA)*
Unit of Certification 2:	
Certificate Includes	*All UoA product landed at processors approved by the Client (as given in the certificate addendum on the MSC website) is considered included in the certificate and permitted to use the MSC ecolabel.*
Client	*Fishing Vessel Owner's Association and Deep Sea Fishermen's Union of the Pacific: for MSC purposes, Eat on the Wild Side*
Other Eligible Fishers	*All product landed from vessels permitted with federal IFQ and CDQ in Alaskan EEZ waters fishing Sablefish using bottom set longline or bottom set pots is eligible to join the unit via Certificate Sharing.*

Table 3. TAC and Catch Data

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*

3.1.5 Scope of Assessment in Relation to Enhanced Fisheries

There is no enhancement in this fishery.

3.1.6 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

The fishery under assessment is not an Introduced Species Based Fishery (ISBF).

3.2 Overview of the Fishery

The scope of this report includes waters off the coast of Alaska including the Gulf of Alaska, Bering Sea, and the Aleutian Islands. Fisheries for sablefish in Alaska are both federally and state managed. Federal management applies to sablefish within the Exclusive Economic Zone (EEZ), which extends from 3 to 200 miles from 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. 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.

An overview of the management history of the fishery is given in the section titled: Principle Three: Management System Background, below.

The client for the assessment is the FVOA, although the certificate is structured to also include Processors and vessels that deliver to these processors. All product landed from vessels permitted with federal IFQ and CDQ in Alaskan EEZ waters fishing Sablefish using bottom set longline or bottom set pots is eligible to join the unit via Certificate Sharing (See: UoA and Unit of Certification (UoC)).

In 2015, there were 1,737 vessel landings containing IFQ sablefish, and 1,625 of those landed only sablefish IFQ (no halibut). Most landings were taken from the Central Gulf of Alaska and Southeast Outside area of the Gulf of Alaska that accounted for 67% of total sablefish landings. (https://alaskafisheries.noaa.gov/fisheries-catch-landings) According to the 2015 SAFE report, pot gear (where permitted in BSAI) has increased in use relative to hook and line gear over the last 15 years. Whereas in 2000 it accounted for less than 10% of the total fixed gear catch; since 2004 it has accounted for 50% of the BS and 34% of the AI fixed gear IFQ catch. An increase in depredation of longline sablefish by sperm whales and orcas has resulted in increased interest in incorporating pots as a permitted gear type in the IFQ fishery in GOA. On April 12, 2015 the NPFMC passed a motion permitting use of longline pots in GOA. This action will likely be implemented for the 2017 fishing season and is now part of the UoA under assessment.

Description of Gear

Longline gear in Alaska is fished on-bottom. Since the inception of the IFQ system, average set length in the directed fishery for sablefish has been near 9 km and average hook spacing near 1.2 m. The gear is

baited by hand or by machine, with smaller boats generally baiting by hand and larger boats generally baiting by machine. Circle hooks are usually used, except for modified J-hooks on some boats with machine baiters. The gear usually is deployed from the vessel stern with the vessel traveling at 5-7 knots. Some vessels attach weights to the longline, especially on rough or steep bottom, so that the longline stays in place on bottom (Hanselman *et al.* 2014).

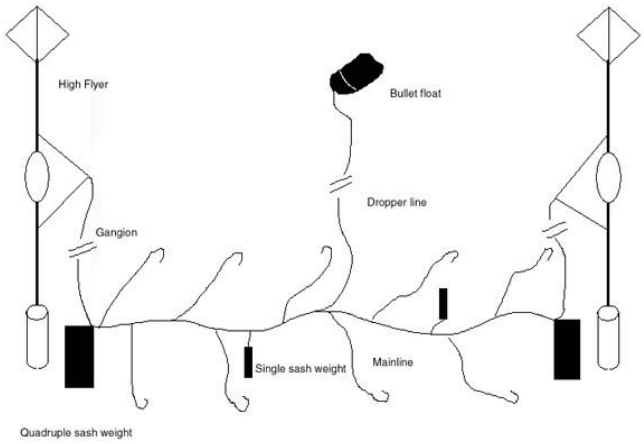

Figure 1. Typical demersal long-line gear set-up
http://www.nmfs.noaa.gov/pr/interactions/gear/bottomlongline.htm

Pots are usually steel framed cages covered in net mesh. As in bottom-set longline, they are baited. Fish enter through a tunnel and are sorted upon retrieval of the traps. Several pots are set along a line, with a float line and buoy stick attached. The April 2015 motion to permit pot gear in the GOA requires "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." Additionally, there are limits on the number of pots allowed per vessel and soaking time permitted.

Figure 2. Photo of pot gear in Alaska. http://www.kcaw.org/2015/02/27/at-board-of-fish-a-preview-of-pot-vs-longline-conflict/

Commercial fishers are licensed via IFQ to target sablefish or to catch it as a non-target species via fishing rights granted on licenses/quota for non-sablefish species. Sablefish is often caught in the longline halibut fishery, and is also caught as bycatch in the trawl fishery. NMFS allocates a portion of

the annual TAC to the trawl fishery as bycatch, and once this TAC is reached requires that sablefish caught incidentally in the trawl fishery be discarded. (e.g. https://alaskafisheries.noaa.gov/node/30753.) In addition to the federal fishery, there are state-managed fisheries for sablefish. For more information regarding the different access rights to the sablefish resources, see Access Rights to Sablefish.

3.3 Principle One: Target Species Background

Taxonomic Classification

Class: *Actinopterigii*

Order: *Scorpaeniformes*

Family: *Anoplopomatidae*

Genus: *Anoplopoma*

Species: *fimbria*

The fishery targets Sablefish (*Anoplopoma fimbria*), a bathydemersal cod-like fish. Other common names include black cod, butterfish, and coalfish. Sablefish inhabit the northeastern Pacific Ocean from northern Mexico to the Gulf of Alaska (GOA), westward to the Aleutian Islands (AI), and into the Bering Sea (BS). Adult sablefish occur along the continental slope, shelf gullies, and in deep fjords, generally in soft bottom muddy habitat at depths greater than 200 m. In Alaska, juvenile sablefish spend their first two to three years on the continental shelf of the GOA, and occasionally on the shelf of the southeast BS. The BS shelf is utilized significantly in some years and seldom used during other years (Hanselman et al 2015).

They are a popular food fish, with mild flavored white flesh high in omega 3 fatty acids. Sablefish is not a low trophic level (LTL) species, and therefore MSC LTL fishery considerations are not addressed in this report.

Biology and Life History

Information on the general biology, development, behavior, and ecology of sablefish may be found on the AFSC website (http://www.afsc.noaa.gov/abl/MESA/mesa_sa_sable.php), and in the stock assessment prepared by Hanselman et al (2015). Much of the information on sablefish biology provided below was obtained from these two sources, unless otherwise noted.

Sablefish spawn in the water column at depths of 300 to 500 m near the edges of the continental slope. Eggs develop at depth off-shore, but larvae migrate to the surface. In Alaska, spawning is in late March. The length at which 50% of the female fish are mature is 65 cm (age 6) while 50 percent of males are mature at 57 cm (age 5). Young of the year (YOY) sablefish in Alaska occur in the central and eastern Gulf of Alaska. 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.

In the Eastern Pacific, A two-population stock structure is supported based on differences in growth rate, size at maturity, and tagging data. The northern population inhabits Alaska and northern British Columbia waters while the southern population inhabits southern British Columbia, Washington,

Oregon, and California waters. Mixing of the two populations occurs off southwest Vancouver Island and northwest Washington. Sablefish are assessed as a single population in federal waters off Alaska because northern sablefish are highly migratory for at least part of their life. Because juveniles appear to migrate throughout Alaskan waters (Figure 3), little fine-scale genetic structure is expected. However, some genetic work is currently underway to test this hypothesis. This assessment includes only the northern population/stock.

Adult sablefish are opportunistic and prey on fish and invertebrates including pollock, eulachon, capelin, herring, sandlance, Pacific cod, squid, euphausiids, and jellyfish. Yearling sablefish primarily feed on euphausiids. Juvenile sablefish are eaten by adult coho and chinook salmon.

Sablefish are long-lived; ages over 40 years are regularly recorded with maximum life spans up to 94 years. A natural mortality rate of M=0.10 has been assumed for a number of sablefish assessments, including the most recent one (Hanselman et al 2015). Sablefish grow rapidly in early life, and reach average maximum lengths and weights of 68 cm and 3.2 kg for males and 80 cm and 5.5 kg for females. Sablefish have been documented to reach a maximum length of 120 cm.

History of Fishing and Management

At the end of the 19th century and the first half of the 20th century, sablefish were utilized primarily by US and Canadian fishermen from California to Alaska. Catches were relatively small and averaged less than 2,000 t from 1930 to 1957. Thereafter, Japanese and Russian longliners began to fish the eastern Bering Sea and expanded the fishery. In 1962, catches peaked at 25,989 t. In the 1960s Japanese trawl fleets moved in and the longline fishery moved to the Aleutian Islands and Gulf of Alaska. In 1972, another peak in catch was reached at 36,776 t. Populations declined and in the 1970s regulations were adopted in order to reduce the total catch; ultimately to about one fifth of the 1972 peak. The sablefish season was gradually reduced, so much so, that in some years the season was open only for a few days resulting in “derby” style fishing through the mid-1990s. The IFQ program was adopted in 1995 and the season length increased to 8 months/year. The fishery is now 8.5 months from March to November and corresponds with the timing of the Pacific halibut fishery.

Current Management Practice

Sablefish in Alaska are managed by discrete regions to distribute exploitation throughout their wide geographical range. There are four management areas in the Gulf of Alaska: Western, Central, West Yakutat, and East Yakutat/Southeast Outside (SEO) and two management areas in the Bering Sea/Aleutian Islands (BSAI): the eastern Bering Sea (EBS) and the Aleutian Islands (AI) region (Figure 3).

The sablefish harvest policy is derived from the NPFMC Tier System for groundfish stocks (DiCosimo et al 2010). The tier system assigns TACs based on the availability of various types of information. Sablefish currently falls under Tier 3 of the system because: 1) the data are sufficient to apply age-structured modelling, 2) an estimate of Bmsy is not available, and 3) an estimate of B40% is available.

For Tier 3 stocks, annual catch limits are based on a fixed fraction of the vulnerable stock, based on an F40% strategy, with target and limit reference points. Under this policy, there is: 1) a “BMSY-proxy” target reference point (TRP) (B35%), 2) a precautionary target reference point (B40%), and 3) a limit reference point (LRP), set at 1/2 of the B35% TRP (B17.5%).

The harvest control rule is structured to reduce fishing mortality when the stock falls below B40%. Specifically, when spawning stock biomass is greater than B40%, F40% is the upper limit on target fishing mortality, and F35% is the overfishing level (OFL). When estimates of spawning stock biomass fall below B40% (the precautionary TRP), the harvest rate is linearly adjusted downwards to zero at 17.5% of the unfished biomass (the MSST). Thus, the HCR is precautionary, because a reduction in target fishing mortality is applied before the stock declines to the B35% TRP level.

The intent of this precautionary HCR is to accelerate the rate of rebuilding should a stock fall to a low level of abundance. At present, the target harvest rate for sablefish is set below the F40% level, because the stock status is below B40% (this is discussed further, under "Current Status", below).

Status of Stocks

Stock Assessment

The information needed to assess stock status relative to the limit reference points, and to apply the harvest control rule, is obtained from quantitative stock assessments based on fitting population dynamics models to fishery and survey data.

Assessments for the US North Pacific sablefish fishery are conducted by the NMFS Sustainable Fisheries Division, Auke Bay, Alaska. The model configuration has been essentially unchanged since 2010. New data included in the 2014 stock assessment were: 1) relative abundance and length data from the 2014 longline survey, 2) relative abundance and length data from the 2013 longline fishery, 3) length data from the 2013 trawl fisheries, 4) age data from the 2013 longline survey and 2013 fixed gear fishery, 5) updated historical catches from 2006 – 2013, and 6) projected 2014- 2016 catches (Hanselman et al. 2014).

Uncertainty in estimation of the reference points is evaluated in a probabilistic way, with a Bayesian analysis via Markov chain Monte Carlo simulation. Additionally, a retrospective analysis has been conducted to look for evidence of potential bias in parameter estimates. The model showed robust performance when the retrospective trend in spawning biomass and total biomass for 10 previous assessment years (2004-2013) was compared to estimates from the current model. Also, alternative hypotheses have been rigorously explored in the assessment; for example, numerous model runs were conducted to evaluate how accounting for whale depredation affects assessment results (Hanselman et al 2014).

The stock assessment model does not estimate a stock recruit relationship, because recruitment is largely driven by factors unrelated to fishing (e.g. environmental conditions) for this stock. For this reason, exploratory work has been done to examine key environmental variables that affect recruitment by including them directly into a stock assessment model (Shotwell et al 2012).

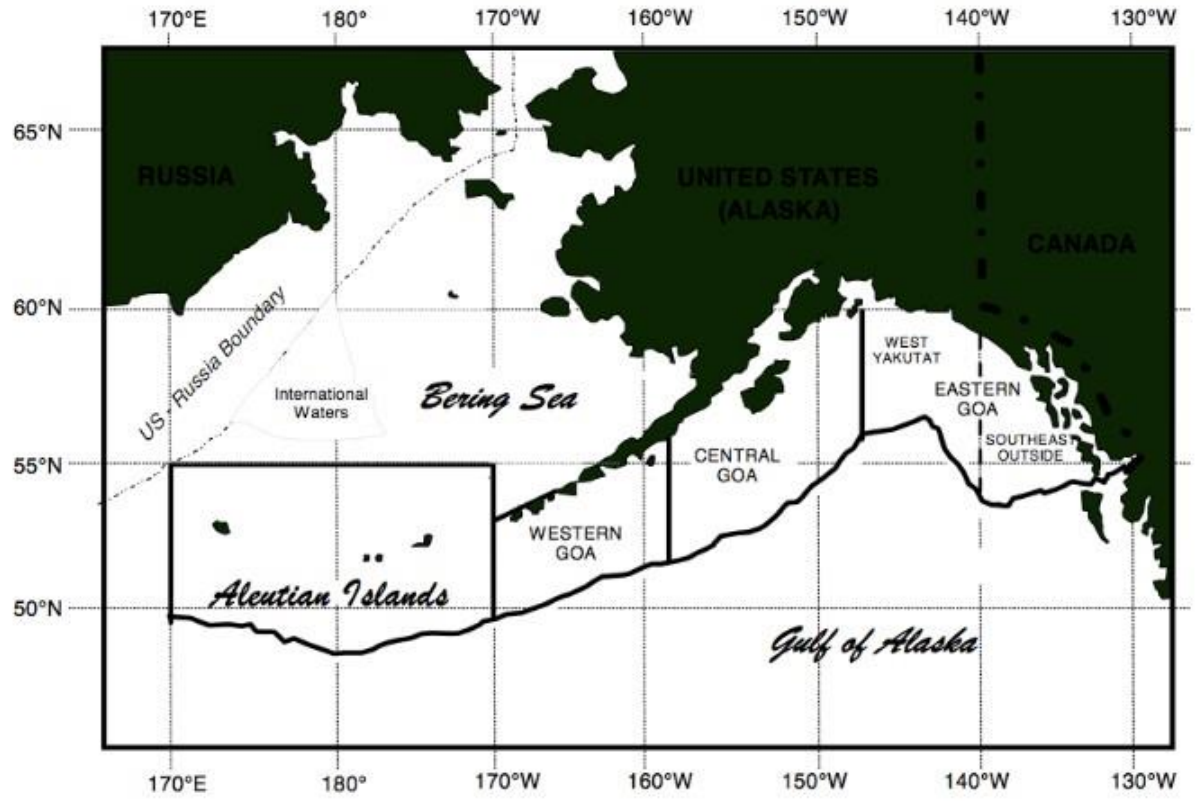

Figure 3. Sablefish Regulatory Areas and Districts (Source: http://alaskafisheries.noaa.gov/rr/figures/fig14.pdf)

Current Status

Reference points for the Eastern Bering Sea (EBS), Aleutian Islands (AI), and Gulf of Alaska (GOA) were calculated using recruitments from 1979-2012 (Hanselman *et al.* 2014). The updated point estimates of *B40%, F40%,* and *F35%* from the 2014 assessment are 104,908 t, 0.095, and 0.112, respectively. Projected female spawning biomass (combined areas) for 2015 is 91,183 t (88% of *B40%*), placing sablefish in sub-tier "b" of Tier 3. The maximum permissible value of *FABC* under Tier 3b is 0.082, which translates into a 2015 ABC (combined areas) of 13,657 t. The OFL fishing mortality rate is 0.098 which translates into a 2015 OFL (combined areas) of 16,128 t.

Model projections indicate that the stock is not subject to overfishing, is not overfished, and is not approaching an overfished condition. Estimates of spawning stock biomass have varied from slightly above to slightly below the B35%-B40% range since the mid 1990's (Figure 2). Spawning biomass has increased from a low of 32% of unfished biomass in 2002 to 35% of unfished biomass projected for 2015 and is trending downward in projections for the near future.

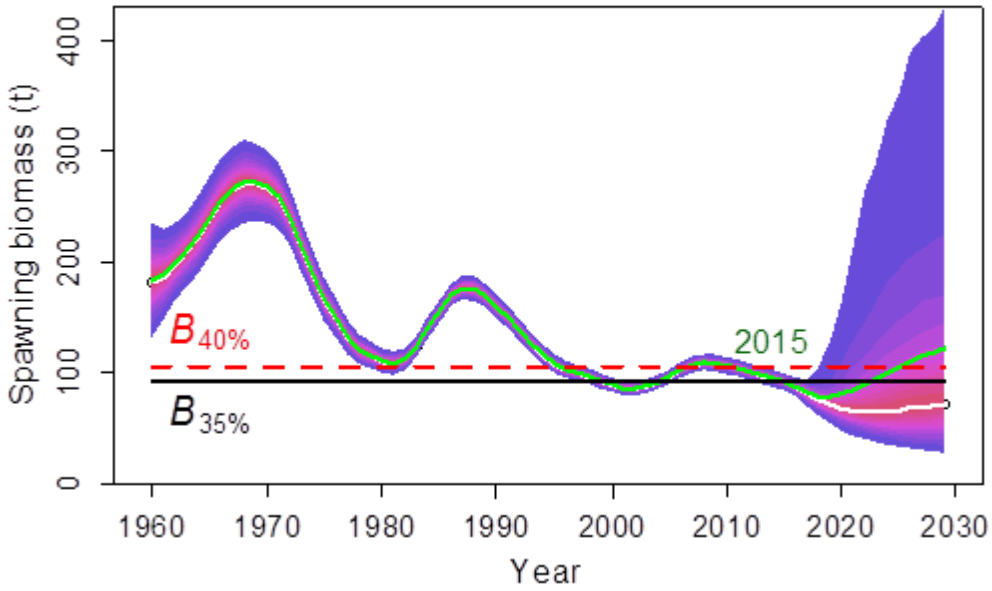

Figure 2. Estimates of female spawning biomass (thousands t) and their uncertainty. White line is the median and green line is the mean. Width of purple shaded area is the 95% credibility interval. Source: Hanselman et al. 2014; Figure 3.35.

Model projections for 2015 indicate the probability of the spawning stock biomass being below B40% is near 100%, and the probability of it being below B35% is approximately 90% (Figure 3).

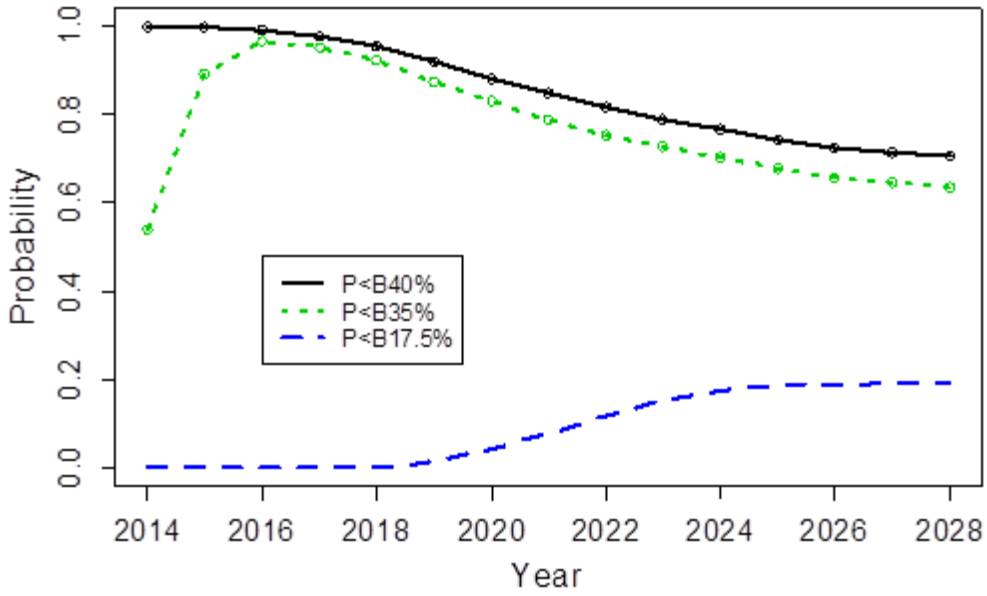

Figure 3. Probability that projected spawning biomass will fall below $B_{40\%}$, $B_{35\%}$ and $B_{17.5\%}$. Source: Hanselman et al. 2014; Figure 3.34.

Recent Trends

Catches (Figure 4) and fishing mortality (Figure 5) have generally declined since the late 1980s-early 1990s, associated with a sustained period of lower than average recruitments (Figure 6). Managers reduced Total Allowable Catch (TAC) from levels above 20,000 mt in the early 2000's to below 14,000 in recent years (Table 2), consistent with the NPFMC harvest policy of reducing target fishing mortality when the spawning stock size falls below B40%.

Since 2000, the percent of annual TAC taken in the catch has averaged 81% (Table 2), indicating good management performance. The TACs set for the AI, BS, and GOA have declined by 12%, 40%, and 19%, respectively, from 2012-2015 (Table 3). Corresponding catches from the AI, BS, and GOA have declined by 69%, 73%, and 20%, respectively, for the same period (Table 4).

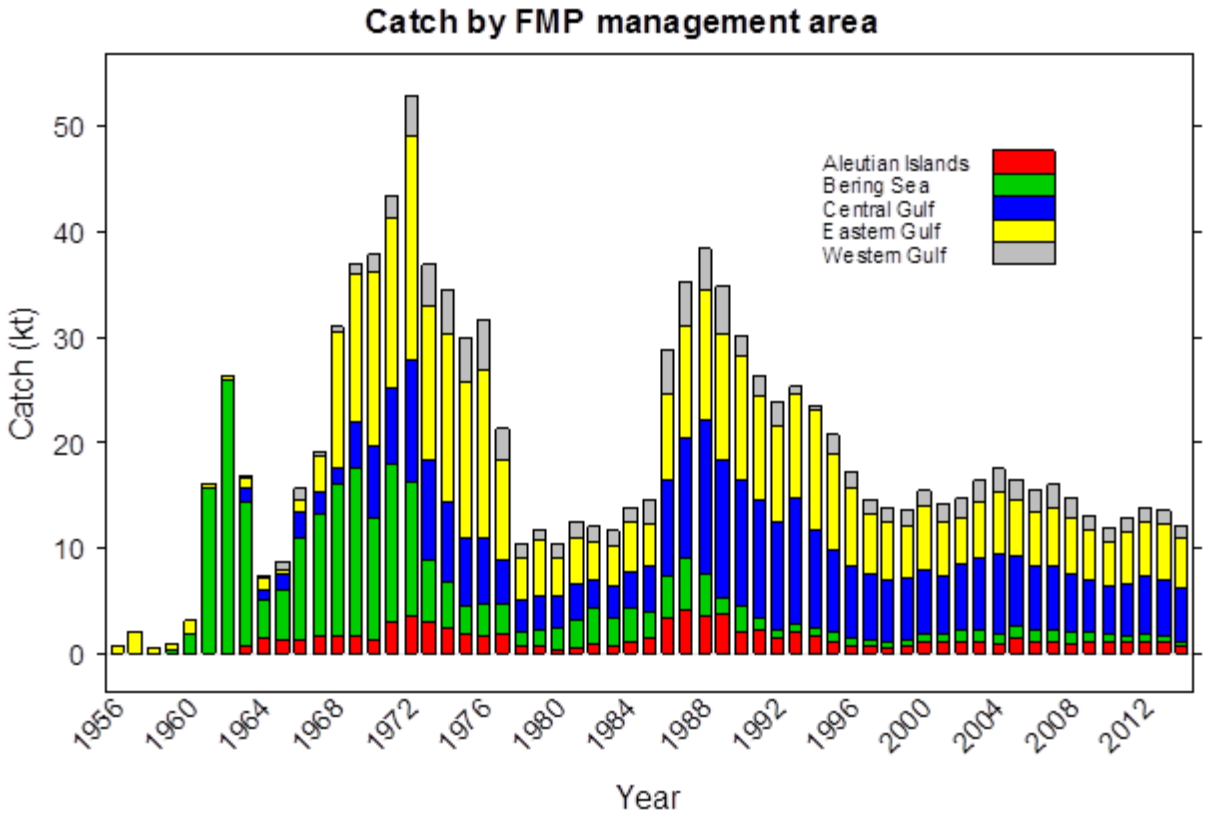

Figure 4. Sablefish fishery total reported catch (kt) by North Pacific Fishery Management Council area and year. Source: Hanselman et al 2014; Figure 3.2.

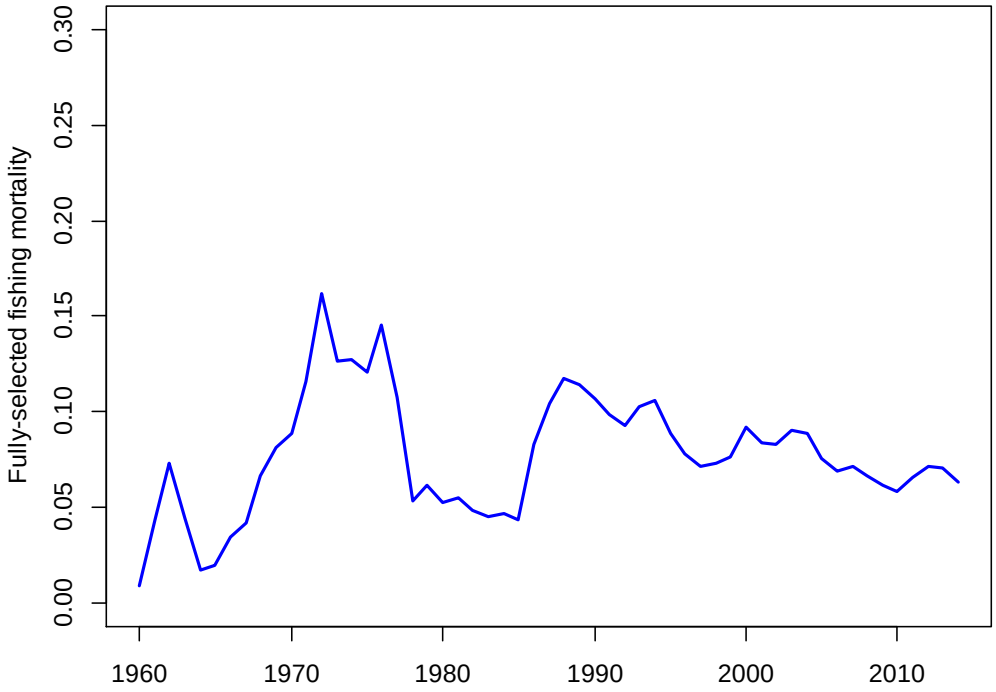

Figure 5. Time series of combined fully-selected fishing mortality for fixed and trawl gear for Alaska sablefish. Source: Hanselman *et al.* 2014; Figure 3.29.

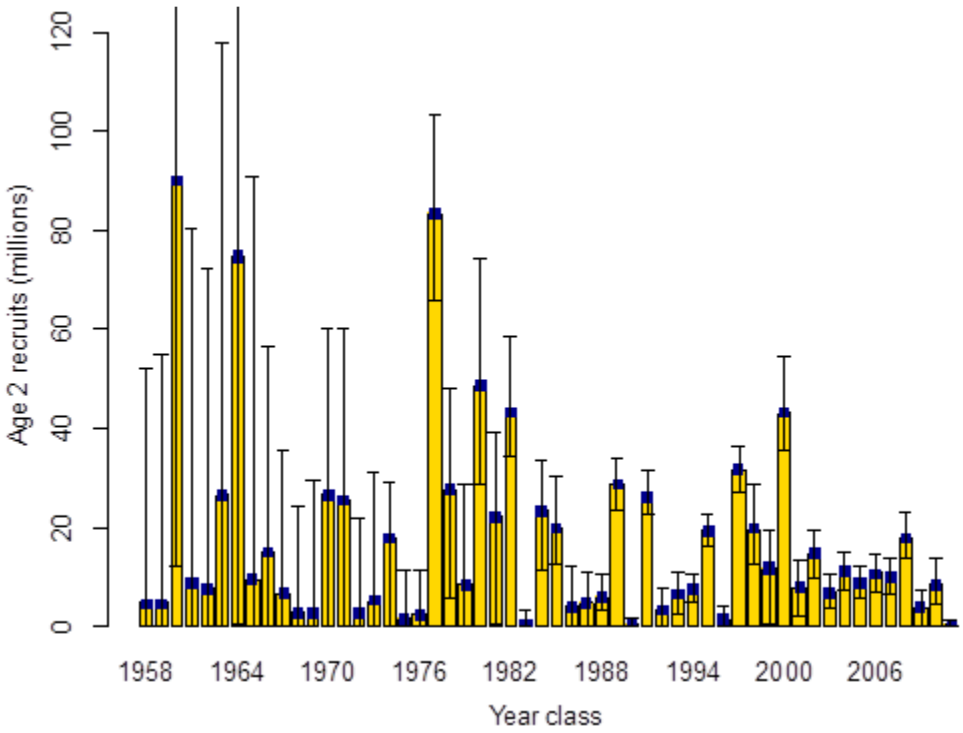

Figure 6. Estimates of the number of age-2 sablefish (millions) with 95% credible intervals by year class. Source: Hanselman *et al.* 2014; Figure 3.14b.

Table 2. Annual Alaska sablefish Total Allowable Catch (TAC), catch, and catch as a percent of TAC, 2000-2015.

Source: Hanselman et al (2015)

Year	TAC	Catch	% of TAC Taken
2000	17,300	15,565	90.0%
2001	16,900	14,064	83.2%
2002	17,300	14,748	85.2%
2003	20,900	16,411	78.5%
2004	23,000	17,518	76.2%
2005	21,000	16,580	79.0%
2006	21,000	15,551	74.1%
2007	20,100	15,957	79.4%
2008	18,030	14,674	81.4%
2009	16,080	13,128	81.6%
2010	15,230	11,980	78.7%
2011	16,040	12,971	80.9%
2012	17,240	13,868	80.4%
2013	16,230	13,642	84.1%
2014	13,722	11,476	83.6%
2015	13,657	10,094*	73.9%

*Estimate as of 10-29-15 (www.akfin.org)

Table 3. Total Allowable Catch (TAC) for the Aleutian Islands (AI), Bering Sea (BS), and Gulf of Alaska (GOA), 2012-2015.

Total Allowable Catch (Metric Tons)				
Source: Hanselman et al. (2014; 2015)				
Area	**2012**	**2013**	**2014**	**2015**
AI	2,050	2,140	1,811	1,802
BS	2,230	1,580	1,339	1,333
GOA	12,960	12,510	10,572	10,522
Total	**17,240**	**16,230**	**13,722**	**13,657**

Table 4. Catch from the Aleutian Islands (AI), Bering Sea (BS), and Gulf of Alaska (GOA), 2012-2015. TACs in the GOA are nearly fully utilized, while TACs in the BS and AI are rarely fully utilized (Hanselman et al 2015).

Catch (Metric Tons)				
Source: Hanselman et al (2014; 2015)				
Area	**2012**	**2013**	**2014**	**2015**
AI	1,199	1,062	757	372
BS	740	634	328	197
GOA	11,915	11,945	10,391	9,525
Total*	**13,868**	**13,642**	**11,476**	**10,094**
*Overall total updated from (Hanselman et al 2015); differs slightly from the sum of area values for 2012 and 2013 in this table.				

Management Related Research

NMFS

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:

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

The Assessment Team held an informative on-site meeting with the sablefish stock assessment team on November 6th, 2015, in Juneau, AK. NMFS staff made note of the fact that in recent years the catch rates have been declining, in accordance with the NPFMC policy of reducing catch rates when

the stock declines below $B_{40\%}$ (the trigger reference point). Nevertheless, the spawning stock size has not increased; for this stock, recruitment is not closely related to spawning stock biomass levels.

There has been a long string of low recruitments, with 2008 being the last notably good year. Sablefish have been modeled as one unit-stock for the past ten years. Recently, they have been working on the development of a Management Strategy Evaluation (MSE) using a spatially explicit base model. This approach could potentially be used to evaluate different apportionment strategies by area. An external review of the stock assessment by the Center of Independent Experts (CIE, http://www.ciereviews.org/) is planned to occur in 2016, and is anticipated to help evaluate this approach.

The staff reported that whale depredation (sperm and orca whales) has recently been a growing factor in complicating the interpretation of both fishery and survey data. In the fishery, it raises new questions about how to set the quotas, and in the survey it has caused concern about potential bias in sampling.

An important area of ongoing research regards sampling for sablefish maturity-at-age. This parameter is important for population modelling and understanding sablefish productivity. Evidence of skip-spawning has been observed in the routine samples collected during the summer survey. If skip spawning is extensive, the routine summer sampling program may be giving a biased estimate of sablefish maturity and fecundity. Thus, winter sampling is now being done in selected areas to confirm that the summer sampling is giving representative data for the population.

3.4 Principle Two: Ecosystem Background

All species that are affected by the fishery and that are not the Target and scored in Principle 1, are considered under Principle 2. This includes species that are retained for sale or personal use, including bait, (assessed under Performance Indicator 2.1), bycatch species [1]that are returned to the water (Performance Indicator 2.2), and species that are considered endangered, threatened or protected by the government in question (United States) or are listed by the Convention of International Trade of Endangered Species of Fauna and Flora (CITES) (Performance Indicator 2.3). This section contains an evaluation of the total impact of the fishery on all components in P2 and includes both observed and unobserved fishing mortality. Unobserved mortality may occur from illegal, unregulated or unreported (IUU) fishing, biota that are injured and subsequently die as a result of coming in contact with fishing gear, ghost fishing, waste, or biota that are stressed and die as a result of attempting to avoid being caught by fishing gear. This section also considers impacts on marine habitats (Performance Indicator 2.4) and the ecosystem more broadly (Performance Indicator 2.5).

In the MSC system, species are scored as “main” non-target species if they comprise >5% of the total landings by weight, or may also be scored as main if they comprise <5%, but >2% and have

[1] Note that in the MSC system, bycatch species follow a more narrow definition that in colloquial use, where bycatch is often assumed to mean all non-target species encountered by a fishery. In the MSC process, “bycatch” refers specifically to non-target species returned to the water either because they are unwanted, or because of mandatory discarding. Retained species (also non-target), are not called bycatch in the MSC system, and are landed.

vulnerable life histories. Species are categorized for scoring purposes as retained versus bycatch based on whether they are greater than 50% retained or discarded (Table 4).

There are two units of assessment under consideration for the sablefish fishery: 1) bottom set longline (hook and line) gear and 2) bottom set longline (pot) gear. This section will refer to longline (hook and line) as "hook and line" gear, and longline pot gear as "pot" gear.

Where there is distinct interaction with each gear type and an ecosystem component, there is a distinct evaluation presented as identified by a green sub-header denoting the gear type. Where this is no difference between the gear types, a single evaluation is presented.

Ecosystem

The scope of this report includes waters off the coast of Alaska including the Gulf of Alaska, Bering Sea, and the Aleutian Islands. The Gulf of Alaska Large Marine Ecosystem (LME) lies off the southern coast of Alaska and the western coast of Canada. It is separated from the East Bering Sea LME by the Alaska Peninsula. Significant upwelling linked to the presence of the counter-clockwise gyre of the Alaska Current generates cold, nutrient-rich waters that support a diverse ecosystem (Sherman and Hempel 2009). The Gulf of Alaska has a broad continental shelf extending up to 200 km in some areas and contains several deep canyons, known to be good fishing areas. Gulf of Alaska continental shelf habitats include steep rock outcrops, smooth turbidite sediment scapes, and methane seeps. The nature of the seabed on the Gulf of Alaska shelf has been strongly influenced by glaciation and high rates of sediment deposition. The Gulf of Alaska also contains approximately 24 major seamounts (Stone and Shotwell 2007).

The Eastern Bering Sea LME is characterized as a shallow sea with one of the largest continental shelves in the world (Sherman and Hempel 2009). The continental shelf breaks at approximately 170 m depth and seven major canyons, including two of the largest submarine canyons in the world, indent the continental slope. The continental shelf is covered with sediment deposited by the region's major rivers (Johnson 2003) and therefore has limited hard substrate.

The physical oceanography of the region is characterized by waters down to 200 meters that flow easterly across the Pacific Ocean into the southern Gulf of Alaska and then swing counter clockwise through the Central Gulf of Alaska and westerly along the Aleutian Islands. The wind driven surface currents may break through the Aleutians and move northward through the Bering Sea. Deeper water flows on to the west entering the Bering Sea at the western extremities of the Aleutian Island chain. The biological productivity of the region is influenced by the annual variation in these current patterns (Dodimead *et al.* 1963).

Important biogenic habitat in the region is associated with deep sea corals and sponges (Stone and Shotwell 2007). Deep corals are widespread throughout Alaska, including the continental shelf and upper slope of the Gulf of Alaska, the Aleutian Islands, the eastern Bering Sea, and extending as far north as the Beaufort Sea. Coral distribution, abundance and species assemblages differ among geographic regions. Gorgonians and black corals are most common in the Gulf of Alaska while gorgonians and stylasterids are the most common corals in the Aleutian Islands. True soft corals are common on Bering Sea shelf habitats (Stone and Shotwell 2007). Overall, the Aleutian Islands have the highest diversity of deep corals in Alaska, including representatives of six major taxonomic groups and at least 50 species or subspecies of deep corals that may be endemic to that region. In the Aleutian Islands, corals form high density "coral gardens" that are similar in structural complexity

to shallow tropical reefs and are characterized by a rigid framework, high topographic relief and high taxonomic diversity (Stone 2006).

Sablefish are part of a complex of predatory groundfish that inhabit soft sediments at considerable depth. Adult sablefish occur along the continental slope, shelf gullies, and in deep fjords, generally at depths greater than 200 m (Figure 4).

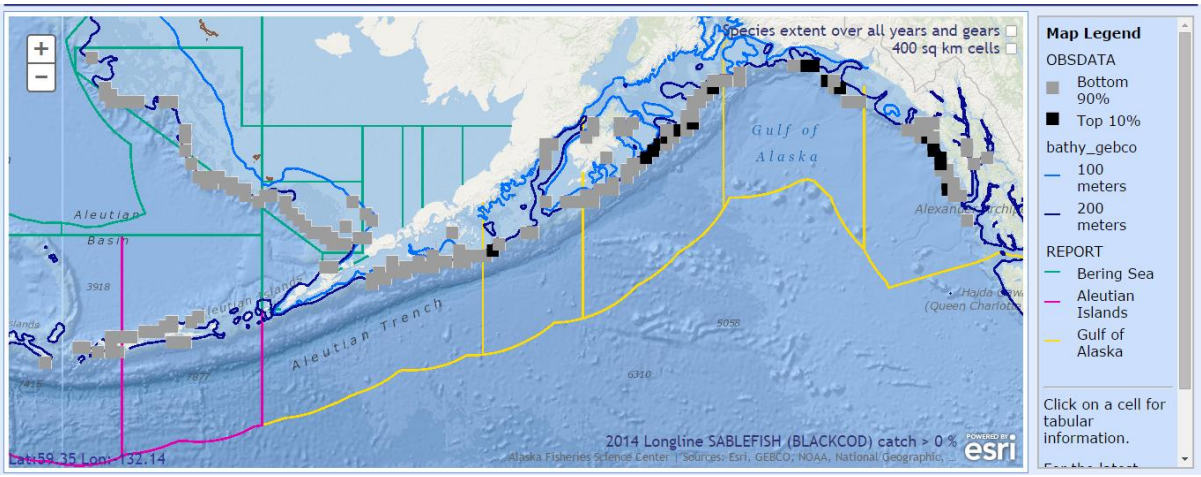

Figure 4. Map showing observed sablefish hook and line fishing effort (2013, aggregated to 400 km squares) and bathymetric contours of Bering Sea-Aleutian Islands and Gulf of Alaska. Source: Alaska Fisheries Science Center 2016. Black areas give the top 10% of fishing effort while the gray areas give the bottom 90% of effort.

Several tagging studies have shown sablefish to be highly migratory for at least part of their life cycle, with the pattern of movement related to fish size. Young sablefish routinely undertake migrations of a thousand miles or more, and older fish commonly travel the same distance on a return journey. In general, these studies show that small fish in the eastern areas of the GOA travel north and westward from their release sites and large fish tagged in the western areas of the GOA move eastward. During the migration, younger fish, which have come from shallow inshore waters, move further out on the continental shelf and eventually end up as adults in the deeper waters of the continental slope where spawning takes place (Hanselman *et al.* 2014). Sablefish prey on smaller fishes and invertebrates and may be preyed upon by sharks and whales. Essential Fish Habitat (EFH) for adult sablefish has been described as being located in the lower portion of the water column, over varied habitats, generally softer substrates, and deep shelf gulleys along the slope (200 to 1,000 m) throughout the BSAI and GOA (5, NPFMC 2015)

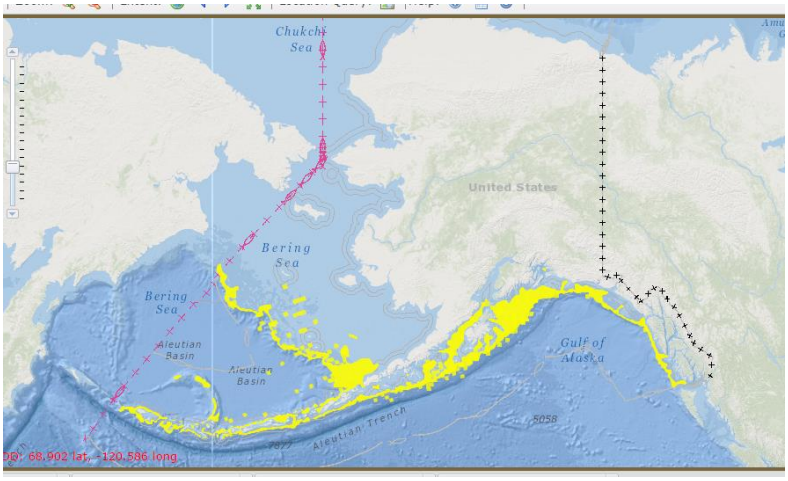

Figure 5. Sablefish Essential Fish habitat. Areas denoted in yellow represent essential fish habitat for sablefish in all life history stages. Source: NOAA EFH mapper, 2015. Available at http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

Overview of Non-target Catch

There is a strategy in place to manage the non-target species which consists of (1) a 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 and clear procedures exist for restricting catch limits if stock rebuilding is necessary, (6) mandatory use of seabird avoidance devices on all vessels larger than 55' (hook and line only), and (7) a spatial management strategy that prohibits or restricts vessels from fishing in sensitive habits (i.e. EFH Habitat Areas of Particular Concern). This strategy is expected to keep bycatch species at levels that are highly likely to be within biological limits and minimize impacts to habitat. The evidence for successful implementation of this management strategy is manifest by regular (often annual or bi-annual) stock assessment, in season catch accounting, and the healthy stock status for most non-target species relative to reference points.

The information used to project the main bycatch species of the sablefish pot fishery in the GOA, is from the existing sablefish pot fishery in the BSAI (Table 4). This is being used as a proxy of likely bycatch species, with a full understanding that the species composition will likely be different in the GOA. Once sablefish pot fishing operations commence in the GOA, we will be able to assess effects on those fish, bird, marine mammals, and invertebrate assemblages. This is expected to occur in the year three annual surveillance audit of the fishery.

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.

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

b. Catch accounting system: The system uses information from multiple sources to provide an estimate of total groundfish catch, including at-sea discards, as well and estimates of prohibited species catch and other non-groundfish bycatch. Observer data, shoreside landing reports ("fish tickets"), vessel and shoreside production reports, and the enforcement database are combined to provide an integrated source for fisheries monitoring and in-season decision making (Figure 6). Participants in the North Pacific groundfish fisheries, including IFQ sablefish, are required to use an electronic reporting system. E-Landings is a comprehensive system that inputs all catches, including self-reported discards and landed species. Catches can be submitted on-board the fishing vessel daily, so that the e-Landings system thereby 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. Thus, together the fish ticket and e-Landings system provide precise quantitative information on the amount of fish landed.

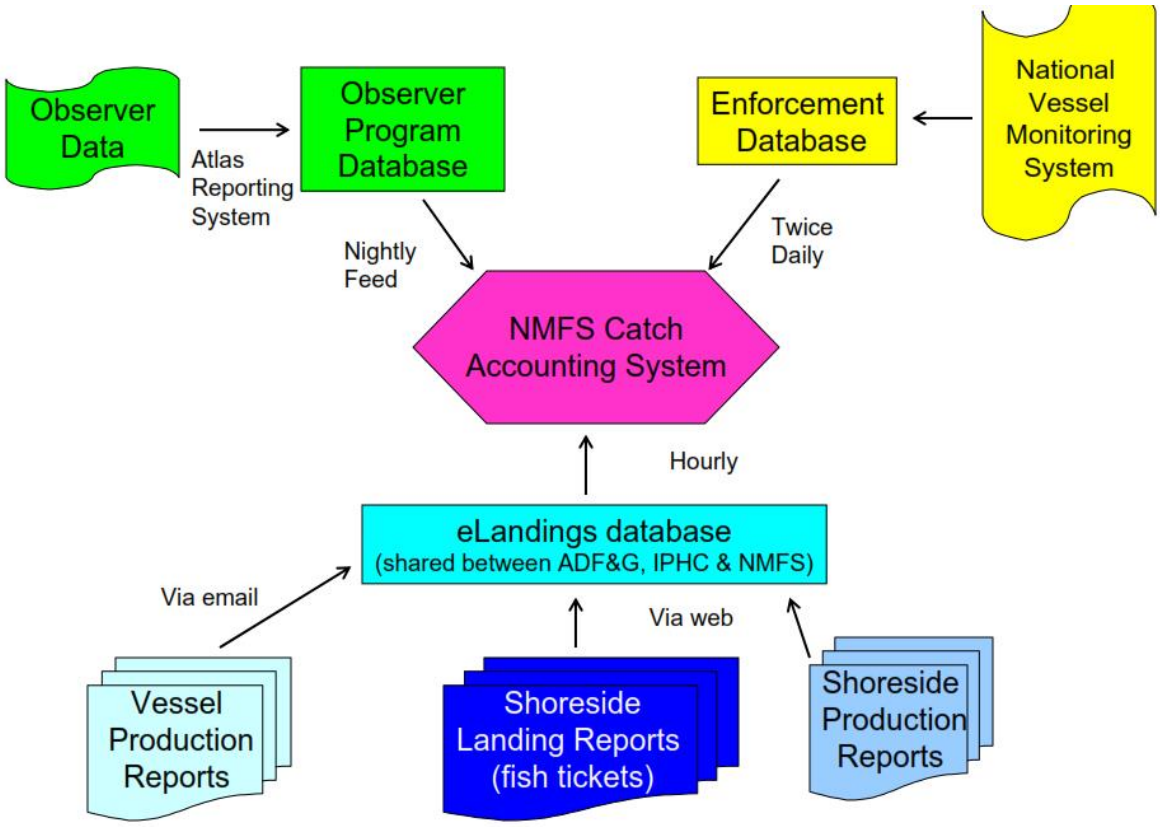

Figure 6. Diagram showing sources of data entering the Catch Accounting System. Source: Alaska Fisheries Science Center.

c. Observers: 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). 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 restructure and EM testing, increases the amount and reliability of data available

to determine fishery impacts on non-target species, though data are still sparse for vessels < 40 feet. 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 the level of mortalities.

Table 4. Summary of Main Non-target Species Categorized as Retained or Bycatch (returned to the water) for Evaluation. A summary of the rationale for categorization as main, is given in the column entitled Rationale.

Longline (hook and line) gear		
Performance indicator	**Species**	**Rationale**
2.1 Retained	Pacific halibut	Main retained: Greater than 5% of catch
2.1 Retained	Thornyheads	Main retained. Less than 5% of catch, but vulnerable
2.1 Retained non-target	Bait	Main retained: Unknown volume, designated "main" to obtain information.
2.2 Bycatch	Grenadiers	Main bycatch. Greater than 5% of catch
2.2 Bycatch	Sharks, Laysan Albatross, Black-Footed Albatross	Main bycatch. Less than 5% of catch, but vulnerable
2.3 ETP species	Short-tailed Albatross	ESA Listed "Endangered"
Longline (Pot) gear		
Performance indicator	**Species**	**Rationale**
2.1 Retained	NA	NA
2.1 Retained non-target	Bait	Main retained: Unknown volume, designated "main" to obtain information.
2.2 Bycatch	Arrowtooth Flounder	Main bycatch. Greater than 5% of catch
2.3 ETP species	NA	NA

Table 5. Catch Summary for Longline Gear. Average species or species group catch, including retained, and bycatch landings, for BSAI and GOA IFQ sablefish Longline fishery 2013-1014. Weights are in metric tons and birds are counts. Species included as 'main' for scoring in bold. Source: NOAA Catch Accounting System, 2015.

Longline (hook and line) gear						
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
Greenland Turbot	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

Table 6. Catch Summary for Pot Gear. Average species or species group catch, including retained, and bycatch landings, for BSAI IFQ Sablefish Pot fishery. Groundfish species are averages from years 2005-2014, non-groundfish species are averaged from 2013-2014. Weights are in metric tons, and the only species categorized as 'main' for evaluation is bolded. Source: NOAA Catch Accounting System, 2015.

Longline (pot) gear						
Species	**% of Sablefish Fishery**	**% Retained**	**% Discarded**	**Average Catch (mt/year)**	**Average Retained (mt/year)**	**Average Discarded (mt/year)**
Sablefish	90.24%	98.48%	1.52%	996.48	981.32	15.16
Arrowtooth Flounder	**6.06%**	**6.52%**	**93.48%**	**66.97**	**4.36**	**62.94**
Greenland Turbot	1.81%	7.66%	92.34%	19.95	1.53	18.42
Snails	0.55%	0.00%	100.00%	6.09	0	6.09
Other Rockfish	0.19%	15.83%	84.17%	2.09	0.33	1.76
Giant Grenadier	0.16%	0.00%	100.00%	1.75	0	1.75
Other Species	0.15%	0.00%	100.00%	1.71	0	1.71
Kamchatka Flounder BSAI	0.13%	0.00%	100.00%	1.41	0	1.69
Grenadier - Ratail Grenadier Unidentified	0.13%	0.00%	100.00%	1.39	0	1.39
Pacific Cod	0.12%	0.00%	100.00%	1.31	0	1.31
Shortraker Rockfish	0.09%	0.00%	100.00%	0.95	0	0.95
Sea star	0.06%	0.00%	100.00%	0.66	0	0.66
Eelpouts	0.04%	0.00%	100.00%	0.47	0	0.47
Misc Fish	0.04%	0.00%	100.00%	0.4	0	0.4
Misc crabs	0.04%	0.00%	100.00%	0.48	0	0.48
Sponge unidentified	0.04%	0.00%	100.00%	0.47	0	0.47
Flatfish BSAI	0.03%	0.00%	100.00%	0.37	0	0.37
urchins dollars cucumbers	0.03%	0.00%	100.00%	0.36	0	0.36

Other Sculpins	0.03%	0.00%	100.00%	0.28	0	0.28
Rougheye Rockfish	0.02%	11.41%	88.59%	0.25	0.03	0.22
Sharks	0.01%	0.00%	100.00%	0.1	0	0.1
Pollock	0.01%	0.00%	100.00%	0.08	0	0.08
Hermit crab unidentified	0.01%	0.00%	100.00%	0.12	0	0.12
Atka Mackeral	0.00%	0.00%	100.00%	0.05	0	0.05
Octopus	0.00%	0.00%	100.00%	0.03	0	0.03
Sculpin	0.00%	0.00%	100.00%	0.03	0	0.03
Other Skates	0.00%	0.00%	100.00%	0.01	0	0.01
Brittle star unidentified	0.00%	0.00%	100.00%	0	0	0
Corals Bryozoans - Corals Bryozoans Unidentified	0.00%	0.00%	100.00%	0.02	0	0.02
Invertebrate unidentified	0.00%	0.00%	100.00%	0.01	0	0.01

Retained (Non-target) Catch

Hook and line gear

Species: Pacific halibut

Biology

Pacific halibut (*Hippoglosus 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 or approximately 90,000 mt (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, however high percentages of discards are also common largely due to minimum size regulations (32 in.) or trip limit overages for vessels targeting both sablefish and halibut (Gilroy and Stewart 2014). In the last fishing season, of the total coastwide commercial fishery 648 mt was allocated to "wastage" which is undersized halibut caught in the halibut fishery, while approximately 3,500 mt was taken as bycatch by non-halibut fisheries (IPHC 2013)

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 (B_0) 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 (available online at: https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/us-north-pacific-halibut/us-north-pacific-halibut-1)

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 the 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 (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 hook and line 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, and the catch accounting system. See ‘Sources of Information’ section (above) for more detail.

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 from the observed biomass estimate in 2013. The recommended overfishing limit 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 hook and line fishery in both GOA and BSAI combined for 2013-2014 was 757.9 mt. For the most recent year of data available (2015), the GOA ABC was 1,841 t (Shotwell *et al*. 2014) and the BSAI ABC was 1,050 t (Spies and Spencer 2015). Overfishing is not considered to be occurring in either area.

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 being subject to a directed fishery and they are still managed using a "bycatch only" 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 hook and line fishery (48%) followed by the rockfish trawl fishery (27%), and the flatfish longline hook and line 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 the 'Sources of Information' section (Above).

Pot gear

There are no main retained species in the sablefish pot fishery (See Table 4).

Bait considerations: hook and line & pot gear

According to CR V1.3 CB3.5.5: "The team shall consider species used as bait in a fishery, if they are caught by the fishery under assessment or elsewhere under the Retained Species component in P2." In the UoA, bait type and volume are not recorded or quantified in a systematic way. During on-site meetings the assessment team was able to ascertain typical bait species used in the fishery as well as a ball-park volume estimate from fishery managers and industry members. However, this information was anecdotal and qualitative in nature, not verifiable, and not sufficient to determine whether bait in aggregate or on a species-specific level qualifies as 'main.' The assessment team has determined that the species will be classified as 'main' as a precautionary measure and to ensure that scoring on the "information PI 2.1.3" could reflect the deficiency in information on bait

However, given the uncertainty surrounding bait type and volume, the team considers that there is not sufficient information to accurately score bait traditionally as a 'main' element under PI 2.1.1 pertaining to outcome status and 2.1.2 pertaining to management considerations. The team has therefore, where relevant, considered the bait element as 'NA' under PIs 2.1.1 and 2.1.2. In order to sum scoring elements and provide an overall PI score in accordance with CRV1.3 Scoring Requirements (27.10.7), the assessment team has considered NA equivalent to Y up to the SG80 level, similar to how 'minor' species are treated in under PIs 2.1.X and 2.2.X.

Bait is scored traditionally as a 'main' species then under 2.1.3, where the baseline information deficiency is most appropriately assessed. This approach permits the assessment team to address the information deficiency regarding bait without nonsensically scoring bait for outcome and management considerations without appropriate information.

Market or Argentinian squid and Pacific herring are primarily used as bait, with reports that chum salmon is used to a lesser extent. The emergence of autobaiters on long line vessels has pushed the fishery to use uniformly shaped bait and may shift use to squid and chum salmon. The sablefish pot fishery commonly uses Pacific whiting (or Pacific hake), Argentinian short-fin, and Market squid as bait.

Currently, there is no reliable tracking of the volume or source of bait used in the hook and line and pot fisheries. It is possible to estimate ratios of bait used per fish caught to determine relative volumes in the longline hook and line fishery. For example, in typical hook and line operations, a single herring will bait two hooks and a single squid will bait three hooks. Average catch per hook (1995 – 1998) is 0.39 kg (Sigler and Lunsford 2001). For comparison, an age-4 herring weighs roughly 0.1 kg, or 0.05 kg / hook yielding a nearly 8-fold difference between bait and catch mass. Similarly, average squid bait weights are .15kg, or .05kg / hook yielding a similar 8-fold difference between bait and catch mass. However, the lack of reliable information on the type of bait used and the ratio of bait to fish caught, prevents us from reliably estimating the source or volume of bait used via this approach.

Argentine shortfin squid (*Illex argentines*) have a very fast life cycle and only live for about one year. During that time, they grow from tiny (one millimeter) juveniles to their maximum size, reproduce once, and die. This species actively feeds on pelagic crustaceans, other squids, and small bony fishes. Throughout their short lifetime, individuals eat a variety of prey of different sizes. The Argentine squid is the target of an extremely large fishery throughout its range. The management framework includes a set of policies and measures designed to promote the sustainability of fishery

resources including: (i) establishment and subsequent expansion of the restricted area for protecting juvenile common hake and other species—an area currently comprising nearly 400,000 km^2; (ii) establishment of a satellite-based Vessel Monitoring System (VMS) for the fishing fleet, designed to oversee compliance at sea with the prohibitions on fishing in the restricted areas; (iii) a requirement to place inspectors and observers aboard the commercial fleet to monitor catches and compliance with fishing regulations; and (iv) instituting Individual and Transferable Catch Quotas (IADB 2013). In some recent years, as many as one million metric tons (2.2 billion pounds) of this species have been captured in a single fishing season. It is the second largest (by weight) squid fishery in the world. Catch levels have varied significantly in recent years, with some years being much lower than the million ton maximums, but populations seem to consistently bounce back (likely a result of the very fast life cycle and high number of eggs produced by each female). In a recent analysis of this species, scientists determined it to be of least concern (Clyde *et al.* 1984). There is a formal stock assessment process for this species carried out by the Falkland Islands Fisheries Department.

Market squid (*Doryteuthis opalescens*), range from southeastern Alaska to Baja California, Mexico. The commercial fishery for this squid is consistently one of California's largest commercial fisheries in both volume and revenue. Market squid are harvested for human consumption and as bait in recreational fisheries. The fishery is managed by the state as directed by the Market Squid Fishery Management Plan, which has been in effect since 2005. The fishery uses either seine or brail gear that is usually combined with attracting lights to capture aggregations of adult squid spawning in shallow water, in areas over sandy substrate. Market squid have short life spans (they have been aged to 10 months), and are extremely sensitive to variable ocean conditions. They play an important role in the food chain as a key forage species for many predatory fish, mammals, and seabirds (CDFW 2005). CDFW manages the fishery by: (1) setting a seasonal catch limit of 107,048 mt (118,000 short tons) to prevent the fishery from over-expanding; (2) maintaining monitoring programs designed to evaluate the impact of the fishery on the resource; (3) continuing weekend closures that provide for periods of uninterrupted spawning; (4) continuing gear regulations regarding light shields and wattage used to attract squid; (5) establishing a restricted access program that includes provisions for initial entry into the fleet, permit types, permit fees, and permit transferability that produces a moderately productive and specialized fleet; and (6) creating a seabird closure restricting the use of attracting lights for commercial purposes in any waters of the Gulf of the Farallones National Marine Sanctuary. The MSY control rule for market squid is founded generally on conventional spawning biomass “per recruit” model theory. Specifically, the MSY control rule for market squid is based on evaluating (throughout a fishing season) levels of egg escapement associated with the exploited population. In November 2010, the Council adopted an ABC proxy of Fmsy resulting in egg escapement ≥ 30%. Assessments for market squid are not available, but consideration of the fishery and life histories suggest that current fishing levels are sustainable and not having severe adverse impacts on the population (PFMC 2001). Current studies include developing an aging program, sampling reproductive status of squid landed in the fishery, and a collaboration with industry to develop a long-term index of paralarval abundance (PFMC 2014).

Chum salmon (*Oncorhynchus keta*) have wide distribution in the Pacific, and historically have been the most abundant of the salmon along the coast. Chum salmon experience a rapid growth rate during their first few months at sea and reach maturity at around four years old. Although chum salmon has low fecundity and its spawning behaviour makes it vulnerable to net fishing pressure, this is partially offset by the production of large eggs that the fish buries. That strategy, in addition to substantial hatchery production, make it resilient to fishing pressure. The Alaskan chum salmon fishery has extensive management measures in place that include scientific monitoring, gear

restrictions, bycatch reduction measures, and a limited entry program to control capacity. The 2014 chum salmon harvest of 6.7 million fish ranks 21st since statehood and was below the recent 10-year average of 10.5 million. Most chum salmon production in the region is attributable to hatchery production. Before hatchery chum salmon production became significant in 1984, the 1962–1983 regional average chum salmon harvest was 1.6 million (Munro 2015). While some chum salmon populations were once overfished, most stocks are currently considered healthy. It is assumed that Alaskan chum is used for bait, versus chum from Canada or elsewhere: no information on provenance was available to the team.

Pacific herring (*Clupea pallasii*) is a coastal schooling species. They are found in large schools in depths from the surface to 1,300 feet (400 m). Herring can live up to 19 years. Adult Pacific herring migrate inshore, entering estuaries to breed once per year, with timing varying by latitude. Herring feed on phytoplankton and zooplankton in nutrient-rich waters associated with oceanic upwelling. Young feed mainly on crustaceans, but also eat decapod and mollusk larvae, whereas adults prey mainly on large crustaceans and small fishes. Herring population abundance trends are very dynamic and are subject to fairly substantial changes on both large and small geographic scales. The primary cause for such fluctuations in abundance is environmental change that affects herring growth and recruitment. In Southeast Alaska, the Alaska Department of Fish and Game (ADF&G) manages the herring fishery on a long-term, sustained yield basis. The ADF&G Herring Management Plan for the eight other spawning aggregates that comprise the Southeast Alaska DPS, requires that biomass estimates meet a designated minimum threshold, preset for each of the stocks, before commercial fishing is allowed to begin. Harvest policies are then guided by a maximum exploitation rate of 20% of the mature biomass, which is consistent with other herring fisheries on the west coast of North America. Furthermore, the petition to list the Lynn Canal herring population as endangered under the ESA was denied in 2014. However, in recognition of its conservation status the herring fishery in Lynn Canal and the Juneau area has been closed since 1982 (NMFS 2014). It is assumed that Pacific herring fished in AK is used for bait in the sablefish fishery, versus Pacific herring from Canada or elsewhere: no information on provenance was available to the team.

Pacific whiting (*Merluccius productus*) ranges from the Gulf of Alaska to the Gulf of California (Hart 1973); however, it is most abundant within the region of the California Current system. Pacific whiting females mature and spawn at 3 to 4 years of age and at lengths of 34-40 cm. As a large predator, whiting interacts with other fish and shellfish populations, notably the commercially important stocks of Pacific herring, *Clupea harengus pallasi*; northern anchovy, *Engraulis mordux*; and shrimp. Whiting is also important as prey in the diets of marine mammals and large fishes. The Pacific hake fishery managed under the Joint US-Canada Agreement for Pacific hake which went into effect in 2010. Coastwide catch in 2014 was 301,573 t, out of a TAC (adjusted for carryovers) of 428,000 t. The stock is estimated to be near its highest biomass level since the early 1990s as a result of an above average 2008 cohort and a very large 2010 cohort (Taylor *et al*. 2015). It is assumed that Pacific herring fished in AK is used for bait in the sablefish fishery, versus Pacific herring from Canada or elsewhere: no information on provenance was available to the team.

Bycatch (Discarded Catch)

Hook and line gear

Species group 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).

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 depradating on 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. Further, habitat and ecological relationships of giant grenadier are still 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 (Table 7). 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 artifact that the Catch Accounting System (CAS) 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 7. 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. A non-targeted species or species group;
b. Not subject to overfishing, overfished, or approaching an overfished condition;
c. Not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and
d. 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 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.”

While little is presently known about the interactions of grenadiers with other groundfish species, the PPA may improve the level of scientific knowledge through, at a minimum, recording of their harvest and/or placing limits on their harvests. Thus, the 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. Studies are 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 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 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.

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 the 'Sources of Information' section (Above).

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 feed 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 have 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 5,562 t and OFL of 7,416 t (Spiny Dogfish, GOA), ABC of 427 t and ABC of 571 t (Shark Complex, GOA), and an ABC of 1,022 t and an OFL of 1,363 t (Shark Complex, BSAI). 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 unreliable survey biomass estimates.

Management

Sharks are currently managed under the “other species” complex (Pacific sleeper, salmon, spiny dogfish and other unidentified sharks) in the BSAI FMP on a biennial basis. In the GOA, Spiny Dogfish are managed separately as a modified Tier 6 species (random effects model) biomass estimate while the “other species” complex (Pacific sleeper, salmon, and other unidentified sharks) is managed with a traditional Tier 6 (status quo 3-survey average) biomass estimate (Tribuzio *et al.* 2015).

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 the ‘Sources of Information’ section (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 fish) and harvest (fish kept) of all shark species combined, in numbers of individuals, (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 group Birds (Black-footed albatross 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 (Pittman *et al.* 2004)

Status

For both species, the current 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. 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 modelling 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 and an estimated average of 210.3 birds for the years 2010-2015 (Table 8) 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 early1920'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. 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 and an estimated average of 141.8 birds for the years 2010-2015 (Table 8) representing a small portion of the overall take.

Management

All longline vessels >55'are required to use seabird avoidance devices 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.

Table 8. 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 from Shannon Fitzgerald at NMFS-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		

Information

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. Additionally, information on the catch of seabirds is collected through two fishery dependent mechanisms, including the catch accounting system and observer program. More detail is provided in the 'Sources of Information' section (Above).

Pot gear

The information used to determine main bycatch species of the sablefish pot fishery in the GOA, is from the existing sablefish pot fishery in the BSAI. This is being used as a proxy of likely bycatch species, on the understanding that the species composition will likely be different in the GOA. Once sablefish pot fishing operations commence in the GOA, we will be able to assess effects on those fish, bird, marine mammals, and invertebrate assemblages. These data are expected in the Year Three annual surveillance audit. Furthermore, due to confidentiality issues, data used here were aggregated from different years to get an average catch composition for groundfish and non-groundfish species.

Species Arrowtooth Flounder

Biology

Arrowtooth flounder range from central California to the eastern Bering Sea. They're most commonly found on sand or sandy gravel habitat and occasionally over low-relief rock-sponge bottoms. During the summer, arrowtooth flounder feed in shallow water on the continental shelf. They migrate to deep water over the continental slope to spawn in the winter. They are currently the most abundant fish in the Gulf of Alaska (Spies and Turnock 2014). Because of their abundance, arrowtooth flounder are of substantial ecological importance at higher trophic levels in the Gulf of Alaska food web and have been identified as a significant food source for Steller sea lions, occurring in their diet 21%-35% of the time in the area around Kodiak Island. Juveniles and adults feed on crustaceans (mainly pink shrimp and krill) and fish (mainly cod, herring, and pollock). A variety of fish and marine mammals prey on arrowtooth flounder, including skates, sharks, shortspine thornyhead, halibut, orcas, other toothed whales, and harbor seals. At present, data on many basic aspects of arrowtooth flounder life history such as size and age of sexual maturity are lacking (Speies and Turnock 2014).

Status

Pot sablefish in BSAI operations catch notable levels of arrowtooth flounder which is represents about 6% of the fishery and is mainly discarded. Arrowtooth flounder catch in 2014 is the highest on record. This is partially due to recent changes to regulations of the halibut trawl prohibited species catch (PSC) limits. In the GOA, unused halibut PSC limits are now allowed to be rolled from one season to the next, which allows catcher processors to spend more time targeting arrowtooth flounder without constraints due to halibut PSC, that would otherwise threaten to close the fishery. In addition, new regulations have moved the deep-water flatfish fishery closure date later in the year for all trawl vessels. These changes will likely result in continued higher arrowtooth flounder catches than previous years, similar to the current year. The estimate of projected 2015 total arrowtooth flounder biomass is 908,379 t (ABC at 80,547 t and the OFL is 93,856 t) and the population is not considered overfished (Spies et al. 2014). In the GOA, the estimated 2015 total biomass is 1,949,990 t (ABC at 189,556 t, OFL 226,160 t). The stock is not overfished, and is not approaching a condition of being overfished. For both areas total catch has been well below allowable biological catch (Spies and Turnock 2014). Catches averaged 66.97 mt / yr between 2003-2015 in sablefish-directed pot sets, which comprise a very small portion of the overall catch.

Management

Arrowtooth flounder is managed as a Tier 3a target species, meaning they are commercially important, and there is sufficient data to allow each to be managed on its own biological merits. Accordingly, a specific TAC is established annually, as well as an OFL and ABC (NPFMC 2012). Catch of each species must be recorded and reported. Arrowtooth flounder are managed as two separate management units in the BSAI and GOA. EFH for late juvenile and adult arrowtooth flounder is located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf and upper slope (200 to 500 m) throughout the BSAI wherever there are softer substrates consisting of gravel, sand, and mud (NPFMC 2012).

Information

Information on the stock status of arrowtooth flounder 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 the 'Sources of Information' section (Above).

Endangered, Threatened and Protected (ETP) Species

Hook and line gear

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 7), possibly due to the presence of squid, which are an important prey species (Figure (Suryan *et al.* 2006, Walker *et al.* 2015, *in press*). The predominant 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).

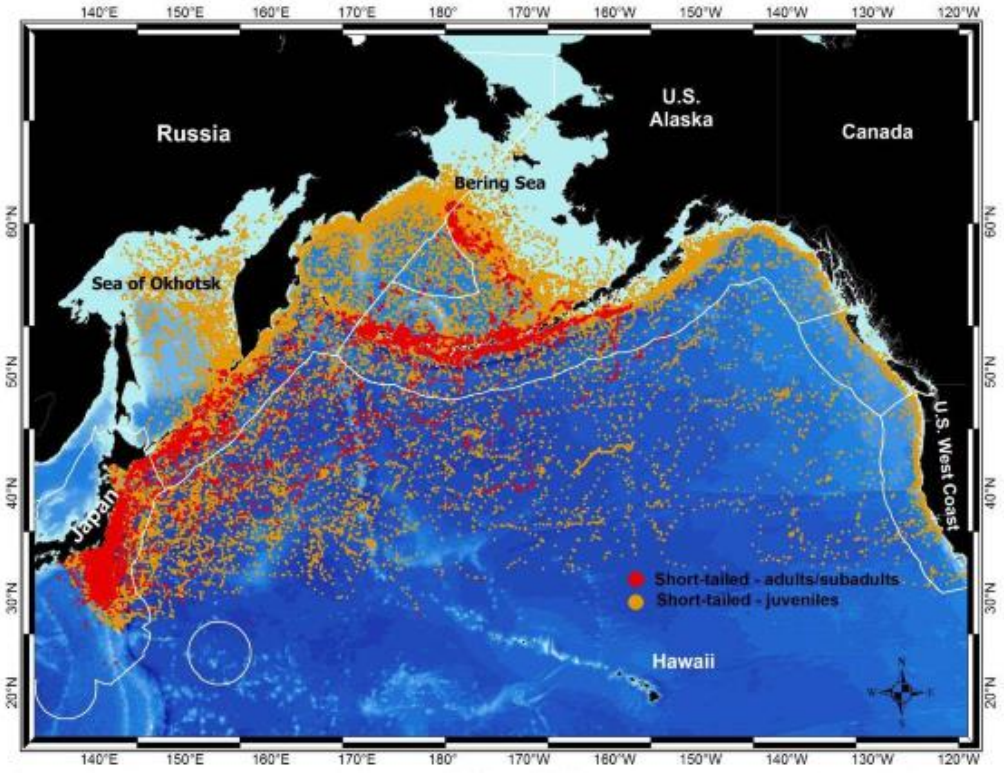

Figure 7. Short-tailed albatross locations tracked between 2002 and 2012, showing adult (red) and juvenile (orange) distributions in the North Pacific. Where shown, white lines represent the exclusive economic zones of countries within the range of the short-tailed albatross (USFWS 2014).

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 re-initialization 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:

a. 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.
b. 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.
c. 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.

d. 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 8) 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*).

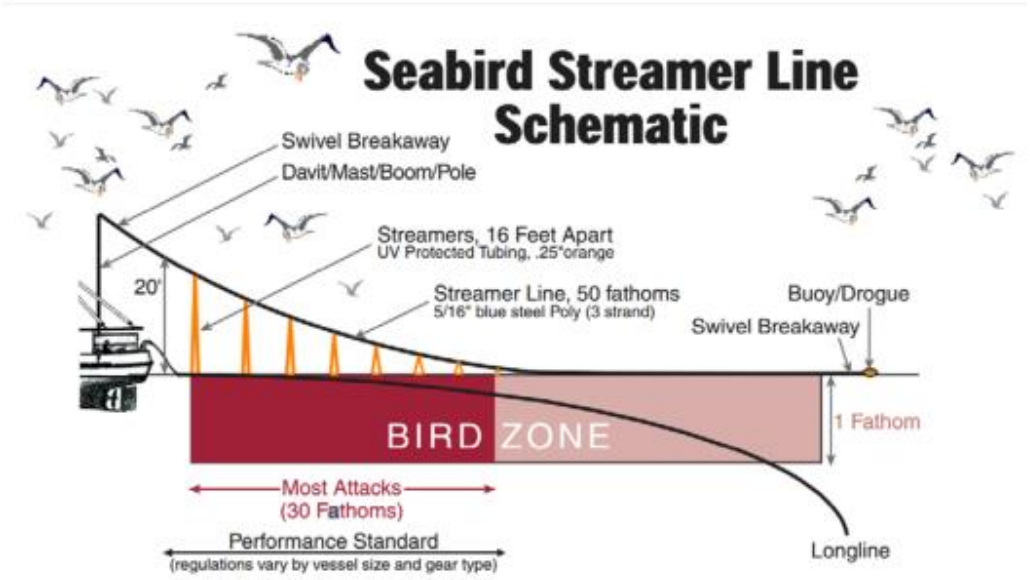

Figure 8. Streamer lines used to reduce seabird bycatch in hook-and-line fisheries (Melvin 2000).

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. In reality, consultation can be reinitiated quite quickly.

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 Catch Accounting System 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).

Sperm whale and Orca Depredation

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. 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.

We discuss this recent trend in depredation in our scoring for ETP species. 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, indirect impacts on ETP species trophic dynamics, and changes in fishing behavior.

Pot gear

There are no significant ETP interactions in the sablefish pots fishery (see Overview of Non-target Catch.)

Habitat Impacts:

Longline hook and line and pot gear

Sablefish longline hook and line gear is generally thought to have minimal impacts on the seafloor relative to other gear types, but can impact corals by entangling and dislodging them (as evidenced by coral bycatch, Livingston 2003). Similarly, pot fishing is considered to have a minimal impact upon the environment apart from the potential for ghost fishing, although this can be mitigated by inbuilt biodegradability of pots and gear recovery schemes (Grieve *et al*. 2014). However, longline and pot gears can have an impact on certain sensitive habitat as evidenced by limited underwater observations. The actual capture of gorgonian and stony corals, as examples, has been verified by commercial fisheries observers and NMFS surveys. 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 (Grieve *et al*. 2014). The sablefish hook and line fishery encountered an average of 10.02 mt of benthic structure forming organisms in 2013 and 2014 (sponges, corals, gorgonians and sea pens combined). The BSAI sablefish pot fishery only encountered an average of .02 mt of benthic structure forming organisms (sponges, corals, gorgonians and sea pens combined) in 2013 and 2014 (NOAA CAS 2015). However, a large proportion of this gear is set on soft substrate where effects are considered negligible.

As sablefish directed pot fishing begins in the GOA, information will need to be provided to determine if the distribution of effort is having a significant amount of impact on sensitive coral habitats. 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 (Heifetz *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) 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 longline hook and line and pot depth distributions.

The Essential Fish Habitat Environmental Impact Statement (NMFS 2005) concluded that the effects of commercial fishing on the habitat of sablefish is minimal or temporary in the current fishery management regime primarily based on the criterion that sablefish are currently above minimum stock size threshold.

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” (HAPC) 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 (Figure 9). 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, totaling 13.5 nm^2. All bottom-contact gear (longlines, trawls, pots, dinglebar gear, etc.) is prohibited in this area (Table 9).

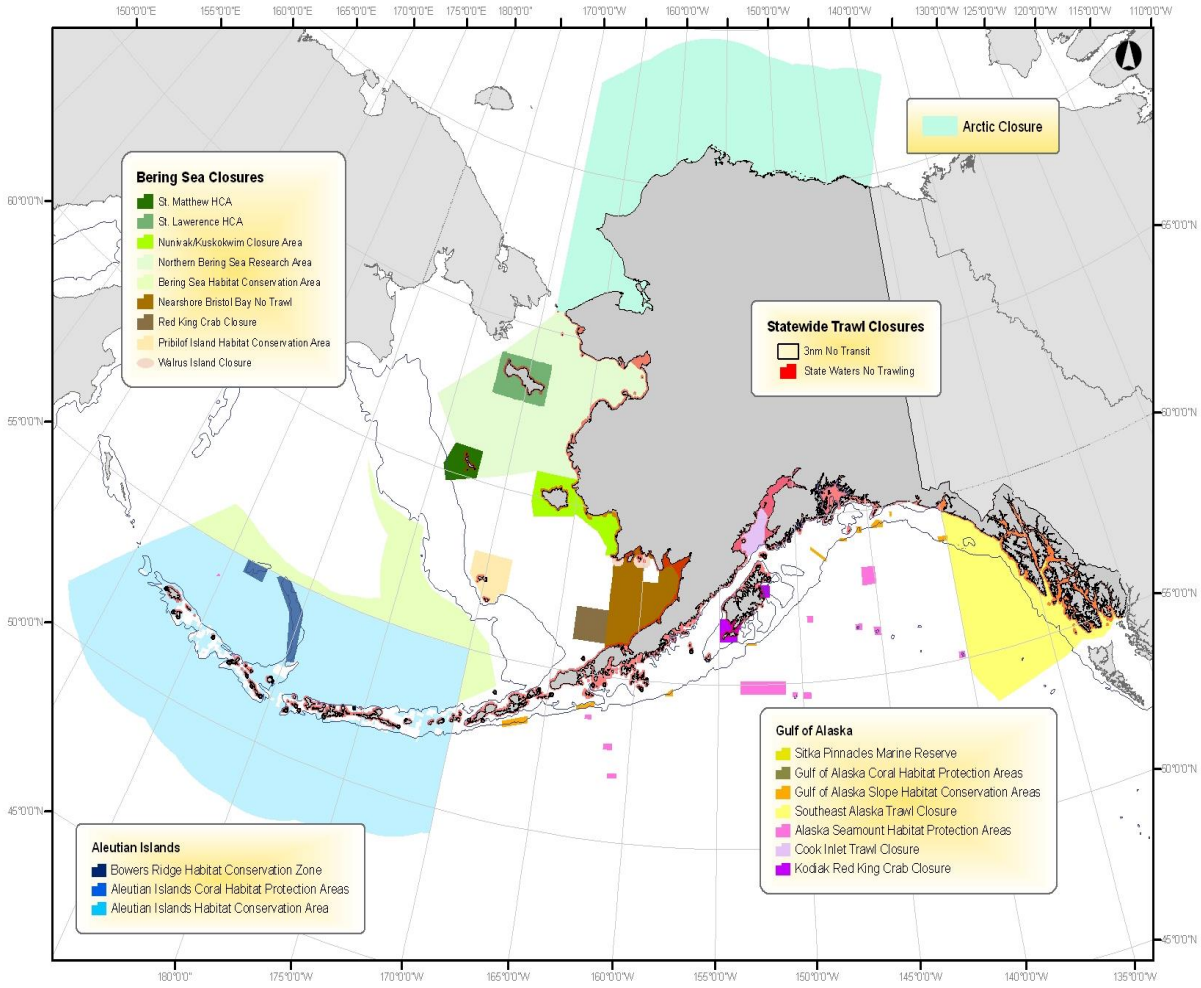

Figure 9. Map of existing habitat, species, and gear closures in Alaskan Waters. Source: NPFMC 2015. Available at: http://www.npfmc.org/habitat-protections/

Table 9. Habitat areas of particular concern (HAPC) descriptions and regulations Source: NMFS 2015. Available at: https://alaskafisheries.noaa.gov/sites/default/files/hapc_ak.pdf

HAPC	Individual HAPC's	Total Area Size	Fishery Management Application	Specific Regulation
Alaska Seamount Habitat Protection Areas	Dickens Seamount Denson Seamount Brown Seamount Welker Seamount Dall Seamount Quinn Seamount Giacomini Seamount Kodiak Seamount Odessey Seamount Patton Seamount Chirikof & Marchand Seamounts Sirius Seamount Derickson Seamount Unimak Seamount Bowers Seamount	5,300 nm^2	No federally permitted vessel may fish with bottom contact gear[i]. 50 CFR 679.22(a)(12)	Federal Register 50 CFR Part 679 Volume 71, No.124 Wednesday, June 28,2006 http://www.fakr.noaa.gov/frules/71fr36694.pdf
Bowers Ridge Habitat Conservation Zone	Bowers Ridge Ulm Plateau	5,330 nm^2	No federally permitted vessel may fish with mobile bottom contact gear [ii]. 50 CFR 679.22(a)(15)	Same as above
Gulf of Alaska Coral Habitat Protection Areas	Cape Ommaney 1 Fairweather FS1 Fairweather FS2 Fairweather FN1 Fairweather FN2	14 nm^2	No federally permitted vessel may fish with bottom contact gear [iii]. 50 CFR 679.22(b)(9)	Same as above
Gulf of Alaska Slope Habitat Conservation Areas	Yakutat Cape Suckling Kayak Island Middleton Island east Middleton Island west Cable Albatross Bank Shumagin Island Sanak Island Unalaska Island	1,892 nm^2	No federally permitted vessel may fish with nonpelagic trawl gear [iv]. 50 CFR 679.22(b)(10)	Same as above
Skate Nursery Areas	Bering 1 Bering 2 Bristol Pribilof Zhemchug Pervenets	81.7 nm^2	Monitoring Priority	Federal Register Vol. 80, No.6 Friday, January 09, 2015 http://alaskafisheries.noaa.gov/frules/80fr1378.pdf

[i] Bottom contact gear means nonpelagic trawl, dredge, dinglebar, pot, or hook-and-line gear http://alaskafisheries.noaa.gov/regs/679a2.pdf.
[ii] Mobile contact gear means nonpelagic trawl, dredge, or dinglebar gear http://alaskafisheries.noaa.gov/regs/679a2.pdf.
[iii] See footnote i.
[iv] Nonpelagic trawl means a trawl other than a pelagic trawl. http://alaskafisheries.noaa.gov/regs/679a2.pdf

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 cameras; 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 5-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 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 (i.e. bottom up effects).

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 were: 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 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 57 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.

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 factor 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 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 trade-offs 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 modelling (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

3.5 Principle Three: Management System Background

Area of Operation and Relevant Jurisdictions

In Alaska, 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. The area of operation of the fishery in the UoA is in the federally managed waters off the coast of the State of Alaska, within United States EEZ, which extends from 3 to 200 miles from shore. (Fig. 1). Sablefish in Alaskan coastal waters from the shore to 3 miles offshore are jointly managed by Federal and State authorities; however, that zone is not part of the UoA for this MSC assessment.

The fishery management system evaluated in this report is the framework of the North Pacific Fishery Management Council (one of eight US Regional Fishery Management Councils; discussed below). Consultations with indigenous peoples are conducted through the NPFMC; there are not separate indigenous management jurisdictions.

As noted in the Principle 1 section of this report, Sablefish are assessed as a single population in the Federal waters off Alaska. They are managed by discrete regions that distribute exploitation throughout their wide geographical range. There are four management areas in the Gulf of Alaska: Western, Central, West Yakutat, and East Yakutat/Southeast Outside (SEO) and two management areas in the Bering Sea/Aleutian Islands (BSAI): the eastern Bering Sea (EBS) and the Aleutian Islands region (Figure 1).

Historical Governance

The principle legislative instrument for fisheries management in the US is the Magnuson-Stevens Fishery Conservation and Management Act (MSA), originally passed by the US Congress as the Fishery Conservation and Management Act (FCMA) in 1976. The National Marine Fisheries Service (NMFS) implements the MSA, which contains ten National Standards (NS) to which Fishery

Management Plans (FMP) must adhere. The procedures on how NMFS meets the NS through implementing guidelines are published in the US Federal Register at 50 CFR Part 600 subpart D.

The MSA provided for the establishment of eight Regional Fisheries Management Councils, responsible for the development of Fishery Management Plans (discussed below). Implementation falls under federal law CFR › Title 50 › Chapter VI › Part 660 › Subpart D › Section 660.131. Under this jurisdiction, the North Pacific Fishery Management Council (discussed under "Management Bodies", below) recommends management and enforcement measures to NMFS, the agency charged with implementation. Regulations recommended by the Council must be approved by the Secretary of Commerce (Secretary) before being implemented through the NMFS. Although management is implemented through the Councils, the ultimate responsibility for adhering to regulations approved by the Secretary lies with NMFS.

The MSA was re-authorized in 1996, with added provisions to rebuild overfished fisheries, protect essential fish habitat, and reduce bycatch. The MSA was further strengthened with its re-authorization in 2007. The Act now requires fishery management plans to establish mechanisms for specifying annual catch limits at levels such that overfishing does not occur, calls for measures to ensure accountability within these limits, and requires that the limits do not exceed the scientific recommendations made by the Councils' Scientific and Statistical (SSC) committees. Additionally, the MSA re-authorization in 2007 promoted the use of limited access privilege programs, such as sablefish IFQ program (discussed under "Access", below) – an important feature of sablefish management in Alaska.

Management Bodies in the UoA

North Pacific Fishery Management Council (NPFMC) – (http://www.npfmc.org)

The NPFMC primarily manages groundfish in the Gulf of Alaska, Bering Sea, and Aleutian Islands, targeting cod, pollock, flatfish, mackerel, sablefish, and rockfish species harvested by trawl, longline, jig, and pot gear (NPFMC 2009).

The NPFMC has an open and participatory process, and conducts public meetings allowing all interested persons an opportunity to be consulted in the development of FMPs and amendments, and other Council decisions (NPFMC 2012). The NPFMC is made up of 11 voting members from the states of Alaska, Washington, and Oregon; and one from NMFS. It also has non-voting members from other agencies, and many advisory bodies. The Council reviews and revises, as appropriate, the assessments and specifications with respect to the optimum yield from each fishery (16 U.S.C. 1852(h)). The NPFMC has developed a management policy and objectives to guide its development of management recommendations to the Secretary of Commerce (NPFMC 2009, 2012)

Alaska fisheries for salmon, crab, and scallops are managed jointly with the State of Alaska through coordination with the Alaska Department of Fish and Game (ADFG) and the Alaska Board of Fisheries (BOF). Many fishery resources are harvested in waters under both state and federal jurisdiction. As such, the NPFMC and state work together to address habitat concerns, catch limits, allocation issues, and other management details through coordination meetings and delegation of management oversight to one agency or the other.

NPFMC access programs for sablefish including subsistence sablefish, and the IFQ and CDQ programs, is discussed under 'Access Rights', below.

Regional Management Council Dispute Resolution System

The NPFMC management system resolves most disputes within its highly participatory, open, and transparent structure and processes. Section 302 of the MSA, and the APA, mandate the Regional Fishery Management Councils follow specific procedures for discussing and resolving disputes on fisheries policy. Dissatisfied parties affected by Council and NMFS decisions can appeal the decision to the Appeals Office in the NMFS Alaska Regional Office, which adjudicates appeals of initial administrative determinations made under the authority of 50 C.F.R. Part 679 and Part 680. The jurisdiction of the Appeals Office's includes the Individual Fishing Quota Program for Pacific halibut and sablefish, the Western Alaska Community Development Program, and other management programs (NPFMC 2009, 2012)

These dispute resolution mechanisms have proven to be effective at dealing with most issues, avoiding legal disputes, and are appropriate for the context of the sablefish fishery. In cases where the Council processes have not resolved disputes, the parties involved can and do, by law, resolve the disputes in the federal court system. There is ample evidence (c.f. NAPA 2002) that the management system attempts to comply with binding judicial decisions.

Access Rights to Sablefish

Groups that are granted specific access rights to sablefish fishery include 1) IFQ, holders,2) CDQ holders, and 3) participants in the state-managed sablefish fishery (non-UoA).

IFQ Program

The NPFMC developed and approved an individual fishing quota (IFQ) program for the commercial sablefish fishery in Alaska in 1995 (Pautzke and Oliver 1997; http://www.npfmc.org/ifqpaper/). Initial quota shares were assigned to vessel owners or leaseholders who had at least one landing in the years 1988, 1989, or 1990, with the amount of quota share allocated based on the highest 5-year historical catch records between 1985-1990. The share percentage is multiplied by the annual quota assigned to the IFQ fishery to arrive at the permit-specific TAC on an annual basis. Quota shares are specific to vessel class (catcher boats versus freezer longliners) with catcher boats further divided into vessel length categories. Transfer and leases of quota share is governed under 50 CFR § 679.41: https://alaskafisheries.noaa.gov/sites/default/files/679d41.pdf. Further information regarding the ongoing operation of the IFQ program may be found on the NPFMC website at: https://alaskafisheries.noaa.gov/fisheries/ifq.

CDQ Program

The fishery management system explicitly recognizes and accounts for the rights of people dependent on marine fishing in the form of the CDQ Program in Western Alaska and a subsistence sablefish fishery in waters in and off Alaska managed by the State of Alaska. As authorized and governed by the MSA as amended in 2006, the CDQ Program receives annual allocations of quota for groundfish, halibut, crab, and prohibited species in the BSAI Management Area to allow these communities to 'start and support regionally based, commercial seafood or other fisheries-related businesses' (Section 305(i)(1) of the MSA). Sablefish quotas are included under the Groundfish CDQ allocation.

Sablefish CDQ allocation for the hook and line and pot gear portion of the TAC is set at 20% (per management area BS and AI). Specifications are determined annually, and may be found with other federal harvest specifications here: https://alaskafisheries.noaa.gov/harvest-specifications/field_harvest_spec_year/2016-2017-751 As the CDQ permits are a subset of the IFQ

allocation, are eligible for commercial landings, and may be fished on the same trips as IFQ sablefish, CDQ permitted landings are included in the UoA. According to the NMFS Fisheries Catch and Landings Reports (https://alaskafisheries.noaa.gov/fisheries-catch-landings) in 2015, there was just 34 mt of sablefish landed by hook and line and pot vessels in the Bering Sea, accounting for 26% of the quota. In the Aleutian Islands there were no landings by hook and line and pot vessels. In 2016, the quota allocation for hook and line/pot CDQ represents less than 4% of the combined total IFQ and CDQ quota (including IFQ allocation to GOA).

For both the IFQ and CDQ permits, annual permits identify permissible harvest areas, which must be reported at landing. Annual permits cover an entire season, which generally runs from March to November. The E-landings catch accounting system (CAS) described in the Sources of Information section above is used at landing to electronically deduct the volume of sablefish landed from the permit holder's annual allocation. Vessels must notify the Office of Law Enforcement before making a landing, and product may only be landed at permitted locations (as a Registered Buyer according to 50 CFR § 679.4). For further description of traceability systems at landing, see the section: Traceability.

State-Managed Fishery (non-UoA)

There are also state-managed fisheries for sablefish within state waters.The state managed fisheries occur in Southeast Alaska, Prince William Sound, Cook Inlet and the Aleutian Islands. The Cook inlet and Aleutian Islands fisheries use a Guideline Harvest Level (GHL) and are managed as open access fisheries. Prince William Sound, Chatham, and Clarence Strait are managed as limited entry with an annual harvest objective. For more information about the state managed fishery, see http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.management.

Fishery Management Plans and Objectives

NPFMC

The NPFMC has established two groundfish management plans that pertain to the management of sablefish in Alaska; one for the Bering Sea/Aleutian Islands (NPFMC 2015a) and one for the Gulf of Alaska (NPFMC 2015b). Each of these FMPs contain 46 short- and long-term objectives grouped into nine categories: (1) Prevent Overfishing; (2) Promote Sustainable Fisheries and Communities; (3) Preserve Food Web; (4) Manage Incidental Catch and Reduce By-Catch and Waste; (5) Avoid Impacts to Seabirds and Marine Mammals; (6) Reduce and Avoid Impacts to Habitat; (7) Promote Equitable and Efficient Use of Fishery Resources; (8) Increase Alaska Native Consultation; and (9) Improve Data Quality, Monitoring and Enforcement. These objectives are well-defined and measurable, consistent with achieving the outcomes expressed in MSC Principles 1 and 2, and are explicit within the fishery management system. The annual SAFE reports, and other assessments, provide measures of the extent to which the specific objectives are being achieved.

The two groundfish management plans relevant to sablefish were last updated in 2015 for BSAI (http://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf) and GOA (http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Management Plan Consultation by the NPFMC

Under the Magnuson-Stevens Act, the North Pacific Fishery Management Council submits FMPs and FMP amendments to the Secretary of Commerce for approval, The Council conducts public hearings so as to allow all interested persons an opportunity to be heard in the development of FMPs and

amendments, and reviews and revises, as appropriate, the assessments and specifications with respect to the optimum yield from each fishery (16 U.S.C. 1852(h)) (NPFMC 2015).

Regulatory Updates from the NPFMC

In 2015, a regulation change was proposed by NPFMC to allow the use of sablefish pot gear in the GOA sablefish IFQ fishery (NMFS 2015d). 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).

Research Plans

NPFMC

The NPFMC identifies 1 to 5 year priorities for research as those activities that are the most important for the conservation and management of fisheries in the Gulf of Alaska, Aleutian Islands, eastern Bering Sea, and the Arctic (http://www.npfmc.org/research-priorities). The listing of priorities has two purposes: 1) to meet the requirements of the revised Magnuson-Stevens Act for the Councils to identify 5 year research needs, and 2) to provide guidance on research priorities to the research community and funding agencies. Research priorities are organized into four categories: 1) critical ongoing monitoring, 2) urgent, 3) important (near term), and 4) strategic (future needs). These categories are assigned to specific research needs with the intention of placing emphasis on how the research corresponds to the Council's time horizon of management concerns.

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. Additional information about NPFMC research priorities is available at: http://www.npfmc.org/research-priorities.

Vessel Size Composition of the Commercial Fleet

Fleet Composition

For the sablefish IFQ/CDQ fleet as a whole, there are more vessels over 50 ft, than under; and the proportion under 41 ft was 5% in 2013 (Table 10). Smaller vessels made up a greater than average portion of the fleet in the SE area, and a smaller than average portion in the Western Yakutat (WY) area in 2013 (Table 11). Vessels over 50 ft. account for more of the catch than vessels under 50 ft. (Table 12). Smaller vessels have taken a greater than average portion of the catch in the Bering Sea (BS) and the Southeast (SE) areas in 2013 (Table 13).

Table 10. Number of Sablefish IFQ/CDQ Vessels by Size Group in 2013.

Number of Sablefish IFQ/CDQ Vessels by Size Group - 2013							
Size Class (LOA)	**BS**	**AI**	**WG**	**CG**	**WY**	**SE**	**Total**
<= 40 ft	6	3	3	10	0	9	31
41-50 ft	9	6	6	35	6	48	110
51-60 ft	28	30	25	81	69	104	337
> 60 ft	30	29	21	44	34	22	180
Total	**73**	**68**	**55**	**170**	**109**	**183**	**658**

Source: BS/AI: NPFMC April 2015. C7 Discussion Paper. Table 2 p10.

Source: GOA: NPFMC April 2015. C6 EA/RIR. Table 14 p.88

Table 11. Proportion of Vessel Counts by Size Group and Area of Catch in 2013.

Proportion of Vessel Counts by Size Group and Area of Catch - 2013							
Size Class (LOA)	**BS**	**AI**	**WG**	**CG**	**WY**	**SE**	**Total**
<= 40 ft	8%	4%	5%	6%	0%	5%	5%
41-50 ft	12%	9%	11%	21%	6%	26%	17%
51-60 ft	38%	44%	45%	48%	63%	57%	51%
> 60 ft	41%	43%	38%	26%	31%	12%	27%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 12. Sablefish IFQ catch (mt) by Vessel Size Group and Area of Catch in 2013.

Sablefish IFQ catch (mt) by Vessel Size Group and Area of Catch - 2013							
Size Class (LOA)	**BS**	**AI**	**WG**	**CG**	**WY**	**SE**	**Total**
<= 40 ft	52	0	100	46	1	64	263
41-50 ft	19	3	66	286	58	654	1,086
51-60 ft	48	130	686	2,325	950	1,911	6,050
> 60 ft	243	598	440	1,624	755	485	4,144
Total	**362**	**731**	**1,291**	**4,280**	**1,765**	**3,114**	**11,543**

Source: NPFMC April 2015. C6 EA/RIR. Table 19 p.94

Table 13. Proportion of Sablefish Catch by Vessel Size Group and Area of Catch – 2013.

Proportion of Sablefish Catch by Vessel Size Group and Area of Catch - 2013							
Size Class (LOA)	**BS**	**AI**	**WG**	**CG**	**WY**	**SE**	**Total**
<= 40 ft	14%	0%	8%	1%	0%	2%	2%
41-50 ft	5%	0%	5%	7%	3%	21%	9%
51-60 ft	13%	18%	53%	54%	54%	61%	52%
> 60 ft	67%	82%	34%	38%	43%	16%	36%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Allocation of Catch by Gears

Since 1992, approximately 90% of sablefish has been caught using longline gear with the remaining 10% divided between trawl and pots (Note: trawl gear is not part of the unit of certification for this MSC assessment). Recently, pots have taken a larger portion of the remaining 10% than in previous years. The federally managed fishery in Alaska went to IFQ management in 1995. Quota shares were assigned initially to vessel owners or leaseholders who made at least one landing in the years 1988-1990. Each year, IFQs are assigned to individuals by multiplying the percentage of quota share they own by the annual harvest limit set for the sablefish fishery. Recent quotas have been near 14,000 tons.

Pot fishing has been banned in the GOA since 1985 but allowed in the Bering Sea and Aleutian Islands (BSAI) and has accounted for nearly half of the IFQ catch in those areas" (AFSC 2010). A regulation change has been proposed by NPFMC to allow the sablefish IFQ fishery pot gear back into GOA (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). Thus, final action to allow sablefish pots back into 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).

Observer Program

NPFMC managers have recognized that data collection by onboard observers is currently the most reliable method available to obtain fishery discard and biological information on fish, and data concerning seabird and marine mammal interactions with fisheries. Onboard observers also perform the task of collecting biological data such as species composition, weights, and tissue

samples that are critically important for stock assessment scientists and researchers (NMFS 2014, Jannot et al 2011).

North Pacific Fishery Observer Program

The Observer Program provides the regulatory framework for NMFS-certified observers to obtain information necessary to conserve and manage the groundfish and halibut fisheries in the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands (BSAI) management areas. Data collected by well-trained, independent observers are a cornerstone of management of the Federal fisheries off Alaska. These data are needed by the North Pacific Fishery Management Council (Council) and NMFS to comply with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), the Marine Mammal Protection Act, the Endangered Species Act, and other applicable Federal laws and treaties (NMFS 2014).

The NPFMC approved a re-structuring of the North Pacific observer program in October, 2010 that came into effect in January 2013, replacing the previous "interim" observer strategy that had lasted 23 years. The new regulations amend how observer coverage is funded and changes the coverage requirements for vessels and processors. Changes were made to increase the statistical reliability of data, to address cost equity issues for all participants, and to expand coverage to previously unobserved fisheries (NPFMC 2011).

The program placed all vessels and processors in the groundfish and Pacific halibut fisheries off Alaska into either "full coverage" or "partial coverage" categories. Vessels subject to full coverage include" 1) catcher-processors and motherships in the groundfish fisheries, 2) catcher vessels fishing under a management system that uses prohibited species caps in conjunction with a catch share program, and 3) processors (floating and onshore) taking deliveries of AGA or CDQ pollock.

Analysis and evaluation of the partial coverage category of the observer program is managed through an Annual Deployment Plan (ADP) and associated review process. An interagency working group, the Observer Science Committee, conducts an evaluation and makes recommendations to NMFS and NPFMC on deployment methods. An Observer Advisory Group (OAG), that includes members from the fishing Industry and others, provides independent recommendations to the Council. NMFS presents an Annual Performance Review (APR) report to the NPFMC during its June meeting with proposed changes to the deployment plan for the following year. The APR report details how well various aspects of the program are working, and leads to recommendations to be implemented in the subsequent year's amended ADP.

As the re-structured observer program evolved, NMFS identified sampling frame problems when using the vessel-selection method to assign observers to vessels. This issue was addressed by dropping the vessel-selection method, and using only the trip-selection method to assign observers to vessels in 2015. Two trip-selection pools were employed for 2015: 1) *Small vessel trip-selection***:** this pool is comprised of catcher vessels that are fishing hook-and-line or pot gear and are greater than or equal to 40ft, but less than 57.5ft LOA (the vessels in this pool were in the "vessel-selection" pool in the 2013 and 2014 ADPs), and 2) *Large vessel trip-selection***:** this pool comprises three classes of vessels: a) all catcher vessels fishing trawl gear, b) catcher vessels fishing hook-and-line or pot gear that are also greater than or equal to 57.5ft LOA, and c) catcher-processor vessels exempted from full coverage requirements (this pool was termed the "trip-selection" pool in the 2013 and 2014 ADPs). Anticipated selection probabilities in 2015 are 12% for the small vessel trip-selection pool and 24% for the large vessel trip-selection pool. This represents an identical selection rate in

the former vessel-selection pool and a 50% increase in the large vessel trip-selection 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 since 2013 (NMFS 2015c). However, the Observer Program Annual Report (NMFS 2015a) and the Observer Program Supplemental Environmental Assessment (NMFS 2015b) 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 (see EM discussion, below). Additionally, vessels not < 40 ft LOA that are selected by NMFS to participate in Electronic Monitoring (EM) Cooperative Research were eligible to be in the no selection pool while participating in such research (NMFS 2015c).

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

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. For 2016, NMFS has proposed modifications to ODDS to address temporal bias, and changes to the eLandings system to provide better linkage between ODDS and eLandings and improve data analysis (NMFS 2015c).

The analysis and evaluation of the data collected by observers and ADP development is an on-going processIn June 2016, NMFS will present the 2015 Annual Report that will form the basis for the 2016 ADP (NMFS 2014). NMFS continues to recommend the trip-selection method for all vessels in 2016 (NMFS 2015c).

Coverage rates and structure for the restructured program since 2013 are given in Table 14.

Table 14 Alaska observer program targeted coverage rates in the small and large vessel selection pools, 2013-2015 (NMFS 2015c).

Stratum	**Small vessel trip selection**		**Large vessel trip selection**	
ADP Year	Rate (%)	Unit	Rate (%)	Unit
2013	11	Vessel	11-15	trip
2014	12	Vessel	16	trip
2015	12	Trip	24	trip

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*). There is the need to distinguish between trips (leave port – return to port) and deliveries (offloads to tenders). There appears to be evidence that for vessels using tenders, "normal" (unobserved) trips are longer than observer trips, and there appears to be an incentive for observed boats to deliver to tenders to avoid starting a new trip and thus taking on an observer, effectively providing exemption from coverage. 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 September 26th 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."

NPFMC Recommendations associated with observer program improvements in 2015 can be found in Appendix 3.

Electronic Monitoring and Coverage for Small Vessels (<40 ft and 40-57.5ft LOA)

A number of efforts to examine the benefits and weaknesses of electronic monitoring systems have occurred over the last 10 years; the first in 2002 (Ames 2005), a second in 2004 (Ames et al. 2007) and most recently in 2010 (Cahalan et al. 2010). The 2010 study indicated that observer coverage and EM coverage exhibited statistically unbiased and acceptable comparability related to identification and numbers for almost all species, with the exception of those that could not be identified beyond the species grouping levels used in management. EM does not however, have the same capacity as human observers to collect biological specimens (e.g. otoliths, scales).

In 2014, NPFMC 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 2015c).

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 40-57.5ft 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 2015c). 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, 2013b), 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.

At present there is recognition by the NPFMC and the OAC 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.

Regulation Compliance and Enforcement

Enforcement authorities operate a comprehensive monitoring, control and surveillance (MCS) system in the Alaskan 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).

For violations that are significant, or for repeat violators, the agent refers the case to the NOAA General Counsel's Office for Enforcement and Litigation for further action. Penalty schedules, which specify the civil penalties for violations of federal fisheries regulations, have been developed for each region's fisheries. The penalty schedule for groundfish and IFQ Fisheries off the coast of Alaska contains sanctions for various violations of sablefish IFQ regulations. The most frequent types of violations in the IFQ fishery are shown in Table 15.

The NPFMC maintains an Enforcement Consultants Committee as an advisory body to the Council. Online access to agendas/minutes of committee meetings, and enforcement reports from the 17th Coast Guard District, are available at: http://www.npfmc.org/committees/enforcement-committee/

There have been no major changes to the way enforcement is carried out systematic non-compliance has not been an issue since the fishery was re-certified in 2011.

Table 15. 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

Other non-MSC fishery users or activities, which could affect the UoA, and arrangements for liaison and co-ordination

These two units of Sablefish are being assessed in parallel with the Pacific halibut bottom longline fishery, where the FVOA & Eat on the Wild Side are the clients for all three Units of Assessment. The units are connected through the same client, but could proceed through certification separately, such that neither of the sablefish units depends on the other, nor do the sablefish units depend on the Pacific halibut unit.

Outside processes which could affect the Units of Assessment include how Electronic Monitoring progresses such that results can be used to close outstanding conditions related to independent information gaps on vessels <40ft LOA.

4 Evaluation Procedure

The US sablefish demersal longline fishery and longline pot fishery, both partially, but not completely, overlap with multiple MSC units of assessment. There are several certified fisheries in the geographic areas of Alaska (as well as elsewhere in the US), but only those in AK were considered sufficient in overlap for harmonization consideration, which was undertaken in accordance with MSC FCR V2.0 Annex PB.

No fisheries need to be considered for harmonization for Principle 1 as no other MSC-certified fisheries land sablefish from this stock. As this fishery is assessed on V1.3, harmonization for any cumulative impacts for Principle 2 is not required as per V2.0 (see section 3.3 Assessment Methodologies for more detail). A number of species are considered for partial Principle 3 harmonization based on common regulation by the Magnuson Stevens Act and shared management under the NPFMC. Principle 3 will seldom harmonize completely, even in related fisheries, because of the diverse and layered nature of most management structures. Nonetheless, performance indicators relevant to P3 harmonization include all over-arching policy and governance performance indicators that operate at the federal-regional level. Aspects of fishery specific performance indicators (3.2.1-3.2.5) will score some common aspects such as management by the NPFMC. However, each is subject to a number of different regulatory structures and measures specific to particular species, gears, licenses and other relevant attributes. MSC guidance in FCR V2.0 GPB3 recognizes that "it may be impractical to attempt full harmonisation, due to the large number of fisheries that may be managed under the relevant policy framework, and the differences in application between them."

4.1 Harmonised Fishery Assessment

Table 16. Fisheries in the MSC System Considered for Harmonization. Relevant fisheries include other fisheries that are managed under the Magnuson Stevens Act, by the North Pacific Fisheries Management Council.

Fishery	Status	Principles for Harmonization	Conformity Assessment Body
1. AK Pollock - BSAI	Re-certified 2016	Principle 3	MRAG
2. AK Pollock - GOA	Re-certified 2016	Principle 3	MRAG
3. AK Flatfish - BSAI	Re-certified 2015	Principle 3	MRAG
4. AK Flatfish - GOA	Re-certified 2015	Principle 3	MRAG
5. AK Pacific Cod -BSAI	Re-certified 2015	Principle 3	MRAG
6. AK Pacific Cod -GOA	Re-certified 2015	Principle 3	MRAG
7. US Pacific Halibut	In second re-assessment	Principle 3	SCS Global Services

Table 17. Alignment of Scores for Harmonization. AK Fisheries listed in the table below include fisheries 1-7 in Table 15. Score differences highlighted in blue and explained in the footnotes below.

PI No.	Performance Indicator (PI)	US N Pac Sablefish	BSAI Pacific cod	GOA Pacific cod	BSAI Pollock	GOA Pollock	BSAI Flatfish[1]	GOA Flatfish[1]	US N Pac Halibut
3.1.1	Legal & customary framework	100	100	100	100	100	100	100	100
3.1.2	Consultation, roles & responsibilities	100	100	100	95[1]	100	100	100	100
3.1.3	Long term objectives	100	100	100	100	100	100	100	100
3.1.4	Incentives for sustainable fishing	100	80[1]	80[1]	100	80[1]	100	100	85[1]
3.2.1	Fishery specific objectives	100	90[2]	90[2]	90[2]	90[2]	90[1]	90[1]	100
3.2.2	Decision making processes	100	100	100	100	100	100	100	100
3.2.3	Compliance & enforcement	95	100[3]	100[3]	100[3]	100[3]	100[2]	100[2]	80[2]
3.2.4	Research plan	100	100	100	100	100	100	100	100
3.2.5	Management performance evaluation	100	100	100	100	100	100	100	85[3]

BSAI Pacific cod - Longline

[1] The differnce in scoring is due to SIa. For sablefish, an IFQ program is in place. This incentive program is not in place for Pacific cod.

[2] The difference in scoring is due to SIa. With respect to sablefish, the Team found the short and long term goals of NPFMC to be largely measureable.

[3] The difference in scoring is due to Sic. The sablefish Team found the lack of 100% observer coverage, and the lack of a VMS requirement to cause scoring to fall short of SG100.

GOA Pacific cod - Longline

[1] The differnce in scoring is due to SIa. For sablefish, an IFQ program is in place. This incentive program is not in place for Pacific cod.

[2] The difference in scoring is due to SIa. With respect to sablefish, the Team found the short and long term goals of NPFMC to be largely measureable.

[3] The difference in scoring is due to Sic. The sablefish Team found the lack of 100% observer coverage, and the lack of a VMS requirement to cause scoring to fall short of SG100.

BSAI pollock

[1] The differnce in scoring is due to SIb, and is specific to a salmon bycatch issue for pollock.

[2] The difference in scoring is due to SIa. With respect to sablefish, the Team found the short and long term goals of NPFMC to be largely measureable.

[3] The difference in scoring is due to Sic. The sablefish Team found the lack of 100% observer coverage, and the lack of a VMS requirement to cause scoring to fall short of SG100.

GOA pollock

[1] The differnce in scoring is due to SIa. For sablefish, an IFQ program is in place. This incentive program is not in place for pollock.

[2] The difference in scoring is due to SIa. With respect to sablefish, the Team found the short and long term goals of NPFMC to be largely measureable.

[3] The difference in scoring is due to Sic. The sablefish Team found the lack of 100% observer coverage, and the lack of a VMS requirement to cause scoring to fall short of SG100.

BSAI Flatfish (arrowtooth flounder)

[1] The difference in scoring is due to SIa. With respect to sablefish, the Team found the short and long term goals of NPFMC to be largely measureable.

[2] The difference in scoring is due to Sic. The sablefish Team found the lack of 100% observer coverage, and the lack of a VMS requirement to cause scoring to fall short of SG100.

GOA Flatfish (arrowtooth flounder)

[1] The difference in scoring is due to SIa. With respect to sablefish, the Team found the short and long term goals of NPFMC to be largely measureable.

[2] The difference in scoring is due to Sic. The sablefish Team found the lack of 100% observer coverage, and the lack of a VMS requirement to cause scoring to fall short of SG100.

US North pacific halibut

[1] Sablefish scores higher because it has an IFQ program, but Washington does not.

[2] Lack of coverage on <40ft vessels is more problematic in halibut fishing than in sablefish because the sablefish fishery is more geographically concentrated.

[3] Pacific halibut is subject to both the IPHC and NPFMC management systems. IPHCs MSE process is not yet an effective mechanism to evaluate all parts of the management system.

4.2 Previous assessments

This fishery is in its 2nd re-assessment. The first certificate cycle extended from 2006-2011. The second certificate cycle is in its 5th and final year, and a 4th Annual Surveillance was completed at the same time as the on-site in December 2015. Coming into the 4th Annual Surveillance, the fishery had no open conditions. The 2nd full re-assessment was announced on October 1, 2015. Copies of this and all assessment downloads are available here: https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/us-north-pacific-sablefish/2nd-re-assessment-downloads-1

4.3 Assessment Methodologies

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 reporting template used in this report is V2.0. The default assessment tree was used without adjustments. The fishery will continue to be subject to updated *process* requirements (FCR 2.0 and GCR 2.1 or more up to date versions thereof) at the time of any next surveillance, but the fishery will remain on Part C of V1.3 of the Certification Requirements for all *performance* requirements (PISGs) for the five year duration of the certificate cycle, should the fishery be found capable of scoring at a level that confers certification.

Parts of Principle 2 of the new MSC fisheries standard (v2.0) are assessed for all MSC Units of Assessments (UoAs) rather than just the impact of the UoA included in the current assessment process.

Although fisheries certified against CR v1.3 are not yet subject to the 'MSC-cumulative' approach, fisheries being assessed against FCR v2.0 are required to take the impacts of these existing MSC fisheries into account where applicable (e.g. where there are overlapping, main primary species). Guidance is provided on this topic under harmonisation in Annex GPB and Annex GSA.

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

The assessment team selected interviewees and the location for onsite visits based on information needed to assess management operations of the unit of assessment. 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 (Table 18). The assessment team visited agency offices including the National Marine Fisheries Center Regional Office (Juneau), Alaska Fisheries Science Center (Juneau), the FVOA client office (Seattle) and the University of Washington, Seattle to meet with seabird experts. Several meetings also took place at hotels and restaurants in Seattle and Juneau.

Table 18. 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	NMFS - 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 19. 2015 Meeting Attendees by Organization in General Order of Meetings

Table 2: Meeting Attendees		
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	Monitoring and Enforcement	NMFS
Brandee Gerke	Sustainable Fisheries: Supervisory Fisheries Management Specialist	NMFS-ARO

4.4.2 Consultations

In addition to the meetings and attendees list above (Section 4.4.1), consultations have included direct email outreach to potentially interested stakeholders including an initial announcement of the fishery assessment and follow-up information regarding and invitation to participate in the on-site meeting. The direct email stakeholder list includes over 40 individuals representing local and regional fishing associations, local and regionally eNGOs, national and international NGOs active in sustainable seafood, bird conservation eNGOs, management representatives, and the client representative.

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. Stakeholders were directly notified of the various stages of the MSC report, in accordance with the requirements of MSC FCRV2.0.

Prior to the onsite meeting, as well as following the onsite meeting, there were no written stakeholder comments received.

4.4.3 Evaluation Techniques

Documentation

One of the most significant, and difficult, aspects of the MSC certification process is ensuring that the assessment team gets a complete and thorough grounding in all aspects of the fishery under evaluation. In even the smallest fishery, this is challenging as the assessment team typically needs information that is fully supported by documentation in all areas of the fishery from the status of stocks, to ecosystem impacts, through management processes and procedures.

Under the MSC program, it is the responsibility of the applicant organizations or individuals to provide the information required, proving the fishery or fisheries comply with the MSC standards. It is also the responsibility of the applicants to ensure that the assessment team has access to any and all scientists, managers, and fishers that the assessment team identifies as necessary to interview in its effort to properly understand the functions associated with the management of the fishery. Last, it is the responsibility of the assessment team to make contact with stakeholders that are known to be interested, or actively engaged in issues associated with fisheries in the same geographic location.

Most information required for the assessment was provided by the client or was available online. The team requested additional data and reports that were provided by NOAA and NMFS-AFSC staff, as well as Dr. Ed Melvin of University of Washington.

Scoring Process

Scoring was spurred through initial research and the 4-day site visit and completed iteratively through phone calls, emails and skype teleconferences between January and April 2016. Following the onsite visit in November 2015, the team compiled a list of requested documents that were communicated to respective information providers and agency staff in November and December 2015. A final scoring meeting was held by teleconference on March 17th 2016 with all members of the team and the project coordinator. Assessment team members were required to provide records of harmonization considerations and rationales for any differences in scoring outcomes (See Section 4.1).

Scoring was completed by consensus through team meetings and exchanging rationales by email and draft score and report sharing. Scoring elements were determined as follows:

Table 20. Scoring elements. Scoring "elements" in the MSC system are species or other types of entities (e.g. bait) that are scored uniquely within one of the components of Principle 2.

Longline (hook and line) gear			
Performance indicator	**Species**	**Rationale**	**Data-deficient?**
1.1 Target species	Sablefish	Main	N
2.1 Retained	Pacific halibut	Main retained: Greater than 5% of catch	N
2.1 Retained	Thornyheads	Main retained. Less than 5% of catch, but vulnerable	N
2.1 Retained non-target	Bait	*Main retained: Unknown volume, designated "main" to obtain information.	Y
2.2 Bycatch	Grenadiers	Main bycatch. Greater than 5% of catch	N
2.2 Bycatch	Sharks, Laysan Albatross, Black-Footed Albatross	Main bycatch. Less than 5% of catch, but vulnerable	N
2.3 ETP species	Short-tailed Albatross	ESA Listed "Endangered"	N
Longline (Pot) gear			
Performance indicator	**Species**	**Rationale**	**Data-deficient?**
1.1 Target Species	Sablefish	Main	N
2.1 Retained	NA	NA	NA
2.1 Retained non-target	Bait	*Main retained: Unknown volume, designated "main" to obtain information.	Y
2.2 Bycatch	Arrowtooth Flounder	Main bycatch. Greater than 5% of catch	N
2.3 ETP species	NA	NA	NA

* For an in-depth rationale and explanation of the treatment of bait as a 'main retained' species in the UoA, see: "Bait considerations: hook and line & pot gear."

Scoring was completed in accordance the MSC FCRV2.0 7.10. Element scoring was conducted in accordance with the requirements under FCRV2.0 7.10 and associated Table 4. Conditions were set, as necessary, at the PI level and in accordance with FCR V2.0 7.11.

The following table summarizes how scores are calculated for Scoring Issues with multiple elements, as well as at the PI level:

Score	Combination of individual scoring elements at the scoring issue level or scoring issues at the PI Level
<60	Any scoring element/SI within a PI which fails to reach SG60 shall not be assigned a score. Teams shall record their rationale in narrative form for the PI rather than assigning actual scores of less than 60.
60	All elements/SIs meet SG60 and only SG60.
65	All elements/SIs meet SG60; a few achieve higher performance, at or exceeding SG80, but most do not meet SG80.
70	All elements/SIs meet SG60; some achieve higher performance, at or exceeding SG80, but some do not meet SG80 and require intervention action to make sure they get there.
75	All elements/SIs meet SG60; most achieve higher performance, at or exceeding SG80; only a few fail to achieve SG80 and require intervention action.
80	All elements/SIs meet SG80.
85	All elements/SIs meet SG80; a few achieve higher performance, but most do not meet SG100.
90	All elements/SIs meet SG80; some achieve higher performance at SG100, but some do not.
95	All elements/SIs meet SG80; most achieve higher performance at SG100, and only a few fail to achieve SG100.
100	All elements/SIs meet SG100.

Decision rules for final outcome

The decision rule for MSC certification is as follows:

- No PIs score below 60 (cannot receive certification)
- The aggregate score for each Principle, rounded to the nearest whole number, is 80 or above
- The aggregate score for each Principle is calculated using the MSC-provided scoring worksheet, which provides a weight per PI to be multiplied by the PI score received, where the sum of all weighted PI scores for a given Principle is provides the final Principle Score. Scoring worksheets can be downloaded from the MSC website here: https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-forms-and-templates

5 Traceability

5.1 Eligibility Date

The target eligibility date is set to be equivalent to the date of publishing the Public Comment Draft Report, as permitted under MSC FCRV2.0 7.6. The traceability and segregation systems that are required to ensure the separation of any certified product from non-certified product are believed to already be in place for the client fleet, as traceability systems are consistent with those in place through the last certificate cycle.

5.2 Traceability within the Fishery

Traceability in the unit of assessment is strong with low risk. This is primarily because the scope of the UoA encompasses the entire IFQ permitted fishery; the catch accounting system is able to associate each landing with a permit that identifies the trip ID, quota holder, vessel category, and location of fishing; and compliance is considered high.

Based on the traceability systems in place and risks described below, the assessment team has determined that the scope of the certificate will extend to the point of landing, at which point eligible product may enter the chain of custody.

Traceability at sea

There is no transshipment or at sea-processing of sablefish in the IFQ fishery. Because the unit of assessment in the state of Alaska includes the entire IFQ and the CDQ allocation of the fishery, there is little risk of mixing with non UoA product at sea

Traceability at landing

There is low risk of mixing at offloading. Sablefish are landed on IFQ/CDQ permits that allow quota holders to harvest their annual allocation at any time during the eight plus-month IFQ halibut and sablefish seasons.

Mixing is controlled in three main ways:

1. Fish Tickets: All ports where sablefish are landed are required to have a registered code and scale to weigh the catch. This information is recorded on the landing slip which is required to be filled out by a registered weigh-master or registered dockside staff safeguarding against inaccurate or miss-reporting.

2. Catch Accounting: Quota shareholders are issued Landing Cards by NMFS-RAM, which must be presented at registered "transaction" locations when catch is off-loaded. The catch weight is then electronically debited from the holder's quota for that year. All landing card data is transmitted directly to NMFS-RAM databases. AK Fishermen must also alert the "transaction" station before leaving for a trip and notify OLE three hours prior to arrival at a registered landing site. Depending on whether a majority of halibut or sablefish is landed on a given trip, the total catch, including non-target species, are coded as "from a halibut trip" or "from a sablefish trip", depending on whether halibut or sablefish constituted >50% of the targeted catch. 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).

3. Observers & Logbooks: All groundfish vessels have observer coverage and vessel captains complete voluntary and required logbooks.

Sablefish are landed trawl fisheries that catch sablefish as retained bycatch, and target species such as rockfish and sole. There is no likelihood of mixing on the water and a very low likelihood of mixing at the point of landing because of the three systems outlined above that ensure that landings are traceable back to a specific trip and permit (which also specifies vessel category and location of fishing). This data feeds into the catch accounting system described in the Sources of Information section of this report, which can differentiate between sablefish landed under each fishery permit type (trawl, IFQ, CDQ).

Tenders are not used in the IFQ fishery for sablefish.

Table 21. Traceability Factors within the Fishery:

Traceability Factor	Description of risk factor if present.
Potential for non-certified gear/s to be used within the fishery	IFQ/CDQ sablefish can be caught with pots or demersal longline, both of which are included in the UoA. Sablefish are also caught as bycatch in the trawl fishery, but there are robust traceability systems at landing to differentiate between gear types. Observer coverage also helps to assure that only declared gear is used, but this is very low practical risk that an IFQ permitted vessel would employ a non-pot or longline gear type.
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	The UoA* encompasses the entire federally permitted area in the US EEZ off of Alaska, and permit zoning is marked on fish tickets and can be verified with logbook entries. VMS is also required on all vessels fishing for sablefish in the Bering Sea or Aleutian Islands IFQ program. If vessels tried to fish outside of AK on the stock, they would be fishing illegally in Canadian waters and subject to legal prosecution. There is not evidence that this behavior occurs. *UoC product is determined based on landing (whether the processor is included in the certificate), so UoC considerations not applicable at sea.
Potential for vessels outside of the UoC or client group fishing the same stock	There is other fishing on the sablefish stock (e.g. trawl fleet, Canada), and NMFS management considers these removals. Inclusion in the UoA* can be verified via permit/fish ticket, which will identify fishers as IFQ/CDQ permitted, and inclusion in the UoC can be verified via the certificate addendum. *UoC product is determined based on landing (whether the processor is included in the certificate), so UoC considerations not applicable at sea.
Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	Chain of custody has been determined to begin at the point of landing. The assessment team has not evaluated risks beyond the point of landing, as traceability systems beyond the point of landing shall be audited by Chain of Custody auditors.
Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)	Chain of custody has been determined to begin at the point of landing. The assessment team has not evaluated risks beyond the point of landing, as traceability systems beyond the point of landing shall be audited by Chain of Custody auditors.
Risks of mixing between certified and non-certified catch during transhipment	There is no transshipment in this fishery.
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch)	NA

before subsequent Chain of Custody is required	

5.3 Eligibility to Enter Further Chains of Custody

The assessment team has determined that sufficient traceability systems are in place to determine product from the unit of assessment to be eligible to enter further chains of custody at the point of landing as product eligible to be sold as MSC certified and/or carry the MSC ecolabel.

As in the 2011 1st re-assessment, this report does not cover processing beyond the point of landing. This report acknowledges that sufficient monitoring takes place to identify the fishery of origin for all landed fish via landing slips where the amount of catch and the fishing area are recorded for each line (whether hook and line or pot gear was used) set during the fishing trip. This is sufficient to allow a chain-of-custody to be established from the point of landing forward for all products derived from the fishery. MSC chain-of-custody certifications were not undertaken in this project, and therefore, are undertaken on a separate and individual basis for those entities that may wish to identify and/or label products derived from the fishery. Only those fishers that belong to the certificate are eligible to enter the chain-of-custody where the products can then carry the blue MSC eco-label. Other eligible fishers may join the certificate at the discretion of the certificate holder. A current list of companies eligible to participate in the certificate can be found here: https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/us-north-pacific-sablefish/reassessment-documents/20160316_F-SCS-0019_Revised_SAB124.pdf.

6 Evaluation Results

6.1 Principle Level Scores

Table 5: Final Principle Scores

Final Principle Scores		
Principle	**Longline Hook and Line**	**Longline Pots**
Principle 1 – Target Species	95.6	95.6
Principle 2 – Ecosystem	89.0	84.3
Principle 3 – Management System	99.5	99.5

6.2 Summary of PI Level Scores

Principle	Component	PI No.	Performance Indicator (PI)	Longline (hook and line)	Longline (pots)
One	Outcome	1.1.1	Stock status	90	90
		1.1.2	Reference points	100	100
		1.1.3	Stock rebuilding	NA	NA
	Management	1.2.1	Harvest strategy	95	95
		1.2.2	Harvest control rules & tools	90	90
		1.2.3	Information & monitoring	100	100
		1.2.4	Assessment of stock status	100	100
Two	Retained species	2.1.1	Outcome	85	80
		2.1.2	Management	85	90
		2.1.3	Information	75	70
	Bycatch species	2.2.1	Outcome	85	80
		2.2.2	Management	85	85
		2.2.3	Information	95	65
	ETP species	2.3.1	Outcome	95	100
		2.3.2	Management	95	100
		2.3.3	Information	95	60
	Habitats	2.4.1	Outcome	80	80
		2.4.2	Management	90	90
		2.4.3	Information	90	85
	Ecosystem	2.5.1	Outcome	100	100
		2.5.2	Management	90	90
		2.5.3	Information	90	90
Three	Governance & policy	3.1.1	Legal & customary framework	100	100
		3.1.2	Consultation, roles & responsibility	100	100
		3.1.3	Long term objectives	100	100
		3.1.4	Incentives for sustainable fishing	100	100
	Fishery specific mgt.	3.2.1	Fishery specific objectives	100	100
		3.2.2	Decision making processes	100	100
		3.2.3	Compliance & enforcement	95	95
		3.2.4	Research plan	100	100
		3.2.5	Mgt. performance evaluation	100	100

6.4 Summary of Conditions

Condition number	Condition	Performance Indicator	Related to previously raised condition? (Y/N/NA)
H&L 2.1.3	By surveillance year 3, the client will provide adequate information on the type, volume, and variability of bait used in the fishery to effectively assess the outcome status with respect to these species, to support a partial strategy if necessary, and determine if there is any increased risk level due to changes in the operation of the fishery.	**2.1.3**	**N**
Pot 2.1.3(1)	By surveillance year 3, the client will provide adequate information on the type, volume, and variability of bait used in the fishery to effectively assess the outcome status with respect to these species, to support a partial strategy if necessary, and determine if there is any increased risk level due to changes in the operation of the fishery.	**2.1.3**	**N**
Pot 2.1.3(2)	By year 3 surveillance, the Client will provide adequate information from the NOAA Catch Accounting System on the nature and extent of retained species to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.	**2.1.3**	**N**
Pot 2.2.3	By year 3 surveillance, the client will provide adequate information from the NOAA Catch Accounting System on the nature and the amount of to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.	**2.2.3**	**N**
Pot 2.3.3	By year 3 surveillance, the client will provide relevant information from the NOAA Catch Accounting System and other ETP resource management sources to support the management of fishery impacts on ETP species, including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species.	**2.3.3**	**N**

6.5 Determination, Formal Conclusion and Agreement

With the information available, the US North Pacific Sablefish fishery meets the minimum requirements for being awarded certification which includes meeting the SG60 for all Performance Indicators and an average score of 80 or greater for all three Principle scores. The team discussed the merits and shortfalls of the fishery and by consensus recommended certification for the fishery. In accordance with MSC Certification Requirements, the report was made open to objection by interested parties for a period of 15 working days from publication of the Final Report with the positive certification determination, through August 18, 2016. No objections were received. The SCS Certification Board reviewed the report, Performance Indicator rationales, peer reviews and stakeholder comments and agreed with the Assessment Team's recommendation to re-certify the fishery. The certificate will be awarded after the Public Certification Report is posted to the MSC website.

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Appendices

Appendix 1 Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

Principle 1

Evaluation Table for PI 1.1.1

PI 1.1.1		**The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The limit reference point defining an overfished condition for sablefish is the Minimum Stock Size Threshold (MSST), which is one half of the B_{msy} proxy B35% (B17.5%). The probability of the stock being above B17.5% in 2015 was estimated to be greater than 95% (Hanselman *et al.* 2014). As per CR CB2.2.1, this corresponds to a "high degree of certainty" that the stock is above the point where recruitment would be impaired. A score of 100 is warranted.		
b	**Guidepost**		The stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
	Met?		(Y/N) Y	(Y/N) N

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
	Justification	Sablefish are managed under the NPFMC groundfish Tier System (DiCosimo *et al.* 2010). Projected female spawning biomass is 88% of B40%, placing sablefish in Tier 3b (Hanselman *et al.* 2014). For all Tier 3 stocks, the MSY level is defined as B35%, The trend in estimated sablefish spawning stock biomass has varied above the B40% level until the mid-1990s, and subsequently has varied mostly between the B40% and B35% levels, falling below B35% briefly from 2000-2003 (Figure 2). The probability that female SSB was above B35% in 2014 was estimated to be slightly less than 50% (Figure 3) (Hanselman *et al*. 2014). The target reference point for sablefish is B35%; however, B40% is also defined in the HCR as a "precautionary" target. The objective of targeting for a higher (precautionary) level of spawning biomass (B40%) is so the stock will have a better chance of being at or above the Bmsy proxy target (B35%) (DiCosimo *et al.* 2010). The evidence indicates that, for most of the past 10 years, the stock has been fluctuating at a level above B35% (Figure 2). Thus, the stock has been fluctuating at or above its target reference point, and the SG80 level requirement is met. Scoring at the SG100 level would require a 95% probability that the stock has been above, or fluctuating around the B35% target reference point. The 2014 stock assessment estimated the probability of SSB > B35% to be less than 50% (Figure 3). Thus, the requirements of the SG100 level are not met.
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Stock Status relative to Reference Points			
	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
Target reference point	B 35%; B 40% For NMFS Tier 3b stocks (including sablefish), assessments report B35% and B40% as reference points. The B35% level is considered a proxy for B_{msy}, and the B40% level provides an additional buffer for uncertainty in	For 2015: B100% = 292,269 mt B35% = 91,794 mt B40% = 104,908 mt	For 2015: SSB = 91,183 mt SSB = 99% of B35% SSB = 88% of B40%

PI 1.1.1	**The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing**		
	estimation and ecosystem considerations.		
Limit reference point	MSST =0.5 x B35% = B17.5%	B17.5% = 45,897 mt	SSB = 91,183 t = 1.99 of B35%; SSB = 88% of B40%.
OVERALL PERFORMANCE INDICATOR SCORE:			**90**
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.	
	Met?	(Y/N) Y	(Y/N) Y	
	Justification	The basis for using spawning stock biomass per-recruit analysis to establish viable limit and target reference points is well established (Clark 1993. 2002, Gabriel et al 1989, Gabriel and Mace 1999. Morgan et al. 2009, Murawski et al. 2001). For sablefish, the target reference points are: 1) B35% (a proxy for B_{msy},) and 2) B40% (a higher level that provides an additional SSB buffer). The LRP for sablefish (B17.5%) is set at ½ of the B_{msy} proxy B35%, which is consistent with GCB 2.2 as a proxy LRP for stocks with average productivity. These reference points are estimated the stock assessment,conducted annually (Hanselman et al. 2014).		
b	**Guidepost**		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	As noted above in SIa, the spawning stock biomass-per-recruit method is well established as a means to derive risk-averse reference points. Specifically, the reference point of ½ bmsy is an accepted limit reference point for maintaining stock above the level at which there is an appreciable risk of impairing reproductive capacity (Murawski et al. 2001). Further, a review of the NPFMC groundfish harvest strategy incorporating the spawning biomass per-recruit reference points in the Tier system concluded that the strategy was conservative (Goodman et al., 2002). The evidence supports scoring at the SG100 level.		

PI 1.1.2		Limit and target reference points are appropriate for the stock		
c	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	As noted above under 1.1.1 and in Sis a and b, above, the NPFMC employs two reference points for Tier 3 stocks; B35% (as the B_{msy} proxy) and B40% (as a precautionary target reference point). The B35% reference point is thus appropriate to maintain the stock at a level consistent with $B_{MSY,}$ and the B40% reference point is set with the intent of maintaining the stock at a higher level. A review by Goodman et al. (2002) concluded this system is precautionary. Thus, scoring at the SG 100 level is warranted.		
d	Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.	
	Met?		Not relevant	
	Justification			
References		Goodman, D., Mangel, M., Parkes, G., Quinn, T., Restrepo, V., Smith, T., and Stokes, K. 2002. Scientific Review of the Harvest Strategy Currently Used in the BSAI and GOA Groundfish Fisheries Management Plans. http://www.alaskafisheries.noaa.gov/npfmc/misc_pub/f40review1102.pdf, 138 pp. Clark, W.G., 1993. The effect of recruitment variability on the choice of a target level of spawning biomass per recruit. In: Kruse, G, Marasco, R.J., Pautzke, C., Quinn, T.J. (Eds.), Proceedings of the International Symposium on Management Strategies for Exploited Fish Populations. Alaska Sea Grant College Program Report, 93-02, University of Alaska, pp. 233–246.		

PI 1.1.2	Limit and target reference points are appropriate for the stock	
	Clark W.G. 2002. F35% revisited ten years later North Am. J. Fish. Manage., 22 (2002), pp. 251–257 Gabriel, W.L. and P.M. Mace 1999. A Review of Biological Reference Points in the Context of the Precautionary Approach Proceedings, 5th NMFS NSAW. 1999. NOAA Tech. Memo. NMFS-F/SPO-40. P 34-45. Gabriel, W.L., M.P. Sissenwine, and W.J. Overholtz. 1989. Analysis of spawning stock biomass per recruit: an example for Georges Bank haddock. North Am. J. Fish. Manage., 9:383–391. Morgan, M.J., H. Murua, G. Kraus, Y. Lambert, G. Marteinsdottir, C.T. Marshall, L. O'Brien, and J. Tomkiewicz 2009. The evaluation of reference points and stock productivity in the context of alternative indices of stock reproductive potential. Can. J. Fish. Aquat. Sci., 66: 404–414. Murawski, S.A., P.J. Rago, and E.A. Trippel 2001. Impacts of demographic variation in spawning characteristics on reference points for fishery management ICES J. Mar. Sci., 58:002–1014	
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.1.3

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place.		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
	Met?	(Y/N)		(Y/N)
	Justification	Not Applicable. The sablefish stock is not depleted.		
b	**Guidepost**	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
	Met?	(Y/N)	(Y/N)	(Y/N)
	Justification	Not Applicable. The sablefish stock is not depleted.		
c	**Guidepost**	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe.	

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe		
	Met?	(Y/N)	(Y/N)	
	Justification	Not Applicable. The sablefish stock is not depleted.		
References		[List any references here]		
OVERALL PERFORMANCE INDICATOR SCORE:				
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The NPFMC employs a well-designed harvest strategy that incorporates: 1) monitoring (through the observer program), 2) stock assessment (conducted annually), and 3) a precautionary harvest control rule (with an LRP, a TRP, and a precautionary TRP). The observer program is discussed in the background section of this MSC assessment under Principle 3, and the stock assessment and HCR are discussed under Principle 1. Specifically, the harvest strategy uses: 1) monitoring to collect biological samples and to ensure that all removals are accounted for; 2) the stock assessment to determine stock status, and 3) the harvest control rule to set TACs in order to achieve stock management objectives reflected in the target and limit reference points. The harvest strategy is responsive to the status of the stock because 1) stock assessments are conducted annually, and 2) the HCR relates setting of the TAC directly to stock status. When estimates of spawning stock biomass fall below B40%, the harvest rate is linearly adjusted downwards to zero at 17.5% of the unfished biomass (the MSST). Therefore the harvest strategy is responsive to the state of the stock because it is designed to begin reducing the harvest rate when the stock falls below a conservative TRP (B40% -- a biomass level above the Bmsy proxy; B35%). The evidence shows that the requirements of the SG100 level are met.		
b	**Guidepost**	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Justification	A harvest strategy of this type (i.e. the 40:10 rule used by the PFMC) has undergone extensive simulation testing using generalized age- structured models (Punt et al., 2007). Additionally, empirical evidence shows that the stock has rebuilt from lows of the late 1990's/early 2000's to above the B40% level in the late 2000's (Figure 2); this occurred while the harvest strategy was in place, and TACs were being reduced (Table 2). This evidence shows the harvest strategy has been evaluated, and it has achieved its objectives by maintaining the stock at target levels. Thus, the requirements of the SG80 level are met. Estimates of sablefish recruitment in Alaska are poorly related to spawning stock size, and a stock-recruit relationship is not used in the current stock sablefish stock assessment model (Hanselman et al 2014). Given the lack of a dominant spawner-recruit relationship, simulation work specific to the sablefish stock is needed to demonstrate the robustness of the harvest strategy to variable recruitment conditions not related to stock size. Because the harvest control rule has not been fully evaluated using simulation studies to examine its ability to maintain the stock at target levels through prolonged periods of poor recruitment (e.g. due to unfavorable environmental conditions), scoring is not warranted at the SG100 level.		
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	(Y/N) Y		
	Justification	Monitoring of fishery removals occurs via the NPFMC Observer Program (NMFS 2014) and dockside monitoring, and discards are included in the catch accounting process. Thus, catch documentation is considered very reliable. The annual sablefish stock assessment integrates catch and survey data to provide an annual time series of stock status (Hanselman et al 2014). Annual estimates of biomass and fishing mortality provide sufficient feedback to evaluate whether the harvest strategy is working.		
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			(Y/N) Y

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Justification	In their review of the historical development of the NPFMC groundfish harvest strategy, DiCosimo et al. (2010) described how the groundfish Tier System presently in place has evolved through several review processes since 1996, triggered in part by revisions in the National Standard Guidelines. Additionally, a formal peer review of the harvest strategy was conducted by Goodman et al. (2002). The sablefish stock assessment, which is reviewed annually by the NPFMCs SSC, is integral to the harvest strategy. Also, an external (CIE) review of the sablefish stock assessment is scheduled for 2016. The evidence supports scoring at the SG 100 level.		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification			
References		Goodman, D., Mangel, M., Parkes, G., Quinn, T., Restrepo, V., Smith, T., and Stokes, K. 2002. Scientific Review of the Harvest Strategy Currently Used in the BSAI and GOA Groundfish Fisheries Management Plans. http://www.alaskafisheries.noaa.gov/npfmc/misc_pub/f40review1102.pdf, 138 pp. Hanselman, D.H., Lunsford, C.R., Rodgveller, C.J. 2014. Chapter 3. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation (SAFE) Report. December 2014. North Pacific Fishery Management Council, Anchorage AK, Pp. 576-717. Available at: http://www.afsc.noaa.gov/REFM/Docs/2014/BSAIsablefish.pdf NMFS 2014. 2015Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802. Punt, A., Ralston, S., Heifetz, J., Dicosimo, J., Gharrett, A., Love, M., O'Connell, V., and Stanley, R. 2007. A management strategy evaluation of rebuilding revision rules for overfished rockfish stocks. In Proceedings of the 23rd Lowell Wakefield Fisheries Symposium. Biology, Assessment, and Management of North Pacific Rockfishes. Alaska Sea Grant College Program, University of Alaska Fairbanks Fairbanks AK USA.		

PI 1.2.1	There is a robust and precautionary harvest strategy in place	
	Shotwell, S.K., D.H. Hanselman, and I.M. Belkin. 2012. Toward biophysical synergy: Investigating advection along the Polar Front to identify factors influencing Alaska sablefish recruitment. Deep-Sea Res. II, http://dx.doi.org/10.1016/j.dsr2.2012.08.024. Sigler, M. F., T. L. Rutecki, D. L. Courtney, J. F. Karinen, and M.-S.Yang. 2001. Young-of-the-year sablefish abundance, growth, and diet. Alaska Fish. Res. Bull. 8(1): 57-70.	
OVERALL PERFORMANCE INDICATOR SCORE:		**95**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	
	Met?	(Y/N) Y	(Y/N) Y	
	Justification	As discussed in the P1 portion of the background section of this report, Alaska sablefish are managed using the NPFMC Tier System for groundfish stocks (DiCosimo et al 2010). The harvest control (HCR) used for sablefish is clearly defined under Tier 3b of that system. The HCR is consistent with the harvest strategy, because it ensures that the exploitation rate is reduced as the LRP(B17.5%) is approached. Annual catch limits are based on a fixed fraction of the vulnerable stock based on a F40% strategy. When estimates of spawning stock biomass fall below B40% (the precautionary TRP), the harvest rate is linearly adjusted downwards to zero at 17.5% of the unfished biomass (the MSST). The SG60 and SG80 guidelines are fully met.		
b	**Guidepost**		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		(Y/N) Y	(Y/N) N

PI 1.2.2		There are well defined and effective harvest control rules in place		
	Justification	As noted under Scoring Issue a, above, Tier 3b is used to assign the harvest control rule for sablefish. Tier 3b is selected for stocks where the information is available to determine reliable point estimates of B, B40%, F35%, and F40%, and when the stock status is at or below B40% and above the MSSR. A decline in exploitation rates begins when the stock falls below the B40% level (a SSB level higher than the B_{msy} proxy (B35%), providing a buffer to take into account the main uncertainties, such as errors in estimation and ecosystem considerations. Thus the SG80 level is met. The design of the HCR is relies on the validity of the spawning stock biomass per-recruit reference point reference points used. As noted in 1.2.1 SIb, There is no underlying stock recruitment relationship that is estimated to determine if the F40% harvest rate is a reasonable proxy for long-term sustainability. Thus, the HCR does not account for a wide range on uncertainties, and scoring at the SG100 level is not supported.		
c	Guidepost	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	Evidence clearly shows that the HCR in place for sablefish has been effective at reducing exploitation rates when the stock has been below the B40% level. This is well illustrated by the decline in estimated fishing mortality since 1999 (Figure 5); at a time when TACs were being reduced (Table 2). Scoring at the SG100 level is warranted for this Scoring Issue.		
References		DiCosimo, J., Methot, R. D., and Ormseth, O. A. 2010. Use of annual catch limits to avoid stock depletion in the Bering Sea and Aleutian Islands management area (Northeast Pacific). – ICES Journal of Marine Science, 67: 1861–1865.		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	Information for the assessment of sablefish is relatively data rich in comparison to other stock assessments. Data used in the stock assessment dates back to 1960 and includes 1) commercial catch from the Japanese longline fishery, US longline fishery, and US trawl fishery, and 2) survey data from the Japan-US cooperative longline survey, domestic longline survey, and the NMFS GOA trawl survey. Relative abundance and age/length composition data are available from both commercial and survey gears (Hanselman *et al*. 2014). Biological data, and good estimates of total removals are available from the re-structured observer program (discussed in the P3 portion of the background section of this report). Also, ample tagging data have supported the understanding of sablefish stock structure in Alaska, and information on stock productivity, fleet composition, and stock abundance, is well documented (Hanselman *et al.* 2014). Additionally, information is available relating sablefish recruitment dynamics to environmental factors (Sigler *et al*. 2001; Shotwell *et al.* 2012); however, it is not presently incorporated into the current harvest strategy. All elements of the SG100 level are met for this Scoring Issue.		
b	**Guidepost**	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	All information required for the harvest control rule is monitored on an annual basis. There is a high degree of certainty in catch, bycatch, and discard accounting as a result of the NPFMC Observer Program, which has recently gained an additional measure of reliability from a restructuring process (NMFS 2015). While it is noteworthy that a gap in observer program coverage does exist for the smallest boats (vessels < 40 ft LOA are not observed), the Assessment Team reviewed the evidence and concluded that this gap in monitoring is not a substantive factor with respect to uncertainty in estimation of sablefish total removals. We reached this conclusion because: 1) vessels less than 40 ft LOA make up only about 5% of the fleet (Table 11), and 2) catch from these vessels is only about 2 % of the total taken (Table 13). The low participation of small boats in the fishery follows from the geographic concentration of fishing effort offshore, where sablefish aggregate at depths typically beyond the range of the smaller boats. There is a good understanding of inherent uncertainties in the information. A key uncertainty is sablefish natural mortality, which is assumed at a fixed and time-invariant value in the current assessment model. A recent concern has been the potential of added natural mortality from whale depredation, and the effect of this on the stock assessment and management. Uncertainty from this source was addressed in the most recent stock assessment by conducting a number of sensitivity models with different potential mechanisms of accounting for mortality by whale depredation on the survey and in the fishery. The estimation of key parameters was found to be robust to most scenarios examined, and the range of scenarios presented sets reasonable boundaries on how accounting for whale depredation inside the stock assessment would affect model results (Hanselman et al 2014). The evidence supports scoring at the SG 100 level for this Scoring Issue.		
c	**Guidepost**		There is good information on all other fishery removals from the stock.	
	Met?		(Y/N) Y	
	Justification	The observer program (discussed above under SIb, and in the P3 portion of the background section of this report), provides a reliable accounting of other fishery removals from the stock. Hanselman et al. (2014) reported that from 1994 to 2004 discards averaged 1,357 t for the GOA and BSAI combined; since then, discards have been lower, averaging 614 t between 2007 and 2013 (less than 5% of the total catch). The highest discard amounts occur in hook-and-line fisheries in the GOA, with smaller amounts taken from pot, trawl, and jig fisheries. The requirements of the SG80 level are met.		
References		Hanselman, D.H., Lunsford, C.R., Rodgveller, C.J. 2014. Chapter 3. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation (SAFE) Report. December 2014. North Pacific Fishery Management Council, Anchorage AK,		

PI 1.2.3	Relevant information is collected to support the harvest strategy
	Pp. 576-717. Available at: http://www.afsc.noaa.gov/REFM/Docs/2014/BSAIsablefish.pdf NMFS. 2015. Draft Supplement to the Environmental Assessment for Restructuring the Program for Observer Procurement and Deployment in the North Pacific. NMFS, Alaska Regional Office, Juneau. May 2015. Shotwell, S.K., D.H. Hanselman, and I.M. Belkin. 2012. Toward biophysical synergy: Investigating advection along the Polar Front to identify factors influencing Alaska sablefish recruitment. Deep-Sea Res. II, http://dx.doi.org/10.1016/j.dsr2.2012.08.024. Sigler, M. F., T. L. Rutecki, D. L. Courtney, J. F. Karinen, and M.-S.Yang. 2001. Young-of-the-year sablefish abundance, growth, and diet. Alaska Fish. Res. Bull. 8(1): 57-70.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

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/N) Y	(Y/N) Y
	Justification	The information needed to assess stock status relative to the limit reference points, and to apply the harvest control rule, is obtained from quantitative stock assessments based on fitting population dynamics models to fishery and survey data. The assessments are prepared annually by the NMFS Sustainable Fisheries Division, Auke Bay, Alaska. The model configuration incorporates major features relevant to the fishery, by fitting fishery and survey data to the model including : 1) relative abundance and length data from the longline survey, 2) relative abundance and length data from the longline fishery, 3) length data from the trawl fisheries, 4) age data from the longline survey and fixed gear fishery, and 5) historical catches from all sources (Hanselman et al. 2014). The model also takes into account the major features relevant to the biology of the species, including growth and maturity, recruitment, spawner-per-recruit levels, and natural mortality. The model does not estimate a stock recruit relationship, and this is appropriate, because recruitment is largely driven by factors unrelated to fishing (e.g. environmental conditions) for this stock. For this reason, exploratory work has been done to examine key environmental variables that affect recruitment (Shotwell et al 2012). While a better understanding of the environmental-recruitment relationship is not needed to estimate the spawner-recruit reference points used for management, this research could aid in providing useful predictive capabilities for recruitment in future models. The evidence shows that 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.		
b	**Guidepost**	The assessment estimates stock status relative to reference points.		

PI 1.2.4		There is an adequate assessment of the stock status		
	Met?	(Y/N) Y		
	Justification	The information needed to assess stock status relative to the limit reference points, and to apply the harvest control rule, is obtained from quantitative stock assessments based on fitting population dynamics models to fishery and survey data. 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/N) Y	(Y/N) Y	(Y/N) Y
	Justification	Stock status is evaluated relative to the reference points in a probabilistic way. The assessment conducts a Bayesian statistical analysis of reference points via MCMC simulation. Stock size thresholds are defined by 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/N) Y

PI 1.2.4		There is an adequate assessment of the stock status		
	Justification	The assessment has been tested using conventional diagnostics such as retrospective analysis, and was found to be robust. Alternative hypotheses have been rigorously explored in the most recent assessment, in an effort to evaluate how accounting for whale depredation inside the stock assessment model affects assessment results (Hanselman et al 2014). Additional investigations are underway using exploratory models to evaluate spatially explicit models (incorporating a Management Strategy Evaluation). Assessment related research is also being conducted on 1) sablefish growth, 2) standardization of relative abundance indices, 3) maturity-at-age, and 4) sablefish movement. (Hanselman et al 2014). The evidence supports scoring at the SG100 level.		
e	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		(Y/N) Y	(Y/N) 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 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 fisheries stock assessment, ecological, economic and social science. 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		Hanselman, D.H., Lunsford, C.R., Rodgveller, C.J. 2014. Chapter 3. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation (SAFE) Report. December 2014. North Pacific Fishery Management Council, Anchorage AK, Pp. 576-717. Available at: http://www.afsc.noaa.gov/REFM/Docs/2014/BSAIsablefish.pdf Shotwell, S.K., D.H. Hanselman, and I.M. Belkin. 2012. Toward biophysical synergy: Investigating advection along the Polar Front to identify factors influencing Alaska sablefish recruitment. Deep-Sea Res.		

PI 1.2.4	There is an adequate assessment of the stock status	
	II, http://dx.doi.org/10.1016/j.dsr2.2012.08.024.	
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		

Principle 2: Longline (hook and line) gear

Sablefish Longline – P2

Evaluation Table for PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	(Y/N) HAL: Y, THH: Y, BAIT: N/A	(Y/N) HAL: Y, THH: Y, BAIT: N/A	(Y/N) HAL: Y, THH:N, BAIT: N, MINOR: N

	Justification	For all main retained species, biologically based limits are established and there is a high degree of certainty that species are within those limits. **Pacific halibut (HAL)**: 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 (B_0) 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). **There is therefore a high degree of certainty that this stock is within biologically based limits.** **Thornyheads (THH, *Sebastolobus* species)**: THH 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 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, the GOA ABC was 1,841 t (Shotwell *et al*. 2015). **Overfishing is not considered to be occurring and there is a high degree of certainty that these stocks are within biologically based limits.** **BAIT:** According to CR V1.3 CB3.5.5: "The team shall consider species used as bait in a fishery, if they are caught by the fishery under assessment or elsewhere under the Retained Species component in P2." In the UoA, bait type and volume are not recorded or quantified in a systematic way. During on-site meetings the assessment team was able to ascertain typical bait species used in the fishery as well as a ball-park volume estimate from fishery managers and industry members. However, this information was anecdotal and qualitative in nature, not verifiable, and not sufficient to determine whether bait in aggregate or on a species-specific level qualifies as 'main.' The assessment team has determined that the species will be classified as 'main' as a precautionary measure and to ensure that scoring on the "information PI 2.1.3" could reflect the deficiency in information on bait However, given the uncertainty surrounding bait type and volume, the team considers that there is not sufficient information to accurately score bait as a typical 'main' element under PI 2.1.1 pertaining to outcome status and 2.1.2 pertaining to management considerations. The team has therefore, where relevant, considered the bait element as 'NA' under PIs 2.1.1 and 2.1.2. In order to sum scoring elements and provide an overall PI score in accordance with CRV1.3 Scoring Requirements (27.10.7), the assessment team has considered NA equivalent to Y up to the SG80 level, similar to how 'minor' species are treated in under PIs 2.1.X and 2.2.X.

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
		Bait is scored traditionally as a 'main' species then under 2.1.3, where the baseline information deficiency is most appropriately assessed. This approach permits the assessment team to address the information deficiency regarding bait without nonsensically scoring bait for outcome and management considerations without appropriate information. **Other/Minor** For these main retained species, there is a high degree of certainty that they are within biological based limits and that halibut is fluctuating around its target reference points. Similarly, for some other "minor" retained species (i.e. rockfish, Greenland turbot, Kamchatka flounder, arrowtooth flounder, Pacific cod) there is a high degree of certainty that species are also within biologically based limits. However, for tier 5 species, target reference points are not established. At present, the origin and stock status of bait species is unknown, therefore it is not possible to evaluate whether they have well defined target reference points (i.e. Market and Argentinian squid), biologically based limits or even indicators used to evaluate stock status. We cannot conclude that all retained species are highly likely to be within biologically based reference points and cannot score this SI at 100.		
b	**Guidepost**			Target reference points are defined for retained species.
	Met?			(Y/N) HAL:Y, THH:N, BAIT: N, MINOR:N
	Justification	Target reference points of OFL and ABC are defined on an annual basis for Pacific halibut (Stewart and Martell 2015) but not thornyhead species (Shotwell *et al*. 2015). Target reference points have not been defined for all retained species (minor species included, and the origin of bait species is not known). Therefore, we cannot say that these are known to have well defined target reference points and we cannot award a score of 100.		
c	**Guidepost**	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	

PI 2.1.1		**The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species**		
	Met?	(Y/N) HAL/THH/BAIT: NA	(Y/N) HAL/THH/BAIT: NA	
	Justification	**HAL/THH**: N/A for non-target species retained by the fishery, as the main retained species are not outside limits. **BAIT**: It is currently unclear whether bait is a main component of this fishery, nor are there compelling reasons to believe that any of the bait species used by the fishery are outside of limits (most have robust life history traits). Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency.		
d	**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 retained species to be outside biologically based limits or hindering recovery.		
	Met?	(Y/N) HAL/THH/BAIT: NA		
	Justification	**HAL/THH**: N/A for main non-target species retained by the fishery, as status is well known. **BAIT**: It is currently unclear whether bait is a main component of this fishery, nor are there compelling reasons to believe that any of the bait species used by the fishery are outside of limits (most have robust life history traits). Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency.		
References		Stewart and Martell 2015; Shotwell *et al*. 2015; Murphy and Ianelli 2011; Lowe and Ianelli 2009; Skud 1978; IADB 2013; Clyde et al. 1984; CDFW 2005; PFMC 2014; Munro 2015; NMFW 2014; Hoag et al. 1983; Seitz et al. 2007; IPHC 2013; Gilroy and Stewart 2014; NPMFC 2013; Spies and Spencer 2015; Ianelli and Ito 1995		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.
	Met?	(Y/N) HAL/THH: Y, BAIT: NA	(Y/N) HAL/THH: Y, BAIT: NA	(Y/N) HAL/THH: Y, MINOR: Y, BAIT: N

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species
	Justification	A strategy in the MSC system represents a cohesive and strategic arrangement that comprises one or more measures, an understanding of how they work to achieve an outcome that is appropriate to the scale, intensity and context of the fishery and contains mechanisms for the modification of fishing practices in the light of any unacceptable impacts. In this system, there is a strategy in place to manage the main retained species (Pacific Halibut: HAL and Thornyheads: THH) which consists of (1) extensive catch accounting system (2) observer program to estimate discarded catch (3) fishery independent surveys conducted by NOAA- Fisheries (4) statistical stock assessments for all of the main retained species (5) a tiered system of assessments that provides for more precautionary annual catch limits when assessments use less precise methods. The tiered, precautionary procedure for setting annual catch limits provides a high likelihood that stocks will be maintained at levels above their reference points and, and clear procedures exist for restricting catch limits if stock rebuilding is necessary. **HAL**: There is a strategy in place for managing Pacific halibut that involves the annual stock assessment, defining a range of harvest levels and potential risk, setting catch limits within regulatory areas based on biomass estimates, and apportioning Individual Fishing Quotas among fishers in the IFQ program (IPHC 2013). **THH**: While there is no directed fishery for thornyhead species they are retained as one of the most valuable rockfish species. There is a strategy in place for managing thornyhead species that involves annual stock assessments and setting biologically based limits (tier 5 species). 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). **MINOR**: All other retained species and species groups, particularly rockfish, Pacific cod, Greenland turbot, Kamchatka flounder and skates (Table 5) are managed under the same strategy described above. **BAIT**: See 2.1.1 for rationale for treatment of bait as a main retained species. Because the provenance of bait species used in the fishery have not been verified, we cannot be sure of the management systems (including necessary strategies) are in place for bait species. Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency. However, by definition of bait as a 'retained species' in the MSC system, it cannot be said that the UoA has a strategy for managing all retained species due to this deficiency.

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	(Y/N) HAL/THH: Y;BAIT: NA	(Y/N) HAL/THH: Y BAIT: NA	(Y/N) HAL: Y, THH: N, MINOR: N, BAIT: N
	Justification	**HAL**: The IPHC is conducting a Fishery Management Evaluation to test the performance of different strategies for managing the halibut resource. The IPHC has convened a Management Strategy Advisory Board to provide input and oversee this process. Additionally, annual biomass surveys, stock assessment models, and IFQ allocations provide objective basis for confidence that the strategy is working and that the stocks are not being overfished. **THH**: For thornyhead species, there is some objective basis for confidence that the partial strategy will work given the annual biomass surveys and the tier 5 management strategy indicate that the stocks are not currently being overfished. **BAIT/MINOR**: See 2.1.1 for rationale for treatment of bait as a main retained species and associated scoring methodology. Because the provenance of bait species used in the fishery have not been verified, we cannot be sure of the management systems (including necessary strategies) are in place for bait species. Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) HAL/THH: Y; BAIT: NA	(Y/N) HAL/THH/MINOR/BAIT: N

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
	Justification	There is some evidence for successful implementation of this management strategy is manifest by the healthy stock status for retained species, the ability to access reported landings and estimated total landings data as well as annual stock assessment reports for these species. **HAL/THH:** Annual biomass surveys and stock assessments for both Pacific halibut and thornyhead *spp*. provide some evidence that the management strategies are achieving overall objectives to maintain species within biologically based limits. **BAIT/MINOR**: There is a lack of clear evidence that there is a strategy that is being implemented successfully for bait species which prevents us from scoring at 100 for bait and minor species.		
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
	Met?			(Y/N) HAL/THH/MINOR: Y, BAIT: N
	Justification	Annual biomass surveys, stock assessments, and stocks that remain within their limits for Pacific halibut, thornyheads and minor spp. provide some evidence that the management strategies are achieving overall objectives to maintain the stocks within biological limits. There is not evidence that there is a strategy for all bait species, because these cannot be clearly identified.		
e	**Guidepost**	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	(Y/N/Not relevant) Y	(Y/N/Not relevant) Y	(Y/N/Not relevant) Y
	Justification	Based on observer coverage and reports from fishery managers, there is a high degree of certainty that shark finning is not occurring.		
References		IPHC 2013; Spies *et al*. 2014		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**

PI 2.1.2	There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species	
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.1.3

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	(Y/N) HAL/THH/BAIT: Y	(Y/N) HAL/THH: Y, BAIT N	(Y/N) HAL/THH/MINOR: Y, BAIT N
	Justification	**HAL/THH/MINOR**: The North Pacific groundfish and Pacific halibut fisheries have accurate and verifiable sources of fishery dependent and fishery independent information that are used directly in stock assessments for retained species, including annual fishery independent surveys, catch accounting system, and an observer program. For a full discussion of information used to manage the fishery, please see the "Sources of Information" section (above). Despite the lack of observer coverage on vessels <40ft LOA, the small number of boats in this category and particularly the limited geographic range of fishing effort to shelf breaks, mean that there is not a substantial concern that the Observer Program is missing substantial information from these vessels related to non-target catch. **BAIT**: See background and 2.1.1 for rationale for treatment of bait as a 'main retained' species, and for scoring methodologies within 2.1.X. Since only qualitative information for bait species is currently known (see Bait considerations: hook and line & pot gear), the team concluded that this element can only score at the 60 level overall.		
b	**Guidepost**	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	(Y/N/Not relevant) HAL/THH/BAIT: Y	(Y/N) HAL/THH: Y, BAIT: N	(Y/N) HAL/THH/MINOR: Y, BAIT: N

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
	Justification	**HAL/THH/MINOR**: Information from the fishery independent surveys, catch accounting system, and observer programs is sufficient to quantitatively estimate outcome status with a **high degree of certainty**. **BAIT**: Since only qualitative information for bait species is currently known, the team concluded that the information is not sufficient to estimate the outcome status with respect to biologically based limits, and can only score at the 60 level overall.		
c	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	(Y/N)) HAL/THH: Y, BAIT Y	(Y/N) HAL/THH: Y, BAIT N	(Y/N) HAL/THH/MINOR: Y, BAIT N
	Justification	**HAL/THH/MINOR**: Information from the fishery independent surveys, catch accounting system, and observer programs is sufficient to support management with a high degree of certainty. **BAIT**: Information is currently adequate to tentatively identify species used as bait and to assure that there are measures in these fisheries to manage these species. However, verifiable information is not available to assure that information to support a partial strategy for bait species (if main) is available.		
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		(Y/N) HAL/THH: Y BAIT:N	(Y/N) HAL/THH/MINOR: Y, BAIT N

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species
	Justification	**HAL/THH/MINOR**: Sufficient information from fishery independent surveys, catch accounting systems, and restructured observer program are collected on a regular and ongoing basis to assess changes in risk to outcome status, and monitoring is conducted to assess retained species mortalities. This includes monitoring and research studies to estimate halibut mortalities when discarded, as is common in this fishery due to the minimum size regulations. **BAIT**: Since only qualitative on the type and volume of bait used is available the team cannot conclude that sufficient data continue to be collected to detect any increase in risk level due to changes in fishing behavior and cannot score this at the SG80 level.
References		Stewart and Martell 2015; Shotwell *et al*. 2015; Murphy and Ianelli 2011; Lowe and Ianelli 2009; Skud 1978; IADB 2013; Clyde et al. 1984; CDFW 2005; PFMC 2014; Munro 2015; NMFW 2014; Hoag et al. 1983; Seitz et al. 2007; IPHC 2013; Gilroy and Stewart 2014; NPMFC 2013; Spies and Spencer 2015; Ianelli and Ito 1995
OVERALL PERFORMANCE INDICATOR SCORE:		**75**
CONDITION NUMBER (if relevant):		**LL 2.1.3**

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/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA: N, LSA: Y, MINOR: N

	Justification	**GRN**: Due to a lack of necessary information, NMFS cannot establish a minimum stock size threshold from which to determine whether the 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 OFL in the annual Tier 5 grenadier 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 **highly likely that stock is within biologically based limits.** **SHK:** 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.** **BFA**: 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). 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). 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.**

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		
		LSA: 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 and an estimated average of 141.8 birds for the years 2010-2015 representing a small portion of the overall take. **Therefore, there is a high degree of certainty that the species are within biologically based limits.** **MINOR**: For "minor" bycatch species (i.e. BSAI flatfish, octopus, sculpins) there is not a high degree of certainty that species are within biologically based limits. We cannot conclude that all bycatch species are highly likely to be within biologically based reference points and cannot score this PI at 100.		
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?	(Y/N) NA	(Y/N) 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.		

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**		
	Met?	(Y/N) NA		
	Justification	NA		
References		Rodgveller and Hulson 2015; Arata *et al*. 2009; USFWS 2015b; BLI 2014;		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.
	Met?	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA: N, MINOR: N

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations
	Justification	There is a strategy in place to manage most bycatch species which consists of (1) extensive catch accounting system (2) observer program to estimate discarded catch (3) fishery independent surveys conducted by NOAA- Fisheries (4) statistical stock assessments for all of the main bycatch species (5) a tiered system of assessments that provides for more precautionary annual catch limits when assessments use less precise methods. The tiered, precautionary procedure for setting annual catch limits provides a high likelihood that stocks will be maintained at levels above their reference points and, and clear procedures exist for restricting catch limits if stock rebuilding is necessary. **GRN - There is a partial strategy** for managing grenadiers, since they have not traditionally 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 to include Grenadiers "unofficial" stock assessments in the Ecosystem Component of the FMPs. 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 help to better estimate catch, reduce scientific uncertainty, prevent "unmanaged target fishing" of grenadiers, and reduce the vulnerability of grenadiers to overfishing as an incidental catch species (NMFS 2013). Because the grenadier species complex is not formally included in the Groundfish FMPs, we cannot conclude there is a full strategy in place to limit and minimize bycatch. **SHK** - There is a **partial strategy** to manage sharks which 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). Because sharks are managed under the "other species" complex and not on a species-by-species basis, we cannot conclude there is a full strategy in place to limit and minimize bycatch.

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
		BFA/LSA - There is a **partial strategy** to manage seabird bycatch that involves a requirement for all longline vessels >55' to use seabird avoidance devices, which has been demonstrated to markedly reduce seabird mortality. The adoption of these measures has reduced seabird takes by one-third 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. Because there are no formal temporal/spatial restrictions in place to minimize seabird bycatch, we cannot conclude there is a full strategy to minimize and limit seabird bycatch. MINOR - For "minor" bycatch species (i.e. BSAI flatfish, octopus, sculpins) there is not a strategy in place for managing and minimizing bycatch. We cannot conclude that there is a strategy for managing and minimizing bycatch for all species and this element is not scored at 100.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA/MINOR: N
	Justification	There is some objective basis for confidence that the partial strategies for sharks, grenadier and seabird species is working based on reported observer data, annual surveys, and catch accounting system indicating that the sablefish fishery is having minimal impacts on bycatch species stock status. Furthermore, recent stock assessments of the grenadier and shark species complexes have concluded that overfishing is not occurring.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA/MINOR: N

PI 2.2.2		**There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations**		
	Justification	There is some evidence for successful implementation of this management strategy manifest by the healthy stock status for main bycatch species, the ability to access reported landings, and estimated total landings data as well as annual stock assessment reports for these species. Because stock assessments are not conducted on all bycatch species, we cannot conclude there is clear evidence that the strategy is achieving its overall objectives to minimize bycatch.		
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
	Met?			(Y/N) GRN/SHK/BFA/LSA/MINOR: Y
	Justification	Annual biomass surveys and stock assessments for most bycatch species provide some evidence that the management strategies are achieving overall objectives to maintain species with biologically based limits and minimize bycatch of all species.		
References		NPFMC 2014; NPFMC 2013; Tribuzio *et al*. 2010; Fitzgerald *et al*. 2008		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA/MINOR: Y
	Justification	The North Pacific groundfish fisheries (including sablefish) have accurate and verifiable sources of fishery dependent and fishery independent information that are used directly in stock assessments for most bycatch species, including annual fishery independent surveys, a catch accounting system, and an observer program. For a full discussion of information used to manage the fishery, please see the "Sources of Information" section (above).		
b	**Guidepost**	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	(Y/N/Not relevant) GRN/SHK/BFA/LSA: Y	(Y/N/Not relevant) GRN/SHK/BFA/LSA: Y	(Y/N/Not relevant) SHK/BFA/LSA: Y, GRN: N, MINOR:N
	Justification	Information from the fishery independent surveys, catch accounting system, and observer programs is sufficient to quantitatively estimate outcome status of sharks and seabirds with a high degree of certainty, however, due to lack of minimum stock size threshold, grenadier outcome status cannot be estimated with a high degree of certainty. Similarly, for minor species information is not sufficient to quantitatively estimate outcome status with respect to biologically based limits.		
c	**Guidepost**	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage bycatch species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA/MINOR: Y

PI 2.2.3		**Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch**		
	Justification	Information from the fishery independent surveys, catch accounting system, and observer programs is sufficient to support grenadier, shark, and seabird management strategies with a high degree of certainty. Despite the lack of observer coverage on vessels <40ft LOA, the small number of boats in this size category and the limited geographic range of fishing effort to shelf breaks, mean that there is not a substantial concern that the Observer Program is missing substantial information from these vessels related to non-target catch		
d	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?		(Y/N) GRN/SHK/BFA/LSA: Y	(Y/N) GRN/SHK/BFA/LSA/MINOR: Y
	Justification	Sufficient information from fishery independent surveys, catch accounting systems, and restructured observer program are collected on a regular and ongoing basis to assess changes in risk to outcome status, and monitoring is conducted to assess bycatch species mortalities.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
	Met?	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y
	Justification	**STAL:** The incidental take levels of short-tailed albatross have not been exceeded during the current or any previous years of fishing since the Short-tailed albatross was listed as an ESA species. 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) and increased the incidental take from four birds every two years to six birds every two years. Given the lack of any observed bird mortalities from the sablefish fishery in recent years, and the increased incidental take statement for the groundfish fishery as a whole, **there is a high degree of certainty that the effects of the fishery are within the limits of the ESA legislation.** **SPM/ORCA**: There have been no reported takes of orca or sperm whales, and the fishery uses avoidance measures in accord with national legislation to avoid harassment of the animals when fishing. There is **a high degree of certainty** that the effects of the fishery are within the limits of the MMPA legislation.		
b	**Guidepost**	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
	Met?	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL: N, SPM/ORCA: Y

PI 2.3.1		**The fishery meets national and international requirements for the protection of ETP species** **The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species**		
	Justification	**STAL**: NMFS re-initiated consultation with USFWS in 2013, 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 2015f). 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). This determination provides a rationale that it is highly unlikely that there are significant detrimental effects of the sablefish fishery on the Short-tailed albatross population. However, due to limitations of the way that STAL mortalities are estimated from very rare occurrences, there is not a high degree of confidence that there are no significant detrimental effects, and we cannot score this element at 100. **SPM/ORCA:** 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. Currently, this trend in depredation does not have any implications on scoring in the MSC system; however, future assessments should continue to consider depredation in light of its overall direct impacts (i.e. entanglement). There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on sperm or orca whales.		
c	**Guidepost**		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y

PI 2.3.1		**The fishery meets national and international requirements for the protection of ETP species** **The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species**
	Justification	**STAL**: NMFS re-initiated consultation with USFWS in 2013, 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 potential indirect on short-tailed albatross populations (NMFS 2015f). The revised biological opinion concluded that the groundfish fisheries (including sablefish) are not likely to have substantial indirect effects on the short-tailed albatross population, though plastic debris and toxic contamination were considered. This determination provides a high degree of confidence that there are no significant detrimental indirect effects of the sablefish fishery on the Short-tailed albatross population. **SPM/ORCA**: 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). Currently, this trend in depredation does not have any implications on scoring in the MSC system; however, future assessments should continue to consider depredation for this performance indicator in light of its potential indirect impacts on whale species trophic dynamics, and changes in distribution or feeding behavior. There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
References		USFWS 2015; USFWS 2003b; NMFS 2015f
OVERALL PERFORMANCE INDICATOR SCORE:		**95**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.3.2

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y

PI 2.3.2		**The fishery has in place precautionary management strategies designed to:** • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**
	Justification	**STAL:** 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: e. 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. f. 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. g. 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. h. 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 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 2015f).

PI 2.3.2		**The fishery has in place precautionary management strategies designed to:** • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**		
		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*). Given current observer coverage, use of streamer lines, and mortality notification, and implementation of the RPMs there is a **comprehensive strategy in place that is designed to minimise mortality of ETP species above national standards.** **SPM/ORCA**: Fishers communicate with one another to avoid deploying or retrieving gear when whales are present. 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. Additionally, these species are protected under the marine mammal protection act to minimize harassment of animals. **This represents a comprehensive strategy for managing the fishery's impact on ETP species, including measures to minimise mortality, and are designed to achieve above national and international requirements for the protection of ETP species.**		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/ SPM/ORCA: N
	Justification	**STAL**: The strategy is mainly based on information directly about the fishery, including observer data and the extrapolated takes from the catch accounting system, which provide an objective basis for confidence that the strategy will work to achieve objectives, based on information directly about the fishery. However, because short tailed albatross bycatch is estimated based only on observed mortalities, we cannot conclude that there with a high degree of confidence that the strategy will work to achieve its overall objectives of minimizing short-tailed albatross bycatch. **SPM/ORCA:** There is an **objective basis for confidence** that the strategy will work basd on information collected about the fishery and the species involved. This is evidenced by the lack of any observed mortality of orca or sperm whales by sablefish fishing.		

PI 2.3.2		**The fishery has in place precautionary management strategies designed to:** • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**		
c	**Guidepost**		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y
	Justification	STAL/SPM/ORCA: There is clear evidence, from observer data and the extrapolated takes from the catch accounting system, which provide clear evidence that the strategy is being successfully implemented, including a very high rate of adoption of bycatch reduction measures across the groundfish fleet.		
d	**Guidepost**			There is evidence that the strategy is achieving its objective.
	Met?			(Y/N) STAL/SPM/ORCA: Y
	Justification	STAL **SPM/ORCA:** There is **evidence**, including observer data and the extrapolated takes from the catch accounting system, which indicate that the strategy is achieving its overall objectives of minimizing short-tailed albatross bycatch. No Short-tailed albatross, orca, or sperm whales have been reported taken in the sablefish fishery. Furthermore, adoption of these seabird avoidance measures has reduced albatross takes by 85% throughout the groundfish fleet (Fitzgerald *et al*. 2008).		
References		USFWS 2015; Fitzgerald *et al*. 2008; NMFS 2015f; Ed Melvin, pers com		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.3.3

PI 2.3.3		**Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y
	Justification	STAL/SPM/ORCA: Information on potential impacts of sablefish fishing on short-tailed albatross consists of (1) quantitative knowledge on the effectiveness of seabird avoidance devices (2) monitoring of compliance with regulations that require the use of these devices; (3) observer coverage to monitor the fishery for short-tailed albatross kills; and (4) extensive monitoring of short-tailed albatross populations and quantitative modelling to assess rates of population change. This information is sufficient to quantitatively estimate outcome status of short-tailed albatross, sperm and orca whales with a high degree of certainty and supports a comprehensive strategy to manage impacts.		
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	(Y/N/Not relevant) STAL/SPM/ORCA: Y	(Y/N/Not relevant) STAL/SPM/ORCA: Y	(Y/N/Not relevant) STAL/SPM/ORCA: N

PI 2.3.3		**Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
	Justification	**STAL/SPM/ORCA**: 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 by IFQ and CDQ permit holders, as well as bycatch of sablefish by trawl vessels according to the respective fishery's requirements. 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 2015f). This information is sufficient to determine whether the sablefish fishery is a threat to the recovery of the short-tailed albatross. However, this extrapolation can be problematic as it only takes into account observed mortalities. **Because of this accurate and verifiable information is not available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of short-tailed albatross, orca, and sperm whales.**		
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.

PI 2.3.3		**Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
	Met?	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y	(Y/N) STAL/SPM/ORCA: Y
	Justification	STAL/SPM/ORCA: Information on potential impacts of sablefish fishing on short-tailed albatross consists of (1) quantitative knowledge on the effectiveness of seabird avoidance devices (2) monitoring of compliance with regulations that require the use of these devices; (3) observer coverage to monitor the fishery for short-tailed albatross kills; and (4) extensive monitoring of short-tailed albatross populations and quantitative modelling to assess rates of population change. This information is sufficient to determine whether the fishery may be a threat to protection and recovery of short-tailed albatross estimate outcome status with a high degree of certainty and supports a comprehensive strategy to manage impacts.		
References		Fitzgerald *et al*. 2013; AFSC 2015; NMFS 2015f		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) N

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function
	Justification	While some studies have examined the effect of longlining on seafloor habitats in other parts of the world (Pham *et al*. 2015) and concluded there are minimal impacts, there remains a lack of comprehensive evidence on these impacts in Alaska (Meuter 2008). Sablefish longlining is highly unlikely to reduce habitat structure 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 (Heifetz *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) 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. Longline gears can have an impact on certain sensitive habitat as evidenced by limited underwater observations. The actual capture of gorgonian and stony corals, as examples, has been verified by commercial fisheries observers and NMFS surveys. 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. On the other hand, a large proportion of this gear is set on soft substrate where effects are considered negligible. 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) representing a relatively low level of impact. Due to the lack of studies in Alaska related to the impact of longlining on habitat structure we cannot conclude that there is evidence that longlining is reducing habitat structure, however, because of studies conducted elsewhere it is **highly unlikely** that sablefish longlining operations will reduce habitat structure and function to a point of irreversible harm.
References		Livingston 2003; Heifetz *et al*. 2002; McConnaughey *et al*. 2009; Stone 2006; Martin 2009; Pham *et al*. 2015; Mueter 2008

PI 2.4.1	The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	**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). 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, totaling 13.5 nm^2. All bottom-contact gear (longlines, trawls, pots, dinglebar gear, etc.) is prohibited in this area. 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.		

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	While there is some objective basis for confidence that the strategy for preventing structural habitat damage will work given relatively low levels of coral and sponge bycatch (NOAA CAS 2015) and implementation of closed areas, there remains a lack of testing to support this strategy.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) Y	(Y/N) N
	Justification	There is some evidence from the observer program indicating a very few structure forming organisms are being captured by sablefish longlining operations (NOAA CAS 2015). Additionally, limited submersible studies (Heifetz 2003), primarily aimed at identifying impacts from trawl fishing, found that fishing operations are not occurring in habitat conservation areas and that the strategy is being implemented successfully to prevent impacts to structure forming habitat.		
d	Guidepost			There is some evidence that the strategy is achieving its objective.
	Met?			(Y/N) Y
	Justification	There is some evidence from the observer program (NOAA CAS 2015) and limited submersible studies (Heifetz 2003) that the strategy is achieving its objectives to minimize damage to structure forming habitats.		
References		NPFMC 2010b; AFSC 2008; NOAA CAS 2015; Heifetz 2003		
OVERALL PERFORMANCE INDICATOR SCORE:				90

PI 2.4.2	There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The spatial distribution of fishing effort for the Alaska sablefish fishery is well documented via log books and observers, and these data have been used to map and weight the potential impacts of sablefish longlining on vulnerable habitats. The Alaska Fishery Science Center and the North Pacific Fishery Management council have developed criteria for identifying and classifying specific 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). There is an effort to compile and organize habitat data, and summarized information is presented in McConnaughey *et al*. 2009. These efforts provide information on the distribution of habitat types, particularly vulnerable habitat types.		
b	**Guidepost**	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	Sufficient information from the observer program, trawl surveys, and habitat mapping are available to allow the nature of the impacts of the fishery on habitat types to be identified and provide reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear. However, the physical impacts of the gear on all habitat types have not been fully quantified.		

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
c	Guidepost		Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat distributions over time are measured.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	Sufficient information from the observer program, trawl surveys, and habitat mapping continue to be collected in such a way as to allow detection of increased risk to habitat from changes in fishing effort. Additionally, Martin (2009) describe trends in deep water corals and other biogenic habitat based on trawl survey bycatch and find little evidence for persistent trends in corals in the Bering Sea, Aleutian Islands or Gulf of Alaska. Furthermore, EFH designations are revisited every 5 years to help measure changes in habitat distributions over time.		
References		NPFMC 2010b; AFSC 2008; McConnaughey *et al*. 2009; Martin 2009;		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) Y
	Justification	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 (NPFMC 2015). 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. There has also been no evidence of widespread ecological change caused by fishing, as has 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 evidence that the fishery is highly unlikely to disrupt the key elements in the form of ecosystem considerations chapter published annually and the tracking of performance indicators.** 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.		
References		NPFMC 2015; Yang and Nelson 2000, Yang *et al*. 2006; Hanselman *et al.* 2012; Hanselman *et al* 2012; Aydin *et al*. 2007; Zador 2014; Mueter and Lauth 2009; Boldt *et al*. 2008; Peterson *et al*. 2015		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	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 factor 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). 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. Based on this information, **we conclude that there is a partial strategy in place** and that the impending development of ecosystem plans for the Bering Sea/Aleutian Islands represent an important step towards a comprehensive strategy.		

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
b	**Guidepost**	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	The strategy makes use of available physical, biological, and fishing effort information collected via trawl surveys, observer data, and ocean monitoring assets. The strategy includes indicators of ecosystem health such as sea surface temperature, biomass of forage fish species, and socioeconomic conditions. While these indicators represent important elements of the ecosystem, and the partial management strategy takes these indicators into account, they are not related through quantitative modeling efforts and functional relationships are not very well understood. The effort to develop ecosystem plans for the Bering Sea/Aleutian Islands could improve this knowledge, but we are unable to assess the impact on fishery management during this assessment.		
c	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
	Justification	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). Given these trends, the ecosystem management measures are considered likely to work.		
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	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). These indicators provide evidence that the measures related to precautionary harvest rules, habitat protections, and other aspects of the ecosystem are being implemented successfully.		
References		Mueter 2009; Zador 2012; NPFMC 2015; Worm *et al*. 2009; Zador 2014; Mueter and Lauth 2009; Boldt *et al*. 2008;		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	(Y/N) Y	(Y/N) Y	
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habitats. This is considered adequate to broadly understand the key elements of the ecosystem. Moreover, ongoing research has been synthesizing this information via quantitative modeling (Aydin *et al*. 2008; Gaichas and Francis 2008) and via comparative analyses (Gaichas *et al*. 2009, Link *et al*. 2009). Ecosystem indicators are tracked annually and reported in the Ecosystem Considerations appendix of the Stock Assessment and Fishery Evaluation (SAFE) report (Boldt and Zador 2009).		
b	**Guidepost**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.
	Met?	(Y/N/Not relevant) Y	(Y/N/Not relevant) Y	(Y/N/Not relevant) N
	Justification	The Ecosystem Considerations report provides detail about trends and dynamics of several key ecosystem indicators. However, there remain key knowledge gaps related to the relatively imprecise estimates of total impacts to non-target species and their ecological roles. Effects of the fishery on biogenic structures are not precisely determined, and any secondary effects that this may induce are also not well known. On the whole, there is a relatively high amount of information on the ecosystems in which this fishery operates and on the main interactions that the fishery might have, but not all have been investigated.		

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habitats. Taken together this provides reliable information on the impacts of the fishery and functional roles of the main components of the ecosystem.		
d	Guidepost		Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habitats. Sufficient information such as the data mentioned above, ecosystem modeling efforts, and the ecosystem consideration indicators allow the main consequences for the ecosystem to be inferred.		
e	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		(Y/N) Y	(Y/N) Y

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habits. This information is considered by groundfish management teams when setting and allocating catch limits and is sufficient to support the development of strategies to manage ecosystem impacts.	
References		Aydin *et al*. 2008; Gaichas and Francis 2008; Gaichas *et al*. 2009, Link *et al*. 2009; Boldt and Zador 2009	
OVERALL PERFORMANCE INDICATOR SCORE:			**90**
CONDITION NUMBER (if relevant):			**NA**

Principle 2: Pot gear

Evaluation Table for PI 2.1.1

PI 2.1.1		**The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	(Y/N) BAIT: NA	(Y/N) BAIT: NA	(Y/N) BAIT/MINOR: N

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
	Justification	The information used to determine retained species of the sablefish pot fishery in the GOA is from the existing sablefish pot fishery in the BSAI. This is being used as a proxy of likely bycatch species, with a full understanding that the species composition may be different in the GOA. Once sablefish pot fishing operations commence in the GOA, we will be able to reassess retained species composition and effects on those fish, bird, marine mammals, and invertebrate assemblages. From the preliminary information, no main retained species were identified. **BAIT**: According to CR V1.3 CB3.5.5: "The team shall consider species used as bait in a fishery, if they are caught by the fishery under assessment or elsewhere under the Retained Species component in P2." In the UoA, bait type and volume are not recorded or quantified in a systematic way. During on-site meetings the assessment team was able to ascertain typical bait species used in the fishery as well as a ball-park volume estimate from fishery managers and industry members. However, this information was anecdotal and qualitative in nature, not verifiable, and not sufficient to determine whether bait in aggregate or on a species-specific level qualifies as 'main.' The assessment team has determined that the species will be classified as 'main' as a precautionary measure and to ensure that scoring on the "information PI 2.1.3" could reflect the deficiency in information on bait However, given the uncertainty surrounding bait type and volume, the team considers that there is not sufficient information to accurately score bait as a typical 'main' element under PI 2.1.1 pertaining to outcome status and 2.1.2 pertaining to management considerations. The team has therefore, where relevant, considered the bait element as 'NA' under PIs 2.1.1 and 2.1.2. In order to sum scoring elements and provide an overall PI score in accordance with CRV1.3 Scoring Requirements (27.10.7), the assessment team has considered NA equivalent to Y up to the SG80 level, similar to how 'minor' species are treated in under PIs 2.1.X and 2.2.X. Bait is scored traditionally as a 'main' species then under 2.1.3, where the baseline information deficiency is most appropriately assessed. This approach permits the assessment team to address the information deficiency regarding bait without nonsensically scoring bait for outcome and management considerations without appropriate information. **MINOR**: For retained species, particularly Greenland turbot there is a high degree of certainty that species are within their biologically based limits and target reference points have been set. However, retained rockfish species (Tier 5) are **highly likely** to be within biologically based limits but target reference points have not been established. **Overall, then, it cannot be said that there is a high degree of certainty that all retained species are within biologically based limits.**

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
b	Guidepost			Target reference points are defined for retained species.
	Met?			(Y/N) BAIT/MINOR: N
	Justification	**BAIT/MINOR**: While stock assessments are conducted and biologically based limits are established for all Tier 1-5 species, target reference points are not established for Tier 5 retained species and we cannot conclude the fishery meets SG100.		
c	Guidepost	If main retained species are outside the limits, there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits, there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	(Y/N) NA	(Y/N) NA	
	Justification	**BAIT**: It is currently unclear whether bait is a main component of this fishery, nor are there compelling reasons to believe that any of the bait species used by the fishery are outside of limits (most have robust life history traits). Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency.		
d	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 retained species to be outside biologically based limits or hindering recovery.		
	Met?	(Y/N) NA		
	Justification	**BAIT**: It is currently unclear whether bait is a main component of this fishery, nor are there compelling reasons to believe that any of the bait species used by the fishery are outside of limits (most have robust life history traits). Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency.		

PI 2.1.1	The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species	
References		
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		NA

Evaluation Table for PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.
	Met?	(Y/N) BAIT: NA	(Y/N) BAIT: NA	(Y/N) BAIT: N, MINOR: Y

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
	Justification	A strategy in the MSC system represents a cohesive and strategic arrangement that comprises one or more measures, an understanding of how they work to achieve an outcome that is appropriate to the scale, intensity and context of the fishery and contains mechanisms for the modification of fishing practices in the light of any unacceptable impacts. **MINOR**: There is a **strategy** in place to manage all retained species which consists of (1) extensive catch accounting system (2) observer program to estimate discarded catch (3) fishery independent surveys conducted by NOAA- Fisheries (4) statistical stock assessments for all of the main retained species (5) a tiered system of assessments that provides for more precautionary annual catch limits when assessments use less precise methods. The tiered, precautionary procedure for setting annual catch limits provides a high likelihood that stocks will be maintained at levels above their reference points and, and clear procedures exist for restricting catch limits if stock rebuilding is necessary. **BAIT**: See 2.1.1 for rationale for treatment of bait as a main retained species. Because the provenance of bait species used in the fishery have not been verified, we cannot be sure of the management systems (including necessary strategies) are in place for bait species. Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency. However, by definition of bait as a 'retained species' in the MSC system, it cannot be said that the UoA has a strategy for managing all retained species due to this deficiency.		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	(Y/N) BAIT: NA	(Y/N) BAIT: NA	(Y/N) MINOR: Y, BAIT: N

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
	Justification	**MINOR**: There is **high confidence** that the strategy for Greenland turbot and rockfish species will work based on reported observer data, annual surveys, and catch accounting system indicating that the sablefish fishery is having minimal impacts on species stock status. Furthermore, recent stock assessments have concluded that overfishing is not occurring and the stocks are not overfished (Barbeaux *et al*. 2015; Spies *et al.* 2014; Spies *et al.* 2015). **BAIT**: See 2.1.1 for rationale for treatment of bait as a main retained species and associated scoring methodology. Because the provenance of bait species used in the fishery have not been verified, we cannot be sure of the management systems (including necessary strategies) are in place for bait species. Bait unknowns are addressed most appropriately - until bait volume, stock origin and status are understood - under PI 2.1.3, as an information deficiency.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) BAIT: NA	(Y/N) MINOR: Y, BAIT: N
	Justification	**MINOR**: There **is clear evidence** that the strategy for Greenland turbot and rockfish species is being implemented successfully based on reported observer data, annual surveys, and catch accounting system indicating that overfishing is not occurring and the stocks are not overfished (Barbeaux *et al*. 2015; Spies *et al.* 2014; Spies *et al.* 2015). **BAIT**: However, lack of clear evidence that there is a strategy that is being implemented successfully for bait species prevents us from scoring at 100.		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
	Met?			(Y/N) MINOR: Y, BAIT: N
	Justification	**MINOR**: Annual biomass surveys and stock assessments for most retained species provide **some evidence** that the management strategies are achieving overall objectives to maintain species with biologically based limits. **BAIT**: There is not evidence that there is a strategy for all bait species, because these cannot be clearly identified.		

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	(Y/N/Not relevant) Y	(Y/N/Not relevant) Y	(Y/N/Not relevant) Y
	Justification	Based on observer coverage and reports from fishery managers, there is a high degree of certainty that shark finning is not occurring in the BSAI sablefish pot fishery. This will need to be confirmed from observer data in the GOA pot fishery.		
References		Barbeaux *et al*. 2015; Spies *et al.* 2014; Spies *et al.* 2015		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				NA

Evaluation Table for PI 2.1.3

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	(Y/N) BAIT: Y	(Y/N) BAIT: N	(Y/N) MINOR/BAIT: N
	Justification	**MINOR**: The North Pacific groundfish have accurate and verifiable sources of fishery dependent and fishery independent information that are used directly in stock assessments for retained species, including annual fishery independent surveys, catch accounting system, and an observer program. For a full discussion of information used to manage the fishery, please see the "Sources of Information" section (above). Despite the lack of observer coverage on vessels <40ft LOA, the small number of boats in this category and the limited geographic range of fishing effort to shelf breaks, mean that there is not a substantial concern that the Observer Program is missing substantial information from these vessels related to non-target catch. However, because the fishing operations in the GOA have not commenced, accurate and verifiable information will have to be provided to determine if there are substantial changes in retained species composition, thus we cannot award a score of 100. **BAIT**: See background and 2.1.1 for rationale for treatment of bait as a 'main retained' species, and for scoring methodologies within 2.1.X. Since only qualitative information for bait species is currently known, the team concluded that this PI can only score at the 60 level overall		
b	**Guidepost**	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	(Y/N/Not relevant) BAIT: Y	(Y/N) BAIT: N	(Y/N) MINOR/BAIT: N

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
	Justification	**MINOR**: While information from the fishery independent surveys, catch accounting system, and observer programs is sufficient to quantitatively estimate outcome status with a high degree of certainty, there is currently no information collected from the pot fishing operations in the GOA since it has not begun. That information will need to be collected to determine if it can be used to estimate outcome status with respect to biologically based limits, we cannot score this PI at 80. **BAIT**: Since only qualitative information for bait species is currently known, the team concluded that this PI can only score at the 60 level overall.		
c	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	(Y/N) BAIT: Y	(Y/N) BAIT: N	(Y/N) MINOR: N, BAIT: N
	Justification	**MINOR**: Information from the fishery independent surveys, catch accounting system, and observer programs is sufficient to management strategies for retained species with a high degree of certainty. Despite the lack of observer coverage on vessels <40ft LOA, the small number of boats in this size category and the limited geographic range of fishing effort to shelf breaks, mean that there is not a substantial concern that the Observer Program is missing substantial information from these vessels related to non-target catch. However, because fishing operations have not yet commenced in the GOA, and data from observer programs have not been collected, we cannot conclude that information is adequate to support the partial strategy. **BAIT**: Information is not currently adequate to tentatively identify species used as bait and to assure that there are measures in these fisheries to manage these species. However, verifiable information available in not available to assure that information to support a partial strategy for bait species (if main) is available.		
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		(Y/N) BAIT: N	(Y/N) MINOR: Y, BAIT N

PI 2.1.3		**Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species**
	Justification	**MINOR**: Sufficient data from fishery independent surveys, catch accounting systems, and restructured observer program are collected on a regular and ongoing basis to assess changes in risk to outcome status, and monitoring is conducted to assess retained species mortalities. **BAIT**: Since only qualitative on the type and volume of bait used is available the team cannot conclude that sufficient data continue to be collected to detect any increase in risk level due to changes in fishing behavior and cannot score this at the SG80 level.
References		

OVERALL PERFORMANCE INDICATOR SCORE:	**70**
CONDITION NUMBER (if relevant):	**Pot 2.1.3 (1&2)**

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/N) AFT: Y	(Y/N) ATF: Y	(Y/N) ATF/MINOR: N
	Justification	The information used to determine main bycatch species of the sablefish longline pot fishery in the GOA, is from the existing sablefish longline pot fishery in the BSAI. This is being used as a proxy of likely bycatch species, with a full understanding that the species composition may be different in the GOA. Once sablefish longline pot fishing operations commence in the GOA, we will be able to re-assess bycatch species composition and effects on those fish, bird, marine mammals, and invertebrate assemblages. Using the existing proxy data, arrowtooth flounder were identified as the only main discarded bycatch species at 6.06% of the fishery. **ATF/MINOR**: The estimate of projected 2015 total arrowtooth flounder biomass is 908,379 t (ABC at 80,547 t and the OFL is 93,856 t) and the population is not considered overfished (Spies *et al*. 2014). In the GOA, the estimated 2015 total biomass is 1,949,990 t (ABC at 189,556 t, OFL 226,160 t). The stock is not overfished, and is not approaching a condition of being overfished. For both areas total catch has been well below allowable biological catch (Spies and Turnock 2014). Catches averaged 66.97 mt / yr between 2003-2015 in BSAI sablefish-directed pot sets (NOAA CAS 2015) which comprise a very small portion of the overall catch and **it is highly likely that main bycatch species are within biologically based limits, but for minor bycatch species there are no existing stock assessments to determine stock health.**		
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?	(Y/N) NA	(Y/N) NA	

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	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?	(Y/N) NA		
	Justification	NA		
References		Spies *et al*. 2014; Spies and Turnock 2014		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.
	Met?	(Y/N) ATF: Y	(Y/N) ATF: Y	(Y/N) AFT: Y, MINOR: N
	Justification	There is a **strategy** in place to manage main bycatch fish species which consists of (1) extensive catch accounting system (2) observer program to estimate discarded catch (3) fishery independent surveys conducted by NOAA- Fisheries (4) statistical stock assessments for all of the main bycatch species (5) a tiered system of assessments that provides for more precautionary annual catch limits when assessments use less precise methods. The tiered, precautionary procedure for setting annual catch limits provides a high likelihood that stocks will be maintained at levels above their reference points and, and clear procedures exist for restricting catch limits if stock rebuilding is necessary. **AFT/MINOR**: Arrowtooth flounder is managed as a Tier 3a target species, meaning they are commercially important, and there is sufficient data to allow each to be managed on its own biological merits. Accordingly, a specific TAC is established annually, as well as an OFL and ABC (NPFMC 2012). Catch of each species must be recorded and reported. Arrowtooth flounder are managed as two separate management units in the BSAI and GOA. EFH for late juvenile and adult arrowtooth flounder is located in the lower portion of the water column along the inner (0 to 50 m), middle (50 to 100 m), and outer (100 to 200 m) shelf and upper slope (200 to 500 m) throughout the BSAI wherever there are softer substrates consisting of gravel, sand, and mud (NPFMC 2012). **While there is a strategy in place to manage main bycatch species, other minor bycatch species, particularly mobile invertebrates (i.e. snails, sea stars, sea urchins) that are incidentally caught in longline pot fishing operations, are not managed under this strategy, thus we cannot score this PI at 100.**		

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	(Y/N) ATF: Y	(Y/N) ATF: Y	(Y/N) ATF: Y, MINOR: N
	Justification	**AFT**: There is **high confidence** that the strategy for arrowtooth flounder will work based on reported observer data, annual surveys, and catch accounting system indicating that the sablefish fishery is having minimal impacts on bycatch species stock status. Furthermore, recent stock assessments have concluded that overfishing is not occurring and the stocks are not overfished (Spies *et al*. 2014; Spies and Turnock 2014). **MINOR**: For some minor species, particularly mobile invertebrates, testing is not being conducted to provide high confidence that the strategy will work. Therefore, we cannot score this element at 100.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) ATF: Y	(Y/N) ATF: N, MINOR: N
	Justification	**ATF/MINOR**: There is some evidence for successful implementation of this management strategy manifest by the healthy stock status for main bycatch species, the ability to access reported landings, and estimated total landings data as well as annual stock assessment reports for these species.		
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
	Met?			(Y/N) ATF: Y, MINOR: N

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations
	Justification	**AFT:** Annual biomass surveys and stock assessments for main bycatch species provide some evidence that the management strategies are working. **MINOR:** For some minor bycatch species, particularly mobile invertebrates (i.e. snails, sea stars, sea urchins) that are incidentally caught in longline pot fishing operations, there is no evidence that the strategy is achieving its objective, thus we cannot score this PI at 100.
References		NPFMC 2012; Spies *et al*. 2014; Spies and Turnock 2014
OVERALL PERFORMANCE INDICATOR SCORE:		**85**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	(Y/N) ATF: Y	(Y/N) ATF: N	(Y/N) ATF: N, MINOR: N
	Justification	**ATF/MINOR**: The North Pacific groundfish fisheries have accurate and verifiable sources of fishery dependent and fishery independent information that are used directly in stock assessments for retained species, including annual fishery independent surveys, catch accounting system, and an observer program. For a full discussion of the fishery-specific information please see 'Sources of Information' section (above). However, since longline pot fishing activities have not yet started in the GOA there is an information gap related to bycatch species composition and impact from that fleet preventing assessment of the quantitative information on the amount of bycatch species taken in this new fishery.		

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
b	**Guidepost**	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	(Y/N/Not relevant) ATF: Y	(Y/N/Not relevant) ATF: N	(Y/N/Not relevant) ATF: N, MINOR: N
	Justification	**ATF/MINOR**: Information from the fishery independent surveys, catch accounting system, and observer programs is adequate to broadly estimate outcome status of arrowtooth flounder with respect to biologically based limits, however since pot fishing activities have not yet started in the GOA there is an information gap related to bycatch species composition and impact from that fleet preventing assessment of the quantitative information on the amount of bycatch species taken in this new fishery.		
c	**Guidepost**	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	(Y/N) ATF: Y	(Y/N) ATF: N	(Y/N) ATF: N, MINOR: N
	Justification	**ATF/MINOR**: Information from the fishery independent surveys, catch accounting system, and observer programs is adequate to support management measures with respect to bycatch species, however since pot fishing activities have not yet started in the GOA there is an information gap related to bycatch species composition and impact from that fleet preventing assessment of the quantitative information on the amount of bycatch species taken in this new fishery.		
d	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?		(Y/N) ATF: Y	(Y/N) ATF: Y, MINOR: Y

PI 2.2.3		**Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch**
	Justification	**AFT/MINOR**: Sufficient information from fishery independent surveys, catch accounting systems, and the restructured observer program are collected on a regular and ongoing basis to assess changes in risk to outcome status, and monitoring is conducted to assess bycatch species mortalities.
References		
OVERALL PERFORMANCE INDICATOR SCORE:		**65**
CONDITION NUMBER (if relevant):		**Pot 2.2.3**

Evaluation Table for PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	There were no ETP species identified in this assessment. As the fishery commences in the GOA, this will need to be re-assessed.		
b	**Guidepost**	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	NA		
c	**Guidepost**		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	NA		
References				

PI 2.3.1	**The fishery meets national and international requirements for the protection of ETP species** **The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species**
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for PI 2.3.2

PI 2.3.2		The fishery has in place precautionary management strategies designed to: • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	NA		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	NA		
c	**Guidepost**		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.

PI 2.3.2		**The fishery has in place precautionary management strategies designed to:** • **Meet national and international requirements;** • **Ensure the fishery does not pose a risk of serious harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**		
	Met?		(Y/N) Y	(Y/N) Y
	Justification	NA		
d	**Guidepost**			There is evidence that the strategy is achieving its objective.
	Met?			(Y/N) Y
	Justification	NA		
References				

OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for PI 2.3.3

PI 2.3.3		**Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	(Y/N) Y	(Y/N) N	(Y/N) N
	Justification	The North Pacific groundfish fisheries have accurate and verifiable sources of fishery dependent and fishery independent information that are used directly in stock assessments for retained species, including annual fishery independent surveys, catch accounting system, and an observer program. For a full discussion of the fishery-specific information please see 'Sources of Information' section (above). While no ETP species were identified using the BSAI pot fishing proxy data, there is an information gap related to the potential impacts the GOA fishery poses to ETP species preventing assessment of the quantitative information on the amount of bycatch species taken in this new fishery.		
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	(Y/N/Not relevant) Y	(Y/N/Not relevant) N	(Y/N/Not relevant) N
	Justification	Information from the fishery independent surveys, catch accounting system, and observer programs is adequate to broadly assess impacts of the fishery on ETP species, however since pot fishing activities have not yet started in the GOA there is an information gap related to ETP species impacts that prevent determination of whether the fishery is a threat to recovery of ETP species.		

PI 2.3.3		**Relevant information is collected to support the management of fishery impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	(Y/N) Y	(Y/N) N	(Y/N) N
	Justification	Information from the fishery independent surveys, catch accounting system, and observer programs is adequate to support measures to manage the impacts on ETP species, however since pot fishing activities have not yet started in the GOA there is an information gap related to ETP species impacts from that fleet preventing measurement of ability to support a full strategy to manage impacts.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				**60**
CONDITION NUMBER (if relevant):				**Pot 2.3.3**

Evaluation Table for PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) N
	Justification	Pot fishing is considered to have a minimal impact upon the environment apart from the potential for ghost fishing, although this can be mitigated by inbuilt biodegradability of pots and gear recovery schemes (Grieve *et al*. 2014). In Alaska, the sablefish pot fishing occurs in strings of up to 135 pots per set (Hanselmen *et al*. 2014). However, depending on where the gear is set and how it is retrieved it can still have detrimental effects on sensitive habitats (Jenkins and Garrison 2012), including corals. Pot gear 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 (Grieve *et al*. 2014). On the other hand, a large proportion of this gear is set on soft substrate where effects are considered negligible. The BSAI sablefish pot fishery only encountered an average of .02 mt of benthic structure forming organisms (sponges, corals, gorgonians and sea pens combined) in 2013 and 2014 (NOAA CAS 2015). **However, due to information gaps from the pot fishery in GOA, evidence is not yet available to determine is the fishery will reduce habitat structure and function to the point where it would do serious or irreversible harm.**		
References		Grieve *et al*. 2014; Hanselmen *et al*. 2014; Livingston 2003		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	**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). 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, totaling 13.5 nm^2. All bottom-contact gear (longlines, trawls, pots, dinglebar gear, etc.) is prohibited in this area. 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.		

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	While there is some objective basis for confidence that the strategy for preventing structural habitat damage will work given relatively low levels of coral and sponge bycatch (NOAA CAS 2015) and implementation of closed areas, there remains a lack of testing to support this strategy.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		(Y/N) Y	(Y/N) N
	Justification	There is some evidence from the observer program indicating a very few structure forming organisms are being captured by sablefish longline pot operations (NOAA CAS 2015). Additionally, limited submersible studies (Heifetz 2003), primarily aimed at identifying impacts from trawl fishing, found that fishing operations are not occurring in habitat conservation areas and that the strategy is being implemented successfully to prevent impacts to structure forming habitat.		
d	Guidepost			There is some evidence that the strategy is achieving its objective.
	Met?			(Y/N) Y
	Justification	There is some evidence from the observer program (NOAA CAS 2015) and limited submersible studies (Heifetz 2003) that the strategy is achieving its objectives to minimize damage to structure forming habitats.		
References		NPFMC 2010b; AFSC 2008; NOAA CAS 2015; Heifetz 2003		
OVERALL PERFORMANCE INDICATOR SCORE:				90

PI 2.4.2	There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	The spatial distribution of fishing effort for the Alaska sablefish fishery is well documented via log books and observers, and these data have been used to map and weight the potential impacts of sablefish longlining on vulnerable habitats. The Alaska Fishery Science Center and the North Pacific Fishery Management council have developed criteria for identifying and classifying specific 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). There is an effort to compile and organize habitat data, and summarized information is presented in McConnaughey *et al*. 2009. These efforts provide information on the nature, distribution, and vulnerability of main habitat types at a course scale but there remain gaps related to habitat distribution.		
b	**Guidepost**	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	Sufficient information from the observer program, trawl surveys, and habitat mapping are available to allow the nature of the impacts of the fishery on habitat types to be identified and provide reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear. However, the physical impacts of the gear on all habitat types have not been fully quantified.		

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
c	Guidepost		Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat distributions over time are measured.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	Sufficient information from the observer program, trawl surveys, and habitat mapping continue to be collected in such a way as to allow detection of increased risk to habitat from changes in fishing effort. Additionally, Martin (2009) describe trends in deep water corals and other biogenic habitat based on trawl survey bycatch and find little evidence for persistent trends in corals in the Bering Sea, Aleutian Islands or Gulf of Alaska. Furthermore, EFH designations are revisited every 5 years to help measure changes in habitat distributions over time.		
References		NPFMC 2010b; AFSC 2008; McConnaughey *et al*. 2009; Martin 2009;		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) Y
	Justification	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 (NPFMC 2015). 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. There has also been no evidence of widespread ecological change caused by fishing, as has 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 eosystem considerations chapter published annually and the tracking of performance indicators.** 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.		
References		NPFMC 2015; Aydin *et al*. 2007; Zador 2014; Mueter and Lauth 2009; Boldt *et al*. 2008; Peterson *et al*. 2015		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	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 factor 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). 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. Based on this information, **we conclude that there is a partial strategy in place** and that the impending development of ecosystem plans for the Bering Sea/Aleutian Islands represent an important step towards a comprehensive strategy.		

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
b	**Guidepost**	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N
	Justification	The strategy makes use of available physical, biological, and fishing effort information collected via trawl surveys, observer data, and ocean monitoring assets. The strategy includes indicators of ecosystem health such as sea surface temperature, biomass of forage fish species, and socioeconomic conditions. While these indicators represent important elements of the ecosystem, and the partial management strategy takes these indicators into account, they are not related through quantitative modeling efforts and functional relationships are not very well understood. The effort to develop ecosystem plans for the Bering Sea/Aleutian Islands could improve this knowledge, but we are unable to assess the impact on fishery management during this assessment.		
c	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
	Justification	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). Given these trends, the ecosystem management measures are considered likely to work.		
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	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). These indicators provide evidence that the measures related to precautionary harvest rules, habitat protections, and other aspects of the ecosystem are being implemented successfully.		
References		Mueter 2009; Zador 2012; NPFMC 2015; Worm *et al*. 2009; Zador 2014; Mueter and Lauth 2009; Boldt *et al*. 2008;		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	(Y/N) Y	(Y/N) Y	
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habitats. This is considered adequate to broadly understand the key elements of the ecosystem. Moreover, ongoing research has been synthesizing this information via quantitative modeling (Aydin *et al*. 2008; Gaichas and Francis 2008) and via comparative analyses (Gaichas *et al*. 2009, Link *et al*. 2009). Ecosystem indicators are tracked annually and reported in the Ecosystem Considerations appendix of the Stock Assessment and Fishery Evaluation (SAFE) report (Boldt and Zador 2009).		
b	**Guidepost**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.
	Met?	(Y/N/Not relevant) Y	(Y/N/Not relevant) Y	(Y/N/Not relevant) N
	Justification	The Ecosystem Considerations report provides detail about trends and dynamics of several key ecosystem indicators. However, there remain key knowledge gaps related to the relatively imprecise estimates of total impacts to non-target species and their ecological roles. Effects of the fishery on biogenic structures are not precisely determined, and any secondary effects that this may induce are also not well known. On the whole, there is a relatively high amount of information on the ecosystems in which this fishery operates and on the main interactions that the fishery might have, but not all have been investigated.		

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habitats. Taken together this provides reliable information on the impacts of the fishery and functional roles of the main components of the ecosystem.		
d	Guidepost		Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habitats. Sufficient information such as the data mentioned above, ecosystem modeling efforts, and the ecosystem consideration indicators allow the main consequences for the ecosystem to be inferred.		
e	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		(Y/N) Y	(Y/N) Y

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
	Justification	Information on ecosystem structure and effects of sablefish fishing derives from data collected as part of trawl and longline surveys, an extensive annual food habits collection program, assessments for all main retained and discarded species, monitoring of susceptible and vulnerable seabird populations, and monitoring and conservation of sensitive habits. This information is considered by groundfish management teams when setting and allocating catch limits and is sufficient to support the development of strategies to manage ecosystem impacts.	
References		Aydin *et al*. 2008; Gaichas and Francis 2008; Gaichas *et al*. 2009, Link *et al*. 2009; Boldt and Zador 2009	
OVERALL PERFORMANCE INDICATOR SCORE:			**90**
CONDITION NUMBER (if relevant):			**NA**

Principle 3

Evaluation Table for PI 3.1.1

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The Magnuson-Stevens Act[1] (MSA), in combination with the Marine Mammal Protection Act (MMPA),[2] the Endangered Species Act (ESA),[3] the Migratory Bird Treaty Act, National Environmental Policy Act (NEPA),[4] Administrative Procedures Act (APA),[5] and other treaties, laws, and policies govern the management system for the Alaskan sablefish fishery.[6] The US laws are fully consistent with, and supportive of, several international laws and agreements related to fisheries management.[7] The policies and practices based on these legal foundations constitute an appropriate and effective legal framework for delivering sustainable fisheries in accordance with MSC Principles 1 and 2. The requirements of the SG100 level are met.		

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**		
b	**Guidepost**	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**
	Justification	The management system resolves most disputes within its highly participatory, open, and transparent structure and processes. The NPFMC relies on a consensus approach among advisory bodies and allows for minority reports should these groups fail to reach consensus (NPFMC 2009; 2014). Section 302 of the MSA, and the APA, mandate the Regional Fishery Management Councils follow specific procedures for discussing and resolving disputes on fisheries policy. The NPFMC resolves disputes (after weighing staff reports, advisory body reports, NMFS legal counsel advice, and public testimony) by majority vote held in public session as required in Section 302 of the MSA. All stakeholders have an opportunity for input prior to the decision by the Secretary of Commerce Dissatisfied parties affected by Council and NMFS decisions can appeal the decision to the Appeals Office in the NMFS Alaska Regional Office, which adjudicates appeals of initial administrative determinations made under the authority of 50 C.F.R. Part 679 and Part 680.[8] The jurisdiction of the Appeals Office's includes the Individual Fishing Quota (IFQ) Program for Pacific halibut and sablefish, the Western Alaska Community Development Program, and other management programs. These dispute resolution mechanisms have proven to be effective at dealing with most issues, avoiding legal disputes, and are appropriate for the context of the sablefish fishery. In cases where the Council processes have not resolved disputes, the parties involved can and do, by law, resolve the disputes in the federal court system.[9] There is ample evidence (c.f. NAPA 2002) that the management system attempts to comply with binding judicial decisions. The requirements of the SG100 level are met.

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**		
d	**Guidepost**	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The US management system has a mechanism to formally commit to the legal rights created explicitly for Treaty Tribes. The relationship between Federally-recognized Indian Tribes and the Federal government is one of sovereign to sovereign and has been described at length by the federal judiciary and referred to in federal law. Federal agencies are required to consult with Alaska Native corporations on the same basis as Federally-recognized Indian Tribes under E.O. 13175 (NOAA 2013). The fishery management system explicitly recognizes and accounts for the rights of people dependent on marine fishing in the form of the Western Alaska Community Development Quota (CDQ) Program (as authorized and governed by the MSA as amended in 2006). First established in 1992, the CDQ Program receives annual allocations of quota for groundfish (including sablefish), halibut, crab, and prohibited species in the Bering Sea and Aleutian Islands Management Area to allow these communities to 'start and support regionally based, commercial seafood or other fisheries-related businesses' (Section 305(i)(1) of the MSA).[10]. The requirements of the SG100 level are met.		
References		[1] Public Law 94-265 as contained in 16 U.S.C. 38). [2] The MMPA protects marine mammals by prohibiting take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. [3] The ESA conserves species that are in danger of extinction.		

PI 3.1.1	**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**
	[4] NEPA requires Federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their major proposed actions. [5] The APA insures that the public is kept informed of the organization, procedures, and rules of Federal agencies, provides for public participation, and prescribes uniform standards. [6] Including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, Coastal Zone Management Act, Fur Seal Act, and Fish and Wildlife Coordination Act. [7] These include the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, an integral part of the FAO Code of Conduct for Responsible Fisheries (implemented in the US through the High Seas Fishing Compliance Act (16 U.S.C. 5501 *et seq.*), the UN Straddling and Highly Migratory Fish Stocks Agreement, the Convention on Biological Diversity, and the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, the basic instrument for the North Pacific Anadromous Fish Commission, which serves as a forum for promoting the conservation of anadromous stocks and ecologically-related species, including marine mammals, sea birds, and non-anadromous fish, in the high seas area of the North Pacific Ocean (Cialino 2010). [8] A chief administrative judge, one administrative judge, an appeals specialist and an administrative assistant staff the Appeals Office. [9] NAPA (2002, 2005) provides an account and analysis of many of the legal disputes litigated in the federal court system. [10] For more information on the CDQ program see NRC (1999) and the websites by the NPFMC (http://www.fakr.noaa.gov/npfmc/current_issues/CDQ/CDQ.htm), the NMFS Alaska Regional Office (http://www.fakr.noaa.gov/cdq/default.htm),

PI 3.1.1	**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and** • **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** • **Incorporates an appropriate dispute resolution framework.**
	and the Western Alaska Community Development Association (http://www.wacda.org/). Cialino, K. 2010; NRC, 1999; NAPA, 2002; NAPA, 2005. NOAA. 2013. NOAA Procedures for Government-to-Government Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations. NOAA 13175 Policy NPFMC. 2009. Navigating the North Pacific Council Process. North Pacific Fishery Management Council, Anchorage AK. NPFMC. 2014. Fishery Management Plan for Groundfish of the Gulf of Alaska. North Pacific Fishery Management Council, Anchorage AK.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 3.1.2

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The MSA (Section 302(g)) directs each Fishery Management Council to 'establish, maintain, and appoint members to committees and advisory panels'. The MSA specifies the roles and responsibilities of the individuals involved in the management process. The NPFMC consults with a variety of interested and affected parties through its committees, advisory panels, plan teams, and workgroups (NPFMC 2009; 2014). The NMFS Alaska Fisheries Science Center (AFSC) is active in the NPFMC management process, as the primary provider of scientific information for marine fisheries stock assessment and management in Alaska. Additionally, the NMFS Alaska Regional Office (ARO) operates closely with NPFMC to develop and implement fisheries management regulations for Alaska marine fisheries. The evidence indicates that the fishery management system satisfies all of the conditions for SG 100.		
b	**Guidepost**	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
	Justification	The NPFMC and PFMC consult with a variety of interested and affected parties through its committees, advisory panels, plan teams, and workgroups (NPFMC 2009; 2012). In response to Executive Order 13175, NMFS and the NPFMC have developed a formal framework for consultation and collaboration with Alaska Native representatives in the development of policies, legislation, regulations, and programs.[2] The FMPs for GOA and BSAI groundfish include the objective to increase Alaska Native consultation by collecting and incorporating local and traditional knowledge, and increase Alaska Native participation and consultation in fishery management. One of the eight appointed members of the PFMC is from an Indian tribe with federally recognized fishing rights from California, Oregon, Washington, or Idaho. By law, all Councils must conduct public hearings "to allow all interested persons an opportunity to be heard in the development of fishery management plans and amendments" (16 USC 38 Section 1852(h)). The consultation processes, which include regular meetings of the consultative groups and widely distributed documents, regularly seek and accept relevant information, including local knowledge. The system exhibits consideration of the information and explains how it is used (NPFMC 2009; 2012). The requirements for scoring at the SG100 level are met.		
c	**Guidepost**		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		(Y/N) Y	(Y/N) Y
	Justification	The NPFMC process is the primary means for soliciting stakeholder consultation relevant to the Alaska sablefish fisheries. The NPFMC develops a meeting agenda and prepares a briefing book on issues of concern to fisheries management. Stakeholders are encouraged to prepare written and oral testimony on these issues. Written testimony submitted before briefing book deadlines is incorporated into the briefing book. Stakeholders can also provide public comment during the council meeting. The process provides opportunity and encouragement for all interested and affected parties to be involved. The evidence indicates that the fishery management system satisfies all of the conditions for SG 100.		

PI 3.1.2	**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**
References	[1] Specific information on this effort is available on the NMFS Alaska Regional Office website on Tribal Consultation in Alaska (http://alaskafisheries.noaa.gov/tc/). NPFMC. 2009. Navigating the North Pacific Council Process. North Pacific Fishery Management Council, Anchorage AK. NPFMC. 2012. Statement of organization, practices, and procedures of the North Pacific Fishery Management Council (Draft). North Pacific Fishery Management Council, Anchorage AK
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 3.1.3

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) Y
	Justification	The management system has clear long-term policy objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach. The MSA specifies the long- term objectives (especially National Standards 1, 8, 9) and establishes a formal set of processes for setting short- term objectives and management measures to achieve the long-term objectives. The National Standards Guidelines (50 C.F.R. 600.310 et seq.) direct the authorities that develop and approve fishery management plans to apply the precautionary approach when setting control rules in a fishery. The Guidelines describe how to address uncertainty such that there is a low risk that limits are exceeded, and mandate that 'Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management uncertainty increases' (50 CFR 600.310, National Standard 1). The policies, regulations and implementing guidelines explicitly mandate the application of the precautionary approach as defined and described by the international scientific community (FAO 1996). The evidence indicates that the fishery management system clearly satisfies all of the elements for SG 100.		
References		[List any references here]		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) Y

	Justification	The US fisheries management system provides economic and social incentives for sustainable fishing as part of fishery rationalization (for example, individual fishing quotas, catch shares, limited access) and cost-recovery programs. The NPFMC implemented an individual fishing quota (IFQ) program for the Alaska sablefish fishery in 1995. The evidence indicates that the incentives under the IFQ program are consistent with achieving the outcomes expressed by MSC Principles 1 and 2. According to Hanselman, et al. (2014), the IFQ program has helped to increase the fishery's season length, decrease the harvest of immature fish and in turn improve the spawning potential of the stock, improve catching efficiency of sablefish, and reduces fishing costs. In addition, the number of active fishing vessels and hooks deployed has declined substantially since implementation of the IFQ program in 1995. Discards of undesired bycatch also declined in recent years. The cost recovery program for the IFQ program ensures that fishing operations pay at least some of the costs of management and enforcement. The MSA (Section 304(d)(A)) requires that the NMFS cover the actual costs of managing and enforcing the Halibut and Sablefish IFQ program. The costs are the incremental costs of the program – the 'costs that would not have been incurred but for the IFQ Program. Under cost recovery regulations, IFQ permit holders who used their permits to record landings of IFQ sablefish during the 2014 IFQ fishery were obligated to pay 2.6 percent of the total ex-vessel value from the sale of their IFQ sablefish. The fee percentage derives from two sources: 1) the total ex-vessel value of the IFQ sablefish fishery, and 2) the direct program costs of management, data collection and enforcement of the IFQ Program as measured by actual expenditures during Federal fiscal year (NOAA 2015). In addition, the US implemented the National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries in 2001 that applies management measures to mitigate the incidental catch or bycatch and entanglement of seabirds. In Alaska, the fisheries management system has implemented measures to manage the ecological impacts of all hook-and-line fishing operations (including sablefish) in the GOA and BSAI. To minimize the take of seabirds, the use of seabird avoidance devices (tori lines) are required by hook-and-linefishing vessels in areas where seabird interactions occur.[12] According to the client (FVOA), tori lines are the only effective way to minimize seabird entanglement by hook-and-line fishing vessels. These measures have resulted in a significant decrease in seabird bycatch in recent years (Hanselman, et al2014). The annual SAFE reports for reviewing the sablefish fishery explicitly consider the effects of the IFQ program, many of which result from the incentives that are in place. The review also examines factors that may contribute to unsustainable fishing practices, flagging them for possible management action. Although Alaska fisheries receive some subsidies (Sharp and Sumaila 2009) none appear to affect operations in the sablefish fishery.

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing
		The Team is not aware of any subsidies or other negative incentives that contribute to unsustainable fishing practices. The evidence indicates that the fishery management system satisfies all of the elements SG 100.
References		Hanselman, D.H., Lunsford, C.R., Rodgveller, C.J. 2014. Chapter 3. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation (SAFE) Report. December 2014. North Pacific Fishery Management Council, Anchorage AK, Pp. 576-717. Available at: http://www.afsc.noaa.gov/REFM/Docs/2014/BSAIsablefish.pdf NOAA 2015. IFQ Halibut and Sablefish Cost Recovery for Fishing Year 2014. NOAA Sustainable Fisheries. December 2015. https://alaskafisheries.noaa.gov/sites/default/files/reports/ifq-hs-feerpt2014.pdf Sharp, R. and U. R. Sumaila. 2009. Quantification of U.S. Marine Fisheries Subsidies. North American Journal of Fisheries Management. 29:18-22.
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
	Met?	(Y/N/Partial) Y	(Y/N/Partial) Y	(Y/N/Partial) Y
	Justification	The NPFMCs GOA and BSAI groundfish FMPs set management policies for Alaska sablefish, and contain 46 short- and long-term objectives grouped into nine categories: 1) Prevent Overfishing, 2) Promote Sustainable Fisheries and Communities, 3) Preserve Food Web, 4) Manage Incidental Catch and Reduce By-Catch and Waste, 5) Avoid Impacts to Seabirds and Marine Mammals, 6) Reduce and Avoid Impacts to Habitat, 7) Promote Equitable and Efficient Use of Fishery Resources, 8) Increase Alaska Native Consultation, and 9) Improve Data Quality, Monitoring and Enforcement. Additionally, short term objectives are articulated annually in the sablefish SAFE document (Hanselman et al 2014). These objectives are well-defined and measurable, consistent with achieving the outcomes expressed in MSC Principles 1 and 2, and are explicit within the fishery management system. The annual SAFE reports, and other assessments, provide measures of the extent to which the specific objectives are being achieved. The fishery management system satisfies all of the elements for SG 100.		
References		Hanselman et al 2014		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	(Y/N) Y	(Y/N) Y	
	Justification	Decision-making for the Alaska sablefish fishery occurs within the North Pacific Fishery Management Council (NPFMC) process, incorporating input from National Marine Fisheries Service (NMFS), the states of Alaska, Washington and Oregon, and numerous industry, academic, and NGO stakeholders. The process used by the NPFMC for decision making is described in the Council guide for navigating the Council process (NPFMC 2009) and the Council Operating Procedures (NPFMC 2012). These decision-making procedures result in measures and strategies that achieve the fishery-specific objectives, thereby meeting the requirements of the SG80 level for this scoring issue.		
b	**Guidepost**	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
	Justification	The NPFMC has a well-defined, open and participatory decision-making process; conducting public meetings allowing all interested persons an opportunity to be heard in the development of FMPs and amendments, and other Council decisions (NPFMC 2012). The decision-making process relies heavily on the Councils Scientific and Statistical Committee, Advisory Panels, Plan Teams, Workgroups, and regular public hearings to identify issues of concern for fishery managers to address. All of these groups meet regularly and report the issues of concern to the Council for consideration in its decision-making deliberations. As mandated by the MSA, the process must be open and transparent, with supporting documents, minutes of meetings, and testimony published on the Council website. There are three key steps in the Councils decision-making process that produces the management plans and regulations to achieve the objectives: First, a Council develops a fishery management plan employing processes that proactively identify the issues and examine the implications that the proposed regulations may have beyond the fishery (other fisheries, the ecosystem, coastal communities, etc.). Second, the Secretary of Commerce evaluates the proposed plan, its wider implications, and whether it is consistent with all relevant laws. Third, NMFS, the states, and the US Coast Guard and their partners implement the provisions of the plan. The requirements of the SG100 level are met.		
c	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		(Y/N) Y	

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
	Justification	Adaptive management of fisheries and other natural resources is a well-established practice at all levels of government in the US. For marine resources, the President's Interagency Ocean Task Force produced several recommendations, since incorporated in Executive Order 13547, to apply ecosystem-based management and adaptive management to address ocean resource challenges (CEQ 2010). For marine fisheries specifically, the National Standards Guidelines for Standard 2 require that Fishery Management Councils amend FMPs 'as new information indicates the necessity for change in objectives or management measures' (Sec. 600.315(d)) and 'prepare and review annually a Stock Assessment and Fisheries Evaluation (SAFE) report for each fishery management plan' (Sec. 600.315(e)). SAFE reports contain information on the most recent condition of fish stocks, ecosystems, and the social and economic status of user groups. The Councils follow the National Standards Guidelines (50 C.F.R. 600.310 et seq.) when developing fishery management measures. The Guidelines for National Standard 1 instruct each Council and NMFS to apply the precautionary approach when setting control rules in a fishery. The Councils also are subject to National Standard 2 of the MSA, which mandates that 'conservation and management measures shall be based on the best available scientific information' (50 CFR 600.315). The Councils SSCs are charged with the task of reviewing the science behind management recommendations; determining if the information provided constitutes the 'best available scientific information'. The requirements of the SG 80 level are met.		
d	**Guidepost**	Some information on fishery performance and management action is generally available on request to stakeholders.	Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
	Justification	Formal reporting of fishery performance and Council deliberations and actions occurs throughout the NPFMC process (NPFMC 2009; 2012). A detailed briefing book provides stakeholders with all of the information used by the Council members for decision-making. Draft documents (e.g., stock assessments, plan amendments, environmental assessments, and environmental impact statements) are readily available on Council and government websites. Final decisions, including comments from the public and specific responses from the decision-makers, are also posted for easy access. This provides comprehensive, formal reporting of the management system response to relevant findings and information. The requirements of the SG 100 level are met.		
e	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The Office of General Counsel (GC), which represents NMFS, provides legal advice and counsel for the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce. NOAA GC has established a formal guideline for maintaining the agency administrative record (Schiffer 2012). This agency administrative record becomes an important aspect of justifying decisions and avoiding lawsuits. Further, NOAA and NMFS consult with plaintiffs and potential plaintiffs to settle disputes. The management system process includes proactive response from the decision-making agencies to legal actions brought against the management system, and strives to prepare decisions in substantive compliance with laws and regulations to minimize the likelihood of lawsuits, thereby meeting the requirements of the SG 100 level.		

PI 3.2.2	**The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.**
References	Hanselman, D.H., Lunsford, C.R., Rodgveller, C.J. 2014. Chapter 3. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation (SAFE) Report. December 2014. North Pacific Fishery Management Council, Anchorage AK, Pp. 576-717. Available at: http://www.afsc.noaa.gov/REFM/Docs/2014/BSAIsablefish.pdf NPFMC. 2009. Navigating the North Pacific Council Process. North Pacific Fishery Management Council, Anchorage AK. NPFMC. 2012. Statement of organization, practices, and procedures of the North Pacific Fishery Management Council (Draft). North Pacific Fishery Management Council, Anchorage AK. MSA. 2007. Public Law 94-265 as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (P.L. 109-479). An Act to provide for the conservation and management of the fisheries, and for other purposes. As amended through January 12, 2007. Restrepo, V. R. and Powers, J. E. 1999. Precautionary control rules in US fisheries management: specification and performance. Schiffer, S. J. 2012. National Oceanic and Atmospheric Administration Guidelines for compiling an Agency Administrative Record. Memorandum from Lois J. Schiffer, General Counsel.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
	Justification	Enforcement authorities operate a comprehensive monitoring, control and surveillance (MCS) system in the sablefish and other Alaska fisheries. The MSA charges two federal agencies with the authority to implement provisions of the Act: the National Marine Fisheries Service (NMFS) and the US Coast Guard. The Coast Guard enforces fisheries law and regulations at sea in conjunction with NOAA's Office of Law Enforcement Alaska Enforcement Division and other federal, state, tribal, interstate and international organizations.[1] The State of Alaska Department of Public Safety (Wildlife Troopers, Marine Enforcement Section) also enforces federal regulations under the Magnuson-Stevens Fishery Conservation and Management Act and other laws[2] through a Joint Enforcement Agreement with NMFS. The Alaska Enforcement Division (AKD) of the NOAA Office of Law Enforcement (OLE), Alaska Wildlife Troopers (AWT) and the US Coast Guard (USCG) report the results of their MCS activities for the halibut and sablefish IFQ fisheries as a whole, since boarding and other inspections are 'intended to ensure compliance with all IFQ and IPHC regulations and do not focus on collecting species-specific data' (RAM 2009, p. 39). The AKD handles daytime and after hours s surveillance of ports and shoreside monitoring of offloads. US Coast Guard activities are focused on at-sea and aerial surveillance. In FY2012, AKD personnel spent over 5,400 hours conducting patrols to provide a visible deterrence to potential violators; to monitor fishing and other marine activities; to detect violations; to conduct compliance inspections, and to provide compliance assistance (NOAA 2014). Enforcement authorities have characterized the IFQ fishery as stable, with very low rates for significant violations. Typically, the AKD makes about 700 dockside boardings annually on sablefish and halibut IFQ vessels. Additionally, from 2008-2012, the US Coast Guard averaged 310 at sea boardings a year, with an average violation rate of 6.6%. (NOAA 2014). The MCS system has demonstrated a consistent ability to enforce management measures, Strategies, and rules. Requirements of the SG100 level are met.		
b	**Guidepost**	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
	Justification	Under the published policy for assessing civil penalties (GCEL 2010), there are three options available to an investigating agent for pursuing a violation of fisheries law and regulations. If a violation is not significant or is technical, the agent may issue a 'Fix-It Ticket' that allows the violator to correct the violation within a specified time period. For modestly significant violations, the agent may issue a 'Summary Settlement' notice, which allows the violator to pay a reduced penalty. Fix-It Ticket allowances and Summary settlement penalties follow the guidelines by developed and published by NOAA's Offices of Law Enforcement and of General Counsel.[3] For violations that are significant[4], or for repeat violators, the agent refers the case to the NOAA General Counsel's Office for Enforcement and Litigation (GCEL) for further action. Penalty schedules, which specify the civil penalties for violations of federal fisheries regulations, have been developed for each region's fisheries.[5] The penalty schedule, Groundfish & Individual Fishing Quota Fisheries off The Coast of Alaska, contains sanctions for various violations of sablefish IFQ regulations. As an example, the possession or sale of 100 to 1,500 pounds of IFQ sablefish without an annual quota share carries a fine of $15,000 to $50,000, plus forfeiture or value of the illegal fish. For a person holding an IFQ overage during the final voyage of the year, carries a civil penalty ranging from $1 - $6 per pound, plus forfeiture of the entire catch overage or its value. By law sanctions should be consistently applied, in other words, comparable sanctions should be issued for comparable violations. There is no evidence either way whether or not sanctions are consistently applied in the Alaska Region; however, no complaints of inconsistent or arbitrary treatment by enforcement authorities have come to our attention. Most observers of the fishery believe that the sanctions provide effective deterrence. Also, the evidence on non-compliance supports this claim (NOAA 2014). The requirements of SG 100 are met for this Scoring Issue.		
c	Guidepost	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) N

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
	Justification	Regulations for the sablefish IFQ fishery require that fishers maintain logbooks and regularly report their catches, landings, and other measures of fishing activity to NMFS. There is generally widespread compliance with the logbook requirement, with only a few violations of the requirement every year (NOAA 2015). Thus, it is clear that some evidence exists to demonstrate fishers comply with the fishery management system, and thus the requirements are met at the SG80 level. For this Scoring Issue, the SG 100 level requires a high degree of certainty that fishers are complying with the fishery management system. As noted at the time of re-certification in 2011, a shortcoming of the MCS program is the ability to monitor where sablefish fishing takes place(e.g. with vessel monitoring systems (VMS) or monitor bycatch and discards of seabirds and other protected species (e.g. via the Observer Program). The Vessel Monitoring System (VMS), required on many groundfish vessels (e.g. in the Alaska Pollock and cod fisheries) is not currently a requirement for the IFQ fishery; for example, in 2012 only 68 sablefish trips used the Vessel Monitoring System (VMS) checkout (NOAA 2014). Managers have recognized that data collection by onboard observers is currently the only reliable and verifiable method available to gain fishery discard and biological information on fish, and data concerning seabird and marine mammal interactions with fisheries (NMFS 2014). Evidence exists to show that the quality of the Observer program has improved since the re-certification in 2011, as a result of a re-structuring effort that began in January of 2013 (NMFS 2015). Targeted coverage rates by the observer Program in 2015 was 11% for small vessels, and 24% for large vessels. While the reliability of the program has clearly increased, the Team has not seen evidence to affirm a "high degree of confidence" that fishers are fully complying with the management system, at this time. Vessels are not required to carry VMS on board (to document fishing locations), and Observer Program coverage rates (to document bycatch) are not 100%. Thus scoring is met at the SG 80 level, but not the SG100 level at this time.		
d	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		(Y/N) Y	
	Justification	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 (NOAA 2015). The requirement for scoring at the SG80 level is met for this Scoring issue.		

PI 3.2.3	Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with
References	1 The Coast Guard and other enforcement authorities are also responsible for enforcing provisions of the MMPA, ESA, and international fisheries agreements. 2 Other laws include the Endangered Species Act of 1973; the Lacey Act Amendments of 1981; and the Northern Pacific Halibut Act of 1982. Source: http://www.gov.state.ak.us/omb/11_omb/budget/PublicSafety/enacted/2011proj35825.pdf. 3 The Fix-IT Ticket and Summary Settlement Schedules are available at http://www.gc.noaa.gov/enforce-office3.html and at http://www.gc.noaa.gov/docs.html. 4 The term 'significant' is related to the potential harm a violation may have on the resource (GCEL 2010). 5 Available at http://www.gc.noaa.gov/enforce-office3.html. NMFS 2014. 2015Annual Deployment Plan for Observers in the Groundfish and Halibut Fisheries off Alaska. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802. NMFS. 2015. North Pacific Groundfish and Halibut Observer Program 2014 Annual Report. National Oceanic and Atmospheric Administration, 709 West 9th Street. Juneau, Alaska 99802. NOAA 2014. Pacific Halibut–Sablefish IFQ Report. Fishing Year 2012. March 2014.
OVERALL PERFORMANCE INDICATOR SCORE:	**95**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 3.2.4

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/N) Y	(Y/N) Y	(Y/N) Y

	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 2014). 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 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).

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
		In addition, a complementary research program is operated by the North Pacific Research Board (NPRB) (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.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) 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):				

Evaluation Table for PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery has in place mechanisms to evaluate some parts of the management system.	The fishery has in place mechanisms to evaluate key parts of the management system	The fishery has in place mechanisms to evaluate all parts of the management system.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The NPFMC meets five times a year, and has mechanisms in place to evaluate all parts of the management system. The annual management process is detailed in Council Operating Procedure 1H (NPFMC 2009; 2012). Under the annual cycle, management measures are put into place and adjusted through routine in-season evaluation and actions. Amendments to the groundfish fishery management plans have averaged about two per year since the implementation of the council system, demonstrating the wide range of management topics evaluated by the NPFMC, effectively covering all parts of the management system. Additionally, the US Congress reviews the MSA every five years and amends it as necessary. The SG100 level is met for this Scoring Issue.		
b	**Guidepost**	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	(Y/N) Y	(Y/N) Y	(Y/N) Y
	Justification	The NPFMC management system undergoes internal review as part of the annual harvest specification process, involving the NPFMC Groundfish Plan Teams, Advisory Panel, SSC, public comment, and Council Member discussions. All NPFMC recommendations are externally reviewed by NMFS, NOAA, and the Department of Commerce, and NOAA OGC reviews proposed actions to assure compliance with the MSA. Further external review can occur through legal challenges, which have the effect of refining understanding of requirements under laws and regulations. The SG100 level is met for this Scoring Issue.		
References		NPFMC 2009; 2012		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Appendix 1.1 Conditions

Table A1.3: Condition LL 2.1.3

Performance Indicator	2.1.3: Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species
Score	75
Rationale	Please refer to PI 2.1.3(a,b,c) rationale beginning on page 117
Condition	By surveillance year 3, the client will provide adequate information on the type, volume, and variability of bait used in the fishery to effectively assess the outcome status with respect to these species, to support a partial strategy if necessary, and determine if there is any increased risk level due to changes in the operation of the fishery.
Milestones	Surveillance year 1 – data collection methodology determined- no change in score Surveillance year 2 – data collection has begun- no change in score, Surveillance year 3 – data is presented to the CAB- The CAB will re-score based on this data to evaluate compliance with the condition and whether performance has achieved SG80 for PI 2.1.3
Client action plan	Year 1: Client will develop a questionnaire to determine type and volume of bait used in the halibut fishery and distribute to relevant association, etc. The questionnaire will include a prompt to help determine the degree of variability in use of bait from one year to the next. Year 2: Client will collect and collate information from questionnaire and present in final format to the CAB. To include accounting of bait species and volumes used in the fishery, as well as variability by year. Evidence will be provided in the form of a short report with supporting raw data. Year 3: Client will complete analysis of results from questionnaire and present in final format to the CAB. To include accounting of bait species and volumes used in the fishery, as well as variability by year. Evidence will be provided in the form of a short report with supporting raw data.
Consultation on condition	No external agency support or funding expected.

Table A1.3: Condition Pot 2.1.3(1)

Performance Indicator	2.1.3: Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species
Score	70
Rationale	Please refer to PI 2.1.3(a,b,c) rationale beginning on page 159

Condition	By surveillance year 3, the client will provide adequate information on the type, volume, and variability of bait used in the fishery to effectively assess the outcome status with respect to these species, to support a partial strategy if necessary, and determine if there is any increased risk level due to changes in the operation of the fishery.
Milestones	Surveillance year 1 – data collection methodology determined- no change in score Surveillance year 2 – data collection has begun- no change in score, Surveillance year 3 – data is presented to the CAB- The CAB will re-score based on this data to evaluate compliance with the condition and whether performance has achieved SG80 for PI 2.1.3
Client action plan	Year 1: Client will develop a questionnaire to determine type and volume of bait used in the halibut fishery and distribute to relevant association, etc. The questionnaire will include a prompt to help determine the degree of variability in use of bait from one year to the next. Year 2: Client will collect and collate information from questionnaire and present in final format to the CAB. To include accounting of bait species and volumes used in the fishery, as well as variability by year. Evidence will be provided in the form of a short report with supporting raw data. Year 3: Client will complete analysis of results from questionnaire and present in final format to the CAB. To include accounting of bait species and volumes used in the fishery, as well as variability by year. Evidence will be provided in the form of a short report with supporting raw data.
Consultation on condition	No external agency support or funding expected.

Table A1.3: Condition Pot (2.1.3(2))

Performance Indicator	**2.1.3 Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species**
Score	70
Rationale	See PI 2.1.3(b,c) Scoring Tables and Rationales on Page 159
Condition	By surveillance year 3, the Client will provide adequate information from the NOAA Catch Accounting System on the nature and extent of retained species to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species by the next surveillance audit.
Milestones	Catch Accounting System data from pot gear vessels is provided to the assessment team annually. By year 3 it is expected that there will be sufficient data to rescore and close the condition.
Client action plan	The Client for sablefish during the 2017 and subsequent seasons will forward and make available observer information regarding the use of pots that will begin to be used for harvesting sablefish. The regulations that will allow the use of pots will become effective late 2016 in time for the beginning of the sablefish season in early spring 2017.

Consultation on condition	The client has facilitated catch accounting system data requests from NMFS at annual and full assessments historically. No special consultation or external resources are therefore considered necessary.

Table A1.3: Condition Pot 2.2.3

Performance Indicator	2.2.3 Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch
Score	65
Rationale	See PI 2.2.3(a,b,c) Scoring Tables and Rationales on Page 168
Condition	By surveillance year 1, the client will provide adequate information from the NOAA Catch Accounting System on the nature and the amount of to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch by the next surveillance audit.
Milestones	Catch Accounting System data from pot gear vessels is provided to the assessment team annually. By year 3 it is expected that there will be sufficient data to rescore and close the condition.
Client action plan	The Client for sablefish during the 2017 and subsequent seasons will forward and make available observer information regarding the use of pots that will begin to be used for harvesting sablefish. The regulations that will allow the use of pots will become effective late 2016 in time for the beginning of the sablefish season in early spring 2017.
Consultation on condition	The client has facilitated catch accounting system data requests from NMFS at annual and full assessments historically. No special consultation or external resources are therefore considered necessary.

Table A1.3: Condition Pot 2.3.3

Performance Indicator	2.3.3 Relevant information is collected to support the management of fishery impacts on ETP species, including: • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species.
Score	60
Rationale	See PI 2.3.3 (a,b,c) Scoring Tables and Rationales on page 175
Condition	By surveillance year 3, the client will provide relevant information from the NOAA Catch Accounting System and other ETP resource management sources to support the management of fishery impacts on ETP species, including: Information for the development of the management strategy; Information to assess the effectiveness of the management strategy; and Information to determine the outcome status of ETP species by the next surveillance audit.
Milestones	Data from pot gear vessels is provided to the assessment team annually. By year 3 it is expected that there will be sufficient data to rescore and close the condition.
Client action plan	The Client for sablefish during the 2017 and subsequent seasons will forward and make available observer information regarding the use of pots that will begin to be used for harvesting sablefish. The regulations that will allow the use of pots will become

	effective late 2016 in time for the beginning of the sablefish season in early spring 2017.
Consultation on condition	The client has facilitated catch accounting system and other ETP-relevant data requests from NMFS at annual and full assessments historically. No special consultation or external resources are therefore considered necessary.

Appendix 3 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)

SSC comments on variance: 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 Peer Review Reports

Peer Review of the assessment was conducted by Dr. Susan Hanna and Dr. John D. Neilson. Peer Reviewers were selected through the Peer Review College as part of a pilot of the emerging Peer Review College program. Peer Reviewers were provided the assessment on May 16th, and responses were received by the assessment team on June 1, 2016. No scores were changed as a result of Peer Reviewer comments, but the commentary provided useful feedback to increase report clarity and strengthen rationales.

Peer Reviewer #1:

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No** **Yes**	**CAB Response**
Justification: Overall, the assessment team has reviewed the appropriate documentation and developed a sound evidence-based conclusion for each scoring element. However, the treatment of bait as a retained species does need further clarification, as indicated on the evaluation table. My computer was unable to download several figures. The report is in need of editing to fix inconsistent formatting, add better section numbering, and correct for inconsistencies in fonts and English usage (e.g. American vs. UK: choose one) I have made a number of edits in "track changes" on the report draft.		*The team thanks the peer reviewer for the careful review of the report, and notes formatting challenges that likely pertain to different versions of Word style compatibilities. PDF versions should not have such issues.* *Questions over treatment of bait are noted and responded to under relevant Principle 2 PI team responses. In general, the assessment team has provided additional references to MSC requirements to clarify the treatment of bait as (main) retained, and better aligned the structures within and between the US North Pacific Sablefish and Halibut reports for increased consistency and clarity.* *Tracked changes in the report are appreciated, and have been considered in revisions prior to the PCDR.*

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCR 7.11.1 and sub-clauses]	**Yes/No** **Yes**	**CAB Response**
Justification: For conditions LL 2.1.3 and Pot 2.1.3 (1): it would be helpful to also include information on the degree of temporal variability in bait type and source; i.e. how stable is the sourcing and the pattern of use?		*Noted. Additional language was added to the condition to capture this information. See also team response in relevant PIs.*

If included:

Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]	**Yes/No** **Yes**	**CAB Response**
Justification: The action plan as presented is sufficient to meet the conditions. I have no additional comments.		*No response required.*

Table 22 For reports using one of the default assessment trees:

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	*Yes*	*Yes*	*NA*	*The explanation is complete and appropriately documented. A question is raised in the text about a value presented in the LRP table box.*	*Review noted. The questioned value in the LRP table box was checked and verified.*
1.1.2	*Yes*	*Yes*	*NA*	*The explanations provided under sections a,b,c,and d are complete and well-documented.*	*Review noted.*
1.2.1	*Yes*	*Yes*	*NA*	*The explanations provided under sections a,b,c,and d are complete and well-documented. Section e is NA. Two references cited in the table are missing form th e list of references.*	*Missing cite(s) added.*
1.2.2	*Yes*	*Yes*	*NA*	*Explanations provided under sections a, b. and c are complete. The references sections needs to be filled in.*	*Missing cite(s) added.*
1.2.3	*Yes*	*Yes*	*NA*	*Explanations provided in a,b,c are complete and appropriately documented. Three references cited in the scoring text are missing form the reference list.*	*Missing cite(s) added.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	**Justification** Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.4	*Yes*	*Yes*	*NA*	*Explanations provided in a,b,c,d,e are complete and appropriately documented. Reference list is incomplete.*	*Missing cite(s) added.*
2.1.1 *note: LL and Pot gear evaluations are both included in this table. A single evaluation applies to both gears. Where the gears differ, gear-specific evaluations are noted.*	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d are complete and documented.*	*No response required.*

2.1.2	*Yes*	*No*	*NA*	*Further explanation isneeded as to why bait is treated as a retained species, expecially considering the use of imported bait.*	*Bait is both caught in the North Pacific and imported. Due to the information deficiency we don't have a good sense of how much is from each source. Conditions placed on this fishery (under 2.1.3) should provide this level of detail. Bait is treated as a retained species per the MSC CRV1.3 CB3.5.5. We have included additional language related to this in the background section dealing with bait: "Bait Considerations" and in relevant rationales. We have also gone through both the US North Pacific Sablefish and Halibut assessments and reconciled both formatting and rationale of how bait is treated and scored. No scores were changed.*
2.1.3	*Yes*	*No*	*LL 2.1.3 Yes* *Pot 2.1.3 Yes*	*In section a, SG60 and SG80 refer to main retained species taken by the fishery. Would bait fit into this category? Sections a,b,c,d: further explanation is needed as to why bait is treated as a retained species taken by the*	*Bait is treated as a retained species in both assessments, per the MSC requirements (in particular, CRV1.3*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	**Justification** Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				fishery.	*CB3.5.5). We have included additional language related to this guidance and rationale in the background section dealing with bait: "Bait Considerations."*
2.2.1	*Yes*	*Yes*	*NA*	*Explanations provided under sections a,b, and c are appropriate. Not all listed references are cited in the scoring text.*	*References revised. No further response required.*
2.2.2	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d are complete and documented*	*No response required.*
2.2.3	*Yes*	*Yes*	*LL: NA* *Pot: 2.2.3 Yes*	*Explanations in sections a,b,c,d are complete.*	*No response required.*
2.3.1	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c are complete. Reference list is incomplete (LL).*	*No response required.*
2.3.2	*Yes for LL* *NA for Pot Yes*	*Yes for LL* *NA for Pot*	*NA*	*Explanations in sections a,b,c,d are complete and appropriately documented.*	*No response required.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.3.3	*Yes*	*Yes*	*LL: NA* *Pot: 2.3.3 Yes*	*Explanations in sections a,b,c are complete and appropriately documented.*	*No response required.*
2.4.1	*Yes*	*Yes*	*NA*	*Explanation is complete and appropriately documented.*	*No response required.*
2.4.2	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c are complete and appropriately documented.*	*No response required.*
2.4.3	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d are complete and appropriately documented.*	*No response required.*
2.5.1	*Yes*	*Yes*	*NA*	*Explanation is complete and well documented.*	*No response required.*
2.5.2	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d are complete and well documented.*	*No response required.*
2.5.3	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d,e are complete and appropriately documented.*	*No response required.*
3.1.1	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d are complete and well documented.*	*Review noted.*
3.1.2	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c are complete and appropriately documented.*	*Review noted.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.1.3	*Yes*	*Yes*	*NA*	*Explanation is complete. References section is incomplete*	*Missing cite(s) added.*
3.1.4	*Yes*	*Yes*	*NA*	*Explanation is complete and well documented.*	*Review noted.*
3.2.1	*Yes*	*Yes*	*NA*	*Explanation is complete. References section is incomplete*	*Missing cite(s) added.*
3.2.2	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d,e are complete and appropriately documented.*	*Review noted.*
3.2.3	*Yes*	*Yes*	*NA*	*Explanations in sections a,b,c,d are complete and well documented.*	*Review noted.*
3.2.4	*Yes*	*Yes*	*NA*	*Explanations in sections a,b are complete and appropriately documented.*	*Review noted.*

Peer Reviewer #2:

Summary of Peer Reviewer Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No** **Yes**	**CAB Response**
Justification: *I had some relatively minor issues with the scoring but overall the report seems to be a fair representation of the available data and the conclusions appear well supported.*		*The team thanks the peer reviewer for the careful review of the report. Specific concerns are addressed on a PI-basis in the remainder of this document.*

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? ***[Reference: FCR 7.11.1 and sub-clauses]***	**Yes/No** **Yes**	**CAB Response**
*The conditions are straightforward and involve more information on bycatch, including collection of survey information concerning bait type in the two fisheries. The conditions appear appropriate, and should result in the SG 80 outcome.***[**		*Noted. No further response required.*

If included:

Do you think the client action plan is sufficient to close the conditions raised? ***[Reference FCR 7.11.2-7.11.3 and sub-clauses]***	**Yes/No** **Yes**	**CAB Response**
Justification:		*No response required.*

Table 23 For reports using one of the default assessment trees:

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	**Justification** Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	*Yes*	*Yes*	*NA*		*Review noted.*
1.1.2	*Yes*	*No*	*NA*	*SI a was scored by the certifier as 80, yet an overall score of 100 was given. Perhaps 95 for the aggregate score would be more appropriate. FCR states:* *ii. Award 95 when performance against the scoring issues is almost at SG100 (most scoring issues are fully met, but a few are not fully met)*	*Scoring issues a and d do not have a SG100 scoring guidepost, and the fishery has been deemed in compliance with the SG100 scoring guidepost for SI's b and c. Therefore, the team considers that all SG100 scoring guideposts (available) are fully met.*
1.1.3	*NA*	*NA*	*NA*	*The sablefish stock is not depleted relative to the target*	*No response required.*
1.2.1	*Yes*	*Yes*	*NA*		*Review noted.*
1.2.2	*Yes*	*Yes*	*NA*		*Review noted.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	**Justification** Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.3	*Yes*	*No*	*NA*	*SI c was scored by the certifier as 80, yet an overall score of 100 was given. Perhaps 95 for the aggregate score would be more appropriate. FCR states:* *ii. Award 95 when performance against the scoring issues is almost at SG100 (most scoring issues are fully met, but a few are not fully met)*	*Scoring issue c does not have a SG100 scoring guidepost, and the fishery has been deemed in compliance with the SG100 scoring guidepost for SI's a and b. Therefore, the team considers that all SG100 scoring guideposts (available) are fully met.*
1.2.4	*Yes*	*No*	*NA*	*SI b was scored by the certifier as 60, yet an overall score of 100 was given. Perhaps 95 for the aggregate score would be more appropriate. FCR states:* *ii. Award 95 when performance against the scoring issues is almost at SG100 (most scoring issues are fully met, but a few are not fully met)*	*Scoring issue b does not have a SG100 scoring guidepost, and the fishery has been deemed in compliance with the SG100 scoring guidepost for SI's a and b-e. Therefore, the team considers that all SG100 scoring guideposts (available) are fully met.*
(Longline) 2.1.1	*Yes*	*Yes*	*NA*		*No response required.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.2	*Yes*	*Yes*	*NA*		*No response required.*
2.1.3	*Yes*	*Yes*	*Yes*		*No response required.*
2.2.1	*Yes*	*Yes*	*NA*	*Under the first scoring issue narrative (shark), the following concluding statement is made:* ***"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. "*** *This statement seems somewhat contradictory, is there a typo? Should "stocks" be "catches" in the second part of the sentence?*	*Due to sharks being considered a teir 5 species complex, while it is highly likely that the stocks are within BBL, there is not a high degree of certainty that they are.This is the difference in language between SG80 and SG100.*
2.2.2	*Yes*	*Yes*	*NA*		*No response required.*
2.2.3	*Yes*	*Yes*	*NA*		*No response required.*
2.3.1	*Yes*	*Yes*	*NA*		*No response required.*
2.3.2	*Yes*	*Yes*	*NA*		*No response required.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.3.3	*Yes*	*Yes*	*NA*		*No response required.*
2.4.1	*Yes*	*Yes*	*NA*		*No response required.*
2.4.2	*Yes*	*Yes*	*NA*		*No response required.*
2.4.3	*Yes*	*Yes*	*NA*		*No response required.*
2.5.1	*Yes*	*Yes*	*NA*		*No response required.*
2.5.2	*Yes*	*Yes*	*NA*		*No response required.*
2.5.3	*Yes*	*Yes*	*NA*		*No response required.*
(Pot Gear) 2.1.1	*Yes*	*Yes*	*NA*		*No response required.*
2.1.2	*Yes*	*Yes*	*NA*		*No response required.*
2.1.3	*Yes*	*Yes*	*Yes*		*No response required.*
2.2.1	*Yes*	*Yes*	*NA*		*No response required.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.2	*Yes*	*Yes*	*NA*		*No response required.*
2.2.3	*Yes*	*Yes*	*Yes*		*No response required.*
2.3.1	*Yes*	*Yes*	*NA*		*No response required.*
2.3.2	*Yes*	*Yes*	*NA*		*No response required.*
2.3.3	*Yes*	*Yes*	*Yes*		*No response required.*
2.4.1	*Yes*	*Yes*	*NA*		*No response required.*
2.4.2	*Yes*	*Yes*	*NA*		*No response required.*
2.4.3	*Yes*	*Yes*	*NA*		*No response required.*
2.5.1	*Yes*	*Yes*	*NA*		*No response required.*
2.5.2	*Yes*	*Yes*	*NA*		*No response required.*
2.5.3	*Yes*	*Yes*	*NA*		*No response required.*
3.1.1	*Yes*	*Yes*	*NA*		*Review noted.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	**Justification** Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.1.2	*Yes*	*Yes*	*NA*		*Review noted.*
3.1.3	*Yes*	*Yes*	*NA*		*Review noted.*
3.1.4	*Yes*	*Yes*	*NA*		*Review noted.*
3.2.1	*Yes*	*Yes*	*NA*		*Review noted.*
3.2.2	*Y*	*N*	*NA*	*The certifier awarded 100, but 2 of the 5 Scoring Issues (a and c) were (appropriately) given <100. According to the FCR,* *"Award 95 when performance against the scoring issues is almost at SG100 (most scoring issues are fully met, but a few are not fully met)…"* *It seems a score of 95 would be more appropriate.*	*Not all SI's provide an SG100 guidepost, but the fishery has been deemed in compliance with all SG100 scoring guideposts (and the SG60 and SG80 guideposts) within the PI. Therefore, the team considers that all SG100 scoring guideposts (available) are fully met.*

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.3	*Y*	*N*	*NA*	*The certifier awarded 95, but two of four scoring issues were 80. It seems that a socre of 90 would be more appropriate.*	*There are three SG100 guideposts in this PI: SIa, b, c. SId only provides and SG80 guidepost. The fishery was deemed to meet all but one SG100 guidepost provided (2/3), therefore the assessment team considers a score of 95: "Award 95 when performance against the scoring issues is almost at SG100 (most scoring issues are fully met, but a few are not fully met)…" most appropriate.*
3.2.4	*Y*	*Y*	*NA*		*Review noted.*
3.2.5	*Y*	*Y*	*NA*		*Review noted.*

Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary) can be added below and on additional pages

The North Pacific sablefish fishery is relatively data-rich, with a mature system for fisheries management, supported by a robust science program. As with the complementary halibut report, the assessment team has done a good job in summarizing a large amount of information. I have only a few criticisms, involving scoring. The concerns I raise are relatively minor and do not impact the overall conclusion of the report. This well-managed fishery is a good candidate for certification, as indicated by the review.

Team response: concerns noted are addressed within the above template, and the report, as relevant. The team appreciates the thorough peer review and positive feedback.

Appendix 4 Stakeholder submissions

There have been no stakeholder submissions received to date.

Appendix 5 Surveillance Frequency

The assessment team has determined that the default surveillance program is appropriate for the fishery. In the case that all conditions on the fishery are closed ahead of schedule, in which case the surveillance program will be amended in future surveillance reports (MSC FCR 7.23.10). The surveillance audits will be conducted as close to the anniversary date as feasible.

Table 4.1: Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	*On-site surveillance audit*	*On-site surveillance audit*	*On-site surveillance audit*	*On-site surveillance audit & re-certification site visit*

Appendix 6 Objections Process

The objection period was held from July 26, 2016 to August 18, 2016. No objections were received.