



Alaska Responsible Fishery Management Certification

3rd Surveillance Report

For The

Alaska Pacific Sablefish (Black Cod) Commercial Fishery

Client

'Eat on the Wild Side' (FVOA)

Facilitated By

Alaska Seafood Marketing Institute (ASMI)

Assessors: Dr. Ivan Mateo, Lead Assessor
Mr. Vito Romito, Assessor

Report Code: AK/SAB/002.3/2019
Published Date: 30th August 2019

SAI Global
3rd Floor, Block 3,
Quayside Business Park,
Mill Street, Dundalk,
Co. Louth, Ireland.
T: + 353 42 932 0912
www.saiglobal.com



Foreword

This report is the 3rd Surveillance Report for the Alaska sablefish federal and state commercial fisheries following initial certification award against this AK RFM Program, awarded on October 11th 2011, and recertification on 9th January 2017.

The objective of the Surveillance Assessment and Report is to monitor for any changes/updates in the management regime, regulations and their implementation since the previous assessment; in this case, the Final Report of Full Assessment (re-certification) completed in January 2017. The report determines whether these changes and current practices remain consistent with the overall scorings of the fishery allocated during re-certification.

High conformance was demonstrated by the fishery with regards to the Fundamental Clause. No corrective action plans with regards non-conformances were identified.

The certification covers the Alaskan sablefish (*Anoplopoma fimbria*) commercial fishery employing demersal longline, pot and trawl gear within Alaska jurisdiction (200 nautical miles EEZ) under federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)] management.

The surveillance assessment was conducted according to the Global Trust Certification ISO 65 accredited procedures for FAO – Based Responsible Fisheries Management Certification using the Alaska FAO – Based RFM Conformance Criteria Version 1.3 fundamental clauses as the assessment framework.

Table of contents

Foreword	2
Table of contents	3
List of Tables	4
List of Figures	4
Glossary	5
Summary and Recommendations.....	6
Assessment Team Details	7
1. Introduction	8
1.1. Recommendation of the Assessment Team.....	9
2. Fishery Applicant Details.....	10
3. Proposed Unit(s) of Assessment and Certification	11
4. Fishery Observations.....	12
4.1. Stock status, landings and TAC update	12
4.2. Enforcement update	13
4.3. Ecosystem Update.....	14
4.4. Relevant changes to Legislation and Regulations	14
4.5. Relevant changes to the Management Regime	14
5. Surveillance Meetings.....	15
6. Assessment Outcome Summary	15
6.1. Fundamental Clauses Summaries	15
7. Conformity Statement	20
8. Evaluation of Fundamental Clauses	21
8.1. Section A. The Fisheries Management System	21
8.1.1. Fundamental Clause 1	21
8.1.2. Fundamental Clause 2	26
8.1.3. Fundamental Clause 3	32
8.2. Section B. Science and Stock Assessment Activities.....	34
8.2.1. Fundamental Clause 4	34
8.2.2. Fundamental Clause 5	39
8.3. Section C. The Precautionary Approach	45
8.3.1. Fundamental Clause 6.....	45
8.3.2. Fundamental Clause 7	47
8.4. Section D. Management Measures	50
8.4.1. Fundamental Clause 8	50
8.4.2. Fundamental Clause 9	58
8.5. Section E. Implementation, Monitoring and Control	60
8.5.1. Fundamental Clause 10	60
8.5.2. Fundamental Clause 11	64
8.6. Section F. Serious Impacts of the Fishery on the Ecosystem	67
8.6.1. Fundamental Clause 12	67
9. Performance specific to agreed corrective action plans.....	87
10. Unclosed, new non-conformances and new corrective action plans.....	87
11. Future Surveillance Actions	87
12. Client signed acceptance of the action plan.....	87
13. Recommendation and Determination	87
14. References	88
15. Appendices	94
15.1. Appendix 1 – Assessment Team Details.....	94

List of Tables

Table 1. Fishery applicant details.....	10
Table 2. Unit(s) of Assessment (UoA(s)).	11
Table 3. Biomass (4+), TAC and Catch of Sablefish in Gulf of Alaska, Bering Sea and Aleutian Islands Sablefish for 2017-2018.....	13
Table 4. Sablefish stock assessment update 2018.....	33
Table 5. Summary of available OFL, ABC, TAC and catch for sablefish from 2017 to 2020 (Source: 2018 Sablefish SAFE).	47
Table 6. Offence level and penalty matrix for the MSFCMA; AMLRCA; PSMAA , (2019 NOAA Penalty Policy).	65
Table 7. Ecosystem effects on the sablefish stock (Hanselman et al 2017).....	68
Table 8. Bycatch (t) of FMP Groundfish species in the targeted sablefish fishery averaged from 2012- 2017*.....	73
Table 9. Bycatch of nontarget species and HAPC biota in the targeted sablefish fishery.	74
Table 10. Summary of EM monitored fishing activity for 2018.	74
Table 11. Latest status of common bycatch species caught in the Alaska sablefish fishery.	75
Table 12. Estimated demersal longline seabird bycatch in the sablefish target fishery, 2010 through 2018*. (Modified from table 13 in Krieger et al. 2019).	77

List of Figures

Figure 1. Sablefish fishery total reported catch (kt) by NPFMC FMP areas and year.	12
Figure 2. OLE’s reported incidents by percent October 1, 2017 to September 30, 2018 categorized by primary law, program, or regulation type.	61
Figure 3. 2014-2018 USCG boardings (left) and fisheries violations in Alaska (including sablefish).	63
Figure 4. Fishery closures and marine reserves in Alaska.....	82

Glossary

ABC	Allowable Biological Catch
ADFG	Alaska Department of Fish and Game
AFA	American Fisheries Act
AFSC	Alaska Fisheries Science Center
ASMI	Alaska Seafood Marketing Institute
BOF	Board of Fisheries
BSAI	Bering Sea and Aleutian Islands
CCRF	Code of Conduct for Responsible Fisheries
CDQ	Community Development Quota
CFEC	Commercial Fisheries Entry Commission
CPUE	Catch per Unit Effort
EIS	Environmental Impact Statement
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FAO	Food and Agriculture Organization of the United Nations
FMP	Fishery Management Plan
GOA	Gulf of Alaska
GHL	Guideline Harvest Level
IFQ	Individual Fishing Quota
IRFA	Initial Regulatory Flexibility Analysis
IRIU	Improved Retention/Improved Utilization
LLP	License Limitation Program
MSFCMA	Magnuson-Stevens Fisheries Management and Conservation Act
mt	Metric tons
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
nm	Nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
OFL	Overfishing Level
OLE	Office for Law Enforcement
OY	Optimum Yield
PSC	Prohibited Species Catch
RACE	Resource Assessment and Conservation Engineering
REFM	Resource Ecology and Fisheries Management
RFM	Responsible Fisheries Management
SAFE	Stock Assessment and Fishery Evaluation (Report)
SSC	Scientific and Statistical Committee
SSL	Steller Sea Lion
TAC	Total Allowable Catch
USCG	U.S. Coast Guard

Summary and Recommendations

This report is the **3rd Surveillance Report (AK/SAB/002.3/2019)** for the Alaska Pacific Sablefish (Black cod; *Anoplopoma fimbria*) Commercial Fishery produced on behalf of the “Eat on the Wild Side (Fishing Vessel Owners' Association (FVOA))” according to the Alaska Based Responsible Fisheries Management (RFM) Certification Program. The fisheries were originally certified in October 2011, and recertified in 9th January 2017.

The objective of this Surveillance Report is to monitor for, and evaluate the impacts of, any changes to the management regime, regulations and their implementation since the previous assessment. Having assessed these changes to the fishery (if any) the Assessment Team determines if these changes materially affect the fisheries' conformance to the AKRFM Standard and whether current practices remain consistent with the overall confidence ratings assigned during either initial certification or subsequent surveillance audits where the original confidence rating(s) have been changed.

In addition to this, any areas reported as “items for surveillance” or corrective action plans in the previous assessment are reassessed and a new conclusion on consistency of these items with the Conformance Criteria is given accordingly. No non-conformances were identified since certification was granted.

The certification covers the Alaskan sablefish (*Anoplopoma fimbria*) commercial fishery legally employing demersal longline, pot and trawl gear within Alaska jurisdiction (200 nautical miles EEZ) under federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG) & Board of Fisheries (BOF)] management.

The surveillance assessment was conducted according to the Global Trust Certification procedures for Alaska Responsible Fisheries Management Certification using the FAO – Based RFM Conformance Criteria (v1.3) fundamental clauses as the assessment framework.

The assessment was conducted by one externally contracted fishery expert and SAI Global internal staff. Details of the assessment team are provided in [Appendix 1](#).

The main Key outcomes have been summarized in Section 5 “[Assessment Outcome Summary](#)”.

Assessment Team Details

Dr. Ivan Mateo, Lead Assessor

SAI Global/Global Trust Certification Ltd.
Quayside Business Centre,
Dundalk, Co. Louth, Ireland.
Email: ivan.mateo@saiglobal.com

Mr. Vito Romito, Assessor

SAI Global/Global Trust Certification Ltd.
Quayside Business Centre,
Dundalk, Co. Louth, Ireland.
Email: vito.romito@saiglobal.com

1. Introduction

This Surveillance Report documents the 3rd Surveillance Assessment of the Alaska Pacific Sablefish (Black cod) Commercial Fishery (200nm EEZ) originally certified on 11th October 2011, and recertified 9th January 2017, and presents the recommendation of the Assessment Team for continued FAO-Based RFM Certification.

Unit of Certification

The Alaska Pacific Sablefish (Black cod) Commercial Fishery (200nm EEZ) legally employing demersal longline (mainly), pot and trawl gear within Alaska jurisdiction (200 nautical miles EEZ) under federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)] management, underwent their 1st surveillance assessment against the requirements of the Alaska FAO-Based RFM Conformance Criteria Version 1.3 Fundamental clauses.

This Surveillance Report documents the assessment results for the continued certification of commercially exploited Alaska Pacific Sablefish (Black cod) fisheries to the Alaska RFM Certification Program. This is a voluntary program that has been supported by ASMI who wish to provide an independent, third-party certification that can be used to verify that these fisheries are responsibly managed.

The assessment was conducted according to the Global Trust procedures for Alaska RFM Certification using the fundamental clauses of the Alaska RFM Conformance Criteria Version (v1.3) May 2016) in accordance with ISO 17065 accredited certification procedures.

The assessment is based on 6 major components of responsible management derived from the FAO Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labelling of products from marine capture fisheries (2009); including:

- A. [The Fisheries Management System](#)
- B. [Science and Stock Assessment Activities](#)
- C. [The Precautionary Approach](#)
- D. [Management Measures](#)
- E. [Implementation, Monitoring and Control](#)
- F. [Serious Impacts of the Fishery on the Ecosystem](#)

These six major components are supported by 12 fundamental clauses (+ 1 in case of enhanced fisheries) that guide the AK RFM Certification Program surveillance assessment.

A summary of the site meetings is presented in Section 5. Assessors included an externally contracted fishery expert and SAI Global internal staff ([Appendix 1](#)).

1.1. Recommendation of the Assessment Team

Following this 3rd Surveillance Report the assessment team recommends that continued Certification under the Alaska Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fishery, the sablefish (black cod) commercial federal and state fisheries, employing demersal longline, pot and trawl gear within Alaska jurisdiction (200 nautical miles EEZ) under federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)] management.

2. Fishery Applicant Details

Table 1. Fishery applicant details.

Organisation/Company Name:	Eat on the Wild Side (Fishing Vessel Owners' Association (FVOA))
Date:	8/16/2019
Correspondence Address:	
Street:	4005 - 20th Ave. West, Room 232
City:	Seattle
State	Washington
Country:	USA
Postal Code:	98199
Phone:	(206) 283-7735
Web:	
E-mail Address	robertalverson@msn.com

3. Proposed Unit(s) of Assessment and Certification

The applicant Units of Assessment (UoA) (i.e., what is to be assessed) are described by the following:

Table 2. Unit(s) of Assessment (UoA(s)).

Units of Assessment (UoAs)			
Common across all UoAs		UoA	
Species:	Common name:	All	Sablefish (Black cod)
	Latin name:	All	<i>Anoplopoma fimbria</i>
Geographical Area(s)		All	U.S. Federal and State fisheries within the Gulf of Alaska and the Bering Sea & Aleutian Islands.
Stock(s):		All	Eastern Pacific
Management System:		All	U.S. Federal and State fisheries within the Gulf of Alaska and the Bering Sea & Aleutian Islands managed by: <ul style="list-style-type: none"> ▪ National Marine Fisheries Service (NMFS) ▪ North Pacific Fishery Management Council (NPFMC) ▪ Alaska Department of Fish and Game (ADFG) and Board of Fisheries (BOF)
Unique to each UoA		UoA	
Fishing gears/methods:		1	Benthic longline
		2	Pots
		3	Trawl

4. Fishery Observations

4.1. Stock status, landings and TAC update

In the 2018 sablefish stock assessment there were no changes in the assessment methodology (Hanselman et al., 2018). However, Hanselman *et al.*, (2018) recommended an ABC that is lower than maximum permissible based on a new risk-matrix approach. New data included in the assessment model were relative abundance and length data from the 2018 longline survey, relative abundance and length data from the 2017 fixed gear fishery, length data from the 2016 trawl fisheries, age data from the 2017 longline survey and 2017 fixed gear fishery, updated catch for 2017, and projected 2018 - 2020 catches. Estimates of killer and sperm whale depredation in the fishery were updated and projected for 2018 – 2020.

Catches¹

Annual catches in Alaska averaged about 1,700 t from 1930 to 1957 and exploitation rates remained low until Japanese vessels began fishing for sablefish in the BS in 1958 and the GOA in 1963. Catches rapidly increased during the mid-1960s. Annual catches in Alaska reached peaks in 1962, 1972, and 1988 (Figure 1). The 1972 catch was the all-time high, at 53,080 t, and the 1962 and 1988 catches were 50% and 72% of the 1972 catch. Evidence of declining stock abundance and passage of the MSFCMA led to significant fishery restrictions from 1978 to 1985, and total catches were reduced substantially.

Exceptional recruitment fueled increased abundance and increased catches during the late 1980's, which coincided with the domestic fishery expansion. Catches declined during the 1990's, increased in the early 2000s, and have since declined to near 12,000 t (Figure 1) in 2017 and 2018. TACs in the GOA are nearly fully utilized, while TACs in the BS and AI are rarely fully utilized (Table 3).

Catch by FMP management area

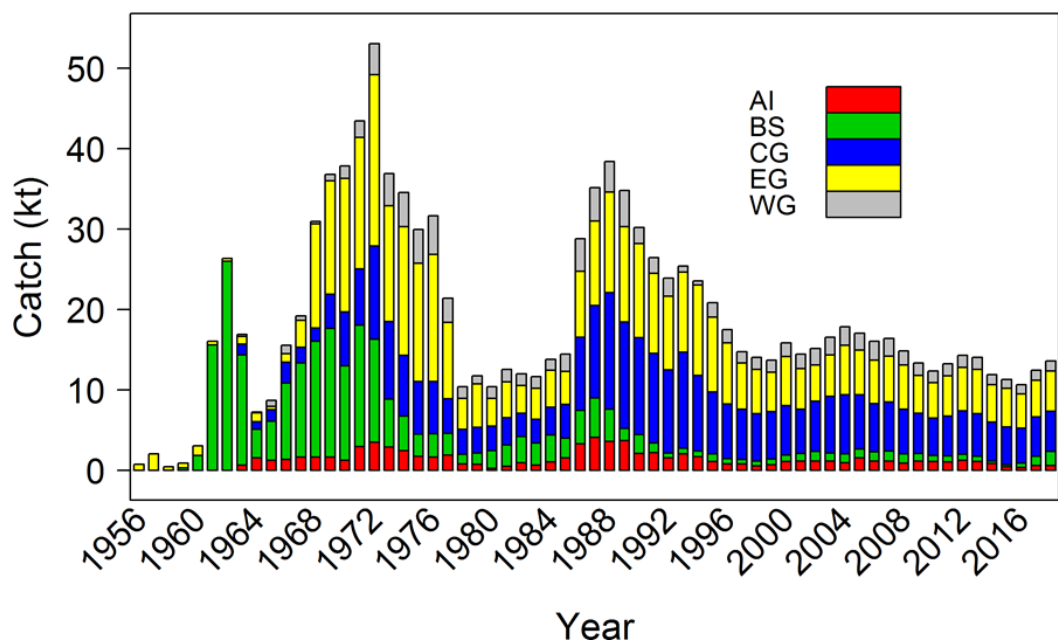


Figure 1. Sablefish fishery total reported catch (kt) by NPFMC FMP areas and year.

¹ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAsablefish.pdf>

Table 3. Biomass (4+), TAC and Catch of Sablefish in Gulf of Alaska, Bering Sea and Aleutian Islands Sablefish for 2017-2018.

Area	Year	Biomass (4+)	OFL	ABC	TAC	Catch
GOA	2017	139,000	11,885	10,074	10,074	10,521
	2018	356,000	22,703	11,505	11,505	9,175
	2019	264,000	25,227	11,571		
	2020	266,000	34,782	15,462		
BS	2017	24,000	1,499	1,274	1,274	1,159
	2018	94,000	2,887	1,464	1,464	1,460
	2019	52,000	3,221	1,489		
	2020	52,000	4,441	1,994		
AI	2017	43,000	2,101	1,735	1,735	590
	2018	65,000	3,917	1,988	1,988	474
	2019	98,000	4,350	2,008		
	2020	99,000	5,997	2,688		

Stock Status

Sablefish are managed under Tier 3 of NPFMC harvest rules. Reference points are calculated using recruitment data from 1977-2014. The updated point estimate of B40%, is 116,738 t. Since projected female spawning biomass (combined areas) for 2019 is 96,687 t (83% of B40%, or B33%), sablefish is in sub-tier “b” of Tier 3. The updated point estimates of F40%, and F35% are 0.099, and 0.117, respectively, but Tier 3b uses the control rule to adjust these values downward. Thus, the maximum permissible value of FABC under Tier 3b is 0.081, which translates into a 2019 ABC (combined areas) of 28,171 t. The adjusted OFL fishing mortality rate is 0.096 which translates into a 2019 OFL (combined areas) of 33,141 t. Model projections indicate that this stock is **not subject to overfishing, overfished, nor approaching an overfished condition.**

Instead of maximum permissible ABC, the SAFE authors (Hanselman *et al.*, 2018) recommended the 2019 ABC to be equal to the 2018 ABC, which translates to a 45% downward adjustment from max ABC. The final 2019 ABC of 15,068 t is 1% higher than the 2018 ABC because of updated whale depredation adjustments that are slightly smaller. The maximum permissible ABC for 2019 is 10% higher than the 2018 maximum permissible ABC of 25,583 t. The 2017 assessment projected a 41% increase in ABC for 2019 from 2018. Hanselman *et al.*, (2018) recommended ABCs for 2019 and 2020 are lower than maximum permissible ABC for several important reasons that are examined in the new SSC-endorsed risk-matrix approach for ABC reductions.

4.2. Enforcement update

NOAA published a new Penalty Policy in 2019², in which penalties and permit sanctions are based on two criteria: (1) A “base penalty” calculated by adding (a) an initial base penalty amount and permit sanction reflective of the gravity of the violation and the culpability of the violator and (b) adjustments to the initial base penalty and permit sanction upward or downward to reflect the particular circumstances of a specific violation; and (2) an additional amount added to the base penalty to recoup the proceeds of any unlawful activity and any additional economic benefit of noncompliance. In general, when a law enforcement officer or agent identifies a statutory or regulatory violation, he or she may pursue one of several available options, depending on the nature and seriousness of the violation.

² <https://www.gc.noaa.gov/enforce-office3.html>

The new Alaska Region Summary Settlement and Fix it schedule is effective since June 27th 2019 and lists penalties amounts for 1st, 2nd and 3rd offences. Specific penalties relevant to the IFQ sector are also listed in detail.

From October 1, 2017 to September 30, 2018 NOAA OLE officers and agents opened 2124 incidents including 1105 Magnuson-Stevens Act, 727 Northern Pacific Halibut Act, and 292 others: Endangered Species Act, Marine Mammal Protection Act, Lacey Act, and other federal and state regulations. USCG data is available on sablefish infractions from June 2018 to May 2019. Fishery infractions appear to be limited. The overall rate of fishery violations across Alaska's fisheries in 2018 is 2%.

4.3. Ecosystem Update

The 2018 SAFE³ reported extensively on the sablefish fishery effects on the ecosystem, including non-target catches, discards, and associated, dependent or endangered species.

The largest bycatch group in the sablefish fishery⁴ is GOA thornyhead rockfish (672 t/year, 215 t discarded). Sharks and skates are also taken in substantial numbers and are mostly discarded. Giant grenadiers, a non-target species that is an Ecosystem Component in both the GOA and BSAI FMPs, make up the bulk of the nontarget species bycatch, with 2013 the highest in recent years at 11,554 t but has decreased by more than half in the last few years. Other non-target taxa that have catches over one ton per year are corals, snails, sponges, sea stars, and miscellaneous fishes and crabs. 2018 EM data was reviewed for 70 sablefish trips containing a total of 1,875 hauls. Some of the most common bycatch (retained and/or discarded) in the sablefish fleet component using EM included Thornyhead, Shortspine Thornyhead, Shortraker/Rougheye rockfish, grenadier, spiny dogfish and soft snout skate. None of these stocks appears to be exploited above sustainable levels.

No takes of short-tailed albatross were observed in the groundfish or halibut fisheries in 2018⁵.

In 2018 a new aerial survey of Steller Sea lions was carried out in Alaska. The results showed that the overall Steller sea lions non-pups count trend has been steadily increasing from 2002 to 2018 and is currently (in 2018) at its highest (see figure 2 of that survey report)⁶.

4.4. Relevant changes to Legislation and Regulations

There were no significant changes to the legislation and Regulations regime that governs the Alaska Sablefish fishery in the last year.

4.5. Relevant changes to the Management Regime

There were no significant changes to the management regime that governs the Alaska Sablefish fishery in the last year.

³ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

⁴ <https://www.fisheries.noaa.gov/resource/data/2018-assessment-sablefish-stock-alaska-0>

⁵ <https://repository.library.noaa.gov/view/noaa/20231>

⁶ file:///C:/Users/romvit0/Documents/RFM/Alaska/AK%20Sablefish/Evidence/SSL_Aerial_Survey_2018_final.pdf

5. Surveillance Meetings

There were no site visits as it was a desktop review for the 3rd audit.

6. Assessment Outcome Summary

6.1. Fundamental Clauses Summaries

Fundamental Clause 1: Structured and legally mandated management system

Evidence adequacy rating: High

No significant change has occurred since the full assessment final report in January 2017. The U.S. Alaska sablefish commercial fishery is managed by the North Pacific Fishery Management Council (NPFMC) and the NOAA's National Marine Fisheries Service (NMFS) in the federal waters (3-200 nm); and by the Alaska Department for Fish and Game (ADFG) and the Board of Fisheries (BOF) in the state waters (0-3 nm). In federal waters, the Alaska sablefish fishery is managed through the NPFMC's GOA and BSAI Groundfish Fishery Management Plans (FMPs) written and amended subject to the Magnuson Stevens Act (MSA). The FMPs established an Individual Fishing Quota (IFQ) management program for this fishery. State sablefish fisheries are managed outside the IFQ program using a Guideline Harvest Level (GHL). The US Coast Guard and the Alaska Wildlife Troopers enforce fisheries regulations in federal and state waters respectively.

Fundamental Clause 2: Coastal area management frameworks

Evidence adequacy rating: High

No significant change has occurred since the full assessment final report in January 2017. An appropriate policy, legal and institutional framework is adopted in order to achieve sustainable and integrated use of living marine resources, taking into account the fragility of coastal ecosystems, the finite nature of their natural resources and the needs of coastal communities. These include decision-making processes and activities relevant to the fishery resource and its users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. Both the NPFMC and the Alaska BOF decision making processes are open to public input and consultation and the information produced through these fora, for the management of sablefish in Alaska, are publicly available. The NMFS, NPFMC and ADFG cooperatively manage the sablefish fisheries in federal and state waters within the Alaskan EEZ. The NMFS and NPFMC as federal agencies participate in coastal area management-related institutional frameworks through federal National Environmental Policy Act (NEPA) process. NEPA documents are required to be produced each time regulations are renewed or amended meaning all proposed regulations include NEPA considerations. The NEPA process requires information to be made publicly available and provides a robust opportunity for public involvement and ensures decisions are made in collaboration with fishery managers, fishermen, fishing organizations and fishing communities.

Fundamental Clause 3: Management objectives and plan

Evidence adequacy rating: High

No significant change has occurred since the full assessment final report in January 2017. The NPFMC is bound by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) which is the primary domestic legislation governing management of marine fisheries in U.S. waters. The MSA sets out and supports implementation of ten National Standards Guidelines for fishery conservation and management, which specifies long-term objectives for U.S. fisheries and establishes a formal set of processes for the setting of short-term objectives and management measures aimed at achieving those long-term objectives. The NPFMC is authorized to prepare and submit to the Secretary of Commerce for approval, disapproval or partial approval, a Fishery Management Plan (FMP) and any necessary amendments, for each fishery under its authority that requires conservation and management. These include Groundfish FMPs for the Gulf of Alaska and the Bering Sea and Aleutian Islands, which incorporate the sablefish fisheries in those regions. Both FMPs present long-term

management objectives for the Alaska sablefish fishery. In state waters (0-3 nm), five Alaska sablefish fisheries are managed by ADFG and the BOF outside the IFQ program using a Guideline Harvest Level (GHL). The Aleutian Islands District and Western District of the South Alaska Peninsula Area Sablefish Management Plan (5 AAC 28.640) governs the harvest of sablefish in the Area as described in 5 AAC 28.555(b). 5 AAC 28.360 defines the Cook Inlet Sablefish Management Plan. Sablefish harvest, possession, and landing requirements for Prince William Sound Area are governed under 5 AAC 28.272. Southeast Alaska State managed sablefish (Chatham and Clarence Strait) regulations are specified under 5 AAC 28.160 in the Groundfish Commercial Fisheries Regulations. These regulations document long term management objectives for these fisheries. In December 2018 The Council adopted the Bering Sea Fishery Ecosystem Plan (FEP). The Bering Sea FEP establishes a framework for the Council's continued progress towards ecosystem-based fishery management (EBFM) of the Bering Sea fisheries, and relies and builds on the Council's existing processes, advisory groups, and management practice.

Fundamental Clause 4: Fishery data

Evidence adequacy rating: High

No significant change has occurred in the principles and methods with regards to the monitoring and management of fishery removals and mortality of the target stock, since the full assessment final report in January 2017. The NMFS and ADFG collect fishery data and conduct fishery independent surveys (longline and trawl) to assess the sablefish populations and ecosystems in GOA and BSAI areas. GOA and BSAI SAFE documents provide complete descriptions of data types and time series of collections. All fishery removals and mortality of sablefish are considered in the assessment and management of the stock. Reliable and accurate data are provided annually to assess the status of sablefish fisheries and ecosystems. These data including information on retained catch in the directed longline and pot fisheries, by-catch in trawl fisheries, and catches in the Alaskan state-managed fisheries (inside 3 n. mi.), including subsistence fisheries. Several data reporting systems are in place to ensure timely and accurate collection and reporting of catch data. A comprehensive observer program is in place to collect information on sablefish. In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool. The EM data from hook-and-line vessels were incorporated into the CAS and used for management in 2018.

Fundamental Clause 5: Stock assessment

Evidence adequacy rating: High

No significant change has occurred in the purpose and methods with regards to the monitoring, assessment and management of fishery removals and mortality of the target stock, since the full assessment final report in January 2017. The mission of the NMFS/AFSC is to plan, develop, and manage scientific research programs which generate the best scientific data available for understanding, managing, and conserving the region's living marine resources and the environmental quality essential for their existence. Appropriate research is conducted for the management of sablefish in Alaska waters. The NMFS and ADFG conduct assessment surveys on sablefish in Alaskan waters. The NMFS conducts an annual longline survey and a biennial trawl survey in the Gulf of Alaska and the Aleutian Islands (alternating years between the two regions), and an annual trawl survey in the Eastern Bering Sea, and ADFG performs annual longline surveys in Chatham and Clarence Strait. These surveys provide estimates of catch per unit effort, relative abundance, and biological data. Tagging studies continues to assess sablefish movement for federal, state, and Canadian waters. The ADFG continue to do annual tagging surveys in Chatham Strait as part of a mark-recapture study to estimate population abundance. Investigations into the migration of sablefish are being conducted in Alaska. The NMFS is working on a migration model that includes both federal and state waters. In addition, the ADFG is conducting pilot studies to determine the feasibility of acoustic tagging of sablefish in Chatham Strait; and research is being conducted on sperm whale interactions (depredation) with the sablefish longline fisheries. Guideline Harvest Level (GHL) and yield-per-unit-area models are being used to manage fishery removals.

Fundamental Clause 6: Biological reference points and harvest control rule**Evidence adequacy rating: High**

No significant change has occurred since the full assessment final report in January 2017. The NPFMC harvest control system is complex and multi-faceted in order to address issues related to sustainability, legislative mandates, and quality of information. A Tier system is established and specifies the maximum permissible Allowable Biological Catch (ABC) and of the Overfishing Limit (OFL) for each stock in the complex (usually individual species but sometimes species groups). The BSAI, and GOA groundfish management plans define target and limit reference points and harvest control rules for sablefish and other groundfish. Each Stock Assessment and Fishery Evaluation (SAFE) report describes the current fishing mortality rate, and stock biomass relative to the reference points.

Fundamental Clause 7: Precautionary approach**Evidence adequacy rating: High**

The first element of the precautionary approach applied in Alaska is the Optimum Yield (OY) for the groundfish complexes in the BSAI and the GOA, as a range of values. Sablefish harvest specifications are made annually by NPFMC, and include the Overfishing Level (OFL), acceptable biological catch (ABC), and total allowable catch (TAC). TACs are generally set more conservatively than ABCs, which in turn are generally set more conservatively than OFLs. Since OFLs are consistent with MSY and catches are generally within TAC levels, harvests tend to always be at the conservative side of MSY. FMPs contain the Council's Groundfish Management Policy "to apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, proactively rather than re-actively, to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations. The 2017 assessment projected a 41% increase in ABC for 2019 from 2018. Instead of the maximum permissible ABC, stock assessment scientists applied the precautionary approach and recommended the 2019 ABC to be equal to the 2018 ABC, which translates to a 45% downward adjustment from max ABC. They also recommended ABCs for 2019 and 2020 to be set lower than maximum permissible ABC for several important reasons that are examined in the new SSC-endorsed risk-matrix approach for ABC reductions. State fisheries for sablefish, like the federal counterpart, also appear to be managed conservatively using precautionary measures.

Fundamental Clause 8: Management measures**Evidence adequacy rating: High**

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary domestic legislation governing management of US marine fisheries. The act establishes MSY as the basis for fishery management and requires that: the fishing mortality rate does not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex is rebuilt to a level that is capable of producing MSY; and OY not exceed MSY. The federal sablefish fishery is managed under an Individual Fishing Quota system. Important management measures for sablefish fishery include are listed in GOA and BSAI FMPs updated in October 2018 and include: Optimum Yield (keeping all groundfish TACs within the BSAI and GOA ecosystem caps) six management areas through which ABCs and TACs are apportioned (i.e. BS, AI, Western GOA, Central GOA, W Yakutat, E Yakutat), quota allocation (by fixed and trawl gears) through IFQ quota share since 1995, CDQ allocations, in-season adjustments and management, time and area restrictions, recordkeeping, and observer requirements, PSC limits (for species like crab and halibut), maximum retainable allowances for sablefish catches in other fisheries, licenses, permits and legal gear (IFQ for longline and pot, demersal trawl is non-IFQ). The most recent NEPA compliant Regulatory Impact Review/ Environmental Assessment was performed in regards to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018. In terms of the state fisheries, three major state fisheries exist which are limited entry and are located in Prince William Sound, Chatham, and Clarence Strait. Minor fisheries for sablefish include the Aleutian Islands state

fishery, which allows longline, pot, jig, and hand troll gear, and the Cook Inlet fishery. Detailed management measures for the sablefish state fisheries have been published for 2019 and 2020 Commercial regulations for groundfish fisheries. The NPFMC is responsible for allocation of the sablefish resource among user groups in Alaska waters. At the state level, Advisory committees (AC) are local groups that meet to discuss fish and wildlife issues, provide a local forum for those issues, and make recommendations to the Alaska Board of Fisheries.

Fundamental Clause 9: Appropriate standards of fisher's competence

Evidence adequacy rating: High

To be eligible to purchase sablefish (and halibut) IFQ shares, new participants must apply for and obtain a Transferable Eligibility Certificate issued by the North Pacific Region of NMFS. An applicant must be a U.S. citizen and show documentation of 150 days of commercial fishing experience in the U.S. There are several avenues for fishermen to receive training to ensure they have appropriate standards of competence. AMSEA provides marine safety training for commercial fishermen. The Alaska Vocational Training & Education Center (AVTEC) main divisions is the Alaska Maritime Training Center which provides varied training for Alaska's seamen. Established in 2007 by the Alaska Sea Grant Marine Advisory Program, the Alaska Young Fishermen's Summit (AYFS) is a three-day networking and skill-building conference for new fishery entrants. In January 2020, the Alaska Sea Grant Marine Advisory Program will present the 8th Alaska Young Fishermen's Summit.

Fundamental Clause 10: Effective legal and administrative framework for enforcement

Evidence adequacy rating: High

The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) Alaska Division (AKD) enforce Alaska fisheries laws and regulations, especially 50CFR679 (on the management of fisheries off the Alaska EEZ). The Alaska Wildlife Troopers enforce regulations in state waters. All landings must be reported to NMFS via its mandatory "e-landings" reporting system. From October 1, 2017 to September 30, 2018 NOAA officers and agents opened 2124 incidents including 1105 Magnuson-Stevens Act, 727 Northern Pacific Halibut Act, and 292 others: Endangered Species Act, Marine Mammal Protection Act, Lacey Act, and other federal and state regulations. USCG data is available on sablefish infractions from June 2018 to May 2019. Fishery infractions appear to be limited. The overall rate of fishery violations across Alaska's fisheries in 2018 is 2%.

Fundamental Clause 11: Framework for sanctions

Evidence adequacy rating: High

On May 2, 2019, NOAA published a Notice of its intention to revise its "Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions" (Penalty Policy) previously published in 2011 and revised in 2014. Under the 2019 Penalty Policy, penalties and permit sanctions are based on two criteria: (1) A "base penalty" calculated by adding (a) an initial base penalty amount and permit sanction reflective of the gravity of the violation and the culpability of the violator and (b) adjustments to the initial base penalty and permit sanction upward or downward to reflect the particular circumstances of a specific violation; and (2) an additional amount added to the base penalty to recoup the proceeds of any unlawful activity and any additional economic benefit of noncompliance. In general, when a law enforcement officer or agent identifies a statutory or regulatory violation, he or she may pursue one of several available options, depending on the nature and seriousness of the violation. Where a violation is minor or is merely technical, having little to no impact on marine resources, the officer or agent may provide compliance assistance, issue a "Fix-It Ticket," which provides the alleged violator with an opportunity to correct the violation within a certain amount of time and waives all penalties if the alleged violator takes appropriate curative action, or issue a Written Warning. The new Alaska Region Summary Settlement and Fix it schedule is effective since June 27th 2019 and lists penalties amounts for 1st, 2nd and 3rd offences. Specific penalties relevant to the IFQ sector are also listed in detail.

Fundamental Clause 12: Impacts of the fishery on the ecosystem

Evidence adequacy rating: High

The 2018 sablefish SAFE report highlights some key information relating to environmental effects on target stocks and ecosystem. In it, the authors highlight that there are concerns about increased variability and decreased predictability of the ecosystem in Alaska. The largest bycatch group in the 2018 sablefish fishery is GOA thornyhead rockfish (672 t/year, 215 t discarded). Sharks and skates are also taken in substantial numbers and are mostly discarded. Giant grenadiers, make up the bulk of the nontarget species bycatch. One of the key updates of the 2018 North Pacific Observer Program Report was that 2018 was the first year that EM was integrated into the Observer Program under regulations. EM data was reviewed for 70 sablefish trips containing a total of 1,875 hauls. Some of the most common bycatch (retained and/or discarded) in the sablefish fleet component using EM included Thornyhead, Shortspine Thornyhead, Shortraker/Rougheye rockfish, grenadier, spiny dogfish and soft snout skate. None of these stocks appears to be exploited above sustainable levels. The short-tailed albatross is currently listed as Endangered under the Endangered Species Act. No takes of short-tailed albatross were observed in the groundfish or halibut fisheries in 2018. In addition to the endangered short-tailed albatross, there is also conservation concern for Laysan and black-footed albatross. The sablefish fisheries in the GOA are listed as Category II (occasional interactions with North Pacific sperm whale and Steller sea lion, Western US) while the BSAI and state fisheries are classified as Category III (remote likelihood of/ no known interactions with no marine mammals species mentioned). The Potential Biological Removal (PBR) for sperm whales is 0.5, however, this is likely an underestimate given that it was calculated based on a limited geographical subset of the whole population. On the basis of total abundance, current distribution, and regulatory measures that are in place, it is unlikely that this stock is in danger of extinction. In 2018 a new aerial survey of SSL was carried out in Alaska. The results showed that the overall Steller sea lions non-pups count trend has been steadily increasing from 2002 to 2018 and is currently (in 2018) at its highest. Sablefish are not considered a key prey species in the North Pacific ecosystem. The Essential Fish Habitat Environmental Impact Statement (EFH EIS) (NMFS, 2005) concluded that benthic longline and fish pot fisheries have minimal or temporary impacts on sablefish habitat while trawl fisheries have substantial long term effects. However, in recent years, even the impacts from trawl fisheries in the BSAI and the Central GOA resulting from gear modifications (raising the bobbins from the seafloor) have decreased⁷. Raised bobbins decrease habitat contact by 90%.

⁷ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/ecosysGOA.pdf>

7. Conformity Statement

The Assessment Team recommends that continued certification under the Alaska FAO Based Responsible Fisheries Program is granted to the Alaska sablefish (*Anoplopoma fimbria*) federal and state commercial fisheries employing demersal longline (mainly), pot and trawl gear within Alaska jurisdiction (200 nautical miles EEZ) under federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADFG), and Board of Fisheries (BOF)] management.

8. Evaluation of Fundamental Clauses

8.1. Section A. The Fisheries Management System

8.1.1. Fundamental Clause 1

There shall be a structured and legally mandated management system based upon and respecting International, National and local fishery laws, for the responsible utilization of the stock under consideration and conservation of the marine environment.

Number of Supporting clauses	13
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full conformance
Non Conformances	N/A

Summarized evidence:

1.1. There shall be an effective legal and administrative framework established at local and national level appropriate for the fishery resource and conservation and management.

No significant changes have occurred in the management of sablefish fishery in Alaska since the full assessment final report in January 2017. Fisheries for sablefish in Alaska are both federally and state managed. In general, groundfish fisheries in the U.S. Exclusive Economic Zone (EEZ; 3 – 200 nm offshore) fall under federal authority, whereas the State of Alaska manages groundfish fishery resources within state territorial (0 – 3 nm) waters.

In federal waters, the Alaska sablefish fishery is managed through the North Pacific Fishery Management Council (NPFMC)'s Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) Groundfish Fishery Management Plans (FMPs), subject to Magnuson Stevens Act (MSA) and corresponding federal regulations. The Council may amend the sablefish individual fishing quota (IFQ) Program through amendments to the Gulf of Alaska and Bering Sea and Aleutian Islands Groundfish FMPs, as well as connected or independent federal regulations. Such amendments must be approved by the Secretary before they can be implemented by North Pacific Management Council (NMFS⁸). A stock assessment is performed annually for the federal fishery using an age-structured model; this assessment is reviewed by the North Pacific Management Council.

State sablefish fisheries (i.e. those occurring between 0 and 3 nm offshore) are managed by Alaska Department of Fish and Game (ADFG) and the Alaska Board of Fisheries (BOF⁹). State sablefish fisheries occur in Southeast Alaska, Prince William Sound, Cook Inlet, and in the Aleutian Islands. The majority of sablefish fisheries in Alaska are limited entry and are managed through quota shares¹⁰.

2018 Updates Relative to Sablefish – Electronic Monitoring¹¹

In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool. The EM data from hook-and-line vessels were incorporated into the CAS and used for in season management in 2018. EM data was collected on a total of 250 hook-and-line and 45 pot trips. Of these, PSMFC completed video review for 174 trips for vessels using hook-and-

⁸ https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf

⁹ <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main>

¹⁰ <http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.management>

¹¹ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=53b3f51f-a17b-4f80-af4c-6dd9e89ab6f7.pdf&fileName=C3%202018%20Observer%20Report.pdf>

line gear and a total of 770 hauls. 2018 EM data was reviewed for 70 sablefish trips containing a total of 1,875 hauls. Some of the most common bycatch (retained and/or discarded) in the sablefish fleet component using EM included Thornyhead, Shortspine Thornyhead, Shortraker/Rougheye rockfish, grenadier, spiny dogfish and soft snout skate.

EM Selection Pool

- NMFS recommended continuing trip-selection in the EM pool where trips will be selected before departing, so the vessel will only be required to use the EM system on selected trips.
- The number of vessels allocated to the EM selection pool will be based on analysis of EM costs and the amount of available funding that is available. If there are insufficient funds to support all the vessels that opt into the EM selection pool, NMFS recommends that priority be given to 1) vessels that are already equipped with EM systems and 2) vessels 40-57.5 ft length overall (LOA) where carrying a human observer has been problematic due to bunk space or life raft limitations.

No Selection Pool

Recognizing the safety issues and logistic challenges of putting observers on small vessels, NMFS recommended maintaining status quo and to put vessels less than 40 ft in the no selection pool for observer coverage. However, since there is no monitoring data from this segment of the fleet, NMFS still continue to recommend that vessels less than 40 ft LOA could be considered for the EM selection pool in the future. NMFS recognized that the Council's priority for EM research is on trawl vessels, so it is unknown when the evaluation of data collected on fixed-gear less than 40 ft would start.

1.2. Management measures shall take into account the whole stock unit over its entire area of stock distribution. Sablefish inhabit the northern Pacific Ocean in an arc extending from northern Mexico in the east to northern Japan in the west, with highest concentrations and the majority of catches occurring in Alaskan waters¹². With regards to eastern North Pacific sablefish, stock assessment scientists have long felt that they form two populations based on differences in growth rate, size at maturity, and tagging studies (McDevitt 1990, Saunders et al. 1996, Kimura et al. 1998, cited in Hanselman *et al.*, 2006); a northern population inhabiting Alaska and northern British Columbia (BC) waters and a southern population inhabits southern BC, Washington, Oregon, and California waters, with mixing of the two populations occurring off southwest Vancouver Island and northwest Washington.

However, recent studies have suggested that, primarily due to their migratory nature, sablefish may in fact form one biological population. According to Hanselman *et al.*, (2015) the similarly low current abundances of Alaskan sablefish and sablefish further south is of concern and is an indication of the need to better understand the contribution to Alaska sablefish productivity from British Columbia and U.S. West Coast sablefish.

Sablefish are assessed as a single population in Federal waters off Alaska with management and regulatory decisions being implemented at the regulatory area level. The NPFMC explicitly considers sablefish life cycle and migration when recommending apportionments of Allowable Biological Catch (ABC) and Overfishing Limit (OFL) between regulatory areas.

In addition, significant stock structure among the federal Alaska population is unlikely given extremely high movement rates throughout their lives (Hanselman *et al.*, 2015, Heifetz and Fujioka 1991, Maloney and Heifetz 1997, Kimura et al. 1998).

¹² http://www.aquamaps.org/receive.php?type_of_map=regular

As the biological stock unit encompasses multiple jurisdictions (i.e. U.S. state and federal) the NPFMC and NMFS consider exploitation by all parties when defining exploitation levels and determining stock health to avoid overfishing/depletion of the resource. The NPFMC apportions the ABC and OFL between regulatory areas based on a 5-year exponential weighting of the survey and fishery abundance indices¹³.

1.3./1.4/1.5./1.6. Transboundary stocks

As discussed above, the GOA and BSAI sablefish stocks are both considered two parts of the same stock, but separate from sablefish further south along the southern coast of British Columbia and the west coast of North America. To the extent appropriate, NMFS and the NPFMC liaise with other agencies, such as Pacific States Marine Fisheries Commission.

Fisheries researchers and scientists from Alaska work closely with those from Canada on assessing the health of sablefish populations in the North Pacific. The Technical Subcommittee (TSC) of the Canada-U.S. Groundfish Committee¹⁴ meets annually to discuss sablefish and other fisheries. The most recent TSC meeting was conducted in April 2019. Their discussions incorporate:

- The exchange of information on the status of groundfish stocks of mutual concern and coordinate, whenever possible, desirable programs of research.
- Recommendation of the continuance and further development of research programs having potential value as scientific basis for future management of the groundfish fishery.
- Review of the scientific and technical aspects of existing or proposed management strategies and their component regulations relevant to conservation of stocks or other scientific aspects of groundfish conservation and management of mutual interest.
- Transmission of approved recommendations and appropriate documentation to appropriate sectors of Canadian and U.S. governments and encourage implementation of these recommendations¹⁵.

There is no legal harvesting of sablefish in North Pacific waters outside the national jurisdiction of the USA or Canada. Similarly, there is no sablefish harvesting by U.S. vessels in Canadian waters, or by Canadian vessels in U.S. waters. The Coast Guards of the USA and Canada coordinate enforcement activities, as necessary.

The MSA obligates NMFS to recover the actual costs of management, data collection, and enforcement of the Alaskan IFQ program. NMFS recovers the incremental costs of managing and enforcing the IFQ Program annually through a fee paid by persons who hold a permit granting an exclusive access privilege to a portion of the total allowable catches in IFQ Program fisheries. After each IFQ fishing year, NMFS provides the IFQ permit holder an IFQ Landing Summary and Estimated Fee Liability page. The IFQ permit holder must either accept the accuracy of the NMFS estimated fee liability associated with his or her IFQ landings for each IFQ permit or calculate a revised IFQ fee liability for all or part of his or her IFQ landings using the Fee Submission Form. The IFQ permit holder is responsible for submitting their cost recovery payment to NMFS on or before the due date of January 31st following the year in which the IFQ halibut and sablefish landings were made¹⁶.

1.7. Review and Revision of conservation and management measures

The NPFMC annually review their previous, current, and possible future conservation and management measures. The NPFMC sets its agenda for each meeting in response to both current priority issues and possible future

¹³ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAsablefish.pdf>

¹⁴ http://www.psmfc.org/tsc-drafts/2019/2019_TSC_RptDRAFT20190702.pdf

¹⁵ http://www.psmfc.org/tsc-drafts/2017/ADFG_2017_AK_TSC_Alaska_FINAL.pdf

¹⁶ https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf

changes/events with the potential to impact the sablefish fishery¹⁷ with all meetings being open to the public comment. The continual public input into the NPFMC process effectively provides public scrutiny of the NPFMC's activities with issues being discussed continuously as long as they remain of importance to the stakeholder. The Alaska Board of Fisheries offers a forum for state fisheries and fishermen very much analogous to the NPFMC fora, where conservation and management measures are continuously revised, as need or proposals arise.

The Alaskan halibut and sablefish IFQ program has gone through numerous innovations over the years and has been officially modified many times since initial implementation including modifications to trading restrictions, eligibility rules, administrative catch accounting systems and more. In December 2016, the NPFMC released the Twenty-Year Review of the Pacific Halibut and Sablefish Individual Fishing Quota Management Program.

The intent of the review was to evaluate the IFQ Program as required by the MSA and within the framework of the scope requested by the Council and its advisory bodies. Primarily, the IFQ Program was examined with respect to how well it has met its 10 original policy objectives and how it is providing entry opportunities for new participants, an objective that the Council has sought to provide through numerous revisions since the IFQ Program was implemented. The Council, its Advisory Panel (AP), Scientific and Statistical Committee (SSC), and IFQ Implementation Committee all provided feedback on the proposed structure and policy scope of this review document at the December 2015 and February 2016 Council meetings.

In the 20 years since implementation of the IFQ Program, this was the first formal and comprehensive review of the program. However, in this time there have been numerous regulatory impact reviews and reports produced by Council and NMFS staff that provide relevant information about QS ownership and transfers, IFQ use and landings, and with respect to specific provisions in the program. This IFQ Program Review synthesized much of the information provided in these previous reports and analyses¹⁸.

The most current revision of a management measures directly affecting the sablefish fishery in Alaska is the restructured observer program and implementation of Electronic Monitoring for the smallest segment of the fleet¹⁹ as well as the implementation of the BSAI fisheries ecosystem plan. In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool. The EM data from hook-and-line vessels were incorporated into the CAS and used for management in 2018. Finally, In December 2018 The Council adopted the Bering Sea Fishery Ecosystem Plan (FEP). The Bering Sea FEP establishes a framework for the Council's continued progress towards ecosystem-based fishery management (EBFM) of the Bering Sea fisheries, and relies and builds on the Council's existing processes, advisory groups, and management practice.

1.8. Transparent management arrangements and decision making

NPFMC's management arrangements and decision making processes for the fishery are organized in a very transparent manner. The NPFMC sets its agenda for each meeting in response to both current priority issues and possible future changes/events with the potential to impact the sablefish fishery. The Council (and NMFS) provides a great deal of information on their websites, including agenda of meetings, discussion papers, and records of decisions²⁰. The Council actively encourages stakeholder participation, and all Council deliberations are conducted in open, public session. As previously discussed, the Three Meeting Outlook²¹ outlines issues likely to be of concern

¹⁷ <http://www.npfmc.org/council-meeting-archive/>

¹⁸ https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf

¹⁹ <https://www.npfmc.org/electronic-monitoring-2/>

²⁰ <http://www.npfmc.org/council-meeting-archive/>

²¹ <http://www.npfmc.org/wp-content/PDFdocuments/meetings/threemeetingoutlook.pdf>

and therefore be discussed at the following three NPFMC meetings affording stakeholders the opportunity to prepare and submit comments for discussion in advance of meetings.

Furthermore, the Alaska Board of Fisheries offers a forum for state fisheries and fishermen very much comparable to the NPFMC fora, where, for example, conservation and management measures are continuously revised, as need or proposals arise.

1.9. Compliance with international conservation and management measures

The fishery does not occur in the high seas; as such this Clause is **NOT APPLICABLE**.

8.1.2. Fundamental Clause 2

Management organizations shall participate in coastal area management institutional frameworks, decision-making processes and activities related to the fishery and its users, in support of sustainable and integrated resource use, and conflict avoidance.

Number of Supporting clauses	10
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized evidence:

2.1./2.2./2.3./2.4. Policy, legal and institutional frameworks adopted to achieve sustainable and integrated use of marine resources along with mechanisms to avoid conflict shall be in place. Representatives of the fisheries sector and fishing communities shall be consulted in decision making processes and information related to management measures shall be disseminated.

No significant changes have occurred in the management of sablefish fishery in Alaska since the full assessment final report in January 2017. An appropriate policy, legal and institutional framework is adopted in order to achieve sustainable and integrated use of living marine resources, taking into account the fragility of coastal ecosystems, the finite nature of their natural resources and the needs of coastal communities. These include decision-making processes and activities relevant to the fishery resource and its users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. Both the NPFMC and the Alaska BOF decision making processes are open to public input and consultation and the information produced through these fora, for the management of sablefish in Alaska, are publicly available.

The NMFS, NPFMC²² and ADFG cooperatively manage the sablefish fisheries in federal and state waters within the Alaskan EEZ. The NMFS and NPFMC as federal agencies participate in coastal area management-related institutional frameworks through federal National Environmental Policy Act (NEPA) process²³. NEPA documents are required to be produced each time regulations are renewed or amended meaning all proposed regulations include NEPA considerations. The NEPA process requires information to be made publicly available and provides a robust opportunity for public involvement and ensures decisions are made in collaboration with fishery managers, fishermen, fishing organizations and fishing communities.

Other State and federal entities that participate in ensuring the sustainable and integrated use of living marine resources within the Alaskan EEZ include, but are not limited to:

Alaskan Department of Environmental Conservation (DEC)²⁴

The DEC implements statutes and regulations affecting air, land and water quality and is the lead state agency charged with implementing the federal Clean Water Act.

²² <http://www.npfmc.org/>

²³ https://ceq.doe.gov/nepa/Citizens_Guide_Dec07.pdf

²⁴ <http://dec.alaska.gov/>

Alaska Department of Fish and Game (ADFG)²⁵

ADFG has jurisdiction over the mouths of designated anadromous fish streams and legislatively designated state special areas (critical habitat areas, sanctuaries, and refuges). Some marine species also receive special consideration through the State's Endangered Species program. Annual updates to the fishery biological trends and regulations are made public by this organization²⁶. In addition, the framework managing natural renewable resources, in a sustainable manner, is outlined in Article 8²⁷.

Alaskan Department of Natural Resources (DNR)²⁸

DNR manages all state-owned land, water, and natural resources except for fish and game and use the state Endangered Species Program to preserve the habitats of species threatened with extinction.

DNR Office of Project Management and Permitting (OPMP)²⁹

The OPMP coordinates the review of larger scale projects in the state such as transportation, oil and gas, mining, federal grants, ANILCA coordination, and land use planning.

U.S. Fish and Wildlife Service (USFWS)³⁰

The USFWS fulfills functions including enforcement of federal wildlife laws, protection of endangered species, restoration of nationally significant fisheries and conservation and restoration of wildlife habitat. Additionally, the USFWS distributes monies collected through the Sport Fish and Restoration Program to State fish and wildlife agencies for fishery projects, boating access and aquatic education.

Bureau of Ocean Energy Management (BOEM)³¹

The BOEM is responsible for managing environmentally and economically responsible development and provide safety and oversight of the offshore oil and gas leases. The activities of BOEM overlap extensively with those of ADNDR, ADFG and ADEC given the potential impacts of such activities on marine resources.

Alaska has institutional and legal frameworks that determine the possible uses of coastal resources, govern access to them and take into account the rights of coastal fishing communities and their customary practices when doing so.

NPFMC processes

The Council system mandated under the MSA of which the NPFMC is part was designed so that fisheries management decisions were made at the regional level allowing input from affected stakeholders. NPFMC meetings are open and public testimony is taken ensuring that the rights of coastal communities and their historic access to the fishery are considered in the decision making process.

Dissatisfied parties affected by Council and NMFS decisions can appeal the decision to the Appeals Office which adjudicates appeals of initial administrative determinations. These dispute resolution mechanisms have proven to be effective at dealing with most issues avoiding the necessity for disputes to escalate to the stage of legal action. However, in cases where processes have not resulted in the resolution of disputes, parties can and do resolve the disputes in the federal court system.

²⁵ <http://www.adfg.alaska.gov/>

²⁶ http://www.adfg.alaska.gov/static/fishing/PDFs/sport/2016_annual_report_sf.pdf

²⁷ <http://ltgov.alaska.gov/services/alaskas-constitution/>

²⁸ <http://dnr.alaska.gov/>

²⁹ <http://dnr.alaska.gov/commis/opmp/>

³⁰ http://www.fws.gov/help/about_us.html

³¹ http://www.boem.gov/uploadedFiles/Proposed_OCS_Oil_Gas_Lease_Program_2012-2017.pdf

The BOF and NPFMC meetings provide fora for resolution of potential conflicts with users being afforded the opportunity to testify in person or in writing. In addition, stakeholders may review and submit written comments to the NMFS on proposed rules published in the Federal Register. The North Pacific Fishery Management Council (NPFMC) and the Board of Fisheries (BOF) tend to avoid conflict by actively involving stakeholders in the process leading up to decision making. NPFMC –BOF established a joint protocol committee through which regular communication on issues (joint jurisdictional issues) of mutual interest could be discussed³².

The Western Alaska Community Development Quota (CDQ) Program³³

The Western Alaskan Community Development Quota (CDQ) Program is a federal fisheries program, authorized and governed by the MSA as amended in 2006 (MSA Section 305(i)(1)), which aims to promote fisheries related economic development in western Alaska. The Program involves 65 eligible communities within a fifty-mile radius of the Bering Sea coastline split into six regional organizations, referred to as CDQ groups. The Program allocates a portion of the BSAI harvest of sablefish to CDQ groups.

Consultation with tribes and Native corporations³⁴

In Alaska, NOAA's National Marine Fisheries Service (NMFS) consults with tribes and Native corporations about Federal actions that may affect tribal governments and their members. In fact, the Alaska National Interest Lands Conservation Act (ANILCA³⁵) which conveyed large sections of federal land to settle Alaska native lands claims specifically directs federal agencies to consult and coordinate with the State of Alaska. Executive Order 13175 sets the framework for regular and meaningful consultation and collaboration with Alaska Native representatives in the development of policies, legislation, regulations, and programs.

Risks and uncertainties related to the policies set up for the management of coastal areas are taken into account within and throughout the various NEPA processes, NPFMC proceedings as well as through ANILCA and the Department of Natural Resources (DNR) Office of Project Management and Permitting (OPMP).

2.5. The economic, social and cultural value of coastal resources shall be assessed in order to assist decision-making on their allocation and use.

Evidence

NOAA's Alaska Fisheries Science Center (AFSC) runs the Economic and Social Sciences Research Program in Alaska³⁶. The aim of the Program is to provide economic and sociocultural information to assist NMFS in meeting its stewardship responsibilities with activities being conducted in support of this mission including:

- collecting economic and sociocultural data for the conservation and management of living marine resources
- developing models to use that data both to monitor changes in economic and sociocultural indicators and to estimate the economic and sociocultural impacts of alternative management measures
- preparing reports and publications
- participating on NPFMC, NMFS, and inter-agency working groups
- preparing and reviewing research proposals and programs
- preparing analyses of proposed management measures
- assisting Alaska Regional Office and NPFMC staff in preparing regulatory analyses

³²https://www.google.com/url?q=http://www.iphc.int/meetings/2016am/bb/11_01_HalibutManagementFrameworkv8.pdf&sa=U&ved=0ahUKEwjjh4i59brVAhXBblAKHc9CBLkQFggFMAA&client=internal-uds-cse&usq=AFQjCNG2aAAmVeBfswViv8UbcasbzFEy7Q

³³<https://alaskafisheries.noaa.gov/fisheries/cdq>

³⁴<https://alaskafisheries.noaa.gov/tribal-consultations>

³⁵<http://dnr.alaska.gov/commis/opmp/anilca/>

³⁶<http://www.afsc.noaa.gov/REFM/Socioeconomics/Default.php>

- providing data summaries

Many of the activities of the Program are conducted in collaboration with other Federal and State agencies and universities. Current research topics being addressed include regional economic impact models, behavioral models of fishing operations, indicators of economic performance, and the non-market valuation of living marine resources.

Regarding socio-economic data collection, AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska. This comprehensive report (Fissel, *et. al.* 2018) provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC discard rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market. This report includes extensive economic data for the commercial ground fisheries in Alaska including sablefish.

In 2005, the Alaska Fisheries Science Center (AFSC) compiled baseline socioeconomic information about 136 Alaska communities most involved in commercial fisheries. Community profiles and their involvement in fishing are now available for 196 communities³⁷. In 2010 and 2011, the AFSC went through the process of evaluating the community profiles and determining how to update them. A NOAA Technical Memorandum finalized in October 2011 documents the process been undertaken to update the *Community Profiles for North Pacific Fisheries – Alaska* ([NOAA-TM-AFSC-230](#)). In addition, the communities to be included in the updated document were reevaluated to ensure that communities with significant reliance on commercial, recreational and subsistence fishing are included. A total of 196 communities have been profiled. The new profiles add a significant amount of new information to help provide a better understanding of each community's reliance on fishing. Introductory materials cover purpose, methods, and an overview of the profiled communities in the larger context of the state of Alaska and North Pacific fisheries. The community profiles comprise additional information including, but not limited to, annual population fluctuation, fisheries-related infrastructure, community finances, natural resources, educational opportunities, fisheries revenue, shore-based processing plant narratives, landings and permits by species, and subsistence and recreational fishing participation, as well as information collected from communities in the Alaska Community Survey, which was implemented during summer 2011, and the Processor Profiles Survey, which was implemented in Fall 2011.

Evidence of the process implemented and current status with regards to economic, social and cultural value of coastal resources was provided by Fissel *et al.*, (2018), in the report titled, Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2018. AFSC, NMFS, NOAA, Seattle WA.

2.6./2.7/2.8. Research and monitoring of the coastal environment, mechanisms for cooperation and coordination, appropriate technical capacities and financial resources, conflict avoidance amongst user groups.

Monitoring of the coastal environment in Alaska is performed by federal and state agencies. The NMFS and NPFMC as federal agencies participate in coastal area management-related institutional frameworks through federal NEPA processes. Other State and federal entities that cooperate at the sub-regional level in order to improve coastal area management include:

³⁷ <https://www.afsc.noaa.gov/REFM/Socioeconomics/Projects/communitysnapshots/fullmap.php>

- Alaskan Department of Environmental Conservation (DEC)
- Alaska Department of Fish and Game (ADFG)
- Alaskan Department of Natural Resources (DNR)
- DNR Office of Project Management and Permitting (OPMP)
- U.S. Fish and Wildlife Service (USFWS)
- Bureau of Ocean Energy Management (BOEM)

Other entities involved in collaborative research in the North Pacific region include the Alaska Fisheries Science Center (AFSC), North Pacific Research Board (NPRB), NMFS Pacific Marine Environmental Lab (PMEL) and institutes of higher learning such as the University of Alaska Fairbanks' (UAF) Institute of Marine Science (IMS).

The NPRB funds major research projects in the Gulf of Alaska³⁸ and the Bering Sea³⁹ aimed at examining physical and biological mechanisms that determine the survival of juvenile groundfish in the GOA and understanding the impacts of climate change and dynamic sea ice cover on the eastern BS ecosystem respectively. For oceanography, the NPRB has funded numerous studies describing baseline oceanographic parameters and supported environmental buoy arrays.

PMEL regularly collect oceanographic and environmental data important to understanding the changing habitat of sablefish and other marine species in Alaskan waters⁴⁰.

Additionally, the IPHC which primarily manages halibut (but collects also a good deal of information relative to sablefish management also), in collaboration with Washington Sea Grant, developed a sampling protocol for collecting seabird occurrence data and oceanographic data on the IPHC setline surveys. The 2018 longline research cruise was the 10th year of the IPHC oceanographic data collection program⁴¹. Oceanographic data are collected during the IPHC fishery-independent setline survey. The IPHC has operated profilers since 2000 on a limited basis, and coastwide since 2009. In 2018, oceanographic data were collected at a total of 1,458 (or 97%) stations out of a possible 1,497⁴² (IPHC, 2019). As for year 2018, The coldest bottom temperatures, which are routinely close to or below 0oC, were typically found around St. Matthew Island in the Bering Sea (IPHC, 2019). However, the Bering Sea experienced temperatures much higher than normal in summer 2018 due to lack of sea ice the winter before, and temperatures around the island ranged from 5.5-8.5oC during the FISS. The coldest coastwide bottom temperature of 2.5oC was still found in the Bering Sea, however, at a FISS expansion station in Area 4D along the continental shelf edge. The severe hypoxic zone found off of the Washington coast in 2017 was not detected in 2018.

Counts of live seabirds, taken immediately following gear retrieval, have been conducted during IPHC fishery-independent setline surveys since 2002. The Convention waters, extending from off Oregon northward to Alaska and the EEZ border with Russia, are surveyed annually between late May and early September. A total of 20,921 seabird counts have been conducted over the last 16 years, with 1,368 occurring in 2017. Current data for 2018 is not available at the moment due to updates on the fishery survey database.

ADFG Habitat Division⁴³ conducts research on coastal and marine environments throughout Alaska in an effort to

³⁸ <http://www.nprb.org/gulf-of-alaska-project/about-the-project/>

³⁹ <http://www.nprb.org/bering-sea-project/about-the-project/>

⁴⁰ <http://www.pmel.noaa.gov>

⁴¹ <https://www.iphc.int/uploads/pdf/am/2018am/iphc-2017-rara27-r.pdf>

⁴² <https://www.iphc.int/library/documents/annual-reports/iphc-2019-ar2018-iphc-annual-report-2018>

⁴³ <http://www.adfg.alaska.gov/index.cfm?adfg=habitatresearch.main>

document and mitigate human-related impacts, changes in habitat and species abundance. The agency also collects physical and chemical data, including temperature, depth, salinity and conductivity during their St. Matthew's pot survey using data loggers placed on the survey pots.

The NMFS' Habitat Conservation Division (HCD) works to avoid, minimize, or offset adverse anthropogenic effects on Essential Fish Habitat (EFH) and living marine resources in Alaska. This work includes conducting and/or reviewing environmental analyses for a large variety of activities including commercial fishing. The HCD focuses on activities in habitats used by federally managed fish species in marine, estuarine, and freshwater areas⁴⁴.

The Coast Guard enforces fisheries laws at sea including regulations to aid the protection and/or recovery of marine protected species and their associated habitats⁴⁵. The costs incurred by the NMFS in its management of the Alaska IFQ Program are recovered as obligated by the MSA through a fee to be paid by IFQ fishermen based on the ex-vessel value of their catches landed under the Program.

The BOF and NPFMC meetings provide for the resolution of potential conflicts with users being afforded the opportunity to testify in person or in writing. These dispute resolution mechanisms have proven to be effective at dealing with most issues avoiding the necessity for disputes to escalate to the stage of legal action. However, in cases where processes have not resulted in the resolution of disputes, parties can and do resolve the disputes in the federal court system. With regards to conflict avoidance and resolution between different fisheries, the North Pacific Fishery Management Council (NPFMC) and the Board of Fisheries (BOF) tend to avoid conflict by actively involving stakeholders in the process leading up to decision making.

⁴⁴ <http://www.fakr.noaa.gov/habitat/default.htm>

⁴⁵ <http://www.uscg.mil/hq/cg5/cg531/LMR.asp>

8.1.3. Fundamental Clause 3

Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.

Number of Supporting clauses	7
Supporting clauses applicable	NA
Supporting clauses not applicable	NA
Overall level of conformity	Full Conformance
Non Conformances	NA

Summarized evidence:

3.1. Long-term management objectives shall be translated into a plan or other management document and be subscribed to by all interested parties.

No significant changes have occurred in the management of sablefish fishery in Alaska since the full assessment final report in January 2017. The NPFMC is bound by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) which is the primary domestic legislation governing management of marine fisheries in U.S. waters. The MSA sets out ten National Standards Guidelines for fishery conservation and management, specifies long-term objectives for U.S. fisheries and establishes a formal set of processes for the setting of short-term objectives and management measures aimed at achieving those long-term objectives.

The NPFMC outlines its management objectives for groundfish fisheries in the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands Management Area (BSAI) in two separate FMPs^{46,47}. These management objectives are consistent across both FMPs and are intended to frame consideration of potential management measures at annual NPFMC meetings. As of the August 2015 editions of both FMPs, a total of 45 objectives for GOA and 46 for BSAI, organized into 9 broader policy objectives, have been outlined. The policy objectives into which the management objectives are currently organized are:

- Prevent Overfishing
- Promote Sustainable Fisheries and Communities
- Preserve Food Web
- Manage Incidental Catch and Reduce Bycatch and Waste
- Avoid Impacts to Seabirds and Marine Mammals
- Reduce and Avoid Impacts to Habitat
- Promote Equitable and Efficient Use of Fishery Resources
- Increase Alaska Native Consultation
- Improve Data Quality, Monitoring and Enforcement

The NPFMC develops its fishery regulations pursuant and these regulations are implemented only after review and rulemaking conducted by the NMFS. The NPFMC process is extremely transparent and inclusive of all stakeholders; all stakeholders are active participants. The main State fisheries for Sablefish also have fishery management plans and these can be found in the 2017-2018 Statewide Commercial Fisheries Regulations for 2017-2018⁴⁸.

⁴⁶ <http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf>

⁴⁷ <http://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf>

⁴⁸ www.adfg.alaska.gov/static-f/regulations/fishregulations/pdfs/commercial/2017_2018_cf_groundfish.pdf

3.2. Management measures should limit excess fishing capacity, promote responsible fisheries, take into account artisanal fisheries, protect biodiversity and allow depleted stocks to recover.

The federal IFQ sablefish fisheries are all closed access fisheries. All but the small Cook Inlet state fishery are also closed access fisheries. However, the Cook Inlet fishery is managed using Guideline Harvest Levels (GHLs) and other management measures to ensure the harvest remains within set limits⁴⁹.

In 1995 NMFS implemented the NPFMC’s program of Individual Fishing Quotas (IFQs) established under amendments 15 and 20 to the BSAI and GOA FMPs. The IFQ program was explicitly intended to alleviate excess fishing capacity and improve the economic viability of the industry. The quota share system resulted in the removal of excess fishing capacity, fewer active vessels deploying less gear, greatly extended fishing seasons and increased economic viability within the fishing industry. The rationalization program has incentivized responsible fishing practices with gear losses, damage as a result of on-deck sorting and dead loss all having been reduced. Prior to rationalization, all vessels participated in a “race to fish” scenario. When the fisheries were rationalized, the number of qualifying vessels was reduced. In 2017, fewer vessels are needed to take the TAC thereby reducing operational costs and increasing overall efficiency.

The Western Alaska Community Development Quota (CDQ) program, intended to help develop commercial fisheries in communities of the BSAI coast, by allowing them exclusive access to specified amounts of halibut and sablefish in the BSAI management area, was established in parallel to the IFQ program. All state and federal managed fisheries are well within target reference point and are not depleted as shown below in a summary table (Table 4) from the 2018 federal SAFE assessment (Hanselman *et al.*, 2018).

Table 4. Sablefish stock assessment update 2018⁵⁰.

Quantity/Status	As estimated or specified <i>last</i> year for:		As estimated or recommended <i>this</i> year for:	
	2018	2019	2019*	2020*
<i>M</i> (natural mortality rate)	0.097	0.097	0.100	0.100
Tier	3b	3a	3b	3a
Projected total (age 2+) biomass (t)	330,655	350,850	488,273	513,502
Projected female spawning biomass (t)	88,928	110,974	96,687	129,204
<i>B</i> _{100%}	245,829	245,829	291,845	291,845
<i>B</i> _{10%}	98,332	98,332	116,738	116,738
<i>B</i> _{35%}	86,040	86,040	102,146	102,146
<i>F</i> _{OFL}	0.102	0.114	0.096	0.117
<i>maxF</i> _{ABC}	0.086	0.096	0.081	0.099
<i>F</i> _{ABC}	0.077	0.085	0.044	0.051
OFL (t)	30,211	47,891	33,141	45,692
OFL _w (t)**	29,507	46,775	32,798	45,220
max ABC (t)	25,583	41,044	28,171	38,916
ABC (t)	15,380	21,648	15,380	20,620
ABC _w (t)**	14,957	21,053	15,068	20,144
Status	As determined <i>last</i> year for:		As determined <i>this</i> year for:	
	2016	2017	2017	2018
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

* Projections are based on estimated catches of 15,380 t and 20,620 t (Author’s ABC) used in place of maximum permissible ABC for 2019 and 2020. This was done in response to management requests for a more accurate two-year projection. **ABC_w and OFL_w are the final author recommended ABCs and OFLs after accounting for whale depredation.

⁴⁹ http://www.psmfc.org/tsc-drafts/2017/ADFG_2017_AK_TSC_Alaska_FINAL.pdf

⁵⁰ https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/sablefish.pdf

8.2. Section B. Science and Stock Assessment Activities

8.2.1. Fundamental Clause 4

There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.

Number of Supporting clauses	13
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Compliance
Non Conformances	N/A

Summarized evidence:

4.1. All fishery removals and mortality of the target stock(s) shall be considered by management.

No significant change has occurred in the principles and methods with regards to the monitoring and management of fishery removals and mortality of the target stock, since the full assessment final report in January 2017. The NMFS and ADFG collect fishery data and conduct fishery independent surveys (longline and trawl) to assess the sablefish populations and ecosystems in GOA and BSAI areas. GOA and BSAI SAFE documents provide complete descriptions of data types and time series of collections. Extensive research related to stock assessment and management of sablefish is conducted by NMFS, and results are presented and published annually in the NPFMC SAFE reports for BSAI and GOA stocks. These annual reports are available on line at NPFMC. In addition, ADF&G does research and stock assessment on the sablefish and other resources under state management.

Commercial fishery catch data are collected from fixed gear (longline and pot) vessels, which target sablefish in the IFQ fishery, plus trawl fisheries that retain bycatch of sablefish in other fisheries such as those for rockfish and sole. NMFS tracks in-season catches and IFQ balances. TACs in the GOA are nearly fully utilized while TACs in the BS and AI are rarely fully utilized. Catch reports for sablefish in 2018 and earlier years can be found on the NMFS Alaskan fisheries website⁵¹. Sablefish catch data for each area in the state-managed fisheries can be found on the ADF&G commercial fisheries website⁵². Sablefish discards by target fisheries are available for hook-and-line and other gears in Hanselman *et al.*, (2018).

The “eLandings” system⁵³ is an electronic fish ticket system, for all catch data required to be reported in regulation, including IFQ/CDQ sablefish and halibut. Each industry report submitted via eLandings is checked by NMFS and entered along with observer data into the catch accounting system (CAS) maintained by NMFS. The CAS combines observer and industry information such as e-landings to create estimates of total catch. The CAS procedures have recently changed to complement the sampling procedures established under the restructured observer program. Additional details on the catch reporting and estimation processes can be found in Cahalan *et al.* (2014), and more information on commercial sablefish catches is in Hanselman *et al.* (2018).

The Alaska Fisheries Information Network (AKFIN)⁵⁴ was established in 1997 in response to an increased need for detailed, organized fishery information to aid decision-making by managers with the aims of consolidating, managing and dispensing information related to commercial fishing in Alaska. The AKFIN maintains an analytic

⁵¹ <https://alaskafisheries.noaa.gov/fisheries-catch-landings?tid=287>

⁵² <http://www.adfg.alaska.gov/index.cfm?adfg=fishingcommercialbyarea.main>

⁵³ <https://elandings.alaska.gov/>

⁵⁴ <http://www.akfin.org/about-akfin>

database of both state and federal commercial fisheries data for which is Alaska relevant to the needs of fisheries scientists and other users, and provides that data in usable formats.

By-catches in the directed sablefish fishery are recorded by observers, reported through the CAS, and presented in the annual stock assessments. Main by-catch species in sablefish longline and pot fisheries include grenadier, halibut, rockfish, sharks, and flatfish. More information on bycatch species is contained in Clause 12.4 below. Hanselman *et al.* (2018) note that removals from the sport fishery are relatively minor for sablefish but have been increasing in recent years, primarily in state-managed waters. Total removals from activities other than the directed fishery have been between 239 and 359 t since 2006, and are documented in the SAFE but not included in the stock assessment model. These catch estimates are approximately 1.5% of the recommended ABC and are considered by the SAFE authors to represent a relatively low risk to the sablefish stock.

The catches used in the 2018 assessment include catches from minor State-managed fisheries in the northern GOA and in the AI region because fish caught in these State waters are reported using the area code of the adjacent Federal waters in the catch reporting system, which is the source of the catch data used in the assessment. The effect of including these State-waters catches in the assessment would be in overestimating biomass by about 1%, a negligible error considering statistical variation in other data used in this assessment (Hanselman *et al.*, 2018). Catches from state areas that conduct their own assessments and set Guideline Harvest levels (e.g. Prince William Sound, Chatham Strait, and Clarence Strait), are not included in the 2018 assessment.

Information on the state fisheries in 2018 in the Southeast Region (Chatham Strait and Clarence Strait), as well as the Prince William Sound area, with comparisons to recent years, can be found in separate reports^{55,56} on the ADFG website.

4.2. An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures shall be established.

An extensive industry-funded on-board observer program⁵⁷ exists in Alaskan waters to cover various fisheries, including sablefish, and provide important fishery catch, length, and age data. Beginning January 1, 2013, amendment 86 (BSAI) and amendment 76 (GOA) were added to the Federal Fisheries Regulations 50 CFR Part 679: Fisheries of the Exclusive Economic Zone Off Alaska. In compliance with the MSA, these amendments restructured the funding and deployment system for observers in the North Pacific groundfish and halibut fisheries and include some vessels less than 60 ft. in length, as well as halibut vessels in the North Pacific Groundfish Observer Program.

Fishery information is available from longline sets that target sablefish in the IFQ fishery. Records of catch and effort for these vessels are collected by observers and by vessel captains in voluntary and required logbooks. Fishery data from the Observer Program is available since 1990. Logbooks are required for vessels over 60 feet beginning in 1999. Since 2000, a longline fishery catch rate index has been derived from observed sets and logbook data for use in the model and in apportionment calculations. Based on data from NMFS/AFSC/NPFMC, less than 2.5% of the sablefish catch since 2014 was taken by vessels < 40' LOA, so lack of observer coverage in this fishery sector is not a major data gap and does not pose a large risk.

The NPFMC has established an intention to integrate electronic monitoring (EM)⁵⁸ into the Observer Program for

⁵⁵ <http://www.adfg.alaska.gov/FedAidPDFs/FMR17-54.pdf>

⁵⁶ <http://www.adfg.alaska.gov/FedAidPDFs/FMR17-40.pdf>

⁵⁷ <https://alaskafisheries.noaa.gov/sites/default/files/2017annualreport.pdf>

⁵⁸ <https://www.npfmc.org/observer-program/>

the fixed gear small-boat groundfish and halibut fisheries, so that EM may be used to collect data to be used in catch estimation (retained and discarded) for this fleet. A fixed gear EM Workgroup (EMWG) provides a forum for all stakeholders, including the commercial fishing industry, agencies, and EM service providers, to cooperatively and collaboratively design, test, and develop EM systems, consistent with NPFMC's goal to integrate EM into the Observer Program. In April 2018, the Council reconstituted membership on the EM Workgroup to reflect a transition from the development and recent implementation of EM for fixed gear, to a new focus on developing EM systems on trawl catcher vessels in the Bering Sea and Gulf of Alaska. At its June 2018 meeting⁵⁹, the Council received an update about fixed gear and trawl EM development from the Electronic Monitoring Workgroup (which has now been renamed the EM Committee) and endorsed preliminary monitoring objectives for trawl EM development.

As part of the 2017 Annual Deployment Plan (ADP) and recognizing the challenging logistics of putting observers on small vessels, NMFS recommended that vessels less than 40' LOA be in the no selection pool for observer coverage but be considered for testing of electronic monitoring since NMFS has no data from this segment of the fleet. NMFS recommended continuing to allow hook-and-line and pot vessels <57.5 ft LOA, where taking an observer is problematic, an opportunity to 'opt-in' to the EM selection pool to participate in the EM cooperative research under the 2017 EM pre-implementation plan developed by the EM workgroup. NMFS also recommended that vessels participating in the EM selection pool be required to log trips in Observer Declare and Deployment System (ODDS⁶⁰). This will improve the ability of NMFS to determine which vessels are in the EM selection pool, when they are fishing, and provides a necessary compliance monitoring tool. From information in the 2017 Annual Observer Report (AFSC 2018), EM data was collected on a total of 143 trips from various fisheries in 2017.

In 2018, EM was integrated into the North Pacific Observer Program under a regulated program and NMFS approved the 141 eligible vessels in the EM selection pool (AFSC, 2019). The EM data from hook-and-line vessels were incorporated into the CAS and used for management. A 2018 pre-implementation plan for using EM aboard vessels using pot gear was developed by the EM Workgroup with the pre-implementation goals of determining the efficacy of EM for catch accounting of retained and discarded catch and to identify key decisions that were needed in order to integrate pot EM into the Observer Program.

Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips (ASFC, 2019). EM data was reviewed for 83 longline vessels covering 174 trips. EM data was reviewed for 94 halibut trips, 10 Pacific cod trips, and 70 sablefish trips containing a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries. Of the 1,875 hauls on reviewed trips, the catch level data was recorded for 770. All catch data presented is from this subset of hauls. Some of the most common bycatch (retained and/or discarded) in the sablefish fleet component using EM included Thornyhead, Shortspine Thornyhead, Shortraker/Rougheye rockfish, grenadier, spiny dogfish and soft snout skate.

There is still no monitoring data from vessels less than 40 ft. NMFS does continue to recommend that vessels less than 40 ft LOA could be considered for the EM selection pool in the future. NMFS recognizes that the Council's priority for EM research is on trawl vessels, so it is unknown when the evaluation of data collected on fixed-gear less than 40 ft will start.

⁵⁹ <https://www.npfmc.org/electronic-monitoring-3/>

⁶⁰ <https://chum.afsc.noaa.gov:7104/apex/f?p=140:1>

4.3. Management entities shall make data available in a timely manner and in an agreed format in accordance with agreed procedures.

NMFS and ADFG have extensive scientific databases which include sablefish. NPFMC has substantial information on management of sablefish in Alaskan waters. These data are made widely available throughout the year to allow for timely resource management, such as quota setting; through the agency websites, publications and at various publically-attended meetings. Data on certain aspects of commercial fishing are confidential, such as individuals or individual vessels in the analysis of fishery CPUE data, depending on the number of individuals or entities involved⁶¹. The Commercial Fisheries Entry Commission⁶² is the designated records manager for ADFG fish ticket records. Fish ticket records are retained by the Commission for 45 years, and are confidential as defined by AS 16.05.815 and 16.40.155.

4.4/4.5. States shall stimulate the research required to support national policies related to fish as food and collect sufficient knowledge of social, economic and institutional factors relevant to the fishery in question to support policy formulation.

State and national policies regarding seafood are guided by the Alaska Seafood Marketing Institute (ASMI), U.S. Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), and the U.S. National Institute of Health (NIH). ASMI is the state agency primarily responsible for increasing the economic value of Alaskan seafood through marketing programs, quality assurance, industry training and sustainability certification. ASMI's role includes conducting or contracting for scientific research to develop and discover health, dietetic, or other uses of seafood harvested and processed in the state⁶³. Through the University of Alaska Fairbanks, the state of Alaska also operates the Kodiak Seafood and Marine Science Center⁶⁴, which directs efforts in several fields, including seafood processing technology, and seafood quality and safety.

Socio-economic data collection and economic analyses are required to varying degrees under the Regulatory Flexibility Act (RFA), the MSA, the NEPA, the Endangered Species Act, and other applicable laws. AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska (Fissel *et al.* 2018)⁶⁵. This comprehensive report provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, including sablefish, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market.

4.6. States shall investigate and document traditional fisheries knowledge and technologies, in particular those applied to small scale fisheries, in order to assess their application to sustainable fisheries conservation, management and development.

The sablefish fisheries in Alaska are well established and any original knowledge and technologies have been part of the evolution of the mature fisheries. Virtually all data from the state and federally managed sablefish fisheries are included in the stock assessments (Hanselman *et al.*, 2018). There is minimal recreational, personal use, or subsistence fishing for sablefish in Alaskan waters, and all estimates are included in the catch data.

⁶¹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

⁶² <https://www.cfec.state.ak.us/>

⁶³ <http://www.alaskaseafood.org/quality/>

⁶⁴ <https://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/>

⁶⁵ https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf

At the 2012 Alaska BOF meeting, a regulation was passed to require personal use and subsistence use sablefish permits, and at the 2015 BOF meeting, limits were defined for personal use sablefish fisheries for the number of fish, number of permits per vessel, and number of hooks. No changes were made to sablefish subsistence fisheries in 2015⁶⁶. Southeast sablefish subsistence and personal use fishing permits for 2017 were available from May 2017⁶⁷.

4.7. States conducting scientific research activities in waters under the jurisdiction of another State shall ensure that their vessels comply with the laws and regulations of that State and international law.

Data from the annual setline survey conducted by IPHC, using commercial vessels from USA and Canada, are considered in the annual sablefish assessments. In 2018 the survey encompassed both nearshore and offshore waters of southern Oregon, Washington, British Columbia, southeast Alaska, the central and western Gulf of Alaska, Aleutian Islands, and the Bering Sea continental shelf⁶⁸. Thus, only the waters under jurisdiction of USA and Canada were surveyed. Survey activities were compliant with all laws and regulations of those countries, registered commercial halibut vessels were chartered, and all catches in the survey were recorded and reported.

Other scientific surveys used directly, or considered, in the sablefish stock assessments include NMFS annual setline and trawl surveys in GOA and BSAI, surveys by ADF&G in state waters, and a trap survey by DFO (Canada) in British Columbia. None of these surveys cross any international boundaries (Webster , 2018)⁶⁹.

4.8. States shall promote the adoption of uniform guidelines governing fisheries research conducted on the high seas.

As this stock of sablefish is not distributed in high seas areas, there is no research conducted in those waters. Sharing of sablefish information between Canada and USA, for research carried out in their EEZs, is accomplished through the stock assessment process, e.g. results from the stratified random trap surveys conducted in Canadian waters by DFO are available to NMFS scientists and included in the annual SAFE stock assessment reports.

4.9/4.10/4.11. States shall promote and enhance the research capacities of developing countries, support (upon request) States engaged in research investigations aimed at evaluating stocks which have been previously un-fished or very lightly fished.

Not applicable for this fishery.

⁶⁶ http://www.psmfc.org/tsc-drafts/2017/ADFG_2017_AK_TSC_Alaska_FINAL.pdf

⁶⁷ [Southeast Sablefish Subsistence And Personal Use Fishing Permit And Harvest Reporting Available Online](#)

⁶⁸ <https://iphc.int/uploads/pdf/im/2018im/iphc-2018-im094-07.pdf>

⁶⁹ Ibid

8.2.2. Fundamental Clause 5

There shall be regular stock assessment activities appropriate for the fishery, its range, the species biology and the ecosystem, undertaken in accordance with acknowledged scientific standards to support its optimum utilization.

Number of Supporting clauses	7
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized Evidence:

5.1 States shall ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science. The research shall be disseminated accordingly. States shall also ensure the availability of research facilities and provide appropriate training, staffing and institution building to conduct the research, taking into account the special needs of developing countries.

The mission of the NMFS/AFSC is to conduct scientific research programs which generate scientific data for understanding, managing, and conserving the marine resources and the environmental quality essential for their existence. Appropriate research is conducted for the management of sablefish in Alaska waters. NMFS and ADFG conduct surveys on sablefish in Alaskan waters. The NMFS conducts an annual longline survey and a biennial trawl survey in the GOA and the Aleutian Islands (alternating years between the two regions), and an annual trawl survey in the Eastern Bering Sea and ADFG performs annual longline surveys in Chatham and Clarence Strait. These surveys provide estimates of CPUE, relative abundance, and biological data. In addition, tagging studies exist to study sablefish movement for federal, state, and Canadian waters. The ADFG conducts an annual tagging survey in Chatham Strait as part of a mark-recapture study to estimate population abundance.

Further investigations into the migration of sablefish are being conducted in Alaska. The NMFS is working on a migration model that includes both federal and state waters. In addition, the ADFG is conducting pilot studies to determine the feasibility of acoustic tagging of sablefish in Chatham Strait. In addition, research is being conducted on sperm whale interactions with the sablefish longline fisheries. Researchers are determining ways to reduce or eliminate whale interactions and how to quantify whale depredation rates⁷⁰.

In the 2018 sablefish stock assessment there were no changes in the assessment methodology (Hanselman *et al.*, 2018) and the only developments was the addition of updated data and the introduction of a risk matrix approach to assess reductions and calculate ABCs (Hanselman *et al.*, 2018). Full descriptions of the data series and stock assessment methodology are provided in the 2018 SAFE document (Hanselman *et al.*, 2018). The 2018 SAFE continues to include the standard Ecosystem Considerations section, along with a new Ecosystem and Socioeconomic Profile (ESP) which highlights specific ecosystem indicators that may help explain variability in the stock assessment, particularly recruitment.

In addition to the annual stock assessment and its related/supporting work, other research programs are ongoing in Alaskan waters which have relevance for the sablefish stock and Alaskan ecosystems. This work includes:

⁷⁰ <http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.research>

North Pacific Research Board (NPRB)⁷¹

The NPRB conducts research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean prioritizing on research efforts designed to address pressing fishery management or marine ecosystem information needs.

Bering Sea Integrated Ecosystem Research Program⁷² is a \$52 million partnership between the NPRB and the National Science Foundation (NSF) that seeks to understand the impacts of climate change and dynamic sea ice cover on the eastern Bering Sea ecosystem. More than one hundred scientists are engaged in field research and ecosystem modeling to link climate, physical oceanography, plankton, fishes, seabirds, marine mammals, humans, traditional knowledge and economic outcomes to better understand the mechanisms that sustain this highly productive region.

The Gulf of Alaska Integrated Ecosystem Research Project (IERP)⁷³ is a program of the NPRB that seeks to understand how environmental and anthropogenic processes, including climate change, affect trophic levels and dynamic linkages among trophic levels, with emphasis on fish and fisheries, marine mammals, and seabirds within the GOA. Implementation of the GOA IERP is structured around four separately completed components which will link together to form a fully integrated ecosystem study in the Gulf of Alaska. The four components of this program are Upper Trophic Level, Forage Base, Lower Trophic Level and Physical Oceanography, and Ecosystem Modeling.

The Alaska Climate Integrated Modeling (ACLIM) project⁷⁴ is a collaboration of diverse researchers aimed at giving decision makers critical information regarding the far-reaching impacts of environmental changes in the Bering Sea. To better predict and respond to future changes, the ACLIM project will develop cutting-edge and multi-disciplinary models. The models will consist of alternative climate scenarios and the associated estimates of potential impacts or benefits to people, industry and the Bering Sea ecosystem. The ACLIM team has 19 members and includes oceanographers, ecosystem modelers, socioeconomic researchers and fishery management experts from NOAA Alaska Fisheries Science Center, NOAA Pacific Marine Environmental Laboratory, the University of Washington Joint Institute for the Study of Atmosphere and Ocean (JISAO) and School of Aquatic and Fishery Sciences (SAFS) and the Norwegian Institute for Water Research (NIVA).

The North Pacific Marine Science Organization (PISCES) is an intergovernmental scientific organization, established in 1992 to promote and coordinate marine research in the northern North Pacific and adjacent seas. Its present members are Canada, Japan, People's Republic of China, Republic of Korea, the Russian Federation, and the United States of America. Its scientific program named FUTURE⁷⁵ (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems) is an integrative program undertaken by the member nations and affiliates of PICES to understand how marine ecosystems in the North Pacific respond to climate change and human activities.

As part of IPHC's annual setline survey, which provides data for the sablefish assessment, IPHC conducts an extensive oceanographic monitoring program which includes waters off British Columbia, and into the Gulf of Alaska, Bering Sea, and Aleutian Islands (Sadorus and Walker, 2017). The IPHC is collaborating with the Joint Institute for the Study of the Atmosphere and Ocean (JISAO) at the University of Washington and NOAA's Pacific

⁷¹ <http://www.nprb.org/>

⁷² <http://www.nprb.org/bering-sea-project>

⁷³ <http://gulfofalaska.nprb.org/>

⁷⁴ <https://www.afsc.noaa.gov/REFM/REEM/ACLIM.htm>

⁷⁵ <http://meetings.pices.int/Members/Scientific-Programs/FUTURE>

Marine Environmental Laboratory to process the oceanographic data and make them publicly accessible, and a number of years of data up to 2014 are currently available⁷⁶.

Also, the Pacific States Marine Fisheries Commission⁷⁷ coordinates research activities, monitors fishing activities, collects and maintains databases on marine fish occurring off the California, Oregon, Washington, and Alaska coasts.

Another major ecosystem research report is the AFSC Ecosystem Consideration Report series⁷⁸. The Ecosystem Considerations reports are produced annually to compile and summarize information about the status of the Alaska marine ecosystems for the North Pacific Fishery Management Council, the scientific community and the public. As of 2018, there are separate reports for the Eastern Bering Sea (EBS), Aleutian Islands (AI), the Gulf of Alaska (GOA), and Arctic (forthcoming) ecosystems. These reports include ecosystem assessments, and ecosystem-based management indicators that together provide context for ecosystem-based fisheries management in Alaska.

In 2016, NPFMC appointed 12 people to a Plan Team to begin developing the Council's Bering Sea Fishery Ecosystem Plan (FEP). The Team's primary responsibilities were to develop the core FEP document, to discuss potential and ongoing FEP action modules, make recommendations to the Ecosystem Committee and the Council about future steps, and to help communicate results to the Council. While the team is a scientific and technical team, the focus is also to ensure that FEP action modules interface with the Council's management needs, and can be integrated into the Council's decision making and management process.

In December 2018 NPFMC adopted the Bering Sea Fishery Ecosystem Plan (FEP)⁷⁹. The Bering Sea FEP establishes a framework for the Council's continued progress towards ecosystem-based fishery management (EBFM) of the Bering Sea fisheries, and relies and builds on the Council's existing processes, advisory groups, and management practice. The Council noted that adoption of the FEP represents a major milestone in what has been a multi-year process to develop this FEP. The FEP builds from the Council's Ecosystem Vision Statement, adopted in 2014, and is a continued commitment by this Council to use the best science to sustainably manage fisheries using a precautionary, transparent and inclusive process.

The BSFEP document identifies management goals and objectives for the FEP and for monitoring of the Bering Sea ecosystem, and describes how the FEP framework will support research projects (Action Modules) to address Council priorities. The Council also adopted the five action modules included in the draft, and initiated action on two of them. For year 2019, NPFMC staff will work with the BS FEP Team to bring back workplans for how to manage the workload associated with the initiated modules. The two action modules for the Council to work on are:

- Develop protocols for using Local Knowledge and Traditional Knowledge in management and understanding impacts of Council decisions on subsistence use.
- Evaluate the short- and long-term effects of climate change on fish and fisheries.

Regarding socio-economic data collection, AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish fisheries in Alaska. This comprehensive report (Fissel, et. al., 2018) provides estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch

⁷⁶ https://www.ecofoci.noaa.gov/projects/IPHC/efoci_IPHCDData.shtml

⁷⁷ <http://psmfc.org>

⁷⁸ <https://access.afsc.noaa.gov/reem/ecoweb/>

⁷⁹ https://www.npfmc.org/bsfep_december2018/

(PSC) and PSC discards rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, and relates changes in value, price, and quantity, across species, product and gear types, to changes in the market. This report includes extensive economic data for the commercial sablefish fishery.

Various studies have been conducted on the economic value of sportfishing in Alaska (e.g. Lew et al. 2015), which include sablefish, although sablefish is not a major target species for sport fishing. The Alaska Seafood Marketing Institute has contracted studies to determine the value of Alaska's seafood industry, and the University of Alaska, Institute of Social and Economic Research conducts research on the economics of various Alaskan fisheries.

Since 2002 IPHC has been working cooperatively with the Alaska Department of Environmental Conservation (ADEC) in a project monitoring environmental contaminants in Alaskan fish. The fish being studied include sablefish, and are analyzed for organochlorine pesticides, dioxins, furans, polybrominated diphenyl ethers, PCB congeners, methyl mercury and heavy metals (arsenic, selenium, lead, cadmium, nickel, and chromium).

The Oil Spill Recovery Institute (OSRI) was established by US Congress in response to the 1989 Exxon Valdez oil spill. OSRI is administered through and housed at the Prince William Sound Science Center, a non-profit research and education organization located in Cordova, AK. The PWS Science Center facilitates and encourages ecosystem studies in the Greater Prince William Sound region. OSRI produces an annual report⁸⁰, among other publications. The 2017 report contains details on their activities, including ongoing research projects, an update of field guide for oil spill response in arctic waters, and shore-zone mapping of the eastern Aleutian Islands.

5.2. The state of the stocks under management jurisdiction, including the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration shall be monitored.

The NMFS, ADFG, and University of Alaska maintain established research programs to monitor the state of the sablefish stocks and effects of fishing, pollution, habitat alteration and climate change. These programs are described in Clause 5.1 above.

Alaska's sablefish stock assessment programs (NMFS, ADF&G) are extensive and comprehensive. The process to determine the stock removals used in the assessment and management considerations is explained in Clause 4.1. Research capacity in environmental science is also discussed in Clause 5.1. The program to determine reference points and evaluate the stock against these in a precautionary approach is described in Clauses 6.1, 6.2 and 6.3. Additional information on ecosystem aspects of the stock and fishery is contained in Clause 12.

The state of the sablefish stock is monitored mainly through survey and annual peer-reviewed stock assessment activities. The 2018 assessment showed that longline survey abundance index increased 9% from 2017 to 2018 following a 14% increase in 2017 from 2016 (Hanselman *et al.*, 2018). The lowest point of the time series was 2015. The fishery catch-rate/abundance index stayed level from 2016 to 2017 and is at the time series low (the 2018 data are not available yet). The 2014 year class is estimated to be 2 times higher than any other year class observed in the current recruitment series. Spawning biomass is projected to increase rapidly from 2019 to 2022, and then stabilized (Hanselman *et al.*, 2018).

NOAA identifies habitats essential for managed species and conserves habitats from adverse effects on those habitats. These habitats are termed "Essential Fish Habitat" or EFH, and are defined as "those waters and

⁸⁰ <http://www.pws-osri.org/wp-content/uploads/2018/03/FY17-Annual-report.pdf>

substrate necessary to fish for spawning, breeding, feeding, or growth to maturity”. NMFS and NPFMC must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to federal and state agencies regarding actions that would adversely affect EFH. More specific information on EFH and recent activities pertaining to this are described in Clause 12 below.

Ecosystem considerations for Alaska sablefish are available from the yearly SAFE and are summarized in Table 2 along with additional information, in Clause 12.1, below.

For state-managed fisheries, ADF&G has a well-developed research capacity⁸¹ and conducts stock assessments in State waters to determine safe harvest levels. In 1988, the department began annual longline research surveys in both Southeast inside sub-districts where the majority of state fleet fishing effort is focused, in order to assess the relative abundance of sablefish over time and differing environmental conditions. Biological data is also collected during the surveys and ADF&G has standardized its survey methods with the NMFS longline survey. These data are presented and reviewed as part of the overall annual sablefish assessment process, and ADF&G scientists participate in the NPFMC Plan Team. The Prince William Sound sablefish fishery is managed using a GHM and derived from the estimated area of sablefish habitat and a yield-per-unit-area model. For the Clarence and Chatham Strait fisheries (Southeast Inside areas) an annual harvest objective is set with regard to survey and fishery catch per unit effort and biological characteristics of the population. In addition, in Chatham Strait an annual stock assessment is performed which includes a mark-recapture estimate of the population abundance. ADF&G arranges public meetings to present and discuss the scientific findings on these sablefish management areas.

The following summarizes stock indices in SSEI and adjacent waters for recent years⁸².

- SSEI longline survey CPUE (round lb per hook) increased 6% from 0.63 in 2016 to 0.67 in 2017.
- SSEI longline survey CPUE (round lb per hook) for fish ≥ 520 mm increased 4% from 0.56 in 2016 to 0.58 in 2017.
- SSEI longline fishery CPUE has been stable in last ten years with a slight increase of 4% (round lb per hook) from 0.26 in 2016 to 0.27 in 2017.
- SSEI pot fishery CPUE (round lb per pot) increased 59% from 49.2 in 2016 to 78.0 in 2017 SSEI sablefish stock status for 2018 quota.
- SSEI fishery harvest percent of immature females increased to 67% in the longline fishery and 82% in the pot fishery from 2016 to 2017.
- Percent of immature males increased to 67% in the longline fishery and decreased to 49% in the pot fishery.
- SSEI longline survey CPUE in round lb per hook decreased by 34.6% and in numbers per hook increased by 15% from 2016 to 2017.
- Gulf of Alaska improvements in recruitment with the 2008 year class 13% above average in size and fully mature in 2018. The 2014 year class is estimated to be very strong; however large uncertainty is associated with this estimate (Hanselman *et al.*, 2017).
- Federal longline survey abundance index increased 14% from 2016 to 2017 and the recommended

⁸¹ <http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.research>

⁸² https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/southeast/ssei_2018_aho_memo.pdf

federal allowable biological catch (ABC) for 2018 is 14% higher than 2017.

- The Department of Fisheries and Oceans (DFO) Canadian sablefish stock assessment showed an increase of 94% in CPUE (kg/trap) from their annual pot survey and an increase of 18% in sablefish estimated biomass from 2016 to 2017.

5.3. Management organizations shall cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources.

The only two nations involved in the sablefish fishery in the eastern North Pacific are Canada and the United States of America. The resources in each nation's waters are managed separately, and each nation conducts surveys that occur in adjacent geographical areas, as well as a survey conducted by IPHC that covers areas in the EEZs of both countries. Japan and USA conducted cooperative longline surveys from 1978 to 1994 and these data are used in the current stock assessment. There is cooperation on various aspects of research, stock assessment, and management between the fisheries agencies (e.g. DFO and NMFS) of USA and Canada⁸³.

5.4. The fishery management organizations shall directly, or in conjunction with other States, develop collaborative technical and research programmes to improve understanding of the biology, environment and status of trans-boundary aquatic stocks.

The main transboundary issues for the Alaskan sablefish stock are between Canada and USA. Both countries have extensive scientific programs for research and assessment, and collaborate on numerous topics related to sablefish science and management. Data from the DFO sablefish surveys in B.C. waters are considered in the NMFS/NPFMC assessment process and SAFE document. The similarly low abundance (through 2014) south of Alaska is of concern, and points to the need to better understand the contribution to Alaska sablefish productivity from B.C. sablefish. Some potential ideas which have been discussed are to conduct an area-wide study of sablefish tag recoveries, and to attempt to model the population to include B.C. sablefish and U.S. West Coast sablefish⁸⁴. Recent data from Canadian surveys in BC waters have shown an increase in sablefish abundance and biomass.

5.5. Data generated by research shall be analysed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate.

Data collected by scientific surveys and sablefish fisheries are analyzed and presented in peer reviewed meetings and in primary literature, following rigorous scientific protocols. These have been described extensively in previous Clauses. Results of these analyses are disseminated in a timely fashion through numerous methods, including scientific publications, and as information on NMFS, ADFG, and NPFMC websites, in order to contribute higher transparency to fisheries conservation and management. Confidentiality of individuals or individual vessels (e.g. in the analysis of fishery CPUE data) is fully respected where necessary. By Alaska Statute (16.05.815 Confidential Nature of Certain Reports and Records)⁸⁵, except for certain circumstances, all records obtained by the state concerning the landing of fish, shellfish, or fishery products and annual statistical reports of fishermen, buyers, and processors may not be released. To ensure confidentiality, fishery data are routinely redacted from ADFG reports if the data for a time/area stratum were obtained from a small number of participants.

⁸³ <https://www.afsc.noaa.gov/REFM/Docs/2017/GOAsablefish.pdf>

⁸⁴ Ibid.

⁸⁵ <http://touchngo.com/iglcnr/akstats/Statutes/Title16/Chapter05/Section815.htm>

8.3. Section C. The Precautionary Approach

8.3.1. Fundamental Clause 6

The current state of the stock shall be defined in relation to reference points or relevant proxies or verifiable substitutes allowing for effective management objectives and targets. Remedial actions shall be available and taken where reference point or other suitable proxies are approached or exceeded.

Number of Supporting clauses	4
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized Evidence:

6.1/6.2/6.3/6.4 States shall determine for the stock both safe targets for management (Target Reference Points) and limits for exploitation (Limit Reference Points), shall measure the status of the stock against these reference points and agree to actions to be undertaken if reference points are exceeded.

No significant change in the assessment methodology occurred in 2018, or in the reference point definitions used to manage the fishery. The NPFMC harvest control system is complex and multi-faceted in order to address issues related to sustainability, legislative mandates, and quality of information. The NPFMC tier system⁸⁶ specifies the maximum permissible Allowable Biological Catch (ABC) and the Overfishing Limit (OFL). The BSAI and GOA groundfish fishery management plans have pre-defined harvest control rules that define a series of target and limit reference points for sablefish and other groundfish covered by these plans. Each SAFE report describes the current fishing mortality rate, and stock biomass relative to the target and limit reference points.

In the NPFMC tier system, the sablefish stock in Alaska is currently managed under Tier 3. Stocks in tier 3 are further categorized as (a), (b), or (c) based on the relationship between biomass, B40%, and a lower value B/B40% $\leq .05$, with (3a) indicating a stock where biomass is above B40%, (3b) indicating a stock where biomass is below B40% but above the lower value, and (3c) indicating a stock where biomass is at or below the lower value. The category assigned to a stock determines the method used to calculate ABC and OFL. The harvest control rule is biomass-based, for which fishing mortality is constant when biomass is above the B40% target and declines linearly down to a threshold value when biomass drops below the target, consistent with the precautionary approach. The rule used to determine the ABC is applied in exactly the same manner, i.e. based on a harvest control rule triggered by targets and limits. If the stock is in Tier 3c, FOFL and maxFABC are set to zero. Note that the MSST threshold used to determine if a stock is overfished is a different reference point than those used in the NPFMC tier system.

The following section on stock rebuilding is from the NPFMC FMP for GOA Groundfish: *Within two years of such time as a stock or stock complex is determined to be overfished, an FMP amendment or regulations will be designed and implemented to rebuild the stock or stock complex to the MSY level within a time period specified at Section 304(e)(4) of the Magnuson-Stevens Act. If a stock is determined to be in an overfished condition, a rebuilding plan would be developed and implemented for the stock, including the determination of an FOFL and FMSY that will rebuild the stock within an appropriate time frame.*

⁸⁶ <http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfm.pdf>

Sablefish are managed under Tier 3 of the NPFMC harvest control rules. Reference points were calculated using recruitments from 1977-2014. The updated point estimates of *B40%*, *F40%*, and *F35%* from Hanselman *et al.*, (2018) are 116,738 t (combined across the EBS, AI, and GOA), 0.099, and 0.117, respectively. Projected female spawning biomass (combined areas) for 2018 is 96,687 t (83% of *B40%*, or *B33%*), placing sablefish in Tier 3b.

Hanselman *et al.*, (2018) recommended ABC values for year 2019 to be set equal to the 2018 ABC recommendation and resulted in a 45% downward adjustment from maximum permissible ABC. The authors used a risk matrix approach to assess reductions and determined an overall score of level 4 (the maximum level across the three categories), indicating “extreme concern.” Hanselman *et al.*, (2019) mention factors influencing the assessment, including positive retrospective bias in the last two years; extreme concerns about the population dynamics of this stock related to recruitment, an inability to rebuild spawning stock biomass, and a lack of old fish in the population; and substantially increased concern in the ecosystem conditions that suggest another marine heat wave is forming in 2018 which, while potentially positive for recruitment, could result in increased natural mortality on the 2014 year class. Additionally, the ABC was decreased to account for estimates of whale depredation occurring in the fishery in the same way that was recommended and accepted in 2016 and 2017.

The maximum permissible value of *FABC* under Tier 3b is 0.081, and the adjusted OFL fishing mortality rate is 0.096. After accounting for risk matrix reductions and whale depredation, the authors’ recommended *FABC* equals 0.044, which results in a recommended 2019 ABC of 15,068 t for all areas combined. This 2019 ABC is the same as the authors’ 2018 ABC as recommended in last year’s assessment, with the only difference due to updating whale depredation estimates. This results in 2019 ABCs of 1,489 t and 2,008 t and OFLs of 3,221 t and 4,350 t for the Bering Sea and Aleutian Islands, respectively. Model projections indicated that this stock **is not subject to overfishing, overfished, nor approaching an overfished condition.**

For state-managed sablefish fisheries, the Cook Inlet, Prince William Sound, and the Aleutian Islands state fisheries have guideline harvest limits (GHL) and are managed using NMFS assessment data (and therefore federal reference points), historical catches and effort, projected catch and effort, and a yield-per-unit-area model, among other parameters. For PWS, the 2019 GHL is 134,000 round pounds, an increase of 0.75% from 2018⁸⁷.

In Southeast Alaska, for the SSEI area, the Annual Harvest Objective for 2019 was set at 590,349 round pounds, an increase of 2% from 2018. The increase was due to continued increases in the longline survey CPUE index, signs of continued recruitment in length and age-class distributions in the survey and fishery, introduction of escape rings for pot gear to reduce harvest of immature individuals and increasing trends in sablefish biomass from adjacent areas including the Gulf of Alaska (GOA), British Columbia, Canada (BC), and Northern Southeast Inside (NSEI) Subdistrict (Olson and Sullivan, 2019).

For the NSEI area, the recommended ABC for the 2019 sablefish fishery was 1,058,037 round pounds, a 9.6% increase from the 2018 ABC. An *F50%* biological reference point was used for calculating the 2018 and 2019 ABCs, resulting in a harvest rate of 6.35% in 2018 and 6.32% in 2019⁸⁸.

Although there is not a full suite of reference points for these state-managed sablefish resources, the fisheries continue to be well managed, with recent catches often being less than the specified GHLs.

⁸⁷ <https://www.adfg.alaska.gov/static/applications/dfnewsrelease/1022786749.pdf>

⁸⁸ <https://www.adfg.alaska.gov/static/applications/dfnewsrelease/1037467075.pdf>

8.3.2. Fundamental Clause 7

Management actions and measures for the conservation of stock and the aquatic environment shall be based on the precautionary approach. Where information is deficient a suitable method using risk assessment shall be adopted to take into account uncertainty.

Number of Supporting clauses	5
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	None

Summarized Evidence:

7.1. The precautionary approach shall be applied widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment.

No significant change has occurred since the 2nd surveillance assessment in 2018. The first element of the precautionary approach applied in Alaska is the Optimum Yield (OY) for the groundfish complexes in the BSAI⁸⁹ and the GOA⁹⁰, as a range of values. The sum of the TACs of all groundfish species (except Pacific halibut, and including sablefish) is required to fall within the range. The second element of precautionary approach is the Tier system, based on knowledge and uncertainties of the stock in question.

Sablefish harvest specifications are made annually by NPFMC, and include the Overfishing Level (OFL), acceptable biological catch (ABC), and total allowable catch (TAC). TACs are generally set more conservatively than ABCs, which in turn are generally set more conservatively than OFLs. Since OFLs are consistent with MSY and catches are generally within TAC levels, harvests tend to always be at the conservative side of MSY. As can be seen below, recent catches of Alaska sablefish have been well within recommendations, indicating that the harvest control rules continues to work well and within precautionary set limits.

Table 5. Summary of available OFL, ABC, TAC and catch for sablefish from 2017 to 2020 (Source: 2018 Sablefish SAFE).

Area	Year	Biomass (4+)	OFL	ABC	TAC	Catch
GOA	2017	139,000	11,885	10,074	10,074	10,521
	2018	356,000	22,703	11,505	11,505	9,175
	2019	264,000	25,227	11,571		
	2020	266,000	34,782	15,462		
BS	2017	24,000	1,499	1,274	1,274	1,159
	2018	94,000	2,887	1,464	1,464	1,460
	2019	52,000	3,221	1,489		
	2020	52,000	4,441	1,994		
AI	2017	43,000	2,101	1,735	1,735	590
	2018	65,000	3,917	1,988	1,988	474
	2019	98,000	4,350	2,008		
	2020	99,000	5,997	2,688		

In addition to this, the NPFMC FMPs, last updated in October 2018, classify each stock based on a tier system

⁸⁹ <https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf>

⁹⁰ <https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmppdf>

(Tiers 1-6) with Tier 1 having the greatest level of information on stock status and fishing mortality relative to MSY considerations. The Tier system specifies the maximum permissible ABC and the OFL for each stock in the complex (usually individual species but sometimes species groups). The overall objectives of the GOA and BSAI FMPs is consistent with preventing overfishing and optimizing the yield from the fishery through the promotion of conservative harvest levels while considering as well as addressing the differing levels of uncertainty⁹¹. Both FMPs contain the Council's Groundfish Management Policy "to apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, proactively rather than re-actively, to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations."

Accordingly to the Tier system, Sablefish in Alaska is managed under Tier 3, sub Tier "b" of NPFMC harvest rules⁹². Reference points are calculated using recruitments from 1977-2014. The updated point estimates of F40%, and F35% from the 2018 assessment are 0.099, and 0.117, respectively, but Tier 3b uses the control rule to adjust these values downward. Model projections indicate that this stock is not subject to overfishing, overfished, nor approaching an overfished condition.

The 2017 assessment projected a 41% increase in ABC for 2019 from 2018. Instead of the maximum permissible ABC, stock assessment scientists applied the precautionary approach and recommended the 2019 ABC to be equal to the 2018 ABC⁹³, which translates to a 45% downward adjustment from max ABC. They also recommended ABCs for 2019 and 2020 to be set lower than maximum permissible ABC for several important reasons that are examined in the new SSC-endorsed risk-matrix approach for ABC reductions. First, the 2014 year class is estimated to be 2 times higher than any other year class observed in the current recruitment regime (1977 – 2014). Tier 3 stocks have no explicit method to incorporate the uncertainty of this extremely large year class into harvest recommendations. While there are clearly positive signs of strong incoming recruitment, there are concerns regarding the lack of older fish and spawning biomass, the uncertainty surrounding the estimate of the strength of the 2014 year class (i.e. 7.5x average), and the uncertainty about the environmental conditions that may affect the success of the 2014 year class in the future. These concerns warrant additional caution when recommending the 2019 and 2020 ABCs.

At the time the Federal Government began the IFQ program, the State established two minor fisheries in Cook Inlet and the Aleutian Islands, so that open-access fisheries were available to fishermen that were not allowed to participate in the IFQ program. Three major state fisheries exist which are limited entry and are located in Prince William Sound, Chatham, and Clarence Strait⁹⁴. The Prince William Sound sablefish fishery is managed using a GHL and derived from the estimated area of sablefish habitat and a yield-per-unit-area model. For Clarence and Chatham Strait fisheries an annual harvest objective is set with regard to survey and fishery catch per unit effort and biological characteristics of the population. In addition, in Chatham Strait an annual stock assessment is performed which includes a mark-recapture estimate of the population abundance.

A mark-recapture project was conducted in 2018 in the Northern Southeast Inside (NSEI) Subdistrict (Chatham Strait) and provided a point estimate of abundance. This estimate was used to forecast abundance and biomass for the 2019 fishery using updated biological data from the fishery and longline survey⁹⁵. The harvest rate was also recalculated using updated biological information. As in previous years, an F50% biological reference point was

⁹¹ <https://www.npfmc.org/bering-seaaleutian-islands-groundfish/>

⁹² <https://www.fisheries.noaa.gov/resource/data/2018-assessment-sablefish-stock-alaska>

⁹³ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

⁹⁴ <https://www.adfg.alaska.gov/index.cfm?adfg=sablefish.management>

⁹⁵ <https://www.adfg.alaska.gov/static/applications/dfnewsrelease/1037467075.pdf>

used for calculating the 2019 ABC, resulting in a harvest rate of 6.32% (the harvest rate in 2018 was 6.35%). The 2019 ABC (1,058,037 round pounds) increased 9.6% relative to the 2018 ABC (965,354 round pounds). Large year classes of sablefish from 2013 and 2014 have been recruiting to the fishery and surrounding geographic areas with signs of improvement observed since 2016.

The 2019 Southern Southeast Inside (SSEI) Subdistrict (Clarence Strait) sablefish commercial annual harvest objective (AHO) is 590,349 round lb, a 2% increase from the 2018 AHO⁹⁶. For 2019, the SSEI AHO was raised 2% due to continued increases in the longline survey CPUE index, signs of continued recruitment in length and age class distributions in the survey and fishery, introduction of escape rings for pot gear to reduce harvest of immature individuals and increasing trends in sablefish biomass from adjacent areas including the GOA, BC, and the NSEI Subdistrict.

The PWS harvest has been well within GHl in all recent years, as per data from ADFG⁹⁷. In 2018 the GHl was 133,000 lbs with harvest of 88,117 lbs, in 2017 the GHl was 117,000 lbs with harvest of 73,113 lbs, in 2016 the GHl was 105,000 lbs with harvest of 40,457 lbs, and in 2015 the GHl was 122,000 lbs with harvest of 16,910 lbs.

Minor fisheries for sablefish include the Aleutian Islands state fishery, which allows longline, pot, jig, and hand troll gear, and one trawl vessel qualifies for the limited entry program in Prince William Sound, and the Cook inlet fishery. The catches used in federal 2018 sablefish SAFE report include catches from minor State-managed fisheries in the northern GOA (Cook Inlet) and in the AI region because fish caught in these State waters are reported using the area code of the adjacent Federal waters in the Alaska Regional Office catch reporting system. Catches from state areas that conduct their own assessments and set Guideline Harvest levels (e.g., Prince William Sound, Chatham Strait, and Clarence Strait), are not included in the 2018 federal assessment⁹⁸.

State fisheries for sablefish, like the federal counterpart, also appear to be managed conservatively using precautionary measures.

7.2. For new and exploratory fisheries, procedures shall be in place for promptly applying precautionary management measures, including catch or effort limits.

The federal and state sablefish fisheries in Alaska are not considered exploratory fisheries, but instead well-developed fisheries with managed through tested means and approaches.

⁹⁶ <https://www.adfg.alaska.gov/static/applications/dfnewsrelease/1029668426.pdf>

⁹⁷ https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareapws.pws_groundfish_sablefish_harvest

⁹⁸ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAsablefish.pdf>

8.4. Section D. Management Measures

8.4.1. Fundamental Clause 8

Management shall adopt and implement effective management measures designed to maintain stocks at levels capable of producing maximum sustainable yields, including harvest control rules and technical measures applicable to sustainable utilization of the fishery and be based upon verifiable evidence and advice from available scientific and objective, traditional sources.

Number of Supporting clauses	17
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	None

Summarized evidence:

8.1. Conservation and management measures shall be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of optimum utilization, and be based on verifiable and objective scientific and/or traditional sources. In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact shall be considered.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA)⁹⁹ is the primary domestic legislation governing management of US marine fisheries. The act establishes MSY as the basis for fishery management and requires that: the fishing mortality rate does not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex is rebuilt to a level that is capable of producing MSY; and OY not exceed MSY.

FMPs for GOA¹⁰⁰ and BSAI¹⁰¹ Regions present long-term management objectives for the Alaska sablefish fishery. Updated last in October 2018 these include: Optimum Yield (keeping all groundfish TACs within the BSAI and GOA ecosystem caps) six management areas through which ABCs and TACs are apportioned (i.e. BS, AI, Western GOA, Central GOA, W Yakutat, E Yakutat), quota allocation (by fixed and trawl gears) through IFQ quota share since 1995, CDQ allocations, inseason adjustments and management, time and area restrictions, recordkeeping, and observer requirements, PSC limits (for species like crab and halibut), maximum retainable allowances for sablefish catches in other fisheries, licenses, permits and legal gear (IFQ for longline and pot, demersal trawl is non-IFQ).

Pot fishing in the BSAI IFQ fishery is legal and landings have increased dramatically since 2000. Pots in the BSAI are longlined with approximately 40-135 pots per set¹⁰². One of the newest development in management measures is the allowance of pot gear for catching sablefish in the GOA, partly due to sperm whale predation. Since January 2017, Amendment 101¹⁰³ to the Fishery Management Plan for Groundfish of the Gulf of Alaska authorizes the use of longline pot gear in the GOA sablefish IFQ fishery.

Partly related to this fishery, the Council is currently reviewing/considering allowing retention of halibut in

⁹⁹ <http://www.nmfs.noaa.gov/sfa/magact/>

¹⁰⁰ <https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf>

¹⁰¹ <https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf>

¹⁰² <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIsablefish.pdf>

¹⁰³ <https://www.fisheries.noaa.gov/action/amendment-101-fmp-groundfish-gulf-alaska-management-area>

sablefish pots in the BSAI¹⁰⁴. In the October 2018 meeting the NPFMC took final action¹⁰⁵ to allow for: (1) more efficient harvest of the halibut resource by decreasing the wastage of legal-size halibut discarded in the BSAI sablefish pot fishery, and (2) reduced whale depredation of halibut caught on hook-and-line gear by allowing operators that hold both halibut IFQ or CDQ the opportunity to retain halibut in pot gear. This action includes the following elements¹⁰⁶: 1) an exemption to the 9-inch maximum width of the tunnel opening on pots, 2) VMS and logbook requirements for all vessels using pot gear to fish IFQ/CDQ, and 3) in the event that the overfishing limit for a shellfish or groundfish species is approached, regulations would allow NMFS to close IFQ fishing for halibut as necessary. Additionally, the Pribilof Islands Habitat Conservation Zone would be closed to all fishing with pot gear.

Sablefish also are caught incidentally during directed trawl fisheries for other species groups such as rockfish and deepwater flatfish. Allocation of the TAC by gear group varies by management region and influences the amount of catch in each region. Trawl catches in 2018 were about 25% of the total catches, while in 2017 they were about 22%¹⁰⁷.

Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations¹⁰⁸. The most recent NEPA compliant Regulatory Impact Review/ Environmental Assessment was performed in regards to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018¹⁰⁹.

In terms of the state fisheries, three major state fisheries exist which are limited entry and are located in Prince William Sound, Chatham, and Clarence Strait¹¹⁰. The Prince William Sound sablefish fishery is managed using a GHL and derived from the estimated area of sablefish habitat and a yield-per-unit-area model. For Clarence and Chatham Strait fisheries an annual harvest objective is set with regard to survey and fishery catch per unit effort and biological characteristics of the population. In addition, in Chatham Strait an annual stock assessment is performed which includes a mark-recapture estimate of the population abundance. Minor fisheries for sablefish include the Aleutian Islands state fishery, which allows longline, pot, jig, and hand troll gear, and the Cook Inlet fishery. These catches are reported and included in the federal SAFE assessment for sablefish. Further details about these fisheries have been provided under Fundamental Clause 7.

Detailed management measures for the sablefish state fisheries have been published for 2019 and 2020 Commercial regulations for groundfish fisheries¹¹¹.

The management measures summarized above, as well as those highlighted under Clause 7 directly leading to sustainable harvesting of sablefish resources, are designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of optimum utilization, and are based on verifiable and objective scientific and/or traditional sources. Harvest levels for each sablefish as set by NPFMC are based on the best

¹⁰⁴ <https://www.npfmc.org/halibut-retention-in-pots/>

¹⁰⁵ <http://meetings.npfmc.org/CommentReview/DownloadFile?p=94b0f940-78a1-45d9-bc75-3686b6ccb3a9.pdf&fileName=C4%20Action%20Memo.pdf>

¹⁰⁶ <https://www.npfmc.org/halibut-in-pots/>

¹⁰⁷ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

¹⁰⁸ <https://www.epa.gov/nepa/what-national-environmental-policy-act>

¹⁰⁹ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=2dcf0126-26d7-478a-a2c6-c8f1dc234d58.pdf&fileName=C4%20Halibut%20Retention%20in%20BSAI%20Pots%20Public%20Review%20-%20pdf%20version.pdf>

¹¹⁰ <https://www.adfg.alaska.gov/index.cfm?adfg=sablefish.management>

¹¹¹ https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2019_2020_cf_groundfish_regs.pdf

biological¹¹², ecological¹¹³, and socioeconomic information¹¹⁴ available, published yearly. Accordingly, the 2018 SAFE report indicates that model projections indicate that the sablefish stock is not subject to overfishing, overfished, nor approaching an overfished condition¹¹⁵.

8.2. States shall prohibit dynamiting, poisoning and other comparable destructive fishing practices.

The GOA and BSAI FMPs¹¹⁶ and NMFS regulations¹¹⁷ make clear that the only legal gears for taking sablefish in Alaska are hook and line, pot, trawl (and jig and hand troll in the AI state fishery¹¹⁸). No destructive practices such as dynamite or poison are permitted, nor is there any evidence that such gears are being used illegally.

8.3. States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery.

The NPFMC is responsible for allocation of the sablefish resource among user groups in Alaska waters. In addition, the Alaskan Board of Fisheries (BOF)¹¹⁹ public meetings process provides a regularly scheduled public forum for all interested individuals, fishermen, fishing organizations, environmental organizations, Alaskan Native organizations and other governmental and non-governmental entities that catch sablefish off Alaska to participate in the development of legal regulations for fisheries.

The Pacific Halibut and Sablefish IFQ Program was adopted by the NPFMC under Amendment 15 to the BSAI FMP and Amendment 20 to the GOA FMP in October 1992¹²⁰. Participation in the IFQ Program is limited to persons that hold Quota Share (QS), although there are several very limited provisions for “leasing” of annual IFQ. QS is a transferable permit that was initially issued to persons who owned or leased vessels that made legal commercial fixed-gear landings of Pacific halibut or sablefish in the waters off Alaska during 1988-1990.

An IFQ Committee provides recommendations to the Council regarding potential future revisions to the IFQ program. Membership is intended to represent a broad range of stakeholders in the IFQ fisheries, including representatives from both directed halibut and sablefish fisheries, representation covering multiple areas, and IFQ processors¹²¹. As of July 11th 2019, the Council is seeking members who (1) would represent IFQ crewmembers who do not own quota (or a small amount) but are interested in purchasing more; and (2) vessel owner/operators who do not own quota (or a small amount).

The Western Alaska Community Development Quota (CDQ) Program created by the NFMC in 1992 provides western Alaska communities opportunities to participate in the BSAI fisheries. There are 65 communities participating in the program¹²².

The Gulf of Alaska parallel of the CDQ program is the Community Quota Entity Program, which authorizes 45 eligible communities in areas 2C, 3A and 3B and one community in the Aleutian Islands to form Community Quota

¹¹² <https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf>

¹¹³ <https://www.fisheries.noaa.gov/alaska/ecosystems/ecosystem-status-reports-gulf-alaska-bering-sea-and-aleutian-islands>

¹¹⁴ <https://www.fisheries.noaa.gov/alaska/commercial-fishing/economic-status-reports-gulf-alaska-and-bering-sea-aleutian-islands>

¹¹⁵ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIsablefish.pdf>

¹¹⁶ <https://www.npfmc.org/bering-seaaleutian-islands-groundfish/>

¹¹⁷ <https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5>

¹¹⁸ <https://www.adfg.alaska.gov/index.cfm?adfg=fishresearch.sablefish>

¹¹⁹ <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main>

¹²⁰ <https://www.fisheries.noaa.gov/alaska/commercial-fishing/pacific-halibut-and-sablefish-individual-fishing-quota-ifq-program>

¹²¹ <https://www.npfmc.org/halibutsablefish-ifq-program/>

¹²² <https://www.federalregister.gov/documents/2016/07/12/2016-16418/proposed-information-collection-comment-request-western-alaska-community-development-quota-cdq>

Entities (CQEs)¹²³ that may purchase commercial halibut and sablefish quota share (QS) for lease to community residents. The overarching purpose of this program is to remedy barriers to participation in remote coastal communities and to provide these communities with long-term opportunities to access the halibut and sablefish resources¹²⁴. As of 2019, the Council is reviewing regulations that restrict CQE ability to fish “D” class quota on “C” class vessels has, in some circumstances, limited the CQE community’s access to fish CQE halibut, particularly in Area 3A¹²⁵.

The Council formed the Community Engagement Committee in June 2018 to identify and recommend strategies for the Council to provide effective community engagement with rural and Alaska Native communities. The Community Engagement Committee will develop tools and processes to facilitate improved communication and understanding between rural communities and tribes and the Council. The latest meeting was held in anchorage in March 2019¹²⁶.

In June 2019 the Council reviewed a discussion paper outlining domestic and international examples of programs that facilitate access opportunities for rural communities and new entrants within limited access fisheries and tasked staff to come back with an expanded paper¹²⁷. The Council requested this discussion paper at the June 2018 meeting in response to information from the IFQ 20-year program review, academic research, and public testimony regarding access challenges in the IFQ Program. The discussion paper provided a more detailed review of Norway’s Recruitment Quota, and highlighted access program design specifications, distributional impacts, and legal considerations that may be relevant to an application in the North Pacific for the Halibut and Sablefish IFQ Program.

As a result of that, the Council directed staff to develop an expanded discussion paper identifying considerations related to the creation of a quota Access Pool for halibut and sablefish QS that facilitates entry-level opportunities. The Access Pool would be targeted at crewmembers and vessel owner-operators whose QS holdings equate to less than 5,000 lbs. of IFQ in 2019. Participation in the Access Pool would be temporary, meaning that a qualifying individual could only fish this quota for a set number of years. Access Pool QS could not be sold. The Access Pool would be structured such that a Regional Fishery Association (RFA) or another entity receives the allocation and determines the criteria for distribution to applicants; criteria would be reviewed by the Council and approved by NMFS. The discussion paper will highlight explicit Council decision points necessary for this approach, the amount of detail needed to develop criteria for allocation, effects on the QS market and existing QS holders, and MSA considerations regarding the ability to allocate QS to RFAs.

At the state level, Advisory committees (AC) are local groups that meet to discuss fish and wildlife issues, provide a local forum for those issues, and make recommendations to the Alaska boards of fisheries and game. Their purpose as established by the Joint Board of Fisheries and Game includes developing regulatory proposals, evaluating regulatory proposals and making recommendations to the appropriate board, providing a local forum for fish and wildlife conservation and use, including matters relating to habitat, consulting with individuals, organizations, and agencies¹²⁸. The regulations governing the advisory committee are 5 AAC Chapters 96 and 97. More than 700 Alaskans belong to 84 advisory committees up and down the coast and throughout the interior, arctic and southcentral. It is through these individuals that the Alaska Board of Fisheries develop regulations that

¹²³ <https://www.npfmc.org/community-quota-entity-program/>

¹²⁴ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=60c6260c-faa3-4eed-87e9-2a324869f26b.pdf&fileName=C6%20MOTION.pdf>

¹²⁵ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=60c6260c-faa3-4eed-87e9-2a324869f26b.pdf&fileName=C6%20MOTION.pdf>

¹²⁶ <https://www.npfmc.org/committees/cec/>

¹²⁷ <https://www.npfmc.org/ifq-access-opportunities-global-examples/>

¹²⁸ <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main>

are responsive to local needs. In 2019, five individuals were awarded the Excellence in Service Award recognizing outstanding contributions in service to Alaska's communities, fish and wildlife, and regulatory process by Fish and Game Advisory Committee members across the state.

8.4. Mechanisms shall be established where excess capacity exists, to reduce capacity. Fleet capacity operating in the fishery shall be measured. States shall maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations and a record of all authorizations to fish allowed by them.

Amendment 20 to the GOA Fishery Management Plan and 15 to the BS/AI Fishery Management Plan established IFQ management for sablefish beginning in 1995. These amendments also allocated 20% of the fixed gear allocation of sablefish to a CDQ reserve for the BS and AI. Since the implementation of IFQs, the number of longline vessels with sablefish IFQ harvests experienced a substantial anticipated decline from 616 in 1995 to 362 in 2011 (NOAA 2016). This decrease was expected as shareholders have consolidated their holdings and fish them off fewer vessels to reduce costs (Fina 2011). IFQ management has increased fishery catch rates and decreased the harvest of immature fish (Sigler and Lunsford 2001). Catching efficiency (the average catch rate per hook for sablefish) increased 1.8 times with the change from an open-access to an IFQ fishery. The change to IFQ also decreased harvest and discard of immature fish which improved the chance that these fish will reproduce at least once. Thus, the stock can provide a greater yield under IFQ at the same target fishing rate because of the selection of older fish (Sigler and Lunsford 2001)¹²⁹.

There are detailed records of all fishing operations and permits allowed in Alaska. There were 1,054 entities holding Sablefish QS in 1995. The number of entities has declined over time to 809, or 23% fewer entities holding QS by 2017, and the number of active CV and CP sablefish vessels decreased to 285, by 11 catcher vessels in 2017¹³⁰, from 2016. Current (as of 2019) Quota Share with Holders and QS Units - by species, area, vessel category, blocks, and CDQ compensation flag are listed on the NOAA website¹³¹.

All the federal IFQ fisheries and the three major state fisheries are limited access fisheries. Exploitation is regulated and controlled through TACs in federal fisheries and GHL/TACs in state fisheries. None of these fisheries is considered depleted or overexploited.

8.5. Technical measures shall be taken into account, where appropriate, in relation to: fish size, mesh size or gear, closed seasons, closed areas, areas reserved for particular (e.g. artisanal) fisheries, protection of juveniles or spawners.

A summary of the NPFMC management measures that govern the GOA and BSAI groundfish fisheries are contained in the FMPs and are summarized below.

Fish size. The fishery is primarily managed through IFQ and through Maximum Retainable Allowances¹³² for other fisheries to account for incidental catches of sablefish in those fisheries. Minimum size requirements are not currently in use. However, a recent discussion paper on sablefish discard allowance (Armstrong et al., 2018) provides information on biological and economic impacts for introducing minimum size regulations for sablefish. In 2018, there was a marked increase in sablefish landings for small (1-3 pound) sablefish in the BSAI fisheries, most notably the midwater pollock fishery, and an associated large decrease in value for these same sized fish

¹²⁹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

¹³⁰ <https://www.fisheries.noaa.gov/resource/data/2017-economic-status-groundfish-fisheries-alaska>

¹³¹ [https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-\(ifq\)-halibut/sablefish-and-cdq-halibut-ifq](https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-(ifq)-halibut/sablefish-and-cdq-halibut-ifq)

¹³² https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/sablefish.pdf

(Armstrong et al., 2018).

Gear. Sablefish in Alaska is caught with longline, pot and bottom trawl gear. In short, longliners use streamer lines to avoid seabird bycatch, demersal trawl are required to carry raised bobbins when targeting flatfish and cod in the BSAI and the Central GOA. Research has demonstrated that this gear modification reduces unobserved mortality of red king crab, Tanner crab, and snow crab, reducing contact with the ocean floor by as much as 90%¹³³. In addition to this there are extensive habitat closures in Alaska¹³⁴. Pot gear carry biodegradable panels to avoid ghost fishing in case of gear loss, as well as escape rings in State fisheries¹³⁵. Mesh size for the relevant gear is specified in Federal regulation 679 (on the management of fisheries within Alaska's EEZ¹³⁶).

Closed seasons/areas. In 1995, Individual Fishery Quotas (IFQ) were implemented for hook-and-line vessels along with an 8- month season. The season dates have varied by several weeks since 1995, but the monthly pattern has been from March to November with the majority of landings occurring in May - June. Extensive trawl closures have been implemented to protect benthic habitat or reduce bycatch of prohibited species (i.e., salmon, crab, herring, and halibut) in the BSAI and GOA. Seasonal closures are used to reduce bycatch by closing areas where and when bycatch rates had historically been high¹³⁷. Over 95% of the AI management area is closed to bottom trawling (277,100 nm²). With the Arctic FMP closure included (an area roughly 150,000 sq nm²), almost 65% of the U.S. EEZ of Alaska is closed to bottom trawling.

Artisanal fisheries. At the time the Federal Government began the IFQ program, the State established two minor fisheries in Cook Inlet and the Aleutian Islands, so that open-access fisheries were available to fishermen that were not allowed to participate in the IFQ program¹³⁸. Three major state fisheries exist which are limited entry and are located in Prince William Sound, Chatham, and Clarence Strait.

8.6. Fishing gear shall be marked.

Regulations pertaining to vessel and gear markings in the sablefish fishery are established in NMFS regulations, as prescribed in the annual management measures published in the Federal Register (part 679.24)¹³⁹. They state:

1. Marking of hook-and-line, longline pot, and pot-and-line gear.
 - a) All hook-and-line, longline pot, and pot-and line marker buoys carried on board or used by any vessel regulated under this part shall be marked with the vessel's Federal fisheries permit number or ADF&G vessel registration number.
 - b) Markings shall be in characters at least 4 inches (10.16 cm) in height and 0.5 inch (1.27 cm) in width in a contrasting color visible above the water line and shall be maintained so the markings are clearly visible.
 - c) Each end of a set of longline pot gear deployed to fish IFQ sablefish in the GOA must have attached a cluster of four or more marker buoys including one hard buoy ball marked with the capital letters "LP" in accordance with paragraph (a)(2) of this section, a flag mounted on a pole, and radar reflector floating on the sea surface.

8.7. Measures shall be introduced to identify and protect depleted resources and those resources threatened with

¹³³ <https://www.fisheries.noaa.gov/resource/document/ea-rir-frfa-amendment-94-bsai-groundfish-fmp-require-trawl-sweep-modification-bs>

¹³⁴ <https://www.npfmc.org/habitat-protections/gear-modifications/>

¹³⁵¹³⁵ https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2019_2020_cf_groundfish_regs.pdf

¹³⁶ https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5#se50.13.679_124

¹³⁷ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf>

¹³⁸ <https://www.adfg.alaska.gov/index.cfm?adfg=sablefish.management>

¹³⁹ <https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5>

depletion, and to facilitate the sustained recovery/restoration of such stocks. Also, efforts shall be made to ensure that resources and habitats critical to the well-being of such resources which have been adversely affected by fishing or other human activities are restored.

The sablefish resource is not depleted. Accordingly to the 2018 SAFE report for Sablefish, model projections indicate that this stock is not subject to overfishing, overfished, nor approaching an overfished condition.

The overall objectives of the GOA and BSAI FMPs is consistent with preventing overfishing and optimizing the yield from the fishery through the promotion of conservative harvest levels while considering as well as addressing the differing levels of uncertainty¹⁴⁰. Management measures are summarized under clause 8.1.

8.8/8.9/8.10/8.11/8.12/8.13. States shall encourage the development and implementation of technologies and operational methods that reduce waste and discards and reduce the loss of fishing gear. The implications of the introduction of new fishing gears, methods and operations shall be assessed and the effects of such introductions monitored. New developments shall be made available to all fishers and shall be disseminated and applied appropriately.

The federal sablefish fishery is managed under an IFQ system. The fishery is for the most part a demersal longline fishery. Longline is typically not associated with as much ghost fishing as some other fishing gears, such as gillnets and some types of traps (NOAA 2015¹⁴¹). Longline gear is also required to carry streamer lines to avoid seabird interactions and fishermen deploy weighted lines that sink faster and further decrease possible interactions with these animals.

In recent years, an increasing percentage of sablefish is also caught and retained with pot gear, due to depredation by whales in longline gear. Groundfish pots are required to comply with a number of specifications, including use of a biodegradable panel¹⁴², and tunnel openings (rigid or soft) which must not exceed maximum dimensions. These gear constructions minimize impacts of ghost fishing and of catch of certain non-target species and sizes, hence reducing waste, discards and mortality in case of gear loss. Escape rings in pots are required in some sablefish state fisheries as per 2019-2020 state regulations¹⁴³.

In one the newest developments to reduce wastage and discards in the IFQ fishery, the NPFMC, in October 2018 took final action¹⁴⁴ to allow for: 1) more efficient harvest of the halibut resource by decreasing the wastage of legal-size halibut discarded in the BSAI sablefish pot fishery, and 2) reduced whale depredation of halibut caught on hook-and-line gear by allowing operators that hold both halibut IFQ or CDQ the opportunity to retain halibut in pot gear. This action includes the following elements¹⁴⁵: 1) an exemption to the 9-inch maximum width of the tunnel opening on pots, 2) VMS and logbook requirements for all vessels using pot gear to fish IFQ/CDQ, and 3) in the event that the overfishing limit for a shellfish or groundfish species is approached, regulations would allow NMFS to close IFQ fishing for halibut as necessary. Additionally, the Pribilof Islands Habitat Conservation Zone would be closed to all fishing with pot gear.

Sablefish also are caught incidentally during directed trawl fisheries for other species groups such as rockfish and deepwater flatfish. Trawl catches in 2018 were about 25% of the total catches, while in 2017 catches were about 22%¹⁴⁶. Research has demonstrated that trawl sweep gear modification required in the trawl flatfish fisheries in

¹⁴⁰ <https://www.npfmc.org/bering-seaaleutian-islands-groundfish/>

¹⁴¹ https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing_DFG.pdf

¹⁴² <https://www.ecfr.gov/cgi-bin/text-idx?SID=0cc954068b4cef56066a93c0ecbd605f&mc=true&node=pt50.13.679&rgn=div5>

¹⁴³ https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2019_2020_cf_groundfish_regs.pdf

¹⁴⁴ <http://meetings.npfmc.org/CommentReview/DownloadFile?p=94b0f940-78a1-45d9-bc75-3686b6ccb3a9.pdf&fileName=C4%20Action%20Memo.pdf>

¹⁴⁵ <https://www.npfmc.org/halibut-in-pots/>

¹⁴⁶ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIsablefish.pdf>

the EBS (since 2010) and the central GOA (since 2013) reduces unobserved mortality¹⁴⁷ of red king crab, Tanner crab, and snow crab.

A recent discussion paper on sablefish discard allowance (Armstrong et al., 2018) provides information on biological and economic impacts for introducing minimum size regulations for sablefish¹⁴⁸. In 2018, there was a marked increase in sablefish landings for small (1-3 pound) sablefish in the BSAI fisheries, most notably the midwater pollock fishery, and an associated large decrease in value for these same sized fish (Armstrong et al., 2018). This size range is the likely age for the 2014 to 2016 year classes (age 2-4).

In terms of sablefish discards in 2018, 42.29% of the combined catch by trawl, pot and jig gear was discarded. Since April 2018, a regulatory change that would allow discarding of small sablefish in the Individual Fishing Quota (IFQ) sablefish fishery has been discussed as a potential tool to mitigate fishery and population impacts of very large sablefish year classes¹⁴⁹. This change was first suggested by IFQ stakeholders following enormous increases in survey catches of small sablefish from the 2014 year class, the largest on record. In October 2018, the Council has reviewed an initial discussion paper that evaluated a range of biological, economic, and management considerations related to a discarding allowance, and which pointed out that growth of fish from the 2014 year class into typical market categories would outpace the timing of the proposed management change. After review of the October 2018 discussion paper, the Council passed a motion instructing staff to gather more information on the possible implications of permitting sablefish discarding, identifying in the motion nine areas of concern for staff to focus on.

In April 2019, the NPFMC motioned to initiate an expanded discussion paper to gather more information on the possible implications of modifying the requirement (e.g. to proxy DMR, gear specific DRMs, etc..) to retain small sized sablefish and to explore the implications of these changes on overall stock abundance and allocations to trawl and IFQ fisheries.

All new proposals for, and resulting developments to reduce waste and discards in the sablefish and other groundfish fisheries are made available to all fishers through the NPFMC/NMFS and Board of Fishery processes, and published online for all relevant stakeholders.

8.14. Policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures.

Not applicable. Sablefish is not an enhanced species.

¹⁴⁷ <https://www.npfmc.org/habitat-protections/gear-modifications/>

¹⁴⁸ https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/sablefish.pdf

¹⁴⁹ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=b40b8eb3-a783-421c-9c3a-4497b1432159.pdf&fileName=D8%20Action%20Memo.pdf>

8.4.2. Fundamental Clause 9

Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.

Number of Supporting clauses	3
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Compliance
Non Conformances	None

Summarized evidence:

9.1./9.2./9.3. Education and training programs.

No significant changes have occurred since the 2nd Surveillance audit. To be eligible to purchase sablefish (and halibut) IFQ shares, new participants must apply for and obtain a Transferable Eligibility Certificate issued by the North Pacific Region of NMFS. An applicant must be a U.S. citizen and show documentation of 150 days of commercial fishing experience¹⁵⁰ in the U.S.

Obtaining IFQ share most often will require the purchaser (aspirant sablefish fisherman) to enter into loan capital arrangements with banks that will require comprehensive fishing business plans supported by competent, professional fishermen with demonstrable fishing experience. This competence and professionalism is a learned experience with the culmination of entrants into the fishery starting at deck hand level working their way up through proof of competence.

There are several avenues for fishermen to receive training to ensure they have appropriate standards of competence.

AMSEA provides marine safety training for commercial fishermen¹⁵¹, subsistence & recreational boaters, and youth & women boaters throughout Alaska and across the United States. AMSEA's Fishing Vessel Drill Conductor Trainings are accepted by the U.S. Coast Guard and meet the training requirements for fishermen onboard commercial fishing vessels.

The State of Alaska, Department of Labor and Workforce Development (ADLWD) includes the Alaska's Institute of Technology, also called Alaska Vocational Training & Education Center (AVTEC). One of AVTEC's main divisions is the Alaska Maritime Training Center. The Alaska Maritime Training Center is a United States Coast Guard approved training facility located in Seward, Alaska, and offers USCG/STCW (STCW is the international Standards of Training, Certification, and Watchkeeping) compliant maritime training¹⁵². In addition to the standard courses offered, customized training is available to meet the specific needs of maritime companies. Courses are delivered through the use of world class ship simulator, state of the art computer based navigational laboratory and modern classrooms equipped with the latest instructional delivery technologies. AVTEC offers courses such as Able Seaman, Fire Fighting, Meteorology, Electronic Chart display and Information Systems, Seafood Processor Orientation and Safety Course, among many others.

¹⁵⁰ https://www.edf.org/sites/default/files/11391_alaska-ifq.pdf

¹⁵¹ <https://www.amsea.org/commercial-fishermen>

¹⁵² <https://avtec.edu/department/alaska-maritime-training-center>

The Marine Advisory Program (MAP) is a university-based statewide program designed to help Alaskans with the practical use and conservation of the state's marine and freshwater resources. MAP is based at the University of Alaska Fairbanks (UAF) College of Fisheries and Ocean Sciences¹⁵³. Through classes, workshops, trainings and other resources, MAP offers Alaskans technical assistance, marine education, applied research and other expert advice on how residents can sustain healthy coastal economies, communities and ecosystems.

Established in 2007 by the Alaska Sea Grant Marine Advisory Program, the Alaska Young Fishermen's Summit (AYFS) is a three-day networking and skill-building conference for new entrants in managing modern commercial fishing businesses designed to provide training, information and networking opportunities for commercial fishermen early in their careers. The event features prominent industry leaders as speakers and mentors. In January 2020, the Alaska Sea Grant Marine Advisory Program will present the 8th Alaska Young Fishermen's Summit¹⁵⁴.

All regulations governing the sablefish fisheries are available on the NPFMC, NMFS¹⁵⁵ and ADFG¹⁵⁶ websites, as previously documented under fundamental clause 8. Changes to regulations are considered only after detailed processes which include open and public discussions, and the results of any changes are widely communicated. Fishermen do attend these meetings and participate in these processes where they input in and become better acquainted with fishery regulations.

Data on the number and location of Alaskan of fishers, permits issued, Current Quota Share with Holders and QS Units - by species, area, vessel category, blocks, and CDQ compensation flag etc. can be can be found online at the NMFS website¹⁵⁷. In 2018 there were 2576 IFQ quota share holdings registered in the NMFS database. Data on fishing in Alaskan state-managed fisheries can be found in the State of Alaska's CFEC website¹⁵⁸.

¹⁵³ <https://alaskaseagrant.org/marine-advisory/>

¹⁵⁴ <https://alaskaseagrant.org/event/2020-alaska-young-fishermens-summit/>

¹⁵⁵ <https://www.fisheries.noaa.gov/alaska/commercial-fishing/pacific-halibut-and-sablefish-individual-fishing-quota-ifq-program>

¹⁵⁶ https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2019_2020_cf_groundfish_regs.pdf

¹⁵⁷ [https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-\(ifq\)-halibut/sablefish-and-cdq-halibut-ifq](https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-(ifq)-halibut/sablefish-and-cdq-halibut-ifq)

¹⁵⁸ https://www.cfec.state.ak.us/fishery_statistics/earnings.htm

8.5. Section E. Implementation, Monitoring and Control

8.5.1. Fundamental Clause 10

An effective legal and administrative framework shall be established and compliance ensured through effective mechanisms for monitoring, surveillance, control and enforcement for all fishing activities within the jurisdiction.

Number of Supporting clauses	6
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	None

Summarized evidence:

10.1. Enforcement agencies and framework:

The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) Alaska Division (AKD) enforce Alaska fisheries laws and regulations, especially 50CFR679 (on the management of fisheries off the Alaska EEZ)¹⁵⁹. The Alaska Wildlife Troopers enforce regulations in state waters. All landings must be reported to NMFS via its mandatory “e-landings” reporting system.

OLE and USCG are responsible for enforcement of regulations in the IFQ fisheries. OLE has 9 field offices across Alaska¹⁶⁰ and is responsible for shoreside enforcement and for providing after hours surveillance while USCG engages in at-sea enforcement. The USCG documents at-sea violations and refers them to OLE for final action. OLE employs a multifaceted strategy to maximize compliance in the IFQ fisheries. This strategy includes educational outreach¹⁶¹, partnerships, patrols, inspections, and investigations. OLE also spends thousands of hours annually 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. OLE personnel investigate reports or complaints of IFQ violations as well as regularly analyze IFQ data that may lead to investigations of abnormal activity and missing or questionable information.

OLE works closely with the Alaska Wildlife Troopers (enforcing regulations in state waters) and the USCG to maximize compliance by sharing information, intelligence, knowledge, and resources¹⁶². The formalized Joint Enforcement Agreement (JEA) between the AK Wildlife Troopers and NMFS provide the state with federal funding for personnel, equipment, operations, and authorization for the Wildlife Troopers to enforce federal fishing regulations while engaged in their regular duties. AWT have requested additional funding to enhance capacity for dockside monitoring and inspections for Individual Fishing Quota (IFQ)/Individual Processing Quota (IPQ) as part of FY 2019¹⁶³.

OLE 2018 Enforcement summary

In December 2018, OLE published the year in summary report¹⁶⁴ for the NPFMC. In it they highlighted that in May OLE received four new near shore patrol vessels. Two 33 foot patrol vessels (Natoma Bay and Sitkoh Bay), built by

¹⁵⁹ <https://www.law.cornell.edu/cfr/text/50/part-679>

¹⁶⁰ <https://www.fisheries.noaa.gov/contact-directory/noaa-enforcement-field-offices>

¹⁶¹ <http://meetings.npfmc.org/CommentReview/DownloadFile?p=7f898929-8fdf-4ef8-90a2-92e40ee58279.pdf&fileName=B4%20OLE%20Report.pdf>

¹⁶² <https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar03.pdf>

¹⁶³ https://www.omb.alaska.gov/ombfiles/20_budget/PublicSafety/Amend/2020proj62513.pdf

¹⁶⁴ <http://meetings.npfmc.org/CommentReview/DownloadFile?p=7f898929-8fdf-4ef8-90a2-92e40ee58279.pdf&fileName=B4%20OLE%20Report.pdf>

North River, were stationed in Petersburg and Ketchikan, Alaska. Two 37 foot patrol vessels (Cape Elizabeth and Kingfisher), built by Bay Weld Boats, were stationed in Homer and Kodiak, Alaska.

Patrol and Boardings

In 2018, OLE’s AKD personnel spent over 5216 hours conducting patrols to provide a visible deterrence to potential violators; monitoring fishing and other marine activities; detecting violations; providing compliance assistance; and providing outreach and education. This is compared to 4,972 patrol hours in 2017, and 4,476 patrol hours in 2016. In 2018, they also dedicated over 1493 hours providing outreach and education with marine resource users. This is a decrease from 1983 hours in 2017, and 1711 hours in 2016. Outreach efforts occurred at a number of organized events as well as contacts in communities, ports, and at sea. The goal of OLE outreach efforts was to ensure that the most current and accurate regulatory information was widely distributed and understood by resource users.

From October 1, 2017 to September 30, 2018 NOAA officers and agents opened 2124 incidents including 1105 Magnuson-Stevens Act, 727 Northern Pacific Halibut Act, and 292 others: Endangered Species Act, Marine Mammal Protection Act, Lacey Act, and other federal and state regulations (Figure 2). The majority of incidents were closed or completed- of 1805 closed incidents, 1008 required no enforcement action - no recorded violation or minor/mitigated violation(s). 319 incidents remained under investigation.

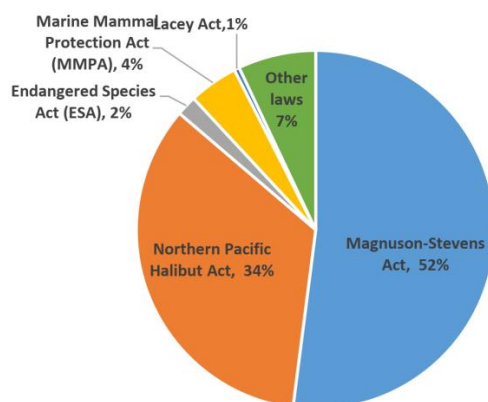


Figure 2. OLE’s reported incidents by percent October 1, 2017 to September 30, 2018 categorized by primary law, program, or regulation type.

Notable civil cases resulting from violations

AK1800956; F/V Tribute – IFQ permit holder/operator and vessel owners were charged under the Magnuson-Stevens Act for intentionally making false prior notice of landing reports and signing false landing receipts to conceal IFQ sablefish violations. A \$91,472.00 NOVA was issued. Case pends.

AK1800146; F/V Woniya – Owner and operator were charged under the Magnuson Stevens Act for retaining IFQ Sablefish on a vessel in excess of the unharvested IFQ held by all IFQ permit holders onboard for the regulatory area in which the vessel was deploying fixed gear. A \$2,000 NOVA was issued. Settled for \$1,800.

AK1501338; F/V Iron Hide – Two individuals were sentenced under the Marine Mammal Protection Act (MMPA) for the take of Steller Sea Lions near Cordova. One was sentenced to five years of probation, three months of home incarceration, 400 hours of community service, a \$20,000 fine, and required to write an apology letter to be published in National Fisherman magazine. The other individual was sentenced to four year of probation, one

month home incarceration, 40 hours of community service and a \$5,000 fine.

USCG 2018 Enforcement summary

The primary at-sea fisheries enforcement assets of the USCG are the cutters, ranging in size from the 87-foot patrol boats up to 418-foot cutters. Patrol boats are limited in sea keeping abilities, and conduct the majority of enforcement inside of 50 nautical miles from shore¹⁶⁵. The 154-foot Fast Response Cutters (FRC) and 110-foot patrol boats in Alaskan waters provide regular law enforcement presence in the commercial, charter, subsistence, and recreational fishing fleets. However, patrol boats are limited in offshore operational effectiveness by weather. Since the commissioning of the two new FRC's in 2017, boarding rates have increased by 40%. This is due in large part to the FRCs increased capabilities for operating further offshore and in greater sea state conditions, allowing for more contact with the IFQ fleet. By 2023, District 17 (D17) anticipates the addition of four more FRC's throughout Alaska that will eventually completely replace the 110ft patrol boat fleet and greatly enhance the boarding capabilities.

Halibut and Sablefish Enforcement

D17 of the Coast Guard conducted 93 at-sea fisheries boardings on vessels targeting IFQ halibut and sablefish during the June to September 2018 period¹⁶⁶ with 13 safety violations on eight vessels and five fisheries violations issued to five vessels for no boarding ladder, two vessels failing to have hired master permit on board, IFQ permit not on board, no FFP on board.

In October-November 2018¹⁶⁷ the Coast Guard patrols completed 30 boardings on fishing vessels targeting halibut and sablefish during the reporting period. There were 12 boardings of IFQ sablefish vessels, with no violations detected. No voyages were terminated for significant safety concerns.

Coast Guard patrols completed 20 boardings on fishing vessels targeting halibut and sablefish during the December 2018 to March 2019 period¹⁶⁸. There were 5 boardings of IFQ sablefish vessels, with no violations detected. No voyages were terminated for significant safety concerns.

Coast Guard patrols completed 124 boardings on fishing vessels targeting halibut and sablefish during the April-May 2019 period¹⁶⁹. There were 13 boardings of IFQ sablefish vessels, with no violations detected. There were 37 boardings of vessels targeting both IFQ halibut and sablefish, with no violations detected. No voyages were terminated for significant safety concerns.

For the year 2018, across all fisheries enforced by USCG activities, the boarding and violation rate was as follows¹⁷⁰.

¹⁶⁵ <https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-ar03.pdf>

¹⁶⁶ <http://meetings.npfmc.org/CommentReview/DownloadFile?p=bd41d08b-6a3b-4825-b15e-b5d82b89c345.pdf&fileName=B6%20USCG%20Report.pdf>

¹⁶⁷ <http://meetings.npfmc.org/CommentReview/DownloadFile?p=48a4ad46-105c-4a72-9938-1690ec02101a.pdf&fileName=B6%20USCG%20Report.pdf>

¹⁶⁸ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=c0752dd1-92db-4d27-b405-dbb735d733bb.pdf&fileName=B6%20USCG%20Report.pdf>

¹⁶⁹ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=a0b54aad-14ee-4114-881b-daf45809b7ae.pdf&fileName=B6%20USCG%202019%20Report.pdf>

¹⁷⁰ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=5d0f7f93-f0e7-472c-b635-8184c34608fe.pdf&fileName=B6%20USCG%202018%20Year%20in%20Review.pdf>

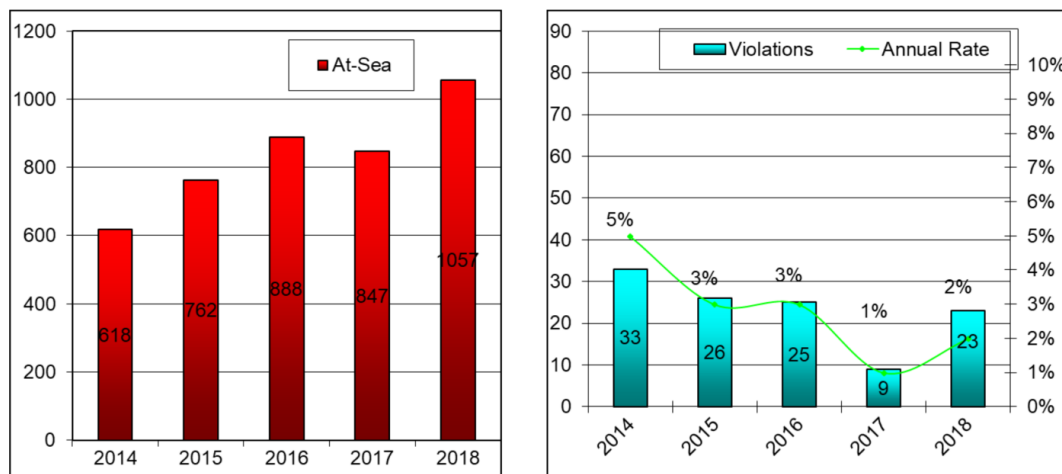


Figure 3. 2014-2018 USCG boardings (left) and fisheries violations in Alaska (including sablefish).

Accordingly the annual rate of violations appears to be quite small.

10.2./10.3/10.4. Fishing permit requirements:

All vessels harvesting sablefish must be authorized and permitted (by way of license and ITQ) to fish, in accordance with federal regulations, 50CFR679¹⁷¹. Data on the number and location of Alaskan of fishers, permits issued, Current Quota Share with Holders and QS Units - by species, area, vessel category, blocks, and CDQ compensation flag etc. can be can be found online at the NMFS website¹⁷². In 2018 there were 2576 IFQ quota share holders registered in the NMFS database. Data on fishing in Alaskan state-managed fisheries can be found in the State of Alaska's CFEC website¹⁷³.

¹⁷¹ <https://alaskafisheries.noaa.gov/fisheries-679regs>

¹⁷² [https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-\(ifq\)-halibut/sablefish-and-cdq-halibut-ifq](https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska#individual-fishing-quota-(ifq)-halibut/sablefish-and-cdq-halibut-ifq)

¹⁷³ https://www.cfec.state.ak.us/fishery_statistics/earnings.htm

8.5.2. Fundamental Clause 11

There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.

Number of Supporting clauses	3
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	N/A

Summarized evidence:

11.1/11.2/11.3. Enforcement policies and regulations, state and federal:

For federal fisheries, the sanction and violation framework is based on the Magnuson-Stevens Act (50CFR600.740 Enforcement policy) provides four basic enforcement remedies for violations: 1) issuance of a citation (a type of warning), usually at the scene of the offense, 2) assessment by the Administrator of a civil money penalty, 3) for certain violations, judicial forfeiture action against the vessel and its catch, 4) criminal prosecution of the owner or operator for some offenses. In some cases, the Magnuson-Stevens Act requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine.

On May 2, 2019, NOAA published a Notice of its intention to revise its “Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions” (Penalty Policy¹⁷⁴) previously published in 2011 and revised in 2014¹⁷⁵, and requested public comment on the proposed revisions. The comment period ended on June 3, 2019.

The 2011 and 2014 policies are now superseded. The revised Penalty Policy was effective June 24, 2019.

While there is significant variation in the maximum penalties and sanctions authorized under the statutes most commonly enforced by NOAA, the factors used to determine an appropriate penalty or permit sanction under these statutes are similar: the nature, circumstances, extent and gravity of the alleged violation; the alleged violator’s degree of culpability; the alleged violator’s history of prior offenses; the alleged violator’s ability to pay the penalty; and such other matters as justice may require. See 15 C.F.R. § 904.108(a). This Policy utilizes these principles to create a system for determining appropriate penalties.

Under the 2019 Penalty Policy, penalties and permit sanctions are based on two criteria: (1) A “base penalty” calculated by adding (a) an initial base penalty amount and permit sanction reflective of the gravity of the violation and the culpability of the violator and (b) adjustments to the initial base penalty and permit sanction upward or downward to reflect the particular circumstances of a specific violation; and (2) an additional amount added to the base penalty to recoup the proceeds of any unlawful activity and any additional economic benefit of noncompliance.

The penalty matrix for the Magnuson Stevens Act is presented in the following table.

¹⁷⁴ <https://www.gc.noaa.gov/enforce-office3.html>

¹⁷⁵ https://www.gc.noaa.gov/documents/Penalty%20Policy_FINAL_07012014_combo.pdf

Table 6. Offence level and penalty matrix for the MSFCMA; AMLRCA; PSMAA ¹⁷⁶, (2019 NOAA Penalty Policy).

		Level of Culpability			
		A Unintentional	B Negligent	C Reckless	D Intentional
Gravity Offense Level	I	Written warning-\$2,500	Written warning-\$5,000	\$2,500-\$7,000	\$7,000-\$10,000
	II	\$2,500-\$4,500	\$4,500-\$7,000	\$7,000-\$12,000	\$12,000-\$24,000
	III	\$5,000-\$12,000	\$12,000-\$18,000	\$18,000-\$24,000	\$24,000-\$48,000 Permit sanction of 5-20 days for subsequent violations*
	IV	\$12,000-\$18,000	\$18,000-\$30,000	\$24,000-\$48,000 Permit sanction of 10-20 days for subsequent violations*	\$48,000-\$72,000 Permit sanction of 20-60 days*
	V	\$18,000-\$30,000	\$30,000-\$48,000 Permit sanction of 10-20 days for subsequent violations*	\$48,000-\$72,000 Permit sanction of 20-60 days*	\$72,000-\$120,000 Permit sanction of 60-180 days*
	VI	\$30,000-\$48,000 Permit sanction of 5-20 days for subsequent violations*	\$48,000-\$72,000 Permit sanction of 20-60 days*	\$72,000-\$120,000 Permit sanction of 60-180 days*	\$120,000 -statutory maximum Permit sanction of 180-365 days*

* Permit sanctions may be assessed in conjunction with a civil penalty, in lieu of a civil penalty, or may be not assessed, depending on the facts and circumstances of a given case. Where permits allow for a certain amount of fishing quota per year (instead of fishing days), permit sanctions will be assessed as a percentage of the quota, at a rate based on days in the fishing season. For example, in a 365-day season, a rate of 0.27% for each day of permit sanction time will be applied (100% divided by 365 days per year is approximately 0.27% per day). As another example, if the season is 180 days long, then a rate of 0.55% would apply.

¹⁴ The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 *et seq.*), the Antarctic Marine Living Resources Convention Act (16 U.S.C. § 2431 *et seq.*), and the Port State Measures Agreement Act (16 U.S.C. § 7401 *et seq.*) all have a statutory maximum of \$189,427 per violation, per the February 7, 2019 adjustment (See 84 Fed. Reg. 2445). However, maximum civil penalties are adjusted annually for inflation.

In general, when a law enforcement officer or agent identifies a statutory or regulatory violation, he or she may pursue one of several available options, depending on the nature and seriousness of the violation. Where a violation is minor or is merely technical, having little to no impact on marine resources, the officer or agent may provide compliance assistance, issue a “Fix-It Ticket,” which provides the alleged violator with an opportunity to

¹⁷⁶ <https://www.gc.noaa.gov/documents/Penalty-Policy-CLEAN-June242019.pdf>

correct the violation within a certain amount of time and waives all penalties if the alleged violator takes appropriate curative action, or issue a Written Warning¹⁷⁷.

For certain violations, an OLE officer or agent may issue a “Summary Settlement offer” under authority delegated to OLE by the NOAA General Counsel. Under the terms of a Summary Settlement offer, an alleged violator receives a document explaining the alleged violation and the alleged violator may resolve the matter expeditiously by paying a reduced penalty.

Summary Settlement schedules developed by the Office of General Counsel, with input from the NOAA Office of Law Enforcement and, often, the relevant program office, provide a listing of violations that OLE is authorized to handle via the Summary Settlement process. Where an officer or agent determines that an alleged violation is significant, or where an alleged violator has one or more prior violations, or does not pay a proposed summary settlement amount, the officer or agent will refer the case to the NOAA General Counsel’s Enforcement Section for further action. U.S. Coast Guard personnel, state and territorial officers operating under Cooperative Enforcement Agreements, and law enforcement personnel from the U.S. Fish and Wildlife Service, Customs and Border Protection, or other federal agencies may also uncover potential violations, and where appropriate, may submit proposed cases to OLE to determine the proper action to take.

The new Alaska Region Summary Settlement and Fix it schedule is effective since June 27th 2019¹⁷⁸ and lists penalties amounts for 1st, 2nd and 3rd offences. Specific penalties relevant to the IFQ sector are also listed in detail. Please refer to those for further details.

¹⁷⁷ <https://www.gc.noaa.gov/documents/Penalty-Policy-CLEAN-June242019.pdf>

¹⁷⁸ <https://www.gc.noaa.gov/gces/2019/AK-SSS-Final-6-27-19.pdf>

8.6. Section F. Serious Impacts of the Fishery on the Ecosystem

8.6.1. Fundamental Clause 12

Considerations of fishery interactions and effects on the ecosystem shall be based on best available science, local knowledge where it can be objectively verified and using a risk based management approach for determining most probable adverse impacts. Adverse impacts on the fishery on the ecosystem shall be appropriately assessed and effectively addressed.

Number of Supporting clauses	16
Supporting clauses applicable	N/A
Supporting clauses not applicable	N/A
Overall level of conformity	Full Conformance
Non Conformances	None

Summarized evidence:

12.1. Assessment of environmental effects on target stocks and ecosystem

The impacts of environmental factors on sablefish and other fish or non-fish species associated or dependent upon them continue to be assessed appropriately by the NMFS/NPFMC and ADFG.

The 2018 sablefish SAFE report highlights some key information relating to environmental effects on target stocks and ecosystem. In it, the authors highlight that¹⁷⁹ there are concerns about increased variability and decreased predictability of the ecosystem in Alaska. For example, recent stock assessment estimates of GOA Pacific cod showed an enormous 2012 year class. This estimate declined severely when the 2015 - 2017 GOA bottom trawl survey biomass estimates and the 2016 – 2018 longline survey abundance estimates were included in the assessment. This severe decline could have been related to unforeseen environmental factors. A similar phenomenon could happen for sablefish because both larval, juvenile, and adult sablefish are well known to be sensitive to ocean temperature for both optimal growth and reproduction (e.g., Sogard and Olla 1998, Appendix 3C of 2018 SAFE report).

It is possible that the increased recruitment in 2014-2016 is due to the marine heat wave, perhaps due to higher productivity and increased food supply for larval sablefish (or competitive release because of mortality or movement of other predators from the marine heat waves). If marine heat waves become a regular occurrence perhaps this bodes well for future sablefish recruitment, but if this is a one-time unrelated recruitment success, then it is critical that these fish survive to contribute to the depleted spawning biomass. However, the effects of the marine heat wave and changing ecosystem have not yet been evaluated carefully for sablefish. Fish condition has declined since the appearance of these large year classes, and is much worse than during the last period of larger recruitments (1997 – 2000) which may affect the ability of these fish to survive or mature. Given the current uncertainty in the ecosystem, the stock assessment authors rated the environmental/ecosystem concern for sablefish as level 2, indicating a substantially increased concern.

The 2018 SAFE report for sablefish indicates that the ecosystem effect on the fishery were summarized in the 2017 SAFE, shown below. Overall, ecosystem effects on the stock were not considered of concern¹⁸⁰.

¹⁷⁹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

¹⁸⁰ <https://www.afsc.noaa.gov/REFM/Docs/2017/GOASablefish.pdf>

Table 7. Ecosystem effects on the sablefish stock (Hanselman et al 2017).

<i>Indicator</i>	<i>Observation</i>	<i>Interpretation</i>	<i>Evaluation</i>
ECOSYSTEM EFFECTS ON STOCK			
<i>Prey availability or abundance trends</i>			
Zooplankton	None	None	Unknown
<i>Predator population trends</i>			
Salmon	Decreasing	Increases the stock	No concern
<i>Changes in habitat quality</i>			
Temperature regime	Warm increases recruitment	Variable recruitment	No concern (can't affect)
Prevailing currents	Northerly increases recruitment	Variable recruitment	No concern (can't affect)

The NMFS' Alaska Fisheries Science Center also publishes yearly Ecosystem Status Reports that provide links between ecosystem research and fishery management. Key findings from the 2018 status reports are briefly summarized below.

Larval sablefish sampled by neuston net in the eastern Bering Sea fed primarily on copepod nauplii and adult copepods (Grover and Olla 1990). Gao et al. (2004) studied stable isotopes in otoliths of juvenile sablefish from Oregon and Washington and found that as the fish increased in size they shifted from midwater prey to more benthic prey. In nearshore southeast Alaska, juvenile sablefish (20-45 cm) diets included fish such as Pacific herring and smelts and invertebrates such as krill, amphipods and polychaete worms (Coutr  et al. 2015). In late summer, juvenile sablefish also consumed post-spawning pacific salmon carcass remnants in high volume, revealing opportunistic scavenging (Coutr  et al. 2015)¹⁸¹. Sablefish is an omnivorous predatory fish of the continental slope of the northern Pacific¹⁸². As such, environmental conditions have an effect on the sablefish resource and on other associated species in the ecosystem.

Northern Bering Sea¹⁸³. Without sea ice and sea ice melt consequently (freshwater), there was no salinity component to the stratification of the water column. The water column was well-mixed from top to bottom and resulted in a weak and delayed spring bloom (~1 month later than typical). A weak bloom cannot fuel the next link in the food chain, the zooplankton. Their abundances and lipid quality were low (lower nutritional value). Anecdotally, large copepods were predominantly *Eucalanus bungii*, not a lipid-rich species. Bottom trawl, surface trawl, and acoustic surveys again documented the presence of pollock and Pacific cod in the northern Bering Sea. Pollock biomass (total weight of all fish in the population) declined slightly from 2017 to 2018. However, more than 50% of Pacific cod biomass in the eastern Bering Sea was found over the northern portion of the shelf. Juvenile forage fish (e.g., pollock, capelin, herring), an important prey resource for birds and mammals, all showed downward trends in abundance over the northern portion of the shelf in 2018.

Southeastern Bering Sea¹⁸⁴. By late spring, small copepod abundances were at one of the highest levels recorded while krill abundances were low. A summer acoustic survey indicated low densities of krill, continuing a trend of low abundance of this important prey resource since 2012. Reduced energy transfer from the prey base to the top-level predators likely contributed to poor body condition and observed mortality events (i.e., mammals and seabirds). The bottom trawl survey indicated that Pacific cod and pollock abundances were below average. An index of overall biomass of demersal (living closer to the seafloor) and benthic (living on the bottom of the seafloor) fish and invertebrates (largely driven by biomass of pollock) dropped sharply between 2017 and 2018. Estimates of age-1 predation mortality remain above average for pollock while Pacific cod and arrowtooth

¹⁸¹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

¹⁸² <http://www.fishbase.org/Ecology/FishEcologySummary.php?StockCode=528&GenusName=Anoplopoma&SpeciesName=fimbria>

¹⁸³ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf>

¹⁸⁴ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf>

flounder mortality were at and below the mean, respectively. The biomass of some species groups (e.g., urchins, sand dollars) continued an increasing trend in 2018 while many commercial crab stocks declined. The multivariate seabird breeding index remains below the long term mean for the Bering Sea as a whole, indicating that overall, seabirds bred later and had poor reproductive success in 2018.

Aleutian Islands¹⁸⁵. The Aleutian Islands region experienced suppressed storminess through fall and winter 2017/2018 across the region. The Alaska Stream appears to have been relatively diffuse on the south side of the eastern Aleutian Islands. Although the sea surface temperatures cooled in 2018, relative to the 2014–2017 warm period, the overall temperature was still warm due to heat retention throughout the water column. Overall, the Aleutian ecosystem has shown a response to the recent warm years that has similar characteristics to those in the Gulf of Alaska. As the water column and surface temperatures shifted to anomalously warm in 2013/2014, the mean size of the copepod community became smaller than the long term mean, indicating that smaller-bodied copepod species became relatively abundant as is expected. In general, planktivorous seabirds have had fewer reproductive failures during these warm years relative to piscivorous seabirds, indicating that zooplankton resources were largely sufficient while forage fish were periodically lacking. The pelagic fish foraging guild biomass decreased slightly from 2016 to 2018 in the Western and Central Aleutian Islands. On the other hand, Pollock, Atka mackerel, Pacific ocean perch, and northern rockfish in the Eastern Aleutian Islands all contributed to the increase in fish pelagic forager biomass from 2016 to 2018. This represents a gradual increase since the low estimate in 2012.

Gulf of Alaska¹⁸⁶. The North Pacific atmosphere-ocean system in 2017–2018 was similar to that from the year before, as seen in the continuation of largely average conditions in the western Gulf of Alaska following the end of the 2014–2016 marine heatwave. The limited indicators of zooplankton abundance available for 2018 show mixed signals. The biomass of copepods and euphausiids during May along the Seward line was above average. This was the fourth year of abundant copepods, but the first for euphausiids since 2014, indicating an increase in higher quality zooplankton prey for predators. Indications of groundfish biomass trends in 2018, an “off-year” for the GOA-wide bottom trawl surveys, are based on ADF&G surveys off Kodiak Island over Barnabus Gully and in two inshore bays. Catch rates were below the long-term mean for arrowtooth flounder, Pacific halibut, Pacific cod, skates, and flathead sole. Catch rates were above the long-term mean for pollock offshore, but below at the inshore bays. Upper trophic marine birds and mammals appear to continue to show signs of negative impacts from the marine heatwave.

ACLIM. The Alaska Climate Integrated Modeling project (ACLIM) is a NOAA sponsored interdisciplinary collaboration to project and evaluate climate impacts on marine fisheries in the Bering Sea, Alaska¹⁸⁷. It connects research on global climate and socioeconomic projections to regional circulation, climate enhanced biological models, and socio-economic and harvest scenarios. To evaluate a range of possible future conditions, scientists are evaluating the effectiveness of existing fishery management actions under 11 different climate scenarios (spanning high and low CO2 futures expected to lead to different degrees of warming). They will also look at how human fishing fleets and communities can adapt to climate change through climate-informed management.

Results of the ACLIM have been presented to the Council. In December 2018 the North Pacific Council adopted a Bering Sea Fishery Ecosystem Plan (BS FEP). Under the overarching guidance of the Council’s Ecosystem Approach Statement, the BS FEP sets goals and objectives for the Bering Sea ecosystem which direct the process by which the Council should manage fisheries, monitor the ecosystem, and prioritize new research through identification

¹⁸⁵ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysAI.pdf>

¹⁸⁶ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/ecosysGOA.pdf>

¹⁸⁷ <https://www.fisheries.noaa.gov/alaska/ecosystems/alaska-climate-integrated-modeling-project>

of projects, called “Action Modules”¹⁸⁸.

Accordingly, in June 2019¹⁸⁹, the Council sought nominations for membership for two taskforces to work on two Action Modules, or projects that implement the Council’s Bering Sea FEP. One of the two is the Climate Change Action Module: tasked with evaluating short- and long-term effects of climate change on fish, fisheries, and the Bering Sea ecosystem, and develop management considerations. The Bering Sea FEP establishes a framework for the Council’s continued progress towards ecosystem-based fishery management (EBFM) of the Bering Sea fisheries, and relies and builds on the Council’s existing processes, advisory groups, and management practice. The FEP was prepared by the Bering Sea Fishery Ecosystem Plan Team, which is an interagency group of Council, NMFS, and other Federal, State and IPHC staff, with contributions from other Council and NMFS staff, and with extensive input from the Council’s Ecosystem Committee. The module will leverage ongoing studies, such as ACLIM and an Alaska species vulnerability assessment, and consider how information from those existing studies can better filter into the Council process.

Aside from the NMFS ecosystem based research, there are a number of other programs, initiatives and plans initiatives devoted to understanding the ecosystem dynamics as they relate to fisheries.

The North Pacific Research Board (NPRB) has funded long-term monitoring (LTM) projects since 2002 through its annual Request for Proposals (RFPs) and as part of its Integrated Ecosystem Research Program with projects in the Bering Sea and Gulf of Alaska¹⁹⁰. The NPRB Long-term Monitoring Program was launched in 2013. The board committed an initial \$400,000 per year for five years to this effort (a total of \$2 million). The first long-term monitoring projects were funded in 2014 and will continue for a minimum of five years.

The NPRB’s Bering Sea Project¹⁹¹ was founded upon the implementation and science plans for the Bering Ecosystem Study (“BEST”) supported by the National Science Foundation (NSF), and the Bering Sea Integrated Ecosystem Research Program (“BSIERP”) supported by the NPRB. The overarching goal of the two programs was to increase our understanding of the processes that maintain the structure and function of the Bering Sea marine ecosystem, and to learn how natural and anthropogenic variation in sea ice and other physical forcing mechanisms may produce natural, economic, sociological and cultural impacts to the ecosystem. Major direct funding was provided by the National Science Foundation (“Bering Ecosystem Study”; ~\$26M) and the North Pacific Research Board (“Bering Sea Integrated Ecosystem Research Program”, BSIERP; ~\$16M). Substantial in-kind support (~\$15M) was provided by other agencies.

The \$17.6 million Gulf of Alaska ecosystem study examines the physical and biological mechanisms that determine the survival of juvenile groundfishes in the Gulf of Alaska¹⁹². From 2010 to 2014, oceanographers, fisheries biologists and modelers studied commercially and ecologically important groundfishes, specifically walleye pollock, Pacific cod, Pacific ocean perch, sablefish and arrowtooth flounder, during their first year of life as these fish are transported from offshore areas where they are spawned to nearshore nursery areas. A synthesis was planned from September 2015 through February 2018. The synthesis is building upon the results of the field program and producing products that apply the results to fisheries management.

¹⁸⁸ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=c334ad33-4139-4b5a-b205-a8b7c5028562.pdf&fileName=D6%20Final%20BS%20FEP%20Jan%202019.pdf>

¹⁸⁹ <https://www.npfmc.org/feptaskforce/>

¹⁹⁰ <https://www.nprb.org/long-term-monitoring-program/about-the-program/>

¹⁹¹ <https://www.nprb.org/bering-sea-project/about-the-project/>

¹⁹² <https://www.nprb.org/gulf-of-alaska-project/about-the-project/>

12.2 Research and Institutional capacity for environmental impact assessment

The NPFMC and NOAA/NMFS routinely carry out assessments and research related to fishery impacts on ecosystems and habitats and how environmental factors affect the fishery. Findings and conclusions are published in the Ecosystem section of the SAFE documents, annual Ecosystem Considerations documents (summarized under clause 12.1), and various other research reports.

In terms of impact assessment, it is a requirement that every time a major change is proposed to regulations affecting fisheries management such as the revision of a fishery management plan, a federal National Environmental Policy Act (NEPA) analysis is initiated. Using the NEPA process, agencies evaluate the environmental and related social and economic effects of their proposed actions. Agencies also provide opportunities for public review and comment on those evaluations¹⁹³. The most recent NEPA compliant Regulatory Impact Review/ Environmental Assessment was performed in regards to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018¹⁹⁴.

Impact assessments are available for all major elements affected by the sablefish fishery. Those include bycatch, ETP species, and habitat effects.

The bycatch from the sablefish fishery was also assessed in 2018, full details of which were reported in the 2018 sablefish SAFE report¹⁹⁵ (Hanselman et. al. 2018). Giant grenadiers, a non-target species (Ecosystem Component in both the GOA and BSAI FMPs), continue to make up the bulk of the nontarget species bycatch. The species is not considered at risk of depletion or depleted.

In terms of seabirds affected, a 2018 report from NOAA Fisheries monitored bycatch seabirds and of ESA short-tailed albatross, where no catches were reported for the year. The report estimated seabird bycatch for the combined groundfish and halibut fisheries (6,075 birds) and conclude that it was below the 2010 through 2018 annual average of 6,492 birds. The report further explained that consistent with results for all gear types combined, most 2018 estimated seabird bycatch by demersal longline gear was Northern fulmar (55 percent; 2,794 birds); gulls (15 percent; 781 birds); and shearwaters (13 percent; 641 birds).

Marine mammals interactions are summarized by NOAA Fisheries annually, in their marine mammal stock assessment reports in U.S. waters¹⁹⁶. The sablefish fisheries are known to interact with Steller sea lions and sperm whales, and further information has been summarized in the clauses below.

The EFH Environmental Impact Statement (EFH EIS) (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 (MSST)¹⁹⁷. The stock continues to be above its MSST level in 2018. The 2015 Essential Fish Habitats (EFH) 5-year review that concluded in June 2017 evaluated new information on EFH, concluded that no change to the conclusions of the evaluation of fishing effects on EFH was warranted based on new information. In June 2018 a final environmental assessment was released relating to EFH as Omnibus amendments applying to: Amendment 115 to the FMP for the Groundfish

¹⁹³ <https://www.epa.gov/nepa/what-national-environmental-policy-act>

¹⁹⁴ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=2dcf0126-26d7-478a-a2c6-c8f1dc234d58.pdf&fileName=C4%20Halibut%20Retention%20in%20BSAI%20Pots%20Public%20Review%20-%20pdf%20version.pdf>

¹⁹⁵ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAsablefish.pdf>

¹⁹⁶ [https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-\(eared-seals-or-fur-seals-and-sea-lions\)](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-(eared-seals-or-fur-seals-and-sea-lions))

¹⁹⁷ <https://repository.library.noaa.gov/view/noaa/17392>

Fishery of the BSAI Area, Amendment 105 to the FMP for Groundfish of the GOA, among other FMPs¹⁹⁸.

In terms of habitat impacts, bottom trawl impacts, which are the most significant have been addressed in Alaska by requires raised bobbins in demersal trawl targeting flatfish and cod in the BSAI and the Central GOA. Research has demonstrated that this gear modification reduces unobserved mortality of red king crab, Tanner crab, and snow crab, reducing contact with the ocean floor by as much as 90%¹⁹⁹. In addition to this there are extensive habitat closures in Alaska²⁰⁰.

12.3./12.4/12.5/12.6. Fishery Interaction with the ecosystem, non-target catches, discards, associated, dependent or endangered species

The 2018 SAFE²⁰¹ reported extensively on the sablefish fishery effects on the ecosystem, including non-target catches, discards, and associated, dependent or endangered species. We provide a direct summary of this information here below.

Sablefish Discards

Sablefish discards by target fisheries are available for hook-and-line gear and other gear combined. From 1994 to 2004 discards averaged 1,357 t for the GOA and BSAI combined (Hanselman et al. 2008). Since then, discards have been lower, averaging 847 t during 2010 - 2018. Discard rates are generally higher in the GOA than in the BSAI. In 2017 and 2018 there was a large increase in discards in the non-halibut gears, mostly because of the high encounter rates with young fish. A recent discussion paper on sablefish discard allowance (Armstrong et al., 2018) provides information on biological and economic impacts for introducing minimum size regulations for sablefish. In 2018, there was a marked increase in sablefish landings for small (1-3 pound) sablefish in the BSAI fisheries, most notably the midwater pollock fishery, and an associated large decrease in value for these same sized fish (Armstrong et al., 2018). This size range is the likely age for the 2014 to 2016 year classes (age 2-4).

Since April 2018, a regulatory change that would allow discarding of small sablefish in the Individual Fishing Quota (IFQ) sablefish fishery has been discussed as a potential tool to mitigate fishery and population impacts of very large sablefish year classes²⁰². This change was first suggested by IFQ stakeholders following enormous increases in survey catches of small sablefish from the 2014 year class, the largest on record. In October 2018, the Council has reviewed an Initial discussion paper that evaluated a range of biological, economic, and management considerations related to a discarding allowance, and which pointed out that growth of fish from the 2014 year class into typical market categories would outpace the timing of the proposed management change.

After review of the October 2018 discussion paper, the Council passed a motion instructing staff to gather more information on the possible implications of permitting sablefish discarding, identifying in the motion nine areas of concern for staff to focus on. In April 2019, the NPFMC motioned to initiate an expanded discussion paper to gather more information on the possible implications of modifying the requirement (e.g. to proxy DMR, gear specific DRMs) to retain small sized sablefish and to explore the implications of these changes on overall stock abundance and allocations to trawl and IFQ fisheries.

Bycatch in the sablefish fishery (observer data)

¹⁹⁸ <https://repository.library.noaa.gov/view/noaa/18204>

¹⁹⁹ <https://www.fisheries.noaa.gov/resource/document/ea-rir-frfa-amendment-94-bsai-groundfish-fmp-require-trawl-sweep-modification-bs>

²⁰⁰ <https://www.npfmc.org/habitat-protections/gear-modifications/>

²⁰¹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

²⁰² <https://meetings.npfmc.org/CommentReview/DownloadFile?p=b40b8eb3-a783-421c-9c3a-4497b1432159.pdf&fileName=D8%20Action%20Memo.pdf>

The largest bycatch group in the sablefish fishery²⁰³ is GOA thornyhead rockfish (672 t/year, 215 t discarded). Sharks and skates are also taken in substantial numbers and are mostly discarded. Giant grenadiers, a non-target species that is an Ecosystem Component in both the GOA and BSAI FMPs, make up the bulk of the nontarget species bycatch, with 2013 the highest in recent years at 11,554 t but has decreased by more than half in the last few years.

Other non-target taxa that have catches over one ton per year are corals, snails, sponges, sea stars, and miscellaneous fishes and crabs. PSCs in the targeted sablefish fisheries are dominated by halibut (331 t/year on average, mostly GOA) and golden king crab (16,025 individuals/year on average, mostly BSAI). Crab catches are highly variable, probably as a result of relatively low observer sampling effort in sablefish fisheries.

Table 8. Bycatch (t) of FMP Groundfish species in the targeted sablefish fishery averaged from 2012- 2017*. Source: AKFIN, October 1, 2018.

Species	Hook and Line			Other Gear			All Gear		
	D	R	Total	D	R	Total	D	R	Total
GOA Thornyhead Rockfish	208	432	640	7	25	32	215	457	672
Shark	454	0	455	0	0	0	454	0	455
GOA Shortraker Rockfish	173	83	255	12	2	14	185	84	269
Arrowtooth Flounder	132	12	145	63	18	81	196	30	226
GOA Skate, Other	162	2	164	1	0	1	163	2	165
GOA Skate, Longnose	157	7	165	1	0	1	158	7	166
GOA Rougheye Rockfish	92	78	170	1	2	3	93	80	172
Other Rockfish	59	59	118	2	3	5	60	62	123
Pacific Cod	57	29	86	0	9	9	58	38	95
BSAI Skate	46	1	47	0	0	0	47	1	47
GOA Deep Water Flatfish	12	0	12	22	7	28	33	7	40
Greenland Turbot	16	11	27	4	1	5	20	12	32
BSAI Kamchatka Flounder	13	1	15	4	11	15	18	12	30
Pollock	2	0	2	9	13	22	11	13	24
Sculpin	12	0	12	1	0	1	13	0	13
BSAI Other Flatfish	5	0	5	1	10	11	6	10	16
GOA Demersal Shelf Rockfish	1	10	11	0	0	0	1	10	11
BSAI Shortraker Rockfish	5	3	8	0	0	0	6	3	8
GOA Skate, Big	6	0	7	0	0	0	6	0	7
Pacific Ocean Perch	2	0	2	1	6	7	3	7	9
GOA Rex Sole	0	0	0	7	1	8	7	1	8
Octopus	4	0	4	1	0	1	5	0	5
GOA Shallow Water Flatfish	4	0	4	1	1	2	4	1	5

*Other = Pot and trawl combined because of confidentiality.

²⁰³ <https://www.fisheries.noaa.gov/resource/data/2018-assessment-sablefish-stock-alaska-0>

Table 9. Bycatch of nontarget species and HAPC biota in the targeted sablefish fishery.

Source: NMFS AKRO Blend/CAS_AKFIN, October 1, 2018.

Group Name	2011	2012	2013	2014	2015	2016	2017	2018
Benthic urochordata	0.13	1.25	0.00	0.00	0.49	0.00	1.06	0.91
Brittle star unidentified	0.48	4.66	0.11	0.67	2.09	0.34	0.59	0.34
Corals Bryozoans	5.75	7.66	12.70	5.17	4.55	5.96	1.61	9.61
Eelpouts	0.64	0.63	1.14	0.79	0.24	1.08	2.35	10.92
Grenadiers	8,640	8,586	11,554	5,916	5,789	7,346	5,623	4,041
Invertebrate unidentified	2.29	7.78	0.18	0.12	0.53	0.21	0.19	0.59
Misc crabs	8.51	6.77	5.83	6.40	3.50	4.87	5.13	4.14
Misc fish	15.92	10.98	31.21	28.31	17.58	15.99	17.38	21.64
Scypho jellies	0.68	0.00	0.00	5.51	0.24	0.18	0.02	0.14
Sea anemone unidentified	3.48	1.03	0.95	3.07	14.11	1.79	2.11	8.11
Sea pens whips	1.59	0.28	0.38	2.33	2.84	1.29	1.14	0.39
Sea star	3.95	3.13	15.73	11.58	9.68	8.99	21.83	9.08
Snails	20.02	12.25	8.83	3.66	3.37	0.18	2.88	2.37
Sponge unidentified	2.16	0.98	3.39	1.67	3.52	0.50	0.72	0.29
State-managed Rockfish	0.00	0.03	0.12	0.12	0.09	0.22	0.43	0.02
Urchins, dollars, cucumbers	0.26	0.79	0.87	0.79	2.49	0.22	0.22	1.11

Bycatch of other species in the target sablefish fleet from EM data

One of the key updates of the 2018 North Pacific Observer Program Report was that²⁰⁴ 2018 was the first year that EM was integrated into the Observer Program under regulations.

Ninety-seven longline and 15 pot vessels participated in the 2018 EM project, completing 250 longline trips and 45 pot trips. EM data was reviewed for 83 longline vessels covering 174 trips, including 94 halibut trips, 10 Pacific cod trips, and 70 sablefish trips containing a total of 1,875 hauls. The data spanned 532 halibut sea days, 38 Pacific cod sea days, and 435 sablefish sea days for a total of 1,005 sea days with trips averaging 5.8 days across all fisheries.

Table 10. Summary of EM monitored fishing activity for 2018.

	Halibut Target		Pacific Cod Target		Sablefish Target			All Fisheries
	Fixed Hook Longline	Snap Longline	Fixed Hook Longline	Snap Longline	Fixed Hook Longline	Snap Longline	String Pot	
Vessels	29	31	1	6	32	7	-	83
Trips	41	53	1	9	61	9	-	174
Hauls	514	526	13	114	611	97	-	1,875
Reviewed Hauls	200	205	9	79	235	42	-	770
Sea Days	243	289	3	35	375	60	-	1,005
Average Trip Length (Days)	5.9	5.5	3.0	3.9	6.1	6.7	-	5.8

Since total catch accounting is the goal for EM in the Southeast Alaska fixed gear sectors, all species of retained or discarded marine organisms were reported and summarized to the target fishery level. Video reviewers identified a high proportion of retained and discarded catch to species. Exceptions were primarily those species that reviewers have been instructed to identify to a group level because they are too similar to reliably differentiate (e.g., shortraker rockfishes, and arrowtooth/Kamchatka flounders). There were also a small proportion of rockfish that were recorded as “Rockfish – unidentified” or “Rockfish – Small Red unidentified”.

²⁰⁴ <https://www.fisheries.noaa.gov/resource/document/north-pacific-observer-program-2018-annual-report>

Some of the most common bycatch (retained and/or discarded) in the sablefish fleet component using EM included Thornyhead, Shortspine Thornyhead, Shortraker/Rougheye rockfish, grenadier, spiny dogfish and soft snout skate.

An assessment on the overfishing / overfished status of common FMP groundfish bycatch species in the sablefish fishery (e.g. all those species above 50 tonnes) is provided in the table below based on the latest available stock assessment information for these species. Grenadier status is also provided since it makes up the bulk of the sablefish nontarget species bycatch. We also integrated information for other species recorded in the EM fleet component. None of these stocks appears to be exploited above sustainable levels.

Table 11. Latest status of common bycatch species caught in the Alaska sablefish fishery.

Species	GOA	BSAI
Grenadiers	Not subject to overfishing as assessed last in 2016 in GOA and BSAI ²⁰⁵ . The next assessment will take place in 2020 (pers. comm. Cara Rodgveller, July 2019).	Not subject to overfishing as assessed last in 2016.
Thornyhead stock complex	No overfishing determined for 2017 ²⁰⁶ .	N/A
Sharks	Shark complex (spiny dogfish, Pacific sleeper shark, salmon shark and other/unidentified sharks). No overfishing determined for 2017 ²⁰⁷ .	Shark complex (Pacific sleeper shark, spiny dogfish, salmon shark, and other/unidentified sharks) No overfishing determined for 2017 ²⁰⁸ .
Shortraker rockfish	No overfishing determined for 2016. ²⁰⁹	N/A
Rougheye rockfish	No overfishing determined for 2017, and no overfished condition or approaching overfished state in 2017. ²¹⁰	No overfishing determined for 2017, and no overfished condition or approaching overfished state in 2017 ²¹¹ .
Arrowtooth flounder	The 2017 stock assessment indicates no overfishing or overfished stock in 2017 ²¹² .	The 2018 stock assessment indicates the stock was not overfished in 2017 ²¹³ .
Skate	No overfishing determined for the skate stock complex in 2016 ²¹⁴ .	No overfishing or overfished status for the skate stock complex in 2017 ²¹⁵ .
Longnose skate	No overfishing determined for 2016.	N/A
Soft snout skate	No overfishing in 2017 (part of other skate complex). ²¹⁶	No overfishing in 2017 ²¹⁷ (part of other skate complex).
Rougheye rockfish	No overfishing determined for 2017, and no overfished status in 2016 ²¹⁸ .	N/A

²⁰⁵ <https://www.afsc.noaa.gov/REFM/Docs/2016/BSAIntro.pdf>

²⁰⁶ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAthorny.pdf>

²⁰⁷ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAshark.pdf>

²⁰⁸ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAishark.pdf>

²⁰⁹ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAshortraker.pdf>

²¹⁰ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOArougheye.pdf>

²¹¹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIrougheye.pdf>

²¹² <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAatf.pdf>

²¹³ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIatf.pdf>

²¹⁴ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAskate.pdf>

²¹⁵ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIaskate.pdf>

²¹⁶ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAskate.pdf>

²¹⁷ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIaskate.pdf>

²¹⁸ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOArougheye.pdf>

Species	GOA	BSAI
Pacific cod	The 2017 stock assessment indicates no overfishing or overfished stock in 2017. ²¹⁹	No overfishing in either EBS ²²⁰ or AI ²²¹ in 2017. Stock not overfished in EBS in 2017.
Spiny dogfish	No overfishing occurred in 2017 as assessed in 2018. ²²²	No overfishing occurred in 2017 as assessed in 2018 (as part of the shark complex) ²²³ .

Seabird bycatch

The short-tailed albatross is currently listed as Endangered under the Endangered Species Act and is protected by the Migratory bird Treaty Act which are implemented by the U.S. Fish and Wildlife Service (USFWS)²²⁴. This species is of relevance to this fishery and assessment. In a 2018 report, NOAA Fisheries monitored bycatch of short-tailed albatross to assess compliance with the incidental take limit established by the U.S. Fish and Wildlife Service (USFWS)²²⁵ in its 2015 biological opinion on the effects of the groundfish and halibut fisheries of Alaska on endangered short-tailed albatross (USFWS 2015). USFWS anticipated up to six short-tailed albatross could be reported taken biannually (every 2 years) as a result of groundfish / halibut fishing activities using demersal longline or trawl gear in the BSAI and GOA FMP areas.

This report estimates seabird mortality associated with Federal groundfish (2010 through 2018) and halibut (2013 through 2018) fisheries off Alaska and provides detailed descriptions of bycatch in 2018. The 2018 estimated seabird bycatch for the combined groundfish and halibut fisheries (6,075 birds) was below the 2010 through 2018 annual average of 6,492 birds.

Consistent with results for all gear types combined, most 2018 estimated seabird bycatch by demersal longline gear was Northern fulmar (55 percent; 2,794 birds); gulls (15 percent; 781 birds); and shearwaters (13 percent; 641 birds). However, in 2018, total bycatch of these species was comparatively lower when compared to the 2010 through 2017 times series average. In the 2018 analysis, 68 percent (4,137 birds) of estimated seabird bycatch occurred in the Bering Sea, 20 percent (1,212 birds) in the GOA, and 12 percent (726 birds) in the Aleutian Islands. These proportions are relatively similar to the 2010 through 2017 average proportions.

Seabird mitigation measures for longline vessels were implemented by regulations in 2004 and required paired or single streamer lines for vessels larger than 55 feet length overall, which accounted for the vast majority of seabird bycatch. Since then, annual seabird bycatch in the fisheries using demersal longline gear has remained below 10,000 birds, dropping as low as 2,100 birds in 2014.

The 2013 through 2018 bycatch estimates included two sources of seabird mortality that previous years did not include: vessels less than 60 feet length overall in the groundfish fisheries and the entire halibut fishery. Including these smaller vessels and the halibut fishery provide a better estimate of overall albatross bycatch in Alaska. The estimated 2013 through 2018 albatross bycatch in the sablefish fisheries (2,887 birds) surpassed the estimated contribution from the halibut fishery (789 birds) (Table 12). Although albatross habitat overlaps with both the sablefish and the halibut fisheries, albatross spend more time over continental shelf break and slope habitat (Fischer et al. 2009; Suryan et al. 2007), which is most commonly associated with the sablefish fishery; the halibut

²¹⁹ <https://www.fisheries.noaa.gov/resource/data/2018-assessment-pacific-cod-stock-gulf-alaska>

²²⁰ <https://www.fisheries.noaa.gov/resource/data/2018-assessment-pacific-cod-stock-eastern-bering-sea>

²²¹ <https://www.fisheries.noaa.gov/resource/data/2018-assessment-pacific-cod-stock-aleutian-islands>

²²² <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/GOAshark.pdf>

²²³ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAishark.pdf>

²²⁴ <http://www.adfg.alaska.gov/index.cfm?adfg=wildliferesearch.shorttailedalbatross>

²²⁵ <https://repository.library.noaa.gov/view/noaa/20231>

fishery generally occurs in shallower water on the shelf. Thus, more interactions between albatross and sablefish vessels would be expected, unless albatross or fisheries shift their distribution in a given year.

Table 12. Estimated demersal longline seabird bycatch in the sablefish target fishery, 2010 through 2018*. (Modified from table 13 in Krieger et al. 2019²²⁶).

Target	Species/Species Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	Grand Total	Ann Avg.
Sablefish	Black-footed Albatross	0	7	0	13	0	21	0	0	0	41	5
	Gulls	90	28	13	12	0	37	0	0	0	180	20
	Laysan Albatross	96	9	90	110	54	123	75	0	0	557	62
	Northern Fulmar	28	21	0	30	58	92	0	0	0	229	25
	Shearwaters	6	35	0	0	71	27	0	0	0	139	15
	Unidentified Albatrosses	0	0	0	0	23	0	0	0	0	23	3
	Unidentified Birds	6	0	0	0	0	0	0	0	0	6	1
	Total	226	100	103	165	206	300	75	0	0	1,175	131
Sablefish	Black-footed Albatross	53	204	82	385	228	343	171	423	232	2,121	236
	Cormorants	0	0	0	0	0	28	0	0	0	28	3
	Gulls	134	549	26	35	8	111	90	250	57	1,260	140
	Laysan Albatross	76	166	17	69	24	22	44	0	22	440	49
	Northern Fulmar	19	810	0	109	0	36	19	64	137	1,194	133
	Shearwaters	0	62	0	0	0	5	20	0	0	87	10
	Unidentified Albatrosses	0	0	0	28	0	0	0	0	58	86	10
	Unidentified Birds	0	9	0	0	0	28	19	0	0	56	6
	Total	282	1,800	125	626	260	573	363	737	506	5,272	586

* The top part of the table is for the BSAI and the bottom part for the GOA

Status

Northern fulmar are considered Least Concern on IUCN Red List²²⁷.

No bycatch of endangered shorttailed albatrosses were recorded in 2017 in the EBS²²⁸, the AI²²⁹ or the GOA²³⁰ groundfish fisheries, as per the Ecosystem considerations. No takes of short-tailed albatross were observed in the groundfish or halibut fisheries in 2018²³¹.

In addition to the endangered short-tailed albatross, there is also conservation concern for Laysan and black-footed albatross (USFWS 2008). In 2018, 643 albatross (300 black-footed albatross, 285 Laysan albatross, 58 unidentified albatross) were estimated to have been caught in the fisheries off Alaska; an increase of 33 percent compared to the 2010 through 2017 average (482 birds). Laysan albatross bycatch was 6 times higher in 2018 than in 2017 (47 birds), and was 80 percent higher than the 2010 through 2017 average (159 birds). Laysan albatross bycatch has ranged from less than 1 percent to 5 percent of total estimated seabird bycatch since 2010. The reason for the increase in Laysan albatross bycatch is unknown. Laysan albatross bycatch was found in both demersal longline (192 birds) and trawl gear (93 birds) in 2018.

²²⁶ <https://www.fisheries.noaa.gov/resource/document/seabird-bycatch-estimates-alaska-groundfish-fisheries-2018>

²²⁷ <https://www.iucnredlist.org/species/22697866/132609419>

²²⁸ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf>

²²⁹ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysAI.pdf>

²³⁰ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/ecosysGOA.pdf>

²³¹ <https://repository.library.noaa.gov/view/noaa/20231>

Laysan albatross is listed as Near Threatened in the IUCN redlist with a stable population trend, last assessed in 2018. The population is estimated to be more than c. 800,000 breeding pairs, equivalent to c.1,600,000 mature individuals (Arata et al. 2009). Midway Atoll, Laysan Island and French Frigate Shoals support 90% of the global breeding population²³².

Black-footed albatross were the fourth most frequently occurring birds in the bycatch (5 percent) in 2018. Black-footed albatross bycatch was 62 percent lower in 2018 (300 birds) compared to 2017 (790 birds). Estimates of the approximate population size of black-footed albatross is 61,700 breeding pairs (Naughton et al. 2007). The black-footed albatross is listed as Near Threatened in the IUCN redlist²³³ with an increasing population trend.

The NOAA Fisheries Alaska Groundfish and Halibut Seabird Working Group provided an update of their work in April 2019²³⁴. Some of their key recommendation to further reduce seabird bycatch included the exploration of vessel-specific bycatch mortality (data shows that few vessels may have large effects on bycatch rates), Assess the effectiveness of using leading indicators (e.g. sea surface temperatures) as a tool for predicting in-season bycatch risk, and exploring ways to improve seabird bycatch mitigation measures in the trawl fisheries. Their next in person meeting is planned for March 2020.

Marine Mammals

The 2019 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The sablefish fisheries in the GOA are listed as Category II (occasional interactions with North Pacific sperm whale and Steller sea lion, Western US) while the BSAI and state fisheries are classified as Category III²³⁵ (remote likelihood of/ no known interactions with no marine mammals species mentioned).

Sperm Whales

Sperm whales have been observed depredating both halibut and sablefish longline fisheries in the Gulf of Alaska and this is also widespread in sablefish longline fisheries in the central and eastern Gulf of Alaska; this depredation can lead to mortality or serious injury if hooking or entanglement occurs. Potential threats most likely to result in direct human-caused mortality or serious injury of this stock include entanglement in fishing gear and ship strikes due to increased vessel traffic (from increased shipping in higher latitudes).

In 2012-2016, five serious injuries of sperm whales were observed in the Gulf of Alaska sablefish longline fishery (two each in 2012 and 2013 and one in 2016) and one in the Bering Sea/Aleutian Islands Pacific halibut longline fishery (in 2015). Each of these injuries was prorated at a value of 0.75 (i.e. observed) and extrapolated to fishery-wide estimates when possible, resulting in a minimum average annual estimated mortality and serious injury rate of 4.4 sperm whales in U.S. commercial fisheries in 2012-2016 (2018 Sperm Whale North Pacific assessment²³⁶).

The Potential Biological Removal (PBR) for sperm whales is 0.5, however, this is likely an underestimate given that it was calculated based on a limited geographical subset of the whole population. On the basis of total abundance, current distribution, and regulatory measures that are in place, it is unlikely that this stock is in danger of extinction (Braham 1992).

²³² <https://www.iucnredlist.org/species/22698365/132643073#population>

²³³ <https://www.iucnredlist.org/species/22698350/132642517#population>

²³⁴ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=b3bd6639-c47d-496a-a22b-da5e4136208a.pdf&fileName=B2%20PRESENTATION%20Seabird%20Working%20Group%20Update.pdf>

²³⁵ <https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables#table-1-category-iii>

²³⁶ [https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-\(eared-seals-or-fur-seals-and-sea-lions\)](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-(eared-seals-or-fur-seals-and-sea-lions))

Steller Sea Lions

Mean estimated annual mortality of Western DPS Steller sea lion was 1.1 in the GOA sablefish fishery. The mean annual U.S. commercial fishery-related mortality and serious injury rate (31 sea lions) is less than 10% of the PBR (10% of PBR = 32) and, therefore, can be considered insignificant and approaching a zero mortality and serious injury rate (Source: 2017 Western Steller Sea lion assessment²³⁷). Based on available data, the total estimated annual level of human-caused mortality and serious injury (241 sea lions) is below the PBR level (320) for this stock. The Western U.S. stock of Steller sea lions is currently listed as endangered under the ESA and, therefore, designated as depleted under the MMPA. As a result, the stock is classified as a strategic stock. Western DPS Steller sea lion are extensively managed by the authorities in Alaska²³⁸.

In 2018 a new aerial survey of SSL was carried out in Alaska. The results showed that the overall Steller sea lions non-pups count trend has been steadily increasing from 2002 to 2018 and is currently (in 2018) at its highest (see figure 2 of that survey report)²³⁹.

Bait fisheries

Most longline bait is purchased frozen, and thawed before using. Salmon, herring, cod, and octopus or squid are typically purchased for bait. These bait species are well managed by either the State of Alaska or the NMFS, and none are classified as depleted, endangered or threatened.

12.7. Role of the “stock under consideration” in the ecosystem

Sablefish are not typically categorized as a key prey species for any single marine predator. Predation on sablefish, especially by marine mammals, is apparently low, except in cases where the fish were attached to fishing gear.

Larval sablefish sampled by neuston net in the eastern Bering Sea fed primarily on copepod nauplii and adult copepods (Grover and Olla 1990). Gao et al. (2004) studied stable isotopes in otoliths of juvenile sablefish from Oregon and Washington and found that as the fish increased in size they shifted from midwater prey to more benthic prey. In nearshore southeast Alaska, juvenile sablefish (20-45 cm) diets included fish such as Pacific herring and smelts and invertebrates such as krill, amphipods and polychaete worms (Coutré et al. 2015). In late summer, juvenile sablefish also consumed post-spawning pacific salmon carcass remnants in high volume, revealing opportunistic scavenging (Coutré et al. 2015)²⁴⁰.

The main juvenile sablefish predators are adult coho and chinook salmon, which prey on young-of-the-year sablefish during their pelagic stage. Although juvenile sablefish may not be a prominent prey item because of their relatively low and sporadic abundance compared to other prey items, they share residence on the continental shelf with potential predators such as arrowtooth flounder, halibut, Pacific cod, bigmouth sculpin, big skate, and Bering skate, which are the main piscivorous groundfishes in the GOA²⁴¹. Sperm whales are likely a major predator of adult sablefish. Juvenile sablefish (< 60cm FL) prey items overlap with the diet of small arrowtooth flounder, and possibly also sleeper sharks²⁴².

²³⁷ [https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-\(eared-seals-or-fur-seals-and-sea-lions\)](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-(eared-seals-or-fur-seals-and-sea-lions))

²³⁸ <https://www.fisheries.noaa.gov/species/steller-sea-lion#conservation-management>

²³⁹ file:///C:/Users/romvit0/Documents/RFM/Alaska/AK%20Sablefish/Evidence/SSL_Aerial_Survey_2018_final.pdf

²⁴⁰ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAISablefish.pdf>

²⁴¹ <https://www.afsc.noaa.gov/REFM/Docs/2017/GOAsablefish.pdf>

²⁴² https://www.afsc.noaa.gov/REFM/Stocks/plan_team/2016sablefishCIE/Papers_for_website/SB_CIE_HISTORY_16.pdf

Alaska sablefish trophic level is considered to be between 3.84 and 4.12²⁴³, and they are not considered a key prey species; as such there does not appear to be a need for management objectives and measures in place to avoid severe adverse impacts on dependent predators.

12.8. Pollution – MARPOL.

MARPOL 73/78 (the "International Convention for the Prevention of Pollution From Ships") is one of the most important treaties regulating pollution from ships. Six Annexes of the Convention cover the various sources of pollution from ships and provide an overarching framework for international objectives. In the U.S., the Convention is implemented through the Act to Prevent Pollution from Ships (APPS).

The requirements apply to vessels operating in U.S. waters as well as ships operating within 200 nautical miles of the coast of North America, also known as the North American Emission Control Area (ECA).

On June 27, 2011 the EPA and USCG entered into a Memorandum of Understanding (MOU) to enforce Annex VI MARPOL. The Annex VI MOU²⁴⁴ provides that EPA and USCG will jointly and cooperatively enforce the provisions of Annex VI and APPS. Efforts to be conducted by USCG and EPA include inspections, investigations and enforcement actions if a violation is detected. The efforts to ensure compliance with Annex VI and APPS include oversight of marine fueling facilities, on board compliance inspections, and record reviews. On January 16, 2015, EPA released a penalty policy for violations of the sulfur in fuel standard and related provisions for ships.

12.9. Knowledge of the essential habitats for the “stock under consideration” and potential fishery impacts on them.

The 2015 Essential Fish Habitats (EFH) 5-year review that concluded in June 2017 evaluated new information on EFH, assessed information gaps and research needs, and identified whether any revisions to EFH are needed. Based on the 5-year review, the Council determined that new habitat and life history information is available to revise many of the EFH descriptions and maps in the FMPs.

These amendments to the EFH provisions in the Council’s FMPs would not substantively change the impacts of EFH as analyzed in the 2005 EFH environmental impact statement. The 2015 EFH 5-year review concluded that no change to the conclusions of the evaluation of fishing effects on EFH was warranted based on new information.

In June 2018 a final environmental assessment was released relating to EFH as Omnibus amendments applying to: Amendment 115 to the FMP for the Groundfish Fishery of the BSAI Area, Amendment 105 to the FMP for Groundfish of the GOA, among other FMPs²⁴⁵. The following changes were proposed for the BSAI and GOA FMPs (as well as the crab FMP):

1. Update EFH descriptions and replace existing maps in the FMPs with maps that represent the 95th percentile by season for each species and life stage, as available.

Sablefish EFH description in the BSAI (update in October 2018)

- Eggs and larvae: No EFH description determined. Insufficient information is available.
- Early Juveniles: No EFH description determined. Information is insufficient. Early juveniles have generally been observed in inshore water, bays, and passes, and on shallow shelf pelagic and demersal habitat.
- Late Juveniles: EFH for late juvenile sablefish is the general distribution area for this life stage, located in

²⁴³ <https://www.fishbase.in/Ecology/FishEcologySummary.php?StockCode=528&GenusName=Anoplopoma&SpeciesName=fimbria>

²⁴⁴ <https://www.epa.gov/enforcement/act-prevent-pollution-ships-apps-enforcement-case-resolutions>

²⁴⁵ <https://repository.library.noaa.gov/view/noaa/18204>

the lower portion of the water column, varied habitats, generally softer substrates, and deep shelf gulleys along the slope (200 to 1,000 m) throughout the BSAI.

- Adults: EFH for adult sablefish is the general distribution area for this life stage, located in the lower portion of the water column, varied habitats, generally softer substrates, and deep shelf gulleys along the slope (200 to 1,000 m) throughout the BSAI.

Sablefish EFH description in the GOA (update in October 2018)

- Eggs: No EFH description determined. Information is insufficient.
- Larvae: EFH for larval sablefish is the general distribution area for this life stage. Larvae are located in epipelagic waters along the middle shelf (50 to 100 m), outer shelf (100 to 200 m), and slope (200 to 3,000 m) throughout the GOA.
- Early Juveniles: EFH for early juvenile sablefish is the general distribution area for this life stage. Early juveniles have been observed in inshore water, bays, and passes, and on shallow shelf pelagic and demersal habitat.
- Late Juveniles: EFH for late juvenile sablefish is the habitat-related density area for this life stage, located in the lower portion of the water column, varied habitats, generally softer substrates, and deep shelf gulleys along the slope (200 to 1,000 m) throughout the GOA.
- Adults: EFH for adult sablefish is the habitat-related density area for this life stage, located in deep shelf gulleys along the slope (400 to 800 m) throughout the GOA.

Habitat impact

The Essential Fish Habitat Environmental Impact Statement (EFH EIS) (NMFS, 2005) concluded that benthic longline and fish pot fisheries have minimal or temporary impacts on sablefish habitat while trawl fisheries have substantial long term effects. However, in recent years, even the impacts from trawl fisheries in the BSAI and the Central GOA resulting from gear modifications (raising the bobbins from the seafloor) have decreased²⁴⁶. Raised bobbins have been shown to decrease habitat contact by 90%.

Extensive trawl closures have been implemented to protect benthic habitat or reduce bycatch of prohibited species (i.e., salmon, crab, herring, and halibut) in the BSAI and GOA. Some of the trawl closures are in effect year-round while others are seasonal. In general, year-round trawl closures have been implemented to protect vulnerable benthic habitat. Seasonal closures are used to reduce bycatch by closing areas where and when bycatch rates had historically been high²⁴⁷. Over 95% of the AI management area is closed to bottom trawling (277,100 nm²). With the Arctic FMP closure included (an area roughly 150,000 sq nm²), almost 65% of the U.S. EEZ of Alaska is closed to bottom trawling. Further information on these is available at <https://www.npfmc.org/habitat-protections/>.

²⁴⁶ <https://www.afsc.noaa.gov/REFM/Docs/2018/GOA/ecosysGOA.pdf>

²⁴⁷ <https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf>

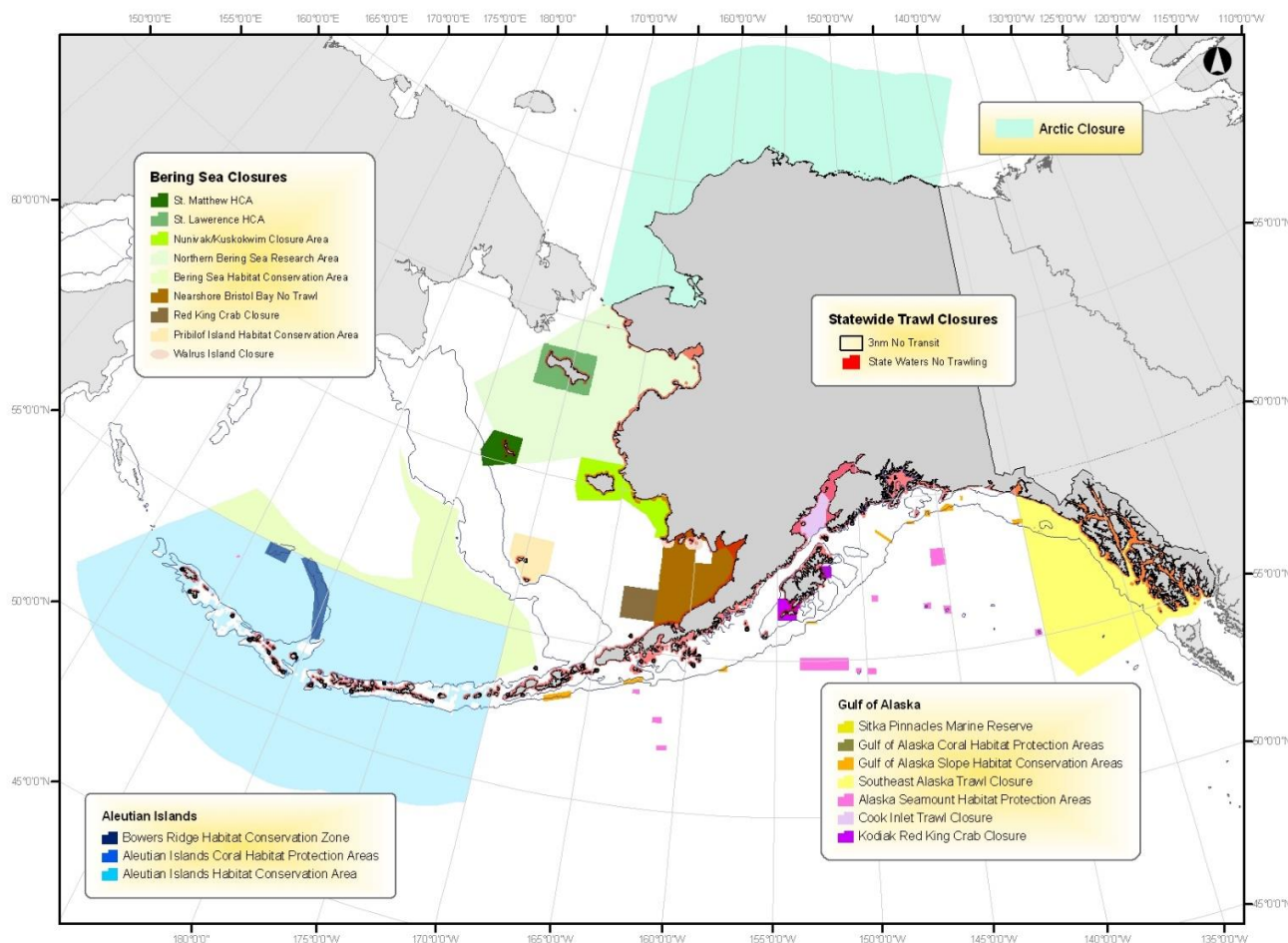


Figure 4. Fishery closures and marine reserves in Alaska.

12.10. Research shall be promoted on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities.

In regards to the IFQ halibut and sablefish fisheries, one of the most important pieces of recent research was the December 2016 Twenty-Year Review of the Pacific Halibut and Sablefish IFQ Management Program. Primarily, the IFQ Program was examined with respect to how well it met its 10 original policy objectives and how it was providing entry opportunities for new participants, an objective that the Council has sought to provide through numerous revisions since the IFQ Program was implemented. The 10 objectives of this review spanned from access to the fishery to quota shares, community reliance to IFQ and benefits from the program, among others²⁴⁸.

Socio-economic data collection and economic analyses are often included under the Regulatory Flexibility Act (RFA), the MSA, the NEPA, the Endangered Species Act, and other applicable laws.

One of the newest developments in management measures is the allowance of pot gear for catching sablefish in the GOA, partly due to sperm whale predation. Since January 2017, Amendment 101²⁴⁹ to the Fishery Management Plan for Groundfish of the Gulf of Alaska authorizes the use of longline pot gear in the GOA sablefish

²⁴⁸ https://www.npfmc.org/wp-content/PDFdocuments/halibut/IFQProgramReview_417.pdf

²⁴⁹ <https://www.fisheries.noaa.gov/action/amendment-101-fmp-groundfish-gulf-alaska-management-area>

IFQ fishery. This FMP Amendment was preceded by a Regulatory Impact Review/ Environmental Assessment²⁵⁰.

The most recent NEPA compliant Regulatory Impact Review/ Environmental Assessment of some relevance to the sablefish fishery was performed in regards to the proposed NPFMC action to allow halibut retention in BSAI sablefish pots, issued for public review in October 2018²⁵¹. The measure under consideration would allow (and require) retention of legal-size halibut in pot gear in the BSAI, provided the operator holds sufficient halibut IFQ or CDQ for the corresponding International Pacific Halibut Commission (IPHC) regulatory area. In 2018 the total number of vessel offloads containing only halibut IFQ was 3,285, the total number of vessel offloads containing only sablefish IFQ was 1,943, and total number of vessel offloads containing both IFQ species was 1,047²⁵². Hence, improving the issue of halibut retention will decrease discards and benefit fishermen with dual sablefish/halibut IFQ shares.

AFSC's Economic and Social Sciences Research Program produces an annual Economic Status Report of the Groundfish Fisheries off Alaska is published yearly. This report contains extensive socio-economic fisheries for all fisheries in Alaska, pursued with all allowed gear types. The 2018 report is not yet published as of July 9th 2019.

Furthermore, at the June 2018 Council meeting, the Council received a presentation of a research report titled "Turning the Tide: How can Alaska address the 'graying of the fleet' and loss of rural fisheries access."²⁵³ In response to this report, information from the IFQ program review and public testimony regarding access challenges in the IFQ Program, the Council requested a discussion paper to review Norway's Recruitment Quota and similar global examples of programs that facilitate access opportunities for rural community residents and new entrants within limited access fisheries and how these programs may apply to the Halibut and Sablefish IFQ Program. Accordingly, the Council motioned with a requests for the staff to develop an expanded discussion paper for consideration on this topic²⁵⁴.

12.11. Outcome indicator(s) and management objectives for non-target stocks.

The main outcome indicators influencing sustainable management of bycatch are those elements expected to keep bycatch species at levels that are highly likely to be within biological limits and minimize impacts to habitat. Management of non-target species (largely FMP groundfish species) of relevance to the sablefish/halibut IFQ program consists of:

1. A catch accounting system for all species caught (FMP, non target, PSC, seabirds, marine mammals),
2. observer program to estimate catches of non-target species (observers + EM data),
3. fishery independent surveys,
4. statistical stock assessments for most target and 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 for restricting catch limits if stock rebuilding is necessary,
6. mandatory use of seabird avoidance devices on all vessels larger than 55', and
7. a spatial management strategy that prohibits or restricts vessels from fishing in sensitive habits.

As summarized in earlier clauses, none of the species considered common bycatch in the sablefish fishery (retained and/or discarded) from 2018 Observer and EM data and that include GOA thornyhead rockfish, sharks

²⁵⁰ <https://repository.library.noaa.gov/view/noaa/19199>

²⁵¹ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=2dcf0126-26d7-478a-a2c6-c8f1dc234d58.pdf&fileName=C4%20Halibut%20Retention%20in%20BSAI%20Pots%20Public%20Review%20-%20pdf%20version.pdf>

²⁵² <https://www.fisheries.noaa.gov/sites/default/files/akro/18ifqland.htm>

²⁵³ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=a5dd0096-6aad-409c-85d5-8a364269106c.pdf&fileName=D5%20Action%20Memo.pdf>

²⁵⁴ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=b4f07aff-7f08-405d-a2a8-047fec26e485.pdf&fileName=D5%20MOTION.pdf>

and skates, giant grenadiers, Shortspine thornyhead, shortraker/rougeye rockfish can be considered depleted, as most of them are exploited using conservative fishing measures (please refer to the clause 12.3-12.6 for status). The key outcome indicators for groundfish species is the ABCs and OFLs set for these which dictate the management and conduct of fisheries in terms of total possible harvest. These are informed by regular (annual or bi-annual) stock assessments in the GOA and BSAI, and in-season catch accounting.

12.12. Outcome indicator(s) and management objectives for endangered species.

The outcome indicators and main management objectives for the sablefish fleet in regards to endangered species refer to regulations aimed at protecting the endangered short tailed albatrosses (as well as other albatross species and seabirds) from longline fishery interactions, as well as MMPA protected marine mammals.

In Alaska, seabird avoidance measures are required²⁵⁵ (i.e. streamer lines) to be used by operators of all vessels greater than 26 ft LOA using hook-and-line gear while fishing for 1) IFQ halibut, Community Development Quota halibut, or IFQ sablefish in the EEZ off Alaska or State of Alaska (State) waters (0 to 200 nm combined); or 2) groundfish in the EEZ off Alaska (3 to 200 nm). No changes occurred in 2018 to these regulations, which are still seen to be effective at reducing bycatch.

No endangered short tailed albatrosses were caught as bycatch in 2018 in either the halibut or sablefish IFQ fishery.

Endangered marine mammal species are managed under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in close coordination with the State of Alaska and other partners. Conservation programs are developed by the NOAA Alaska Regional Office Protected Resources Division for marine mammals including whales, ice seals, harbor seals, northern fur seals, and Steller sea lions; who also develops and implements recovery programs for threatened and endangered species including Cook Inlet beluga whales, bowhead whales, North Pacific right whales, Steller sea lions, and Arctic ringed seals; coordinates the Alaska Marine Mammal Stranding Network to respond to stranded or entangled marine mammals; and consults with federal agencies to minimize the effects of proposed actions on threatened and endangered marine mammals and their critical habitat, among other tasks. All marine mammal encounters in these fishery are required to be released without harm.

The 2019 List of Fisheries Summary Tables list U.S. commercial fisheries by categories according to the level of interactions that result in incidental mortality or serious injury of marine mammals. The sablefish fisheries in the GOA are listed as Category II (occasional interactions with North Pacific sperm whale and Steller sea lion, Western US) while the BSAI and state fisheries are classified as Category III²⁵⁶ (remote likelihood of/ no known interactions with no marine mammals species mentioned).

On the basis of total abundance, current distribution, and regulatory measures that are in place, it is unlikely that North Pacific Sperm whales are in danger of extinction²⁵⁷.

In 2018 a new aerial survey of Steller sea lions was carried out in Alaska. The results showed that the overall Steller sea lions non-pups count trend has been steadily increasing from 2002 to 2018 and is currently (in 2018) at its highest (see figure 2 of that survey report)²⁵⁸.

²⁵⁵ <https://www.fisheries.noaa.gov/alaska/bycatch/seabird-avoidance-gear-and-methods>

²⁵⁶ <https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables#table-1-category-iii>

²⁵⁷ [https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-\(eared-seals-or-fur-seals-and-sea-lions\)](https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock#pinnipeds---otariids-(eared-seals-or-fur-seals-and-sea-lions))

²⁵⁸ file:///C:/Users/romvit0/Documents/RFM/Alaska/AK%20Sablefish/Evidence/SSL_Aerial_Survey_2018_final.pdf

12.13. Outcome indicator(s) and management objectives for avoiding, minimizing or mitigating the impacts of the unit of certification on essential habitats for the “stock under consideration” and on habitats that are highly vulnerable to damage by the fishing gear of the unit of certification.

The EFH Environmental Impact Statement (EFH EIS) (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 (MSST)²⁵⁹. The stock continues to be above its MSST level in 2018.

The sablefish fishery is primarily prosecuted using demersal longline gear which has minimal and temporary effect²⁶⁰ on sensitive and essential fish habitats. The fishery is also prosecuted using pot gear and demersal trawl gear. Although standard demersal trawling can be considered the highest risk gear when it comes to habitat impacts, the trawl flatfish fisheries in the Bering Sea (since 2010) and the central Gulf of Alaska (since 2013) carry trawl sweep gear modifications. Elevating devices (e.g., discs or bobbins) are required to be used on the trawl sweeps, to raise the sweeps off the seabed and limit adverse impacts of trawling on the seafloor. Research has demonstrated that this gear modification reduces unobserved mortality of red king crab, Tanner crab, and snow crab, reducing contact with the ocean floor by as much as 90%²⁶¹.

In addition to this there are extensive habitat closures in Alaska. A figure depicting the current closures and marine protection areas can be found under clause 12.9. No new closures have been implemented in 2018. Further information on these is provided at <https://www.npfmc.org/habitat-protections/>.

12.14. Outcome indicator(s) and management objectives for dependent predators.

Alaska sablefish trophic level is considered to be between 3.84 and 4.12²⁶², and they are not considered a key prey species for any single marine predator (for additional information see clause 12.7, and the information on prey and predators from Hanselman et al., 2017). As such, this clause is NOT APPLICABLE.

12.15. Outcome indicator(s) and management objectives that seek to minimize adverse impacts of the unit of certification, including any enhancement activities, on the structure, processes and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible.

The GOA and BSAI groundfish fishery management plans²⁶³ have specific objectives and indicators used to implement the NPFMC approach to groundfish fisheries and include ecosystem-based management principles that protect managed species from overfishing, and where appropriate and practicable, increase habitat protection and bycatch constraints. This includes the setting of outcome indicators related to preserving the food web, managing incidental catch, avoiding impacts on seabirds and marine mammals, and reduce and avoid habitat effects through gear modifications, area closures, etc.

The eastern Bering Sea indicators were selected in 2010 and will be updated as part of the Fishery Ecosystem Plan currently being developed. The Aleutian Islands indicators were selected in 2011. The Gulf of Alaska indicators were selected in 2015.

²⁵⁹ <https://repository.library.noaa.gov/view/noaa/17392>

²⁶⁰ <http://www.fao.org/3/y3427e/y3427e04.htm#bm04.3.2>

²⁶¹ <https://www.fisheries.noaa.gov/resource/document/ea-rir-frfa-amendment-94-bsai-groundfish-fmp-require-trawl-sweep-modification-bs>

²⁶² <https://www.fishbase.in/Ecology/FishEcologySummary.php?StockCode=528&GenusName=Anoplopoma&SpeciesName=fimbria>

²⁶³ <https://www.npfmc.org/bering-seaaleutian-islands-groundfish/>

In December 2018 the North Pacific Council adopted a Bering Sea Fishery Ecosystem Plan (BS FEP). Under the overarching guidance of the Council’s Ecosystem Approach Statement, the BS FEP sets goals and objectives for the Bering Sea ecosystem which direct the process by which the Council should manage fisheries, monitor the ecosystem, and prioritize new research through identification of projects, called “Action Modules”²⁶⁴. To progress this plan, in June 2019²⁶⁵, the Council sought nominations for membership for two taskforces to work on two Action Modules that implement the Council’s Bering Sea FEP.

There are no enhancement activities for the Alaska Sablefish stock; as such that portion of the Clause is not applicable.

²⁶⁴ <https://meetings.npfmc.org/CommentReview/DownloadFile?p=c334ad33-4139-4b5a-b205-a8b7c5028562.pdf&fileName=D6%20Final%20BS%20FEP%20Jan%202019.pdf>

²⁶⁵ <https://www.npfmc.org/feptaskforce/>

9. Performance specific to agreed corrective action plans

A corrective action plan was not applicable to this fishery because full conformance was demonstrated.

10. Unclosed, new non-conformances and new corrective action plans

Not applicable, full conformance was demonstrated.

11. Future Surveillance Actions

Not applicable, next assessment will be a full re-assessment in 2020.

12. Client signed acceptance of the action plan

Not applicable, full conformance was demonstrated.

13. Recommendation and Determination

Following this 3rd surveillance assessment, finalized in August 2019, the assessment team recommends that continued Certification under the Alaska FAO-Based Responsible Fisheries Management Certification Program is maintained for the management system of the applicant fishery, the US Alaska sablefish federal and state commercial fisheries, under federal (National Marine Fisheries Service/North Pacific Fishery Management Council) and state (Alaska Department of Fish and Game/Board Of Fisheries) management, fished with benthic longline, pot and trawl gear (within Alaska's 200 nm EEZ).

14. References

Reference	Hyperlink
2016 North Pacific Groundfish Stock Assessment and Fishery Evaluation Reports for 2017 Fisheries.	https://www.afsc.noaa.gov/refm/stocks/assessments.htm
2017 EM Pre-Implementation Plan.	http://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/Observer/EM/Final2017EMPreimpPlan.pdf
AFSC Ecosystem Consideration Report series	https://access.afsc.noaa.gov/reem/ecoweb/)
AFSC (2018) North Pacific Observer Program 2017 Annual Report. AFSC Processed Rep. 2018-02, 136 p.	https://alaskafisheries.noaa.gov/sites/default/files/2017annualreport.pdf
Alaska Fisheries Science Center and Alaska Regional Office. 2019. North Pacific Observer Program 2018 Annual Report. AFSC Processed Rep. 2019-04, 148 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115.	https://www.fisheries.noaa.gov/webdam/download/92537561
Alaska Department of Health and Social Services (DHSS).	http://www.iphc.washington.edu/research/biology/environment.html
Alaska Marine Safety Education Association (AMSEA).	http://www.amsea.org/commercial-fishermen
Analysis of fishery CPUE data.	https://www.cfec.state.ak.us/
Bering Sea Integrated Ecosystem Research Program.	http://www.nprb.org/bering-sea-project
Breiwick, J. M. 2013. North Pacific marine mammal bycatch estimation methodology and results, 2007-2011. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-260, 40 p.	-
Cahalan, J., J. Gasper, and J. Mondragon. 2014. Catch sampling and estimation in the federal groundfish fisheries off Alaska, 2015 edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 46 p.	https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-286.pdf
Coutré, K. M., A.H. Beaudreau, and P.W. Malecha. 2015. Temporal Variation in Diet Composition and Use of Pulsed Resource Subsidies by Juvenile Sablefish. Transactions of the American Fisheries Society, 144(4), 807-819.	
Crew access to fishing regime.	http://www.nmfs.noaa.gov/sfa/management/catch_shares/about/documents/ak_halibut_sablefish.pdf
Definition of Pot gear for all groundfish.	https://alaskafisheries.noaa.gov/regs/679a2.pdf http://www.legis.state.ak.us/basis/folioiproxy.asp?url=http://www.jnu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query=[JUMP:%275+aac+28!2E050%27]/doc/{@1}?firsthit
DFO and NMFS Cooperation on stock assessment.	https://www.afsc.noaa.gov/REFM/Docs/2016/GOAsablefish.pdf
EM 2016 trial.	https://www.afsc.noaa.gov/Publications/ProcRpt/PR2017-07.pdf
Faunce, C.H. 2013. The Restructured North Pacific Groundfish and Halibut Observer Program. NOAA quarterly publication.	http://docs.lib.noaa.gov/noaa_documents/NMFS/AFSC/TM_AFSC/TM_NMFS_AFSC_281.pdf
Fishers confidentiality agreement.	http://touchngo.com/1glcntr/akstats/Statutes/Title16/Chapter05/Section815.htm
Witherell, D. and D. Woodby. 2005. Application of Marine Protected Areas for Sustainable Production and Marine Biodiversity off Alaska. Marine Fisheries Review 67(1):1-27.	http://spo.nmfs.noaa.gov/mfr671/mfr6711.pdf
Fishing vessel participation	https://www.npfmc.org/wp-

Reference	Hyperlink
	content/PDFdocuments/halibut/IFQProgramReview_417.pdf
Fissel, B., M. Dalton, B. Garber-Yonts, A. Haynie, S. Kasperski, J. Lee, D. Lew, A. Lavoie, C. Seung, K. Sparks, S. Wise. 2017. Economic status of the groundfish fisheries off Alaska, 2016. In Stock assessment and fishery evaluation report for the groundfish resources of the GOA and BS/AI. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. 425 p.	https://www.afsc.noaa.gov/REFM/Docs/2017/economic.pdf
Fissel, B., M. Dalton, B. Garber-Yonts, A. Haynie, S. Kasperski, J. Lee, D. Lew, A. Lavoie, C. Seung, K. Sparks, S. Wise. 2018. Economic status of the groundfish fisheries off Alaska, 2017. In Stock assessment and fishery evaluation report for the groundfish resources of the GOA and BS/AI. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. 425 p.	https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/economic.pdf
Dournier, D. and, C.P. Archibald. 1982. A General Theory for Analyzing Catch at Age Data. Canadian Journal of Fisheries and Aquatic Sciences, 1982, 39(8): 1195-1207.	https://doi.org/10.1139/f82-157
Gauvin, J. 2013. Final Report on EFP 12-01: Halibut deck sorting experiment to reduce halibut mortality on Amendment 80 Catcher Processors. Alaska Seafood Cooperative Report.	
Gauvin, J., J. Gruver, K. McGauley, and C. Rose. 2013. Salmon Excluder EFP 11-01 Final Report.	http://www.nprf.org/uploads/2/3/4/2/23426280/salmon_excluder_efp_1101_final_report-1.pdf
Goen, J., T. Geernaert, E. Henry, E. Soderlund, A.M. Ranta, T.M. Kong, and J. Forsberg. 2017. Fishery-independent setline survey (FISS) design and implementation in 2017, including current and future expansions. IPHC-2018-AM094-06 Rev1.	https://iphc.int/uploads/pdf/am/2018am/iphc-2018-am094-06.pdf
Grover, J. J., and B. L. Olla. 1990. The food habits of larval sablefish, <i>Anoplopoma fimbria</i> , from the Bering Sea. Fish. Bull., U.S. 88:811-814.	http://fishbull.noaa.gov/884/grover.pdf
Habitat protection protocols and trawl fishing.	http://www.npfmc.org/habitat-protections/gear-modifications/
Hanselman et al 2006; Alaska Sablefish Assessment for 2006.	https://www.researchgate.net/publication/265271817_3_Alaska_Sablefish_Assessment_for_2008
Hanselman, D.H., C. Lunsford, and C. Rodgveller. 2015a. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation Reports for the Groundfish Resources of the Bering Sea/Aleutian Islands and Gulf of Alaska Regions. North Pacific Fishery Management Council, Anchorage, AK 99501. p. 297-414.	
Hanselman, D., Lunsford, C., Rodgveller, C., and Pyper, B. 2010. Stock Assessment and Fishery Evaluation Report. Development of a longline survey abundance index for Alaska sablefish. Alaska Fisheries Science Center, NOAA, National Marine Fisheries Service, Juneau, AK.	
Hanselman, D.H., J. Heifetz, K.B. Echave, and S.C. Dressel. 2015b. Move it or lose it: Movement and mortality of sablefish tagged in Alaska. Canadian Journal of Fish and Aquatic Sciences. 2015, 72(2): 238-251.	

Reference	Hyperlink
Hanselman, D.H., C. Lunsford, and C. Rodgveller. 2014. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation Reports for the Groundfish Resources of the Bering Sea/Aleutian Islands and Gulf of Alaska Regions. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. pp. 283-424 (GOA report), pp. 575-717 (BSAI Report).	
Hanselman, D.H., C.J. Rodgveller, C.R. Lunsford, and K.H. Fenske. 2017. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation Reports for the Groundfish Resources of the Bering Sea/Aleutian Islands and Gulf of Alaska Regions. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501. pp. 327-502 (GOA report), pp. 563-738 (BSAI report)	https://www.afsc.noaa.gov/REFM/stocks/assessments.htm
Hanselman, D.H., C.J. Rodgveller, C.R. Lunsford, K.S. Shotwell, P.L. Malecha and K.H. Fenske. 2018. Assessment of the sablefish stock in Alaska. Stock Assessment and Fishery Evaluation Reports for the Groundfish Resources of the Bering Sea/Aleutian Islands and Gulf of Alaska Regions. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501.	https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/BSAIsa_blefish.pdf
Heifetz, J. and J. T. Fujioka. 1991. Movement dynamics of tagged sablefish in the northeastern Pacific Ocean. Fish. Res., 11: 355-374.	
Henry, E., Soderlund, E., Henry, A. M., Geernaert, T., Ranta, A. M., and Kong, T., Forsberg J. 2017. 2016 IPHC fishery-independent setline survey. Int. Pac. Halibut Comm. Report of Assessment and Research Activities 2016: 4175-215.	
International Convention for the Prevention of Pollution From Ships.	https://www.law.cornell.edu/uscode/text/33/1901 http://www.gao.gov/assets/230/228813.pdf
AWT. 2015. Marine Enforcement Section webpage. 5700 E Tudor Road, Anchorage, AK 99507.	http://dps.alaska.gov/awt/Marine.aspx
Kawakami, T. 1980. A review of sperm whale food. Sci. Rep. Whales Res. Inst. 32: 199-218.	
Kimura, D. K. 1990. Approaches to age-structured separable sequential population analysis. Can. J. Fish. Aquat. Sci. 47: 2364-2374.	
Kimura, D. K., A. M. Shimada, and F. R. Shaw. 1998. Stock structure and movement of tagged sablefish, <i>Anoplopoma fimbria</i> , in offshore northeast Pacific waters and the effects of El Niño-Southern Oscillation on migration and growth. Fish. Bull. 96: 462-481.	
Laidig, T. E., P. B. Adams, and W. M. Samiere. 1997. Feeding habits of sablefish, <i>Anoplopoma fimbria</i> , off the coast of Oregon and California. In M. Saunders and M. Wilkens (eds.). Proceedings of the International Symposium on the Biology and Management of Sablefish. pp 65-80. NOAA Tech. Rep. 130.	
Lew, D. K., G. Sampson, A. Himes-Cornell, J. Lee, and B. GarberYonts. 2015. Costs, earnings, and employment in the Alaska saltwater sport fishing charter sector, 2011-	

Reference	Hyperlink
2013. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-299, 134 p.	
Yang, M-S. 1993. Food habits of the commercially important groundfishes in the Gulf of Alaska in 1990. NOAA Tech. Memo. NMFS-AFSC-22. 150 p.	
Maloney, N. E. and J. Heifetz. 1997. Movements of tagged sablefish, <i>Anoplopoma fimbria</i> , released in the eastern Gulf of Alaska. In M. Saunders and M. Wilkins (eds.). Proceedings of the International Symposium on the Biology and Management of Sablefish. pp 115-121. NOAA Tech. Rep. 130.	
March 2017, NMFS proposed rule to implement Electronic Monitoring.	https://www.federalregister.gov/documents/2017/03/23/2017-05753/fisheries-of-the-exclusive-economic-zoneoff-alaska-integrating-electronic-monitoring-into-the-north
McFarlane, G.A. and Beamish, R.J. 1992. Climatic influences linking copepod production with strong year classes in sablefish (<i>Anoplopoma fimbria</i>). Can. J. Fish. Aquat. Sci. 49: 743-753.	
Melvin, E.F. 2000. Streamer Lines to Reduce Seabird Bycatch Reduce Seabird Bycatch in Longline Fisheries in Longline Fisheries. Washington Sea Grant Program, University of Washington.	
MESA.	https://www.afsc.noaa.gov/ABL/MESA/mesa_sa_sable_ss.htm
National Bycatch Reduction Strategy.	http://npfmc.legistar.com/gateway.aspx?M=F&ID=a6ea1d59-1038-4f85-89ce-29f3dddafa11.pdf
National Environmental Policy Act (NEPA).	https://ceq.doe.gov/nepa/Citizens_Guide_Dec07.pdf
NMFS, 2016. Report on Holding of Individual Fishing Quota (IFQ) by Residents of Selected Gulf of Alaska Fishing Communities 1995 – 2015.	https://alaskafisheries.noaa.gov/sites/default/files/reports/ifq_community_holdings_95-15.pdf
NOAA Marine Debris Program. 2015. Report on the impacts of “ghost fishing” via derelict fishing gear. Silver Spring, MD. 25 pp.	https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing_DFG.pdf
North Pacific Research Board.	http://www.nprb.org/
Observer Declare and Deployment System (ODDS).	https://chum.afsc.noaa.gov:7104/apex/f?p=140:1
Pacific halibut feeding on sablefish.	NOAA, pers. comm. with SAFE author
Pacific States Marine Fisheries Commission.	http://psmfc.org
Penalties under the Halibut Act (MSA).	http://www.gc.noaa.gov/documents/Penalty%20Policy_FINAL_07012014_combo.pdf
Percent Habitat impact by fishing gear.	https://www.afsc.noaa.gov/REFM/Docs/2016/ecosysEBS.pdf https://www.afsc.noaa.gov/REFM/Docs/2016/GOAsablefish.pdf
Prince William Sound (PWS) sablefish fishery harvest.	http://www.psmfc.org/tsc-drafts/2017/ADFG_2017_AK_TSC_Alaska_FINAL.pdf
Research on sperm whale interactions with the sablefish longline fisheries.	http://www.adfg.alaska.gov/index.cfm?adfg=sablefish.research
Sablefish tag recoveries.	https://www.afsc.noaa.gov/quarterly/AMJ2013/AMJ13-Feature.pdf
Sadorus, L. L. and Walker, J. 2017. IPHC Oceanographic monitoring program 2017. IPHC Report of Assessment and Research Activities 2017, p. 95-103.	https://iphc.int/uploads/pdf/am/2018am/iphc-2017-rara27-r.pdf
Dana H. Hanselman, Chris R. Lunsford, and Cara J. Rodgveller.	https://www.afsc.noaa.gov/REFM/Docs/2015/BSAIsablefis

Reference	Hyperlink
(2015). Assessment of the sablefish stock in Alaska.	h.pdf
Seafood harvested and processed in the state.	http://www.alaskaseafood.org/quality/
Shark and Skates biological reference points.	https://www.afsc.noaa.gov/REFM/Docs/2016/BSAishark.pdf https://www.afsc.noaa.gov/REFM/Docs/2016/GOAshark.pdf
Shotwell, S.K., J. Ianelli, and J. Heifetz. 2014. Thornyhead stock complex. In Stock assessment and fishery evaluation report for the groundfish resources of the Gulf of Alaska, p. 839 – 842. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501.	http://www.afsc.noaa.gov/REFM/Docs/2014/GOAthorny.pdf
Siddon, E., and S. G. Zador. 2018. Ecosystem Considerations 2018 for the Eastern Bering Sea Marine Ecosystem. Report, North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, AK 99501.	https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysAI.pdf
Echave et al., 2015. Assessment of the Thornyhead stock complex in the Gulf of Alaska.	https://www.afsc.noaa.gov/REFM/Docs/2015/GOAthorny.pdf
Sigler, M.F., J.T. Fujioka, and S.A. Lowe. 1999. Alaska sablefish assessment for 2000. In Stock assessment and fishery evaluation report for the groundfish fisheries of the Gulf of Alaska. North Pacific Fishery Management Council, Anchorage, AK 99510.	
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.	
Sigler, M. F. and C. R. Lunsford. 2001. Effects of individual quotas on catching efficiency and spawning potential in the Alaska sablefish fishery. Can. J. Fish. Aquat. Sci. 58: 1300-1312.	
Southeast sablefish subsistence and personal use fishing permits for 2017.	http://www.psmfc.org/tsc-drafts/2017/ADFG_2017_AK_TSC_Alaska_FINAL.pdf Southeast Sablefish Subsistence And Personal Use Fishing Permit And Harvest Reporting Available Online
Sport fishery limits.	http://www.psmfc.org/tsc-drafts/2017/ADFG_2017_AK_TSC_Alaska_FINAL.pdf
Sturdevant, M. V., M. F. Sigler, and J. A. Orsi. 2009. Sablefish predation on juvenile Pacific salmon in the coastal marine waters off southeast Alaska in 1999. Trans. Amer. Fish. Soc. 138: 675-691.	
Tanasichuk, R. W. 1997. Diet of sablefish, <i>Anoplopoma fimbria</i> , from the southwest coast of Vancouver Island. In M. Saunders and M. Wilkins (eds.). Proceedings of the International Symposium on the Biology and Management of Sablefish. pp 93-98. NOAA Tech. Rep. 130.	
The Aleutian Islands Coral Habitat Protection Area.	https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmppdf
The Commercial Fisheries Entry Commission.	http://www.alaskaseafood.org/quality/
The Gulf of Alaska Integrated Ecosystem Research Project (IERP).	http://gulfofalaska.nprb.org/
The State of Alaska, Department of Labor and Workforce Development (ADLWD) includes AVTEC (formerly called Alaska	http://www.avtec.edu/

Reference	Hyperlink
Vocational Training and Education Center.	
The University of Alaska Sea Grant Marine Advisory Program (MAP).	http://seagrant.uaf.edu/map/fisheries/
Fishery Management Plan for Groundfish of the Gulf of Alaska. 2015. North Pacific Fishery Management Council, 605 W. 4th Avenue, Suite 306, Anchorage, Alaska 99501.	http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmppdf
USFWS, 2015. Biological Opinion for the Effects of the Fishery Management Plans for the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish Fisheries and the State of Alaska Parallel Groundfish Fisheries, December 2015. 49 pp.	https://alaskafisheries.noaa.gov/sites/default/files/analyses/usfws-biop-122315.pdf .
USFWS. 2018. Biological Opinion For the Effects of the Pacific Halibut Fisheries in Waters off Alaska on the Endangered Short-tailed Albatross (<i>Phoebastria albatrus</i>). Anchorage, AK: 50 pp.	
Wynne, K. M., D. Hicks, and N. Munro. 1991. 1990 salmon gillnet fisheries observer programs in Prince William Sound and South Unimak Alaska. Annual Rept. NMFS/NOAA Contract 50ABNF000036. 65 pp. NMFS, Alaska Region, Office of Marine Mammals, P.O. Box 21668, Juneau, AK 99802.	www.afsc.noaa.gov/nmml/PDF/sars/ak2002sest-w.pdf
Wynne, K. M., D. Hicks, and N. Munro. 1992. 1991 Marine mammal observer program for the salmon driftnet fishery of Prince William Sound Alaska. Annual Rept. NMFS/NOAA Contract 50ABNF000036. 53 pp. NMFS, Alaska Region, Office of Marine Mammals, P.O. Box 21668, Juneau, AK 99802.	www.afsc.noaa.gov/nmml/PDF/sars/ak2002sest-w.pdf
Yang, M-S., and M. W. Nelson. 2000. Food habits of the commercially important groundfishes in the Gulf of Alaska in 1990, 1993, and 1996. NOAA Tech. Memo. NMFS-AFSC-112. 174 p.	
M-S. Yang, K. Dodd, R. Hibpshman, and A. Whitehouse. 2006. Food habits of groundfishes in the Gulf of Alaska in 1999 and 2001. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-164, 199 p.	Resource Ecology & Fisheries Management (REFM) Division; www.afsc.noaa.gov/quarterly/amj2006/divrptsrefm1.htm
Zador, S. G., E. M. Yasumiishi, 2018. Ecosystem Assessment. In: Ecosystem Considerations 2018: Status of the Gulf of Alaska Marine Ecosystem. Report, North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, AK 99301.	https://www.afsc.noaa.gov/REFM/Docs/2018/BSAI/ecosysEBS.pdf

15. Appendices

15.1. Appendix 1 – Assessment Team Details

Dr. Ivan Mateo, Lead Assessor

Dr. Ivan Mateo has over 20 years of experience working with natural resources population dynamic modeling. His specialization is in fish and crustacean population dynamics, stock assessment, evaluation of management strategies for exploited populations, bioenergetics, ecosystem-based assessment, and ecological statistical analysis. Dr. Mateo received a Ph.D. in Environmental Sciences with Fisheries specialization from the University of Rhode Island. He has studied population dynamics of economically important species as well as candidate species for endangered species listing from many different regions of the world such as the Caribbean, the Northeast US Coast, Gulf of California, and Alaska. He has done research with NMFS Northeast Fisheries Science Center Ecosystem Based Fishery Management on bioenergetics modeling for Atlantic cod. He also has been working as environmental consultant in the Caribbean doing field work and looking at the effects of industrialization on essential fish habitats and for the Environmental Defense Fund developing population dynamics models for data poor stocks in the Gulf of California. Recently, Dr. Mateo worked as National Research Council postdoc research associate at the NOAA National Marine Fisheries Services Ted Stevens Marine Research Institute on population dynamic modeling of Alaska sablefish.

Mr. Vito Romito (Assessor)

Vito is an ISO14001 Certified Lead Auditor and MSC approved Fisheries Team Leader for SAI Global with extensive experience in ecosystems effects of fisheries. Vito received a BSc (Honours) in Ecology and a MSc in Tropical Coastal Management from Newcastle University (U.K.), in between which he spent a year in Tanzania, carrying out biodiversity assessments and monitoring studies of pristine and dynamited coral reef and seagrass ecosystems around the Mafia Island Marine Park. For five years he worked at Global Trust Certification/ later SAI Global as Lead Assessor for all the fisheries assessments in Alaska, Iceland and Louisiana. Vito has also carried out several International Fishmeal and Fishoil Organisation (IFFO) forage fisheries assessments in Chile, Peru, Europe and other various pre-assessments in Atlantic and Pacific Canada. To date, Vito has headed and conducted dozens of fishery assessments involving 40+ different species including salmonid, groundfish, pelagic, flatfish, crustacean and cephalopod species in Europe, North and South America, and SE Asia while managing expert teams. For three years, as a senior fisheries consultant and then operations manager with RS Standards Ltd., Vito was involved in various work that included fishery reviews, development and testing of a Data Deficient Fisheries framework and coordination of V2 fisheries standard development for the ASMI Alaska RFM Scheme, and IFFO RS Improver/FIP projects related to South East Asia multispecies bottom trawl fisheries. Vito re-joined the SAI Global Fisheries Team in 2018.