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Responsible Fisheries Management (RFM) standard v1.3

Alaska Atka Mackerel and Rockfish Fishery

Certificate No.: 10000445828-MSC-ANSI-USA

2nd Surveillance Report

Conformity Assessment Body (CAB)	MRAG Americas, Inc.
Assessment team	Erin Wilson (team lead), Amanda Stern-Pirlot, Dr. Giuseppe Scarcella
Fishery client	Alaska Seafood Cooperative
Assessment type	2nd surveillance
Date	April 20th, 2022

1 Contents

2 Table of Contents

3 Glossary

ABC	Acceptable Biological Catch
ADFG	Alaska Department of Fish and Game
AFSC	Alaska Fisheries Science Center
AI	Aleutian Islands
AWT	Alaska Wildlife Troopers
BOF	Board of Fisheries
BS	Bering Sea
BSAI	Bering Sea and Aleutian Islands
CIE	Center for Independent Experts
DFO	Department of Fisheries and Oceans (Canada)
EBS	Eastern Bering Sea
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statements
ESA	Endangered Species Act
FMP	Fisheries Management Plan
GOA	Gulf of Alaska
HCR	Harvest Control Rules
IPHC	International Pacific Halibut Commission
IUU	Illegal, Unreported and Unregulated (fishing)
LLP	License Limitation Program
MMPA	Marine Mammal Protection Act
MSC	Marine Stewardship Council
MSRA	Magnuson-Stevens Reauthorization Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fisheries Management Council
NPRB	North Pacific Research Board
OFL	Overfishing limits
OGC	Office of General Counsel
OLE	Office of Law Enforcement (NOAA Fisheries)
OY	Optimal Yield
PA	Precautionary Approach
POP	Pacific Ocean Perch
PSC	Prohibited Species Catch
PWS	Prince William Sound
RFM	Responsible Fisheries Management
SSC	Science and Statistical Committee
TAC	Total Allowable Catch
TSC	Technical Subcommittee
UoA	Unit of Assessment

4 Summary and Recommendations

4.1 Fundamental Clauses Summary

Fundamental Clause	Evidence adequacy rating	Justification
1. Structured and legally mandated management system	High	The BSAI and GOA Atka mackerel, Pacific Ocean perch, and rockfish fisheries are conducted in the U.S. EEZ waters of the BSAI and GOA. The principle legislative instrument for fisheries management in the U.S. is the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) and is implemented by the NMFS. The North Pacific Fishery Management Council, (NPFMC or Council) is one of eight regional councils established by the MSRA to manage fisheries in the 200-mile EEZ. The Council primarily manages groundfish in the GOA and BSAI, targeting cod, pollock, flatfish, mackerel, sablefish, and rockfish species harvested by trawl, longline, jig, and pot gear. The Council works closely with the Alaska Department of Fish and Game (ADFG) and the Alaska Board of Fisheries (BOF) to coordinate management programs in federal and state waters (0-3 nm from shore). In coastal waters off the United States, AK Atka mackerel and rockfish catch is under the jurisdiction of the BSAI Groundfish FMP, GOA Groundfish FMP, and the MSRA
2. Participation in coastal area management frameworks, decision-making processes and activities related to the fishery in support of sustainable resource use and conflict avoidance	High	The Council and NMFS manage U.S. federal fisheries off Alaska (3-200 nm). Management is coordinated, and in some cases, jointly managed, with the State of Alaska. NOAA and NMFS are also responsible for carrying out the U.S. policies to manage and conserve marine protected resources. Applicable law that is directly relevant to the management of marine fisheries includes, but not limited to, the National Environmental Protection Act (NEPA), Endangered Species Act, Marine Mammal Protection Act (MMPA), Coastal Zone Management Act (CZMA), and the Administrative Procedures Act (APA). The MSRA requires discussions and decisions to take place in public sessions using publicly available information, which ensures transparency in the process. Opportunities are provided for the public to comment on notices of proposed rulemaking. The Council resolves disputes by majority vote as required in section 302 of the MSRA.
3. Management objectives shall be implemented through regulations and formulated in a plan or other framework.	High	The MSRA, National Standards and other legislation include explicit, well-defined short- and long-term objectives for sustainable fishing and conservation. NMFS incorporated precautionary concepts to ensure compliance with the Sustainable Fisheries Act 1996, which includes 10 National Standards for conservation and management of fisheries in the U.S. In addition to the National Standard Guidelines, the Council has established nine specific objectives, each with several sub-objectives, for BSAI and GOA groundfish fisheries in Alaska. These objectives include: 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.
4. Effective fishery data collection	High	Stock Assessment and Fishery Evaluation (SAFE) reports provide complete descriptions of data collections and time series. Records of catch and effort are recorded through the e-landing (electronic fish tickets) catch recording system and collected in vessel logbooks. The observer program and trawl

		and longline surveys also gather additional fishery dependent and independent data.
5.Stock Assessment	High	The Alaska Fisheries Science Center (AFSC) conducts stock assessments and research on AK Atka mackerel and rockfish fisheries annually, producing SAFE reports for the fisheries. ADFG contributes to scientific research and surveys that are conducted in state waters. The stock assessments are peer reviewed by external experts. Based on the 2021 SAFE reports, these stocks in this assessment are not overfished, none are approaching an overfished condition and overfishing is not occurring.
6. Biological reference points and harvest control rules	High	Information for assessing the status of BSAI Atka mackerel, POP, and Northern rockfish and GOA POP, Northern rockfish, and Dusky rockfish fisheries comes from the SAFE reports. The tier system harvest control rules (HCRs) specify the maximum permissible allowable biological catch (ABC), and the Overfishing Level (OFL) for each stock. Stocks in tier 3 are further categorized based on the relationship between Biomass and B40%, with tier 3a designating stocks above B40%. The category assigned to a stock also determines the method used to calculate ABC and OFL. As specified in the MSRA, if stocks decline below the Minimum Stock Size Threshold (MSST), a rebuilding plan must be implemented to bring the biomass back to the BMSY level (biomass relative to maximum sustainable yield [MSY]) within a specified timeframe.
7.Precautionary approach	High	The Council recommend harvest specifications, OFLs, ABC levels and TAC annually based on the SAFE reports, consistent with the Science and Statistical Committee (SSC) recommendations. Additionally, the tier approach assigns groundfish stock to a tier according to available data and uncertainty associated with the fishery.
8. Management measures to produce maximum sustainable levels	High	The MSRA, National Standards and other legislation include explicit, well-defined short- and long-term objectives for sustainable fishing and conservation.
9. Appropriate standards of fishers' competence	High	NMFS, the Council and ADFG have rules and regulations governing AK fisheries available on their websites. The BSAI and GOA FMPs also contain a summary of management measures that apply to these fisheries.
10. Effective legal and administrative framework for monitoring, surveillance, control and enforcement for all fishing within their jurisdiction.	High	There are three entities that provide enforcement for Alaska fisheries: NOAA Office of Law Enforcement (OLE), US Coast Guard (USCG) and Alaska Wildlife Troopers (AWT). Monitoring, control, and surveillance (MCS) is carried out at-sea and shore-side for the federal fisheries by the OLE and the USCG. The AWT fulfils the MCS function for the state water fisheries.
11. Framework for sanctions	High	The MSRA provides enforcement actions for violations, including citations, a civil money penalty, forfeiture action against the vessel and its catch, and in some cases, criminal prosecution. Current enforcement updates and violations are reported in the OLE Report to the Council on a quarterly basis. Personal interviews with AWT and the USCG confirm overall compliance with the AK mackerel and rockfish fisheries, noting only minor infractions.
12. Impacts of the fishery on the ecosystem	High	Monitoring is carried out through the Observer Program operated by NMFS. The groundfish, Prohibited Species Catch (PSC), and non-target species catch composition for each fishery and area was updated for the most recent five full years (See Fundamental clause 12). There have been no notable trends in any of this data over the past five years that would indicate fishery changes in need of further investigation.
13. Enhanced fisheries	Not applicable	This is not an enhanced fishery.

4.2 Audit conclusion

This report contains the findings of the RFM 2nd surveillance audit in relation to the Alaska Atka mackerel and rockfish fishery bottom trawl fisheries. A remote surveillance audit was held January 17th – 21st, 2022, in conjunction with the Marine Stewardship Council (MSC) surveillance audits for Bering Sea and Aleutian Islands (BSAI) Atka mackerel, Pacific Ocean perch (POP), and Northern rockfish and Gulf of Alaska (GOA) Pacific Ocean perch, Northern rockfish, and Dusky rockfish; BSAI & GOA cod; pollock; and flatfish, and with the Responsible Fisheries Management (RFM) reassessment for BSAI & GOA Pacific cod and pollock. The AK Atka mackerel and rockfish fisheries are currently certified under the RFM and the MSC Standards. AK Atka mackerel and rockfish fisheries were certified as sustainable against the RFM standard in February 2020.
Under the RFM certification, there are 6 Units of Assessment (UoA):
UoA 1 BSAI Atka mackerel (*Pleurogrammus monopterygius*)
UoA 2 BSAI Pacific Ocean perch (*Sebastes alutus*)
UoA 3 BSAI Northern rockfish (*Sebastes polyspinis*)
UoA 4 GOA Northern rockfish (*Sebastes polyspinis*)
UoA 5 GOA Pacific Ocean perch (*Sebastes alutus*)
UoA 6 GOA Dusky rockfish (*Sebastes variabilis*)

No issues were identified, and no changes in the fishery occurred that would result in a change in certification from the last surveillance. The fisheries had no non-conformances or recommendations. No clauses were rescored.

MRAG Americas confirms that this fishery continues to meet the RFM Standard and shall remain certified.

5 General Information

1	**Fishery name**	
	Alaska Atka mackerel and rockfish fishery	
2	Unit(s) of Assessment (UoA)	
	BSAI Atka mackerel (*Pleurogrammus monopterygius*): BSAI Pacific Ocean perch (*Sebastes alutus*): BSAI and GOA Dusky rockfish (*Sebastes variabilis*): GOA Northern rockfish (*Sebastes polyspinis*)	
3	Date certified	Date of expiry
	February 14, 2020	February 13, 2025
4	Surveillance type	
	remote	
5	Surveillance number	
	1st Surveillance	
	2nd Surveillance	XX
	3rd Surveillance	
	4th Surveillance	
	Other (expedited etc)	
6	Surveillance team details	
	Ms. Erin Wilson (team leader) joined MRAG Americas, Inc. in February 2015, where she currently works as a Senior Fisheries Program Manager and Fishery Consultant. She has collaborated as a team member on several MSC assessments and is team leader for all the Alaska Groundfish fisheries and the West Coast Groundfish limited entry trawl fishery. She also provides routine audit services for the International	

	Seafood Sustainability Foundation (ISSF). Prior to joining MRAG Americas, Ms. Wilson worked as a Natural Resource Specialist and Biological Technician for the Oregon Marine Reserves with the Oregon Department of Fish and Wildlife (ODFW). She has collaborated on a multitude of projects that focus on marine science and conservation in both a biological and social science aspect. She received a M.Sc. in Marine Resource Management from Oregon State University and a B.S. in Zoology from Colorado State University, along with a Spanish minor. She has the required competencies to conduct RFM and MSC assessments, completed the ISO 19011 training requirements and has more than six years of assessment team experience. MRAG Americas confirms Ms. Wilson has no conflicts of interest in relation to the fishery under assessment. **Ms. Amanda Stern-Pirlot** is an M.Sc graduate of the University of Bremen, Center for Marine Tropical Ecology (ZMT) in marine ecology and fisheries biology. Ms. Stern-Pirlot joined MRAG Americas in mid-June 2014 as MSC Certification Manager (now Director of the Fishery Certification Division) and is currently serving on several different assessment teams as team leader and team member. She has worked together with other scientists, conservationists, fisheries managers and producer groups on international fisheries sustainability issues for over 15 years. With the Institute for Marine Research (IFM-GEOMAR) in Kiel, Germany, she led a work package on simple indicators for sustainable within the EU-funded international cooperation project INCOFISH, followed by five years within the Standards Department at the Marine Stewardship Council (MSC) in London, developing standards, policies and assessment methods informed by best practices in fisheries management around the globe. Most recently she has worked with the Alaska pollock industry as a resources analyst, within the North Pacific Fisheries Management Council process, focusing on bycatch and ecosystem-based management issues, and managing the day-to-day operations of the offshore pollock cooperative. She has co-authored a dozen publications on fisheries sustainability in the developing world and the functioning of the MSC as an instrument for transforming fisheries to a sustainable basis. MRAG Americas confirms Ms. Stern-Pirlot has no conflicts of interest in relation to the fishery under assessment. **Dr. Giuseppe Scarcella** is an experienced fishery scientist and population analyst and modeller, with wide knowledge and experience in the assessment of demersal stocks. He holds a first degree in Marine Biology and Oceanography (110/110) from the Unversità Politecnica delle Marche, and a Ph.D. in marine Ecology and Biology from the same university, based on a thesis "Age and growth of two rockfish in the Adriatic Sea". After his degree he was offered a job as project scientist in several research programs about the structure and composition of fish assemblage in artificial reefs, off-shore platform and other artificial habitats in the Italian Research Council – Institute of Marine Science of Ancona (CNR-ISMAR, now CNR-IRBIM). During the years of employment at CNR-ISMAR he has gained experience in benthic ecology, statistical analyses of fish assemblage evolution in artificial habitats, fisheries ecology and impacts of fishing activities, stock assessment, otolith analysis, population dynamic and fisheries management. During the same years he attended courses of uni- multivariate statistics and stock assessment. He is also actively participating in the scientific advice process of FAO GFCM in the Mediterranean Sea. At the moment he is member of the Scientific, Technical and Economic Committee for Fisheries for the European Commission (STECF). He is author and co-author of more than 50 scientific paper peer reviewed journals and more than 150 national and international technical reports, most of them focused on the evolution of fish assemblages in artificial habitats and stock assessment of demersal species. For some years now, Dr Scarcella has been working in fisheries certification applying the Marine Stewardship Council standard for sustainable fisheries, currently concentrating on Principle 1 of the Standard. Furthermore, Dr Scarcella holds the credential as Fishery team leader (MSC v2.0) and he completed the MSC procedure training 2.1. He also holds the credential as certifier of Responsible Fisheries Management (RFM).
8	Audit/review time and location
	A remote surveillance audit was held January 17th – 21st, 2022.

The Alaska RFM program is a voluntary program that has been developed by the Alaska Seafood Marketing Institute (ASMI) to provide an independent, third- party certification that can be used to verify that these fisheries are responsibly managed according to the Alaska RFM standard.

This assessment is based on the fundamental clauses specified in the Alaska RFM Conformance Criteria v1.3. It is based on six major components of responsible management derived from the United Nations Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labeling of products from marine capture fisheries (2009). The fundamental clauses are:

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

The purpose of this annual Surveillance Report is:

- To establish and report on any material changes to the circumstances and practices affecting the original complying assessment of the fisheries;
- To monitor any actions taken in response to non-conformances raised in the original assessment of the fisheries;
- To re-score any clauses where practice or circumstances have materially changed since the last audit.

6 Background to the fishery

6.1 Fishery Description

The AK Atka mackerel and rockfish fisheries are conducted primarily in the U.S. Exclusive Economic Zone (EEZ) waters of the BSAI and GOA. The North Pacific Fishery Management Council (NPFMC or the Council) manages the BSAI Pacific AK Atka mackerel and rockfish fisheries catch under the jurisdiction of the BSAI Groundfish Fishery Management Plan (FMP), and the GOA Groundfish FMP fisheries in the 200-mile EEZ. The Council also works very closely with the Alaska Department of Fish and Game (ADFG) and the Alaska Board of Fisheries (BOF) to coordinate management programs in federal and state waters (0-3 nm from shore). Many fishery resources are harvested in waters under both state and federal jurisdiction. As such, the Council and state work together to address habitat concerns, catch limits, allocation issues, and other management details through coordination meetings and delegation of management oversight to one agency or the other (MRAG 2020).

No material changes occurred within this fishery since the certification was finalized in December 2019. All information on this fishery could be obtained from the original full assessment report available for the download at https://www.alaskaseafood.org/alaska-rockfishand-atka-mackerel/. Catch data are similar to the previous years, and recent data are presented below:

Table 1 Total Allowable Catch (TAC) for AK mackerel and rockfish fisheries

TAC and catch data BSAI Atka mackerel				
TAC	Year	**2021**	Amount	**62.257 kt**
UoA share of TAC	Year	**2021**	Amount	**60.628 kt**
UoA share of total TAC	Year	**2021**	Amount	**97.4 %**
TAC and catch data BSAI Pacific Ocean perch				
TAC	Year	**2021**	Amount	**35.899 kt**
UoA share of TAC	Year	**2021**	Amount	**35.490 kt**
UoA share of total TAC	Year	**2021**	Amount	**98.8 %**
TAC and catch data BSAI Northern rockfish				
TAC	Year	**2021**	Amount	**13 kt**
UoA share of TAC	Year	**2021**	Amount	**6.213 kt**

UoA share of total TAC	Year	**2021**	Amount	**47.8 %**
TAC and catch data GOA Northern rockfish				
TAC	Year	**2021**	Amount	**5.357 kt**
UoA share of TAC	Year	**2021**	Amount	**2.377 kt**
UoA share of total TAC	Year	**2021**	Amount	**44.4%**
TAC and catch data GOA Pacific Ocean perch				
TAC	Year	**2021**	Amount	**30.777 kt**
UoA share of TAC	Year	**2021**	Amount	**28.959 kt**
UoA share of total TAC	Year	**2021**	Amount	**94.1 %**
TAC and catch data GOA Dusky rockfish				
TAC	Year	**2021**	Amount	**5.389 kt**
UoA share of TAC	Year	**2021**	Amount	**2.928 kt**
UoA share of total TAC	Year	**2021**	Amount	**54.3%**

The Alaska Atka mackerel and rockfish fishery was first certified under the requirements of the Alaska RFM standard v1.3 on February 14, 2020. The first surveillance audit for the fishery was completed by a different certifier, DNV, in May 2021 (DNV 2021). This is the 2nd surveillance audit.

7 The Assessment Process

7.1 Site visits

A remote site visit was held January 17th – 21st. This surveillance audit was held in conjunction with the MSC surveillance audits of BSAI & GOA pollock, cod, and flatfish, along with the RFM reassessment of BSAI & GOA Pacific cod and pollock.

Below is the agenda used for this site visit and for the RFM reassessment site visit for all AK groundfish fisheries:

Responsible Fisheries Management 4th Surveillance Site Visit Agenda,
Alaska Pollock and Pacific cod Fisheries
Marine Stewardship Council 1st Surveillance Audit
Alaska pollock, Pacific cod, Flatfish, Rockfish and Atka Mackerel
January 17-21, 2022

Date	City	Meeting Location	Activity	Key Personnel	All Times PST
January 18th	Seattle	At-Sea Processors Association Office 4039 21st Ave West, Suite 400	Meeting	Opening Client Meetings pollock: Austin Estabrooks (APA), Ruth Christiansen (UCB), Julie Bonney (AGDB)	9-10 am
		At-Sea Processors Association Office 4039 21st Ave West, Suite 400		Opening Client Meetings Pacific cod: Tommy Sheridan (AFDF), Julie Decker (AFDF), Jim Armstrong/Chad See (FLC), Ruth Christiansen (UCB), Mark Fina (GFF)	10-11 am
		Alaska Fishery Science Center		Jim Ianelli (EBS Pollock and multispecies models)	11 am-5 pm

		7600 Sand Point Way N.E., Building 4		Steve Barbeaux (GOA Pacific cod, AI Pollock) Cole Monnahan (GOA Pollock) Steve Barbeaux (BS & AI Pacific cod) Lisa Thompson (FMA-Observer) Jeremy Sterling (NMML) Shannon Fitzgerald (Seabirds) Ecosystem Status Reports? Ecosystem Modeling?	
January 19th	Anchorage based staff	NPFMC 605 W 4th Ave	Meeting	NPFMC Staff-Dave Witherell, Diana Stram, Diana Evans	9-10 am
		Federal Building 3601 C St.		NMFS Office of Law Enforcement-Nathan Lagerwey	10-11 am
		NMFS Habitat Offices 222 W 7th Ave		NMFS Habitat Division-John Olson	11 am-12 pm
January 19th	Juneau based staff	Federal Building 709 W 9th Ave	Meeting	NMFS In-Season Management Staff-Mary Furuness, Steve Whitney	12-1pm
January 20th	Seattle	Federal Building 709 W 9th Ave	Meeting	United States Coast Guard- CAPT Jason Brennell, LCDR Jedediah Raskie	9-10 am
		ADF&G HQ 1255 W 8th Ave		Alaska Dept of Fish & Game- Forrest Bowers, Tim Baker, Mark Stichert	10-11 am
				Alaska Wildlife Troopers- Lt. Jonathan Streife?	11-12 pm
		TBD		Stakeholder Meetings/Follow Up with Stock Author/Ecosystem/Habitat Experts	2-5pm
January 21st	Seattle	At-Sea Processors Association Office 4039 21st Ave West, Suite 400	Meeting & Report Writing	Closing Client Meetings pollock: Austin Estabrooks (APA), Ruth Christiansen (UCB), Julie Bonney (AGDB)	9-10 am
		At-Sea Processors Association Office 4039 21st Ave West, Suite 400		Closing Client Meetings Pacific cod: Tommy Sheridan (AFDF), Julie Decker (AFDF), Jim Armstrong/Chad See (FLC), Ruth Christiansen (UCB), Mark Fina (GFF)	10-11 am
				Report Writing and Follow-Up Meetings as Necessary	1 pm-5 pm

7.2 Stakeholder input

Prior to the audit site visit, all stakeholders were informed of the visit and given the opportunity to provide information to the auditors in advance of, or during, the site visit. No stakeholder comments were received for this surveillance audit.

8 Assessment Outcome / Fundamental Clauses Summaries

8.1 The Fisheries Management System (A)

Much of this text was adapted from DNV's 1st surveillance report (DNV 2021).

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.

No. supporting clauses	13
Applicable supporting clauses	6
Non-applicable supporting clauses	7 (1.3, 1.3.1, 1.4, 1.4.1, 1.5, 1.6.1, 1.9)
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

Considerable resources in the form of stock assessment, ecosystem monitoring and management expertise and capacity; management organizations and structures (e.g., National Marine Fisheries Service (NMFS) Alaska region, the North Pacific Fishery Management Council (NPFMC, or Council), NOAA Fisheries Office of Law Enforcement (OLE), United States Coast Guard (USCG), Observer Program) are dedicated to fisheries, including Atka mackerel, Northern rockfish, Pacific Ocean Perch (POP) and "other" rockfish complex, in Alaskan federal waters. National legislation and the regulatory process by which the Council and NMFS are directed and follow, enable the management of the resource at regional and localized levels. The adaptive and consultative management approach adopted by the Council actively promotes stakeholder participation. The NOAA Office of General Council (OGC) reviews any proposed management action to assure compliance with the Magnuson-Stevens Reauthorization Act (MSRA). International obligations (e.g., combating Illegal, Unreported and Unregulated (IUU) fishing) and the enforcement of federal regulations are upheld by the federal departments such as USCG and OLE.

The assessment models used take into account all sources of fishing mortality and are based on complete catch reporting systems including extensive observer data. Catches from fisheries occurring in state-managed waters are included in the appropriate assessments. All retained catch and discards of BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish are included in the total catch amounts input into the models. The assessments consider various relevant aspects of target stocks biology and distribution. The assessments of BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish are age-structured, use a Bayesian approach, consider sources of uncertainty where possible, and evaluate stock status relative to reference points in a probabilistic way. BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish SAFE reports give extensive histories of the models used in the assessments (see: Lowe et al., 2020; Spencer and Ianelli, 2020a, b; Williams et al., 2020; Fenske et al., 2020; Hulson et al., 2020). Additionally, in BSAI and GOA models exploring stock status in relation to changing environmental conditions have also been developed and evaluated, in some of the models also the target stocks of the present report are considered (see: https://www.fisheries.noaa.gov/feature-story/noaa-releases-2021-ecosystem-status-reports-eastern-bering-sea-gulf-alaska-and; Siddon, 2021; Ferriss, and Zador, 2021). Each model uses information on the status of the stock and potential effects of current management practices.

The North Pacific Fishery Management Council (NPFMC or the Council) manages the BSAI and GOA AK mackerel and rockfish under the jurisdiction of the BSAI Groundfish Fishery Management Plan (FMP), and the GOA Groundfish FMP fisheries in the 200-mile EEZ. The Council also works very closely with the Alaska Department of Fish and Game (ADFG) and the Alaska Board of Fisheries (BOF) to coordinate management programs in federal and state waters (0-3 nm from shore). Many fishery resources are harvested in waters under both state and federal jurisdiction. As such, the Council and state work together to address habitat concerns, catch limits, allocation issues, and other management details through coordination meetings and delegation of management oversight to one agency or the other (MRAG 2020).

The Council's FMPs (NPFMC 2018a, 2019) explicitly describe the Council's commitment to review management issues and this is reflected in the numerous Council meetings that take place each year.

Similarly, the BOF websites have dedicated pages to their public meetings and agendas and outcomes reflect a commitment to review previously agreed management measures.

There is an agreed system to finance the fishery management organizations and arrangements. In general, the costs of fisheries management and conservation are funded through Congressional and state appropriations that follow the federal and state budget cycles. Cost recovery from certain fleet sectors is also in operation. The MSA authorizes and requires the collection of cost recovery fees for limited access privilege programs, such as the CDQ Program. Cost recovery fees recover the actual costs directly related to the management, data collection, and enforcement of the programs. The current groundfish observer program is a further example of management being financially supported through cost recovery. Estimates of the costs for federal and state management, research, and enforcement of the groundfish stocks in the BSAI and GOA are reported in the BSAI and GOA Groundfish FMPs.

There are procedures at multiple levels to review management measures, and the MSRA is reviewed by Congress every five years and is periodically revised and reauthorized. The adaptive management approach taken in the Alaska Pacific fisheries requires regular and periodic review. Component parts of the FMPs are regularly reviewed, including outcome indicators, and various levels of Environmental Impact Statements (EISs) are undertaken when the FMPs are amended to review the environmental and socio-economic consequences, as well as assess the effectiveness of the changes. Stakeholders are actively encouraged to participate in Council and BOF meetings and, in so doing, opportunity to review management measures is provided. Stock status is reviewed and updated annually, producing SAFE reports for the federally managed GOA and BSAI target stocks. ADFG also conducts scientific research and surveys. The SAFE reports document stock status and significant trends or changes in the resource, marine ecosystems and fishery over time. The reports also assess the relative success of existing state and Federal fishery management programs and, based on stock status indicators, provide recommendations for annual quotas and other fishery management measures.

The Council (and NMFS) as well as the BOF (and ADFG) provide substantial amounts of information on their websites, including agenda of meetings, discussion papers, and records of decisions. The Council and the BOF actively encourage stakeholder participation, and all Council and BOF deliberations are conducted in open, public sessions. Anyone may submit regulatory proposals, and all such proposals are given due consideration by both the Council and the BOF.

The current RFM assessment/certification document states that in BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish are not considered to be transboundary, straddling, highly migratory, or high seas stocks. Thus, several sub-clauses in this fundamental clause have not been scored in that certification report, and subsequently in this surveillance audit.

The assessments of the target stocks in the AI, BS, and GOA are conducted routinely with the most recent done in December 2021 (Lowe et al., 2021; Spencer and Ianelli, 2021a, b; Williams et al., 2021; Fenske et al., 2021; Hulson et al., 2021).

There is no material change in compliance with any of the following supporting clauses. The BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks in Alaska are not considered to be transboundary, straddling, highly migratory, or high seas stocks and so clauses 1.3, 1.3.1, 1.4, 1.4.1, 1.5, 1.6.1, and 1.9 are not applicable.

1.1 There shall be an effective legal and administrative framework established at local and national level appropriate for fishery resource conservation and management. The management system and the fishery operate in compliance with the requirements of local, national and international laws and regulations, including the requirements of any regional fisheries management agreement.

1.2 Management measures shall consider 1) the whole stock biological unit (i.e. structure and composition contributing to its resilience) over its entire area of distribution, 2) the area through which the species migrates during its life cycle and 3) other biological characteristics of the stock.

1.2.1 Previously agreed management measures established and applied in the same region shall be taken into account by management.

1.3 Where trans-boundary, straddling or highly migratory fish stocks and high seas fish stocks are exploited by two or more States, the Applicant Management Organizations concerned shall cooperate and take part in formal fishery commission or arrangements that have been appointed to ensure effective conservation and management of the stock/s in question. ***Not applicable to this fishery**

1.3.1 Conservation and management measures established for such stock within the jurisdiction of the

relevant States for shared, straddling, high seas and highly migratory stocks, shall be compatible. Compatibility shall be achieved in a manner consistent with the rights, competences and interests of the States concerned. ***Not applicable to this fishery**

1.4 A State not member/participant of a sub-regional or regional fisheries management organization shall cooperate, in accordance with relevant international agreements and law, in the conservation and management of the relevant fisheries resources by giving effect to any relevant measures adopted by such organization/arrangement. ***Not applicable to this fishery**

1.4.1 States seeking to take any action through a non-fishery organization which may affect the conservation and management measures taken by a competent sub-regional or regional fisheries management organization or arrangement shall consult with the latter, in advance to the extent practicable, and take its views into account. ***Not applicable to this fishery**

1.5 The Applicant fishery's management system shall actively foster cooperation between States with regard to 1) information gathering and exchange, 2) fisheries research, 3) fisheries management, and 4) fisheries development. ***Not applicable to this fishery**

1.6 States and sub-regional or regional fisheries management organizations and arrangements, as appropriate, shall agree on the means by which the activities of such organizations and arrangements will be financed, bearing in mind, inter alia, the relative benefits derived from the fishery and the differing capacities of countries to provide financial and other contributions. Where appropriate, and when possible, such organizations and arrangements shall aim to recover the costs of fisheries conservation, management and research.

1.6.1 Without prejudice to relevant international agreements, States shall encourage banks and financial institutions not to require, as a condition of a loan or mortgage, fishing vessels or fishing support vessels to be flagged in a jurisdiction other than that of the State of beneficial ownership where such a requirement would have the effect of increasing the likelihood of non-compliance with international conservation and management measures. ***Not applicable to this fishery**

1.7 Procedures shall be in place to keep the efficacy of current conservation and management measures and their possible interactions under continuous review to revise or abolish them in the light of new information.

- Review procedures shall be established within the management system.
- A mechanism for revision of management measures shall exist.

1.8 The management arrangements and decision-making processes for the fishery shall be organized in a transparent manner.

- Management arrangements
- Decision-making

1.9 Management organizations not party to the Agreement to promote compliance with international conservation and management measures by vessels fishing in the high seas shall be encouraged to accept the Agreement and to adopt laws and regulations consistent with the provisions of the Agreement. ***Not applicable to this fishery**

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

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.

No. supporting clauses	**10**

Applicable supporting clauses	9
Non-applicable supporting clauses	1 (2.7)
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

In managing the Alaska BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish fisheries, NMFS, in conjunction with the Council and ADFG, participate in coastal area management-related issues through processes established by the National Environmental Policy Act (NEPA), which requires that all federal agencies' funding or permitting decisions be made with full consideration of the impact to the natural and human environment. An environmental review process is required that includes a risk evaluation and evaluation of alternatives including a "no action" alternative. The Council and the BOF system were designed so that fisheries management decisions were made at the regional level to allow input from affected stakeholders. Council meetings are open, and public testimony is taken on issues prior to deliberations and final decisions. In so doing, the management organizations within Alaska and their management processes take into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development.

The Council and BOF websites actively encourage and demonstrate participation by stakeholders at their respective public meetings and cover a wide range of topics regarding the use, development and management of coastal resources. Potential conflict between fishermen and other coastal users at the federal level are usually discussed and resolved through the NEPA process and, at the state level, through the BOF public meeting process or regional committee established as part of the state’s land use and access planning processes.

The technical capacities of the federal and state agencies involved in the management of Alaska BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish are significant, and include internationally recognized scientists, experienced fishery managers and policy makers and highly professional and trained enforcement officers. Appropriate technical and financial resources are in place. A joint protocol is in place between the Council and ADFG which provides the intent to provide long term cooperative, compatible management systems that maintain the sustainability of the fisheries resources in federal and state waters.

Canada abuts the U.S. border to the south and shares certain fisheries resources, however the GOA stocks are not considered to be transboundary. The United States and Canada have a very strong working relationship at both the national and regional levels. In cases involving boundary disputes and treaties governing fishery access, the USCG, NOAA, and Canadian Department of Fisheries and Oceans (DFO) along with Canadian Coast Guard counterparts have effectively coordinated living marine resource enforcement efforts despite occasional related political and economic tensions. There are established agreements and shared management and working practice (e.g., International Pacific Halibut Commission (IPHC), Pacific Salmon Treaty, an agreement between the U.S. and Canada on enforcement).

The MSRA requires the Council and other groups (BOF, ADGF, etc.) to hold public meetings within their respective regions to discuss the development and amendment of FMPs. These meetings are publicized by the Council and stakeholders actively encouraged to participate changes and allow input from stakeholders. The BOF website publishes information on forth-coming BOF meetings including the “Proposal Book” which details proposed ADFG or stakeholder-requested changes that might lead to regulatory change. Stakeholders are actively encouraged to participate at the meetings and submit proposal prior to the meetings. The OLE and AWT put an emphasis on educating and informing stakeholders of new regulatory changes and other important fishery related matters.

Fisheries in the EEZ off Alaska; BSAI; proposed 2021 and 2022 harvest specifications for groundfish are available at the following link:

https://www.federalregister.gov/documents/2020/12/03/2020-26598/fisheries-of-the-exclusive-economic-zone-off-alaska-bering-sea-and-aleutian-islands-proposed-2021

The Community Development Quota (CDQ) program was created by the Council in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. The program involves eligible communities who have formed six regional organizations, referred to as CDQ groups. There are 65 communities within a 50-mile radius of the BSAI coastline who participate in the program. The program is reviewed every 10 years, with the last review occurring in 2012. Analysis by the State of Alaska in 2013

determined that each CDQ entity had maintained or improved performance against its objectives. The CDQ program provides an example of how the management system takes account of the allocation and use of coastal resources with respect to their economic, social and cultural value.

A considerable amount of monitoring of the coastal environment in Alaska is conducted and supported by multiple federal and state agencies (e.g., NMFS, Alaska Fisheries Science Center (AFSC), ADFG, universities such as the University of Alaska Fairbanks' Institute of Marine Science, and organizations that support and facilitate marine research such as the North Pacific Research Board [NPRB]). The NPRB have helped fund two major projects in the Alaska region: The Bering Sea Project and the GOA Ecosystem Study. AFSC has established the Ecosystem Monitoring and Assessment Program with an overall goal to improve and reduce uncertainty in stock assessment models of commercially important fish species through the collection of observations of fish and oceanography.

The State of Alaska is represented in the Oil Spill Task Force by the Department of Environmental Conservation. Its Division of Spill Prevention and Response prevents spills of oil and hazardous substances, prepares for when a spill occurs and responds rapidly to protect human health and the environment. The Oil Spill Recovery Institute located in Prince William Sound (PWS) conducts research into oil spills and their effects on the Alaskan environment, particularly the natural resources in PWS.

There is no material change in compliance with any of the following supporting clauses. Clause 2.7 is not applicable.

2.1 An appropriate policy, legal and institutional framework shall be adopted in order to achieve sustainable and integrated use of living marine resources, taking into account 1) the fragility of coastal ecosystems and finite nature of their natural resources; 2) allowing for determination of the possible uses of coastal resources and govern access to them, 3) taking into account the rights and needs of coastal communities and their customary practices to the extent compatible with sustainable development. In setting policies for the management of coastal areas, 4) States shall take due account of the risks and uncertainties involved.

2.1.1 States shall establish mechanisms for cooperation and coordination among national authorities involved in planning, development, conservation and management of coastal areas.

2.1.2 States shall ensure that the authority or authorities representing the fisheries sector in the coastal management process have the appropriate technical capacities and financial resources.

2.2 Representatives of the fisheries sector and fishing communities shall be consulted in the decision-making processes involved in other activities related to coastal area management planning and development. The public shall also be kept aware on the need for the protection and management of coastal resources and the participation in the management process by those affected.

2.3 Fisheries practices that avoid conflict among fishers and other users of the coastal area (e.g. aquaculture, tourism, energy) shall be adopted and fishing shall be regulated in such a way as to avoid risk of conflict among fishers using different vessels, gear and fishing methods. Procedures and mechanisms shall be established at the appropriate administrative level to settle conflicts which arise within the fisheries sector and between fisheries resource users and other coastal users.

2.4 States and sub-regional or regional fisheries management organizations and arrangements shall give due publicity to conservation and management measures and ensure that laws, regulations and other legal rules governing their implementation are effectively disseminated. The bases and purposes of such measures shall be explained to users of the resource in order to facilitate their application and thus gain increased support in the implementation of such measures.

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.

2.6 States shall cooperate at the sub-regional level in order to improve coastal area management, and in accordance with capacities, measures shall be taken to establish or promote systems for research and monitoring of the coastal environment, in order to improve coastal area management, and promote multidisciplinary research in support and improvement of coastal area management using physical, chemical, biological, economic, social, legal and institutional aspects.

2.7 States shall, within the framework of coastal area management plan, establish management systems for artificial reefs and fish aggregation devices. Such management systems shall require approval for the construction and deployment of such reefs and devices and shall take into account the interests of fishers, including artisanal and subsistence fishers. *Not applicable to this fishery

2.8 In the case of activities that may have an adverse transboundary environmental effect on coastal areas, States shall:

a) Provide timely information and if possible, prior notification to potentially affected States.

b) Consult with those States as early as possible.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 3.

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

No. supporting clauses	**8**
Applicable supporting clauses	8
Non-applicable supporting clauses	0
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

The Council manages the AK mackerel and rockfish fisheries under the jurisdiction of the BSAI Groundfish Fishery Management Plan (FMP), and the GOA Groundfish FMP. Within these FMPs are nine management and policy objectives, that are reviewed annually. These include preventing overfishing, preserving the food web, and reducing bycatch and waste. The BOF identified guiding principles when developing their initial groundfish management, which are similar to the Council objectives.

The Alaska License Limitation Program (LLP) has been in place since 2000. The intent of the program has been to use fishing track records to rationalize the Alaska groundfish and crab fleet by limiting the number, size and specific operation of vessels as well as eliminating latent licenses. The Restricted Access Management Program has prepared lists of LLP groundfish and crab licenses. LLP licenses are initially issued to persons, based on the activities of original qualifying vessels.

Amendment 80, implemented in 2008, allocates BSAI yellowfin sole, flathead sole, rock sole, Atka mackerel, and Aleutian Islands Pacific Ocean perch to the head and gut trawl catcher processor sector, and allows qualified vessels to form cooperatives (NPFMC 2022). The program establishes GOA groundfish sideboard limits for pollock, Pacific cod, Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish, as well as GOA halibut prohibited species catch (PSC). GOA sideboard restrictions are based on historic participation during 1998-2004 (NPFMC 2022).

Groundfish licenses are currently required to participate in the BSAI groundfish fisheries in Federal waters off Alaska. Licenses may contain endorsements for both areas (EBS and AI), or one of the two areas. Gear endorsements define what type of gear may be used: non-trawl, trawl, or both. The GOA groundfish fisheries are among the few remaining limited access (not rationalized) fisheries in Alaska.

General state-wide groundfish regulations include a vessel registration requirement, legal gear definitions, bycatch allowances, and requirements for seabird avoidance measures to be used when fishing with longline gear. The state fisheries for BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish are not closed access fisheries.

The MSRA requires that conservation and fisheries' management measures prevent overfishing while achieving optimal yield (OY) on a continuing basis. NMFS and the Council follow a multi-faceted precautionary approach, including overfishing Limits (OFL), acceptable biological catch (ABC), TAC, and OY to manage the federal Alaska mackerel and rockfish fisheries, based on targets, limits, and pre-defined harvest control rules (HCRs), as well as overall ecosystem considerations (e.g., the OY limits). The fisheries management system is supported by high level science, and management measures have been generally effective in avoiding overfishing and promoting responsible fishing. Objectives for the BSAI and GOA are set out in the FMPs and include the need to take into account socio-economic considerations. Estimates of ex-vessel value by area, gear, type of vessel, and species, are included in the annual Economic Status SAFE report (Fissel et al., 2021 - https://www.fisheries.noaa.gov/resource/data/2020-economic-status-groundfish-fisheries-alaska), and each stock assessment SAFE also contains extensive economic data.

The 2021 assessments of Alaska BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks are available in SAFE reports, which give extensive histories of the models used in the assessments (see: https://www.fisheries.noaa.gov/tags/north-pacific-groundfish-stock-assessments). Safe reports indicate that the stocks are not in overfishing and overfished.

The GOA and BSAI FMPs describe management measures designed to consider the interests of subsistence, small-scale, and artisanal fisheries. Specific FMP management objectives include: the promotion of sustainable fisheries and communities, the promotion of equitable and efficient use of fishery resources and increase Alaska native consultation. Actions have been taken to minimize the bycatch of halibut and salmon, given its importance for subsistence and artisanal fisheries. The fishery dependence of coastal and western Alaska communities was addressed through the creation of the CDQ programs for the BSAI in the early to mid-1990s and the expansion of those programs into the multispecies CDQ program by 1999.

BSAI Specifications:
During the December 2021 Council Meeting, the Council made final recommendations on groundfish harvest specifications, prohibited species catch (PSC) limits, and halibut Discard Mortality Rates (DMRs) to manage the 2022 and 2023 BSAI groundfish fisheries. In setting Total Allowable Catch (TACs) for 2022 and 2023, the Council accounts for Guideline Harvest Levels (GHLs) for groundfish fisheries in State waters. The Council specified an ABC reserve for flathead sole, rock sole, and yellowfin sole, which was specified as the ABC surplus for the species (i.e., the difference between the ABC and TAC). Full assessments were performed in 2021 for EBS and AI pollock, EBS and AI cod, sablefish, yellowfin sole, flathead sole, Alaska plaice, northern rockfish and Atka mackerel (NPFMC 2021).

In April 2021, the Council reviewed and revised options for a proposed management measure to link the Pacific halibut PSC limit for the Amendment 80 commercial groundfish trawl sector in the BSAI to halibut abundance. In December 2021, the Council took final action on the draft Environmental Impact Statement (DEIS) for the abundance-based management (ABM) of the Amendment 80 halibut PSC limit. The current PSC limit is set as a fixed amount at 1,745 mt, which becomes an increasingly larger proportion of total halibut removals in the BSAI when halibut abundance declines. Under this ABM program, the A80 halibut PSC limit will move both up and down according to the indices of abundance and be responsive to changing halibut stock conditions that affect all halibut users, while never exceeding the current PSC limit (NPFMC 2021). The preferred alternative apparently balances between the Magnuson-Stevens Act (MSA) requirements under MSA National Standard 9 (establish conservation measures that minimize bycatch) with MSA National Standard 1 (achieving optimum yield on a continuing basis). It also seeks to balance the interests of the two largest halibut user groups in the BSAI, the directed commercial halibut fishery and the A80 sector. Implementation of this action will occur in either 2023 or the beginning of the 2024 fishing year (NPFMC 2021).

Additionally, crab PSC limits have all declined from 2021 levels due to the estimated abundances of red king crab, Tanner crab and snow crab. Federal regulations state that the Red King Crab Savings Subarea be closed to nonpelagic trawl gear if the ADFG does not set a TAC for red king crab in the Bristol Bay area in the previous year. A TAC has not been set for the 2021/2022 Bristol Bay red king crab season and therefore, the area will be closed to nonpelagic trawl gear in 2022 (NPFMC 2021).

GOA Specifications:

The Council approved the 2021 Gulf of Alaska (GOA) Groundfish Stock Assessment and Fishery Evaluation (SAFE) report and recommended final harvest specifications for the 2022 and 2023 GOA groundfish fisheries. For final rulemaking for the 2022 and 2023 fishing years, the Council recommended Overfishing Limits (OFLs) and Acceptable Biological Catch (ABC) levels consistent with SSC recommendations, and final Total Allowable Catch (TAC). For most stocks, the Council established TACs equal to ABCs. Exceptions where the TAC is set below ABC include pollock, Pacific cod, shallow water flatfish in the Western GOA, arrowtooth flounder, flathead sole in Western and Central GOA, other rockfish in the Eastern GOA, and Atka mackerel (NPFMC 2021). Full assessments were produced for all stocks in the GOA in 2021 with the following exceptions: partial assessments were produced for flathead sole, deep-water flatfish, northern rockfish, and dusky rockfish (NPFMC 2021).

The Council also reviewed the Ecosystem Status Report for the GOA, including a 4-page GOA ecosystem brief. The report provided information on ocean conditions, phytoplankton and zooplankton densities, forage fish abundance, and seabird and marine mammal trends. The report highlighted average temperatures for 2021, however, the GOA biological community is still adapting from the marine heatwaves in 2014-2016 and 2019. Examples of species populations that remain reduced include Pacific cod, Prince William Sound humpback whales, capelin, and common murres (NPFMC 2021c).

At the Council meeting that took place in February 2020, the Council took final action to recommend reauthorization of the Rockfish Program. The Council approved the current management framework with additional modifications designed to improve efficiency within the program, clarify existing regulations and remove unnecessary regulations. The intent is for the new regulations to be implemented before the current Rockfish Program expires on December 31, 2021 (NPFMC 2021b).

Information for assessing the status of BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish come from the Stock Assessment and Fishery Evaluation (SAFE) reports (see: https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/assessments.htm). Catches of Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) of Atka mackerel, Northern rockfish, POP and dusky rockfish continue to be constrained by halibut bycatch limits. The 6 stocks considered in the present surveillance report are above MSY level both in BSAI and in GOA (Figure 1 and Figure 2 and the following paragraph by stock).

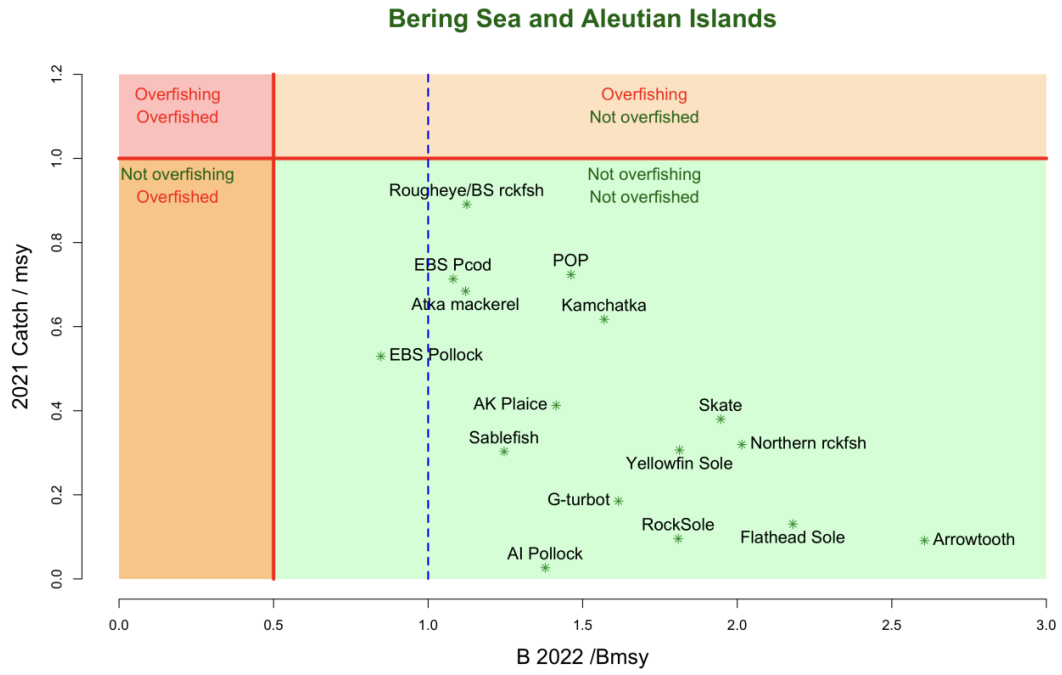

Figure 1 - Summary of BSAI stock status next year (spawning biomass relative to B_{MSY}; horizontal axis) and current year catch relative to fishing at F_{MSY} (vertical axis) where F_{OFL} is taken to equal F_{MSY}. Source: Aydin, et al., 2021

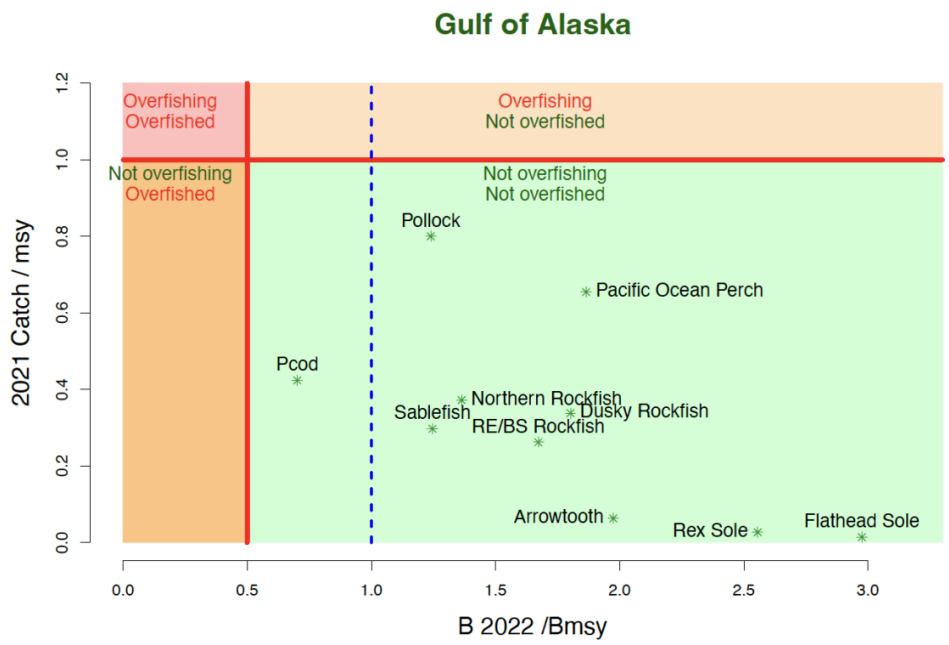

Figure 2 - Summary of GOA stock status next year (spawning biomass relative to BMSY; horizontal axis) and current year catch relative to fishing at FMSY (vertical axis). Note that sablefish is for Alaska-wide values including the BSAI catches. Barbeaux, et al., 2021.

FMPs, protected species management plans, and biological opinion reviews are all supported by well-designed data-gathering programs and analyses, widely available through NMFS and Council websites. These are, in relation to the complexity of factors which may affect species dynamics, comprehensive and rigorous in their analysis.

There are mechanisms developed to identify significant effects on essential fish habitat (EFH) and for identifying habitat areas of particular concern and are considered consistent with achieving management objectives for avoidance, minimization or mitigation of impacts 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. This is further supported by habitat ecosystem indicators considered as part of the SAFE process. There are processes in place – primarily through FMPs, endangered species management plans and Biological Opinions and EISs of the various plans - that allow for direct and indirect impacts that are likely to have significant (not only serious) consequences to be addressed.

The assessment team received stakeholder comment and an update on the status of the current and previous Essential Fish Habitat 5-year review process. Currently, the new 5-year EFH review is officially underway. The species distribution modelling team at AFSC has done one round with the Science and Statistical Committee (SSC); no model results yet, only some examples so far. The outputs by species and life stage will go to stock assessment scientists, etc. The SSC will review species distribution model outputs in February. Dr Jim Thorsen and his team at AFSC are developing more advanced species distribution models than previously used. The Fishing Effects model is being re-run with updates to impact and recovery parameters, fishing gear parameters and fishing effort. He expects the modelling work will be further improved via the SSC review process.

There are several processes in place which address actual or potential impacts identified through the monitoring of the groundfish fishery and the ecosystem supporting the fishery. The primary mechanism is the annual SAFE report. There are specific processes through NMFS and U.S. Fish and Wildlife Service (USFWS) to review potential impacts (generally indirect effects through changes in prey availability) on endangered species (through the Endangered Species Act, ESA) and marine mammals (Marine Mammal Protection Act, MMPA).

There is no material change in compliance with any of the following supporting clauses:

3.1 Long term management objectives shall be translated into a plan or other management document (taking into account uncertainty and imprecision) and be subscribed to by all interested parties.

3.2 Management measures shall provide inter alia that:

3.2.1 Excess fishing capacity shall be avoided and exploitation of the stocks remains economically viable.

3.2.2 The economic conditions under which fishing industries operate shall promote responsible fisheries.

3.2.3 The interests of fishers, including those engaged in subsistence, small-scale and artisanal fisheries shall be taken into account.

3.2.4 Biodiversity of aquatic habitats and ecosystems shall be conserved and endangered species shall be protected. Where relevant, there shall be pertinent objectives, and as necessary, management measures.

3.2.5 There shall be management objectives seeking to avoid, minimize or mitigate 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.

3.2.6 There shall be 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.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

8.2 Science and Stock Assessment Activities (B)

Fundamental Clause 4.

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

No. Supporting clauses	13
Supporting clauses applicable	**8**
Supporting clauses not applicable	**5 (4.7, 4.8, 4.9, 4.10, 4.11)**
Overall level of conformity	**High**
Non Conformances	**None**

Evidence of continuous compliance with the fundamental clause:

NMFS and ADFG collect fishery data and conduct fishery independent surveys to assess the BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish fisheries and ecosystems in GOA and BSAI areas. SAFE reports ((Lowe et al., 2020; Spencer and Ianelli, 2020a, b; Williams et al., 2020; Fenske et al., 2020; Hulson et al., 2020) provide complete descriptions of the data collected and used in the annual assessments, used to determine stock status and harvest recommendations for the Alaskan target stocks. For these fisheries, there is a well-established system that allows for the production, maintenance, regular update, and verification of statistical data. Reporting of commercial catch from both state and federally managed fisheries is done through the Catch Accounting System, a multi-agency (NMFS, IPHC, and ADFG) system that centrally collates landings data from shore-based processing and landings operations as well as retained catch observations from individual vessels. Catch reports for previous years can be found on the NMFS and ADFG websites. The Alaska Fisheries Information Network maintains an analytic database of both state and federal commercial fisheries data in Alaska and provides that data in usable formats.

All data from the state and federally managed fisheries are included in the stock assessments. Relative to commercial catch, there is minimal recreational, personal use, or subsistence fishing for BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaskan waters, and all estimates of such catches compiled by ADFG are included in the assessment catch data. Smaller scale fisheries managed by ADFG and BOF are controlled with specified GHL and other regulations, such as closed areas around Steller sea lion rookeries.

Amendment 86 to the FMP of the BSAI and Amendment 76 to the FMP of the GOA established the new North Pacific Groundfish and Halibut Observer Program, and all vessels fishing for groundfish in federal Alaskan waters are required to carry observers, at their own expense, for at least a portion of their fishing time. Data gathered in the Observer Program cover all biological information from commercial fisheries, including catch weights (landings and discards), catch demographics (species composition, length, sex and age) and interactions with species such as sharks, rays, seabirds, marine mammals and other species with limited or no commercial value. NMFS and the Council have developed at-sea electronic monitoring to integrate video monitoring into the Observer Program to improve data collection. On August 8, 2017, NMFS published a final rule to integrate electronic monitoring into the Observer Program (Ganz et al. 2018). Observer coverage in the BSAI groundfish fisheries has been at or near 100% for the past several years, while in the GOA, lower coverage rates exist. Detailed annual reports (e.g., Alaska Fisheries Science Center and Alaska Regional Office 2021) from the Observer Program can be found on NMFS website, and provide extensive information on the Observer Program, including observer deployments, coverage rates, data collections, etc.

Vessels less than 40 ft. are in the no-selection pool for observer coverage. However, in BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish fisheries, the amount of target stocks taken by vessels <40 ft. LOA was very low in recent years.

NMFS and ADFG have extensive scientific databases which include BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish, and the Council has substantial information on management of target stocks in Alaskan waters. These data are made widely available through the agency websites, publications and at various publicly attended meetings. Data on certain aspects of commercial fishing are considered to be confidential, such as individuals or individual vessels in the analysis of fishery catch-per-unit-effort data, depending on the number of individuals or entities involved. Annual economic SAFE reports (e.g., Fissel et al. 2020) on social/cultural/economic value of the Alaskan fisheries resources are produced. Individual BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish assessment SAFE reports have extensive sections

on the economic performance of the fisheries. Alaska supports both the Alaska Seafood Marketing Institute and the Kodiak Seafood and Marine Science Center to stimulate research and to support and distribute the benefits of seafood in human diets.

There is no material change in compliance with any of the following supporting clauses. Clauses 4.7, 4.8, 4.9, 4.10, and 4.11 are not applicable. 4.1. All fishery removals and mortality of the target stock(s) shall be considered by management. Specifically, reliable and accurate data required for assessing the status of fishery/ies and ecosystems - including data on retained catch, bycatch, discards and waste shall be collected. Data can include relevant traditional, fisher or community knowledge, provided their validity can objectively be verified. These data shall be collected, at an appropriate time and level of aggregation, by relevant management organizations connected with the fishery, and provided to relevant States and sub-regional, regional and global fisheries organizations.

4.1.1 Timely, complete and reliable statistics shall be compiled on catch and fishing effort and maintained in accordance with applicable international standards and practices and in sufficient detail to allow sound statistical analysis for stock assessment. Such data shall be updated regularly and verified through an appropriate system. The use of research results as a basis for the setting of management objectives, reference points and performance criteria, as well as for ensuring adequate linkage, between applied research and fisheries management (e.g. adoption of scientific advice) shall be promoted. Results of analysis shall be distributed accordingly as a contribution to fisheries conservation, management and development.

4.1.2 In the absence of specific information on the “stock under consideration”, generic evidence based on similar stocks can be used for fisheries with low risk to that “stock under consideration”. However, the greater the risk of overfishing, the more specific evidence is necessary to ascertain the sustainability of intensive fisheries.

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

4.3. Sub-regional or regional fisheries management organizations or arrangements shall compile data and make them available, in a manner consistent with any applicable confidentiality requirements, in a timely manner and in an agreed format to all members of these organizations and other interested parties in accordance with agreed procedures.

4.4. States shall stimulate the research required to support national policies related to fish as food.

4.5. States shall ensure that a sufficient knowledge of the economic, social, marketing and institutional aspects of fisheries is collected through data gathering, analysis and research and that comparable data are generated for ongoing monitoring, analysis and policy formulation.

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.

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. *Not applicable to this fishery.

4.8 States shall promote the adoption of uniform guidelines governing fisheries research conducted on the high seas and shall, where appropriate, support the establishment of mechanisms, including, inter alia, the adoption of uniform guidelines, to facilitate research at the sub-regional or regional level and shall encourage the sharing of such research results with other regions. *Not applicable to this fishery.

4.9 States and relevant international organizations shall promote and enhance the research capacities of developing countries, inter alia, in the areas of data collection and analysis, information, science and technology, human resource development and provision of research facilities, in order for them to participate effectively in the conservation, management and sustainable use of living aquatic resources. *Not applicable to this fishery.

4.10 Competent national organizations shall, where appropriate, render technical and financial support to States upon request and when engaged in research investigations aimed at evaluating stocks which have been previously unfished or very lightly fished. *Not applicable to this fishery.

4.11 Relevant technical and financial international organizations shall, upon request, support States in their research efforts, devoting special attention to developing countries, in particular the least developed among them and small island developing countries. *Not applicable to this fishery.

Changes to Fundamental Clause Confidence Ratings.
There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:
Conformance level: High. Non-conformance: None

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.

No. Supporting clauses	**7**
Supporting clauses applicable	**6**
Supporting clauses not applicable	**1 (5.4)**
Overall level of conformity	**High**
Non Conformances	**None**

Evidence of continuous compliance with the fundamental clause:

NMFS has a well-established institutional framework for research developed within the AFSC, which operates several laboratories and Divisions, including the Auke Bay Laboratories in Alaska which conduct scientific research on fish stocks, fish habitats, and the chemistry of marine environments. Peer reviewed stock assessments are done annually and used as the scientific basis to set catch quotas, taking into account uncertainty and evaluating stock status relative to reference points in a probabilistic way. The SAFE reports are compiled annually by the Council and include a volume on Ecosystem Considerations. The SAFE report provides information on the historical catch trend, estimates of the maximum sustainable yield (MSY) or proxy of the groundfish complex as well as its component species groups, assessments on the stock condition of individual species groups; assessments of the impacts on the ecosystem of harvesting the groundfish complex at the current levels given the assessed condition of stocks. This includes consideration of rebuilding depressed stocks; and alternative harvest strategies and related effects on the component species groups.

The SAFE documents are reviewed first by the Council's Groundfish Plan Team, then by the SSC and Advisory Panel, and finally by the full Council. Upon review and acceptance by the SSC, the SAFE report and any associated SSC comments constitute the best scientific information available for purposes of the MSRA. The AFSC periodically requests a more comprehensive external review of groundfish stock assessments by the Center of Independent Experts (CIE).

The assessments receive peer review at three levels. The first is internal, in that the Plan Team meets with the assessment staff before, possibly during, and after the assessment is prepared. The first meeting is to scope the options and scenarios that should be explored in the annual assessment, based on the assessment of the previous year(s) and feedback about how the previous year's fishery has unfolded. Meetings between the assessment staff and the Plan Team occur in a somewhat ad hoc manner, depending on what issues may arise during preparation of the assessment. The number of such meetings can vary between years, depending on the number and type of issues that arise in developing the annual assessment, but in recent years have rarely been fewer than five and sometimes as many as nine. As the assessment nears completion, a meeting with the Plan Team is held to review results and presentation material, to be sure that the assessment is ready for presentation to the Council's SSC. In a narrow sense only the final meeting of the NOAA Plan Team and assessment staff might be considered "peer review" of the assessment; but in fact just as "assessment" is both a process and a product, in a slightly broader sense all the meetings between the Plan Team and the assessment staff can be considered part of an internal peer review process, since all of the meetings have the coverage and quality of the assessment as their primary concern. Once the assessment document is complete, each one receives a thorough and largely external review by the SSC. All technical aspects of the assessment and the coverage of issues by

alternative model formulations and scenarios are reviewed by the SSC, which can request re-runs or deletion or addition of analyses, as they consider necessary, to have a sound assessment as a basis for subsequent consultation and decision-making. The make-up of the SSC includes both employees of NMFS and independent experts in ecological, economic, and social sciences. However, none has a direct involvement in preparation of the assessment, and all participants are expected to act in their expert capacities rather than as institutional representatives. Thus, the SSC review can be considered an external review of the assessment.

Finally, the CIE routinely conducts stock assessment reviews using leading international experts in stock assessments for Alaska fisheries.

Data collected by scientists from the many surveys and BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish fisheries are analysed and presented in peer reviewed meetings and/or in primary literature, following rigorous scientific protocols. Results of these analyses are disseminated in a timely fashion through numerous methods, including scientific publications, and as information on NMFS, ADFG, and Council websites, to contribute to fisheries conservation and management. Confidentiality of individuals or individual vessels (e.g., in the analysis of fishery catch-per-unit-effort data) is fully respected where necessary.

The Council receives comprehensive presentations on the status of the EBS, AI, and GOA marine ecosystems (see: https://access.afsc.noaa.gov/REFM/REEM/EcoWeb/) at its SSC and Advisory Panel meetings as part of its annual management process for Alaskan groundfish. These are prepared and presented by NMFS scientists and contain report cards which look at a wide range of environmental and ecosystem variables, such as physical and environmental trends, zooplankton biomass, predator and forage species biomass, and seabird and marine mammal data. EFH is identified for managed fish species. NPRB and the National Science Foundation identifies research priorities and funds studies about the BS ecosystem from atmospheric forcing and physical oceanography to humans and communities, as well as socio-economic impacts of a changing marine ecosystem. Scientists and researchers from a number of agencies and universities are involved. Ecosystem modelling, sound data management, and education and outreach activities are included in the program. An integrated GOA Ecosystem project, also funded by the NPRB, is examining recruitment processes of major groundfish species.

The Oil Spill Recovery Institute was established by U.S. Congress in response to the 1989 Exxon Valdez oil spill and is administered through and housed at the Prince William Sound Science Center, a non-profit research and education organization located in Cordova, AK. The Center facilitates and encourages ecosystem studies in the greater PWS region.

U.S. cooperates through relevant international organizations, such as the North Pacific Marine Science Organization, to encourage research in order to ensure optimum utilization of all fishery resources. Although the fisheries for BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish are conducted entirely within the U.S. EEZ, there is also scientific cooperation with neighbouring countries such as Canada. The Technical Subcommittee (TSC) of the Canada-U.S. Groundfish Committee (http://www.psmfc.org/tsc2) was formed in 1960 to coordinate fishery and scientific information resulting from the implementation of commercial groundfish fisheries operating in U.S. and Canadian waters off the West Coast. Representatives from Canadian and American state/provincial and federal agencies continue to meet annually to exchange information and to identify data gaps and information needs for groundfish stocks of mutual concern from California to Alaska. Not all of these are transboundary stocks (e.g., Pacific halibut). Each agency prepares a comprehensive annual report highlighting survey and research activities, including stock assessments. These reports are compiled into an annual TSC report that is published online.

There is no material change in compliance with any of the following supporting clauses. Clause 5.4 is not applicable.

5.1. An appropriate institutional framework shall be established to determine the applied research which is required and its proper use (i.e. assess/evaluate stock assessment model/practices) for fishery management purposes.

5.1.1 With the use of less elaborate methods for stock assessment frequently used for small scale or low value capture fisheries resulting in greater uncertainty about the state of the stock under consideration, more precautionary approaches to managing fisheries on such resources shall be required, including where appropriate, lower level of utilization of resources. A record of good management performance may be considered as supporting evidence of the adequacy and the management system.

5.1.2 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. Results of analyses shall be distributed in a timely and readily understandable fashion in order that the best scientific evidence is made available as a contribution to fisheries conservation, management and development. 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.

5.2. There shall be established research capacity necessary to assess and monitor 1) the effects of climate or environment change on fish stocks and aquatic ecosystems, 2) the state of the stock under State jurisdiction, and for 3) the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration.

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

5.4 The fishery management organizations shall directly, or in conjunction with other States, develop collaborative technical and research programs to improve understanding of the biology, environment and status of transboundary aquatic stocks. *Not applicable to this fishery.

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.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses

Conformance:

Conformance level: High. Non-conformance: None

8.3 The Precautionary Approach (C)

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.

No. Supporting clauses	**4**
Supporting clauses applicable	**4**
Supporting clauses not applicable	**0**
Overall level of conformity	**High**
Non Conformances	**None**

Evidence of continuous compliance with the fundamental clause:

The Council's groundfish FMPs for BSAI and GOA contain the details on the Council's precautionary approach, including the tier system, Harvest Control Rules (HCRs), and reference points. Extensive analysis (e.g., a series of standard projections) is conducted in each stock assessment to determine the current and projected biomass level relative to the target reference points. Based on the information in the 2020 SAFE documents, none of the target stocks had overfishing occurring, as per the standard definitions applied to each stock.

The 2020 SAFE documents (referenced in Fundamental Clause 4 above) provide the status of BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks relative to all available reference points. Extensive analysis is conducted in each stock assessment to determine the current and projected biomass level relative to the reference points, and to advise on the various catch levels appropriate to the HCRs. Comprehensive annual Ecosystem Reports for BSAI and GOA that look at numerous elements of the Alaskan ecosystems (see: https://access.afsc.noaa.gov/REFM/REEM/EcoWeb/) are presented to the Council.

The following section provides updates on stock assessment and status for each of the BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks, based on the 2021 SAFE documents:

<u>BSAI Atka mackerel</u>

The assessment of the Atka mackerel stock in the Bering Sea and Aleutian Islands was prepared in November 2021 (Lowe et al., 2021; Table 3). Relative to the 2020 SAFE report (Lowe et al., 2020), the following substantive changes have been made in the assessment of Atka mackerel.

Summary of Changes in Assessment Input

1. The 2020 catch estimate was updated and estimated total catch for 2021 was set equal to the TAC (62,257 t).

2. Estimated 2022 and 2023 catches are 66,740 t and 61,320 t, respectively.

3. The 2020 fishery age composition data were added.

4. The estimated average selectivity for 2016-2020 was used for projections.

5. We assume that approximately 85% of the BSAI-wide ABC is likely to be taken under the revised Steller Sea Lion Reasonable and Prudent Alternatives (SSL RPAs) implemented in 2015. This percentage was applied to the 2022 and 2023 maximum permissible ABCs, and those reduced amounts were assumed to be caught in order to estimate the 2022 and 2023 ABCs and OFL values.

There were no changes in the model configuration.

The addition of the 2020 fishery age composition information impacted the estimated magnitude of the 2012- and 2017-year classes which increased 4 and 33% respectively, relative to last year's assessment. The 2012-year class is estimated to be 59% above average. The 2017-year class increased 33% relative to last year's estimate but remains just about equal to the long term average recruitment. Estimated values of $B_{100\%}$, $B_{40\%}$, $B_{35\%}$, are slightly lower (-0.4%) relative to 2020 assessment.

Projected 2022 female spawning biomass (109,360 t) is slightly higher (1.4%) relative to last year's estimate of 2021 female spawning biomass, and 6% higher relative to last year's projection for 2022. Projected 2022 female spawning biomass is just below $B_{40\%}$ (111,470 t) at $B_{39\%}$, thereby placing BSAI Atka mackerel in Tier 3b. The current estimate of $F_{40\%}$ adj= 0.54 is 25% higher relative to last year's estimate of $F_{40\%}$ adj due to changes in the fishery selectivity used for projections.

The projected 2022 yield at maxF_{ABC} = $F_{40\%}$ adj = 0.54 is 78,510 t, which is 7% higher relative to last year's estimate for 2021. The projected 2022 overfishing level at $F_{35\%}$ adj = 0.65 is 91,870 t, which is 7% higher than last year's estimate for 2021.

Table 2 – Assessments outputs of BSAI Atka mackerel. Source: Lowe et al., 2021.

	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
Quantity	2021	2022	2022*	2023*
M (natural mortality rate)	0.30	0.30	0.30	0.30
Tier	3b	3b	3b	3b
Projected total (age 1+) biomass (t)	560,360	599,690	554,490	570,080
Projected Female spawning biomass	107,830	102,950	109,360	103,330
$B_{100\%}$	290,820	290,820	278,670	278,670
$B_{40\%}$	116,330	116,330	111,470	111,470
$B_{35\%}$	101,790	101,790	97,540	97,540
F_{OFL}	0.51	0.49	0.65	0.61
$maxF_{ABC}$	0.43	0.41	0.54	0.51
F_{ABC}	0.43	0.41	0.54	0.51
OFL (t)	85,580	79,660	91,870	84,440
maxABC (t)	73,590	68,220	78,510	71,990
ABC (t)	73,590	68,220	78,510	71,990
	As determined *this* year for:		As determined *this* year for:	
Status	2019	2020	2020	2021
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 total catch of 66,740 t and 61,320 t in place of maximum permissible ABC for 2022 and 2023, respectively.

To this point no significant changes in fishery operations are expected in 2021 that would substantially alter the impact of the fishery on the resource. The BSAI Atka mackerel is not being subjected to overfishing and is neither overfished nor approaching an overfished condition. Catches are well below TACs and below levels where the most recent year overfishing would be a concern.

BSAI POP

A summary of the 2021 assessment is presented in the SAFE report by Spencer and Ianelli (2021a). In 2005, BSAI rockfish were moved to a biennial assessment schedule with full assessments in even years to coincide with the occurrence of trawl surveys in the AI and EBS slope. In 2017, the scheduled frequency for some stock assessments was changed in response to the National Stock Assessment Prioritization effort, with BSAI POP maintaining its existing schedule. In 2018, a full assessment was conducted which can be found at https://apps-afsc.fisheries.noaa.gov/refm/docs/2020/BSAIpop.pdf. A partial assessment is conducted this year by revising the recent catch data and re-running the projection model using the results from the previous full assessment as a starting point. Therefore, this update does not incorporate any changes to the 2018 assessment methodology but does update the catch estimates for 2018-2020 and provides an estimated catch for 2021. The partial assessment also includes estimates of catch/biomass (i.e., exploitation rates), using estimated total biomass from the 2018 assessment and updated projection model.

Summary of Changes in Assessment Inputs

Changes in input data: The updated information for this partial assessment includes replacing the estimated 2020 catch with the final catch value and revising the 2021 and 2022 catch estimates. The 2020 catch was 40,417 t, 0.8% lower than the estimate of 40,746 t that was used in the 2020 projection. The estimated 2021 catch of 34,190 t was obtained by summing the reported 2021 catch through September (24,850 t) and the product of the remaining amount of catch under the TAC (11,049 t) and an estimate of the proportion of the remaining Oct-Dec TAC which has been caught in recent years (72%, based on 2019 and 2020 data). The estimated 2021 catch is 8% smaller than the value of 37,173 estimated in the 2020 projection model. The estimated 2022 and 2023 catches are assumed to result from fishing at the estimated 2021 F, resulting in 32,807 t and 31,550 t, respectively.

There were no changes in assessment methodology since this was a partial assessment year.

For the 2022 fishery, Spencer and Ianelli (2021) recommended the maximum ABC of 35,688 t and an OFL of 42,605 t based on the updated projection model. The recommended 2022 ABC is 4% less than the 2021 ABC of 37,173 and 0.5% larger than the projected 2022 ABC of 35,503 from the 2020 projection model. A summary of the updated projection model results in Table 3.

Table 3 - Assessments outputs of BSAI Pacific Ocean perch. Source: Spencer and Ianelli, 2021a

	As estimated or specified last year for:		As estimated or recommended this year for:	
Quantity	2021	2022	2022*	2023*
M (natural mortality rate)	0.056	0.056	0.056	0.056
Tier	3a	3a	3a	3a
Projected total (age 3+) biomass	756,011	735,367	738,710	724,085
Female spawning biomass (t)				
Projected	310,036	297,091	299,232	288,437
$B_{100\%}$	584,747	584,747	584,747	584,747
$B_{40\%}$	233,899	233,899	233,899	233,899
$B_{35\%}$	204,661	204,661	204,661	204,661
F_{OFL}	0.089	0.089	0.089	0.089
$maxF_{ABC}$	0.073	0.073	0.073	0.073
F_{ABC}	0.073	0.073	0.073	0.073
OFL (t)	44,376	42,384	42,605	40,977
maxABC (t)	37,173	35,503	35,688	34,322
ABC (t)	37,173	35,503	35,688	34,322
	As determined last year		As determined this year	
Status	2019	2020	2020	2021
Overfishing	No	n/a	No	n/a
Overfished	n/a		n/a	No
Approaching overfished	n/a		n/a	No

*Projections are based on estimated catches of 32,807 t and 31,550 t used in place of maximum permissible ABC for 2022 and 2023.

To this point no significant changes in fishery operations are expected in 2021 that would substantially alter the impact of the fishery on the resource. The BSAI POP is not being subjected to overfishing and is neither overfished nor approaching an overfished condition. Catches are well below TACs and below levels where the most recent year overfishing would be a concern.

BSAI Northern rockfish

In 2005, BSAI rockfish were moved to a biennial assessment schedule with full assessments in even years to coincide with the frequency of trawl surveys in AI and the EBS slope. In 2017, the scheduled frequency for some stock assessments was changed in response to the National Stock Assessment Prioritization effort. BSAI northern rockfish will maintain a biennial schedule but with full assessments in odd years, with the next full assessment scheduled for 2021. The 2019 full assessment can be found at https://apps-afsc.fisheries.noaa.gov/refm/docs/2019/BSAInork.pdf. The following changes were made to northern rockfish 2021 assessment relative to the November 2019 SAFE:

Summary of Changes in Assessment Inputs

1) Catch data was updated through 2020, and total catch for 2021 was projected.

2) The 2019 and 2020 fishery age composition data were included in the assessment.

Changes in the Assessment Methodology

1) The recommended model places a constraint on the asymptotic survey selectivity curve to ensure that the selectivity at age 30 was close to 1 (the constraint had been at age 15 in the 2019 assessment)

BSAI northern rockfish are not overfished or approaching an overfished condition. The recommended 2022 ABC and OFL are 19,217 t and 23,440 t, which are 28% and 29% increases from the values specified last year for 2022 of 14,984 t and 18,221 t. The reason for the increase in the harvest level is a modelled

change in the estimated survey selectivity curve that scaled the population higher than previous assessments.

Table 4 - Assessments outputs of BSAI Northern rockfish. Source: Spencer and Ianelli, 2021b.

Quantity	As estimated or specified last year for:		As estimated or recommended this year for:	
	2021	2022	2022*	2023*
M (natural mortality rate)	0.048	0.048	0.054	0.054
Tier	3a	3a	3a	3a
Projected total (age 3+) biomass (t)	244,600	240,022	279,584	275,210
Female spawning biomass (t)				
Projected	107,003	103,467	121,126	117,333
$B_{100\%}$	159,850	159,850	171,768	171,768
$B_{40\%}$	63,940	63,940	68,707	68,707
$B_{35\%}$	55,947	55,947	60,119	60,119
F_{OFL}	0.075	0.075	0.085	0.085
$maxF_{ABC}$	0.061	0.061	0.069	0.069
F_{ABC}	0.061	0.061	0.069	0.069
OFL (t)	18,917	18,221	23,420	22,594
maxABC (t)	15,557	14,984	19,217	18,538
ABC (t)	15,557	14,984	19,217	18,538
Status	As determined last year for: for: 2019	2020	As determined this year 2020	2021
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 8,213 t and 7,922 t used in place of maximum permissible ABC for 2022 and 2023.

To this point no significant changes in fishery operations are expected in 2021 that would substantially alter the impact of the fishery on the resource. The BSAI Northern rockfish is not being subjected to overfishing and is neither overfished nor approaching an overfished condition. Catches are well below TACs and below levels where the most recent year overfishing would be a concern.

GOA Northern rockfish

GOA northern rockfish (*Sebastes polyspinis*) have historically been assessed on a biennial stock assessment schedule to coincide with the availability of new trawl survey data (odd years). In 2017, the AFSC participated in a stock assessment prioritization process. It was recommended that the GOA northern rockfish remain on a biennial stock assessment schedule with a full stock assessment produced in even years and a partial stock assessment produced in odd years. For a partial assessment, the projection model is updated with new catch information and results are used to recommend harvest levels for the next two years. This incorporates the most current catch information without re-estimating model parameters and biological reference points. The GOA northern rockfish is classified as a Tier 3 stock and is assessed using a statistical age-structure model. This assessment consists of a population model, which uses survey and fishery data to generate a historical time series of population estimates, and a projection model, which uses results from the population model to predict future population estimates and recommended harvest levels. The data used in 2021 assessment includes total catch biomass, fishery age and size compositions, trawl survey abundance estimates, and trawl survey age compositions.

Summary of Changes in Assessment Inputs

Changes in the input data: There were no changes made to the assessment model inputs as this is an off-cycle year. New data added to the projection model included updated catch data from 2020 (2,385 t) and new estimated catches for 2021-2023. Catch data were queried on 2021-10-22. The 2021 catch was estimated by increasing the observed catch by an expansion factor of 1.045, which accounts for the average fraction of catch taken after October 22 in the last three complete years (2018-2020). This expansion factor results in an estimated catch for 2021 of 2,471 t. To estimate future catches, we updated the yield ratio to 0.6, which was the average ratio of catch to ABC for the last three complete catch years (2018-2020). This yield ratio was multiplied by the projected ABCs from the updated projection model to generate catches of 3,089 t in 2022 and 2,884 t in 2023.

There were no changes from the 2020 assessment (Williams et al. 2020) since this is an off-cycle year.

For the 2022 fishery, Williams et al (2021a) recommended maximum allowable ABC of 5,147 t from the updated projection model. This ABC is a minor increase over the 2022 projected ABC of 5,100 t from the 2020 full assessment. The 2022 GOA-wide OFL is 6,143 t. The stock is not being subject to overfishing, is not currently overfished, nor is it approaching a condition of being overfished. The test for determining whether overfishing is occurring is based on the 2020 catch compared to OFL. The official total catch for 2020 is 2,385 t which is less than the 2020 OFL of 6,396 t; therefore, the stock is not being subjected to overfishing. The tests for evaluating whether a stock is overfished or approaching a condition of being overfished require examining model projections of spawning biomass relative to $B_{35\%}$ for 2022 and 2023. The estimates of spawning biomass for 2022 and 2023 from the current year projection model are 40,474 t and 37,408 t, respectively. Both estimates are above the $B_{35\%}$ estimate of 29,691 t and, therefore, the stock is not currently overfished nor approaching an overfished condition. Reference values for northern rockfish are summarized in Table 5.

Table 5 - Assessments outputs of GOA Northern rockfish. Source: Williams et al., 2021a.

	As estimated or specified *last* year for:		As estimated or specified *this* year for:	
Quantity/Status	2021	2022	2022*	2023*
M (natural mortality)	0.059	0.059	0.059	0.059
Tier	3a	3a	3a	3a
Projected total (age 2+) biomass (t)	102,715	99,957	100,371	96,045
Projected female spawning biomass (t)	42,791	40,462	40,474	37,408
$B_{100\%}$	84,832	84,832	84,832	84,832
$B_{40\%}$	33,933	33,933	33,933	33,933
$B_{35\%}$	29,691	29,691	29,691	29,691
F_{OFL}	0.073	0.073	0.073	0.073
$maxF_{ABC}$	0.061	0.061	0.061	0.061
F_{ABC}	0.061	0.061	0.061	0.061
OFL	6,396	6,088	**6,143**	5,874
maxABC (t)	5,358	5,100	**5,147**	4,921
ABC (t)	5,358	5,100	**5,147**	4,921
Status	As determined *last* year for:		As determined *this* year for:	
	2019	2020	2020	2021
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfishing	n/a	No	n/a	No

*Projections are based on an estimated catch of 2,471 t for 2021, and estimates of 3,089 t and 2,884 t used in place of maximum permissible ABC for 2022 and 2023.

To this point no significant changes in fishery operations are expected in 2021 that would substantially alter the impact of the fishery on the resource. The GOA Northern rockfish is not being subjected to overfishing and is neither overfished nor approaching an overfished condition. Catches are well below TACs and below levels where the most recent year overfishing would be a concern.

GOA Pacific Ocean perch

POP in the GOA are assessed on a biennial stock assessment schedule to coincide with the availability of new survey data. Consequently, we present a full stock assessment using a statistical age-structured model. Survey and fishery data are used to estimate population trends and projected future population estimates are used to recommend catch limits.

Summary of Changes in Assessment Inputs

Changes in the input data: We updated the catch for 2020 and used preliminary catch estimates for 2021-2023, along with 2021 bottom trawl survey biomass, and 2020 fishery age composition.
The assessment methodology is the same as the 2020 assessment (Hulson et al., 2020).

For the 2022 fishery, Hulson et al. (2021) recommended the maximum allowable ABC of 38,268 t. This ABC is a 6% increase from the 2021 ABC of 36,177 t. The increase is attributed to the model continuing to react to five consecutive survey biomass estimates larger than 1 million tons as well as an increase in survey biomass in 2021 compared to 2019. This also resulted in an 11% higher ABC than the 2022 ABC projected last year. The corresponding reference values for POP are summarized in Table 6, with the

recommended ABC and OFL values in bold. The stock is not being subject to overfishing, is not currently overfished, nor is it approaching a condition of being overfished.

Table 6 - Assessments outputs of GOA Pacific Ocean perch. Source: Hulson et al., 2021.

Quantity	As estimated or specified *last* year for: 2021	2022	As estimated or recommended *this* year for: 2022	2023[1]
M (natural mortality)	0.076	0.076	0.075	0.075
Tier	3a	3a	3a	3a
Projected total (age 2+) biomass (t)	613,522	597,732	650,832	634,907
Projected Female spawning biomass	207,096	198,179	216,635	210,257
$B_{100\%}$	317,035	317,035	331,917	331,917
$B_{40\%}$	126,814	126,814	132,767	132,767
$B_{35\%}$	110,962	110,962	116,171	116,171
F_{OFL}	0.120	0.120	0.120	0.120
$maxF_{ABC}$	0.100	0.100	0.100	0.100
F_{ABC}	0.100	0.100	0.100	0.100
OFL (t)	42,977	41,110	**45,580**	44,196
maxABC (t)	36,177	34,602	38,268	37,104
ABC (t)	36,177	34,602	**38,268**	37,104
Status	As determined *last* year for: 2019	2020	As determined *this* year for: 2020	2021
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfished	n/a	No	n/a	No

[1]Projected ABCs and OFLs for 2022 and 2023 are derived using estimated catch of 28,187 for 2021, and projected catches of 32,458 t and 31,105 t for 2022 and 2023 based on realized catches from 2018-2020. This calculation is in response to management requests to obtain more accurate projections.

To this point no significant changes in fishery operations are expected in 2021 that would substantially alter the impact of the fishery on the resource. The GOA POP is not being subjected to overfishing and is neither overfished nor approaching an overfished condition. Catches are well below TACs and below levels where the most recent year overfishing would be a concern.

GOA dusky rockfish

GOA dusky rockfish (*Sebastes variabilis*) have historically been assessed on a biennial stock assessment schedule to coincide with the availability of new trawl survey data (odd years). In 2017, the AFSC participated in a stock assessment prioritization process. It was recommended that the GOA dusky rockfish remain on a biennial stock assessment schedule with a full stock assessment produced in even years and a partial stock assessment produced in odd years. For a partial assessment, the projection model is updated with new catch information and results are used to recommend harvest levels for the next two years. This incorporates the most current catch information without re-estimating model parameters and biological reference points.

The GOA dusky rockfish is classified as a Tier 3 stock and is assessed using a statistical age-structure model. This assessment consists of a population model, which uses survey and fishery data to generate a historical time series of population estimates, and a projection model, which uses results from the population model to predict future population estimates and recommended harvest levels. The data used in this assessment includes total catch biomass, fishery age and size compositions, trawl survey abundance estimates, and trawl survey age compositions.

Summary of Changes in Assessment Inputs

Changes in the input data: There were no changes made to the assessment model inputs as this is an off-cycle year. New data added to the projection model included updated catch data from 2020 (2,198 t) and new estimated catches for 2021-2023. Catch data were queried on 2021-10-22. The 2021 catch was estimated by increasing the observed catch by an expansion factor of 1.033, which accounts for the average fraction of catch taken after October 22 in the last three complete years (2018-2020). This expansion factor decreased from last year's expansion factor of 1.052 and resulted in an estimated catch for 2021 of 2,997 t. To estimate future catches, we updated the yield ratio to 0.67, which was the average ratio of catch to ABC for the last three complete catch years (2018-2020). This yield ratio was multiplied by the projected ABCs from the updated projection model to generate catches of 4,725 t in 2022 and 4,337 t in 2023.

There were no changes from the 2020 assessment (Fenske et al. 2020) as this was an off-cycle year.

For the 2022 fishery, Williams et al. (2021b) recommends a maximum allowable ABC of 7,069 t from the updated projection model. A “stair step” methodology was requested by the SSC that specifies the ABC be set halfway between the 2020 ABC (3,676 t) and 2022 model estimated maximum ABC. This results in an adjusted ABC of 5,372 t. The 2022 GOA-wide OFL is decreased from last year’s expansion factor of 1.052 and resulted in an estimated catch for 2021 of 8,614 t.

The stock is not being subject to overfishing, is not currently overfished, nor is it approaching a condition of being overfished. The test for determining whether overfishing is occurring is based on the 2020 catch compared to OFL. The official total catch for 2020 is 2,198 t which is less than the 2020 OFL of 8,655 t; therefore, the stock is not being subjected to overfishing. The tests for evaluating whether a stock is overfished or approaching a condition of being overfished require examining model projections of spawning biomass relative to B35% for 2022 and 2023. The estimates of spawning biomass for 2022 and 2023 from the current year projection model are 38,371 t and 36,853 t, respectively. Both estimates are above the $B_{35\%}$ estimate of 21,299 t and, therefore, the stock is not currently overfished nor approaching an overfished condition. Reference values for dusky rockfish are summarized in Table 7 with the recommended ABC and OFL values in bold.

Table 7 - Assessments outputs of GOA dusky rockfish. Source: Williams et al., 2021b.

	As estimated or specified *last* year for:		As estimated or specified *this* year for:	
Quantity/Status	2021	2022	2022*	2023*
M (natural mortality)	0.07	0.07	0.07	0.07
Tier	3a	3a	3a	3a
Projected total (age 4+) biomass (t)	97,702	98,825	95,682	92,310
Projected female spawning biomass (t)	38,362	37,530	38,371	36,853
$B_{100\%}$	60,855	60,855	60,855	60,855
$B_{40\%}$	24,342	24,342	24,342	24,342
$B_{35\%}$	21,299	21,299	21,299	21,299
F_{OFL}	0.114	0.114	0.114	0.114
$maxF_{ABC}$	0.093	0.093	0.093	0.093
F_{ABC}	0.093	0.093	0.093	0.093
OFL	8,655	8,423	**8,614**	8,146
maxABC (t)	5,389	5,295	**7,069**	6,686
ABC (t)	5,389	5,295	**5,372**	5,181
Status	As determined *last* year for:		As determined *this* year for:	
	2019	2020	2020	2021
Overfishing	No	n/a	No	n/a
Overfished	n/a	No	n/a	No
Approaching overfishing	n/a	No	n/a	No

*Projections are based on an estimated catch of 2,986 t for 2021, and estimates of 4,725 t and 4,337 t used in place of maximum permissible ABC for 2022 and 2023.

To this point no significant changes in fishery operations are expected in 2021 that would substantially alter the impact of the fishery on the resource. The GOA dusky rockfish is not being subjected to overfishing and is neither overfished nor approaching an overfished condition. Catches are well below TACs and below levels where the most recent year overfishing would be a concern.

Evidence of continuous compliance with the supporting clauses
There is no material change in compliance with any of the following supporting clauses.

6.1. States shall establish safe target reference point(s) for management.

6.2 States shall establish safe limit reference point(s) for exploitation (i.e. consistent with avoiding recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible). When a limit reference point is approached, measures shall be taken to ensure that it will not be exceeded. For instance, if fishing mortality (or its proxy) is above the associated limit reference point, actions should be taken to decrease the fishing mortality (or its proxy) below that limit reference point.

6.3 Data and assessment procedures shall be installed measuring the position of the fishery in relation to the reference points. Accordingly, the stock under consideration shall not be overfished (i.e. above limit

reference point or proxy) and the level of fishing permitted shall be commensurate with the current state of the fishery resources, maintaining its future availability, taking into account that long term changes in productivity can occur due to natural variability and/or impacts other than fishing.

6.4 Management actions shall be agreed to in the eventuality that data sources and analyses indicate that these reference points have been exceeded.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

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.

No. Supporting clauses	**5**
Supporting clauses applicable	**4**
Supporting clauses not applicable	**1 (7.2)**
Overall level of conformity	**High**
Non Conformances	**None**

Evidence of continuous compliance with the fundamental clause:

The status of U.S. fish stocks is determined by two metrics. The first is the relationship between the actual exploitation level and the OFL. If the exploitation level (or fishing mortality) exceeds the FOFL, the stock is considered to be subject to overfishing. The second is the relationship between the stock size and the MSST. If the stock size is below the minimum stock size threshold (MSST) it is considered to be overfished. A stock is considered to be approaching an overfished condition when it is projected that there is more than a 50% chance that the biomass of the stock or stock complex will decline below the MSST within two years. Harvest specifications for each of the target stocks are made annually by the Council and include the OFL, ABC, and TAC. Links to these documents from the December 2020 Council meeting, with harvest specifications adopted for 2021 and 2022, are as follows: https://www.npfmc.org/goa-specs-2/ and https://www.npfmc.org/bsai-specs-2/.

The Council's management plans classify each stock based on a tier system (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). BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks are classified in Tier 3. The BSAI and GOA groundfish FMPs have pre-defined HCRs that define a series reference points for groundfish covered by these plans. The overall objectives of the management plans are to prevent overfishing and to optimize the yield from the fishery through the promotion of conservative harvest levels while considering differing levels of uncertainty.

The PA reference points are established by the Council's PA documented in their FMPs, and stock status is evaluated against these calculated reference points in the annual stock assessment SAFE reports. Where possible, projections are carried out as part of the stock assessments to determine future trajectories of biomass, and related risks of overfishing. There are numerous references and examples of how uncertainty is dealt with in the stock assessment in the annual SAFE reports. Also, the FMPs for groundfish in GOA and BSAI regions are explicit in how different levels of uncertainty are accounted for in the management process. Environmental data and socioeconomic data are also well documented through annual SAFE reports. The SAFE reports and FMPs have been referenced in previous sections.

The FMPs also have another reference point, B20%, defined as follows: "For groundfish species identified as key prey of Steller sea lions (i.e., walleye pollock, Pacific cod, and Atka mackerel), directed fishing is

prohibited in the event that the spawning biomass of such a species is projected in the stock assessment to fall below B20% in the coming year. However, this does not change the specification of ABC or OFL."

Stock assessments are comprehensive and reviewed on a number of levels, including externally by CIE. Where data gaps have been identified, and these are outlined in the SAFE reports, the NMFS/AFSC has ongoing research programs capable of addressing these needs. Organizations such as NPRB enable scientists from a number of disciplines and agencies to work collaboratively on a variety of fishery related studies in Alaskan waters. There are pre-agreed Council HCRs in place to ensure overfishing does not occur on the BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks and to reduce fishing mortality if reference points are approached or exceeded, as outlined in the Tiered PA system described previously. Extensive provisions exist in the NMFS fishery regulations for in-season adjustments (e.g., gear modifications, fishery closures) where necessary to protect the resource from biological harm. FMPs contain the following specific clause: "In the event that a stock or stock complex is determined to be approaching a condition of being overfished, an in-season action, an FMP amendment, a regulatory amendment or a combination of these actions will be implemented to prevent overfishing from occurring."

Clause 7.2 is not applicable, as fisheries for BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska are well established and not new or exploratory fisheries. There are no concerns with the use of introduced or translocated species.

There is no material change in compliance with any of the following supporting clauses. Clause 7.2 is not applicable.

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. This should take due account of stock enhancement procedures, where appropriate. Absence of scientific information shall not be used as a reason for postponing or failing to take conservation and management measures. Relevant uncertainties shall be taken into account through a suitable method of risk assessment, including those associated with the use of introduced or translocated species.

7.1.1 In implementing the precautionary approach, States shall take into account, inter alia, of uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, including discards, on non-target and associated or dependent species as well as environmental and socio-economic conditions.

7.1.2 In the absence of adequate scientific information, appropriate research shall be initiated in a timely fashion.

7.2 In the case of new or exploratory fisheries, States shall adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. The latter measures should, if appropriate, allow for the gradual development of the fisheries. *Not applicable to this fishery

7.3 Contingency plans shall be agreed in advance for the appropriate management response to serious threats to the resource as a result of overfishing or adverse environmental changes or other phenomena adversely affecting the fishery resource. Such measures may be temporary and shall be based on best scientific evidence available.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

8.4 Management Measures (D)

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.

No. Supporting clauses	17
Supporting clauses applicable	15
Supporting clauses not applicable	2 (8.11, 8.14)
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The MSRA requires that conservation and fisheries management measures prevent overfishing while achieving optimum yield on a continuing basis and sets out the standards (e.g., optimal use and avoiding overfishing) which are followed in managing the BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish fisheries in Alaska. The Council uses a multi-tier PA, which includes OY and MSY reference points. NMFS and the Council follow a multi-faceted PA (OFL, ABC, TAC, OY) to manage the federal target stocks fisheries, based on targets, limits, and pre-defined HCRs, as well as overall ecosystem considerations. These systems are described extensively in Fundamental Clauses 6 and 7 above. The objectives are spelled out clearly in FMPs for BSAI and GOA regions, and both FMPs contain long-term management objectives for the Alaskan BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska fisheries. The state BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish fisheries are managed by ADFG and BOF. Extensive cooperation exists between federal and state authorities in assessing and managing the BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska stocks.

AFSC runs the Economic and Social Sciences Research Program in Alaska. 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. The Council has established the Social Science Planning Team to improve the quality and application of social science data that informs management decision-making and program evaluation. The FMPs include a substantial section on the economic and socioeconomic characteristics of the fisheries and communities in Alaska. There is a detailed annual SAFE report on economic status of Alaskan fisheries (Fissel et al. 2020) and a section on economics in the SAFE reports. Harvest levels for each groundfish species or species group that are set by the Council for a new fishing year are based on the best biological, ecological, and socioeconomic information available, and follow a rigorous and public peer-reviewed process.

As listed in the FMPs and in NMFS regulations, the only legal gears for taking BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska in the Alaskan fisheries are pelagic trawl, bottom trawl, jig, longline, and pot. Regulations pertaining to vessel and gear markings in the fishery are established in NMFS and ADFG regulations as prescribed in the annual management measures published in the Federal Register. There was no evidence that indicated the marking of gear is not being followed or is not effective. No destructive gears such as dynamite or poison are permitted, nor is there any evidence that such methods are being used illegally. There is no evidence that regulations involving gear selectivity in BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska fisheries are being circumvented either by omission, or through the illegal use of gear technology. Evidence provided by fishing fleets indicates that lost fishing gear is minimal. A NOAA (2015) study shows ghost fishing mortality and gear loss for derelict trawl (and other gears such as longline) are likely to be lower in comparison to gillnets and trap gears, although less in known of the effects of derelict trawls and longlines.

The Council and BOF have extensive processes in place to allow for identifying and consulting with domestic parties having interest in the AK mackerel and rockfish fisheries. The Council is responsible for allocation of the target stocks resource among user groups in Alaskan waters, and the BOF public meeting

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 target stocks off Alaska to participate in the development of legal regulations for fisheries. Fishing industry stakeholders work extensively with fishery scientists, managers, and other industry members on various initiatives to ensure sustainability of the Alaska fisheries. The Council established a Rural Outreach Committee in 2009 to improve outreach and communications with rural communities and Alaska Native entities and develop a method for systematic documentation of Alaska Native and community participation in the development of fishery management actions. The Western Alaska CDQ Program, established by the Council in 1992, allocates a percentage of all BSAI quotas for groundfish, prohibited species, halibut, and crab to eligible communities. There are approximately 65 communities within a 50-mile radius of the BS coastline who participate in the program.

Mechanisms have been established to reduce capacity to levels commensurate with sustainable use of the fishery resources in Alaska. These include harvest control rules re catch and effort management, an overall OY cap in GOA and BSAI regions, a license limitation and restricted access program, and reduction of the number of vessels through industry-based initiatives. The industry-based measures have been taken to rationalize effort, eliminate derby-style fisheries, improve retention and utilization and reduce bycatch, and include the formation of groundfish cooperatives under Amendment 80, aimed at reduction of bycatch and further rationalization of the fishery. Fleet capacity and regularly updated data on all fishing operations are presented in the annual SAFE documents, as well as in various cooperative reports. Each cooperative is responsible for its own target catch and bycatch, and when any allocation is reached, the cooperative must stop fishing. This provides a strong incentive for cooperatives to keep bycatch rates low and to fish efficiently.

Amendment 111 to the GOA FMP, effective March 31st, 2021, reauthorized the Rockfish Program and made minor changes to it. This will have minimal effect on fishing operations and no change in the conservation, safety, and efficiency benefits of the program

There have been numerous regulations, as well as technological developments, aimed at reducing waste and discards in the AK mackerel and rockfish fisheries, and to ensure that the resources are harvested sustainably. These include various measures to address fish size, discards, and closed seasons and areas. Specific examples include development of excluder devices for trawl gear to reduce these by-catches, and closures of large areas to protect numerous endangered species (including salmon, crab, and marine mammals). Since 1998, full retention of BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska is required in all Alaskan fisheries under the Improved Retention/Improved Utilization Program. In addition, some vessels have made various gear modifications to avoid catch of smaller fish, and/or to minimize bottom contact. MRAs are put in place to help manage bycatches in groundfish fisheries. Fishing industry groups such as cooperatives and coalitions have undertaken numerous conservation-oriented measures in relation to fish size, bycatch avoidance, and product utilization. NMFS has a full suite of fishery regulations for Alaskan waters which cover all aspects of fishing, including seasons, gear limitations, and numerous area closures.

The gear regulations also contain details on mesh sizes permitted, biodegradable panels in pot gears, types of hook and line gear allowed, etc. The use of bottom contact gear is prohibited in the Gulf of Alaska Coral and Alaska Seamount Habitat Protection Areas year-round. Fishing with trawl vessels is not permitted year-round in the Crab and Halibut Protection Zone and the Pribilof Island Habitat Conservation Area. As well, a number of closure zones for trawl gears are described in the FMPs for GOA and BSAI. A suite of measures specific to seabird avoidance in hook and line fisheries in Alaskan waters also exists, and data on seabirds are collected by observers, and included in the SAFE documents. Various measures to reduce bycatches of PSC species (e.g., crabs, halibut, Chinook) in BSAI and GOA, including gear modifications and closed areas and seasons, have been adopted in recent years. Other industry-driven measures taken to reduce halibut catch include use of excluder devices, improved communication and data sharing among vessels to avoid halibut, and enhanced deck sorting to reduce mortality of halibut returned to the sea (Gauvin 2013). In 2016, NMFS reduced the MRA of skates using groundfish and halibut as basis species in the GOA from 20% to 5%, as a necessary measure to limit the incidental catch and discards of skates in GOA groundfish and halibut fisheries.

The FMPs for BSAI and GOA groundfish state that “For groundfish species identified as key prey of Steller sea lions (i.e., walleye pollock, Pacific cod, and Atka mackerel), directed fishing is prohibited in the event that the spawning biomass of such a species is projected in the stock assessment to fall below B20% in the coming year” (NPFMC 2018a, 2019). The Council has acted in a precautionary manner to place protections around Steller sea lion rookeries and haulouts and close areas where fishing may impact Steller sea lion

prey. ADFG has also implemented areas closed to fishing in PWS around SSL rookeries. ADFG notes that co-management agreements have been established between the NMFS and the Aleut Marine Mammal Commission, the Traditional Council of St. George Island, and the Traditional Council of St. Paul Island.

None of the BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish stocks in Alaska are classified as overfished or undergoing overfishing and no destructive fishing practices are allowed in GOA or BSAI which would adversely impact habitat. With regard to other resources taken in the fishery, considerable work has been done to reduce catches of species such as halibut and Chinook salmon in trawl catches, as there are concerns with the status of Chinook in many rivers. Extensive work on deck sorting (Gauvin 2013) has occurred in recent years in certain trawl fisheries to improve the survival rates of halibut discarded at sea (required under regulation). Exempted fishing permits have been issued for deck sorting on Amendment 80 C/Ps to reduce halibut mortality, and implementing regulations were adopted in October 2019. Numerous measures to protect Steller sea lion populations and habitat affect are implemented in the FMPs for GOA and BSAI groundfish. NMFS and the Council must describe and identify EFH in 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. Further details on this are described under Fundamental Clause 12 below.

Amendment 97 established annual Chinook salmon PSC limits for the groundfish trawl fisheries, except for pollock trawl fisheries, in the Western and Central GOA. This action established annual Chinook salmon PSC limits for various fleet sectors and also established incentives for reducing Chinook salmon PSC for the trawl C/P and Non-Rockfish Program CV sectors and established seasonal Chinook salmon PSC limits for the trawl C/P sector. The majority of chinook by-catch in GOA is from the pollock fishery, and a recent supplementary Biological Opinion concluded that groundfish fisheries in the GOA were not likely to jeopardize the continued existence of threatened Chinook stocks. Amendment 103 to the GOA FMP, passed in September 2016, allows NMFS to reapportion unused Chinook salmon PSC within and among specific trawl sectors in the Central and Western GOA, based on specific criteria and within specified limits. This rule does not increase the current combined annual PSC limit of Chinook salmon that applies to Central and Western GOA trawl sectors and promotes more flexible management of GOA trawl Chinook salmon PSC.

In Alaska fisheries for BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish, gear loss is rare and lost gear is usually recovered, but this information is not generally collected by the client.

The fishery for BSAI Atka mackerel, BSAI and GOA Northern rockfish, BSAI and GOA POP and GOA dusky rockfish in Alaska is conducted by U.S. vessels only. In adjacent waters of the GOA cooperation on research and management between Canada and the United States occurs as part of the science and management process.

There are numerous measures implemented in Alaskan fisheries to minimize non-utilized catches, such use prohibition of discarding (Improved Retention/Improved Utilization Program), use of salmon and halibut excluder devices in trawl nets, and use of streamers on longline gear to reduce seabird bycatch. Many of the studies and subsequent implementation have involved cooperative efforts between researchers at institutions in NMFS, ADFG, universities, and industry, and are introduced into regulations only after extensive testing has occurred. Key studies include research on excluder devices, deck sorting of halibut, and research on pots to reduce Tanner crab bycatch. Additional information on bycatch is presented in Fundamental Clause 12 below.

Evidence of continuous compliance with the supporting clauses
There is no material change in compliance with any of the following supporting clauses. Clauses 8.11 and 8.14 are not applicable.

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, fisher or community sources.

8.1.1 Management targets are consistent with achieving maximum sustainable yield (MSY) (or a suitable proxy) on average, or a lesser fishing mortality if that is optimal in the circumstances of the fishery (e.g., multispecies fisheries) or to avoid severe adverse impacts on dependent predators.

8.1.2 In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact shall be considered.

8.1.3 Studies shall be promoted which provide an understanding of the costs, benefits and effects of alternative management options designed to rationalize fishing, in particular, options relating to excess fishing capacity and excessive levels of fishing effort.

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

8.3 States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery. When deciding on use, conservation and management of the resource, due recognition shall be given, where relevant, in accordance with national laws and regulations, to the traditional practices, needs and interests of indigenous people and local fishing communities which are highly dependent on these resources for their livelihood. Arrangements shall be made to consult all the interested parties and gain their collaboration in achieving responsible fisheries.

8.4 Mechanisms shall be established where excess capacity exists, to reduce capacity to levels commensurate with sustainable use of the resource. Fleet capacity operating in the fishery shall be measured and monitored. 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.

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

8.6 Fishing gear shall be marked in accordance with national legislation in order that the owner of the gear can be identified. Gear marking requirements shall take into account uniform and internationally recognizable gear marking systems.

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

8.8 States and relevant groups from the fishing industry shall measure performance and encourage the development, implementation and use of selective, environmentally safe and cost effective gear, technologies and techniques that sufficiently selective as to minimize catch, waste and discards of non-target species - both fish and non-fish species and impacts on associated or dependent species. The use of fishing gear and practices that lead to the discarding of catch shall be discouraged and the use of fishing gear and practices that increase survival rates of escaping fish shall be promoted. Inconsistent methods, practices and gears shall be phased out accordingly.

8.9 Technologies, materials and operational methods or measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques shall be applied to minimize the loss of fishing gear, the ghost fishing effects of lost or abandoned fishing gear, pollution and waste.

8.10 The intent of fishing selectivity and fishing impacts related regulations shall not be circumvented by technical devices and information on new developments and requirements shall be made available to all fishers.

8.11 Assessment and scientific evaluation shall be carried out on the implications of habitat disturbance impact on the fisheries and ecosystems prior to the introduction on a commercial scale of new fishing gear, methods and operations. Accordingly, the effects of such introductions shall be monitored.

8.12 International cooperation shall be encouraged with respect to research programs for fishing gear selectivity and fishing methods and strategies, dissemination of the results of such research programs and the transfer of technology.

8.13 States and relevant institutions involved in the fishery shall collaborate in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies, and on the behavior of target and non-target species in relation to such fishing gear as an aid for management decisions and with a view to minimizing non utilized catches.

8.14 Policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. States shall ensure that, when selecting the materials to be used in the creation of artificial reefs as well as when selecting the geographical location of such artificial reefs, the provisions of relevant international conventions concerning the environment and the safety of navigation are observed.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

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.

No. Supporting clauses	**3**
Supporting clauses applicable	**3**
Supporting clauses not applicable	**0**
Overall level of conformity	**High**
Non Conformances	**None**

Evidence of continuous compliance with the fundamental clause:

NMFS, the Council and ADFG have rules and regulations governing AK fisheries available on their websites. The BSAI and GOA FMPs also contain a summary of management measures that apply to these fisheries. These also cover legal definitions such as quota shares, individual fishing quotas, etc.

Data on the number and location of Alaskan fishers, permits issued, etc. can be found in the annual SAFE documentation. Information on Alaska sport fish and crew license holders has been compiled through the Alaska Fisheries Information Network. Data on fishing in Alaskan state-managed fisheries can be found in the State of Alaska's Commercial Fisheries Entry Commission (CFEC) website. Fishermen in the state-managed fisheries must register prior to fishing and are required to keep a logbook during the fishery. Completed logbook pages must be attached to the ADFG copy of the fish ticket at the time of delivery. USCG also maintains records and issues credentials on licenses for crewmembers, including engineers, captains, mates, deckhands, etc. The State of Alaska issues commercial fishing licenses for all crew.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses.

9.1. States shall enhance through education and training programs the education and skills of fishers and, where appropriate, their professional qualifications. Such programs shall take into account agreed international standards and guidelines.

9.2 States, with the assistance of relevant international organizations, shall endeavor to ensure through education and training that all those engaged in fishing operations be given information on the most important provisions of the FAO CCRF (1995), as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations.

9.3 States shall, as appropriate, maintain records of fishers which shall, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

8.5 Implementation, Monitoring and Control (E)

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.

No. Supporting clauses	**6**
Supporting clauses applicable	**2**
Supporting clauses not applicable	**4 (10.3, 10.3.1, 10.4, 10.4.1)**
Overall level of conformity	**High**
Non Conformances	**None**

Evidence of continuous compliance with the fundamental clause:

Under the Federal North Pacific Groundfish Observer Program a comprehensive monitoring, control and surveillance system has been implemented. All the UoAs' vessels are required to carry observers as requested, and most carry two observers at all times to collect data on fishing effort, total catch by species, and biological data; characterize marine mammal and sea bird interactions. Vessels carry VMS to monitor location. At-sea and shore-side enforcement is carried out by the Alaska State Troopers, NMFS OLE, and the USCG (NOAA 2019b; USCG 2019).
Monitoring, control and surveillance actions include:

- Fishing permit requirements
- Fishing permit and fishing vessel registers
- Vessel and gear marking requirements
- Fishing gear and method restrictions
- Reporting requirements for catch, effort, and catch disposition
- Vessel inspections
- Record keeping requirements

- Auditing of licensed fish buyers
- Control of transshipment
- Monitored unloads of fish
- Information management and intelligence analysis
- Analysis of catch and effort reporting and comparison with landing and trade data to confirm accuracy
- Boarding and inspection by fishery officers at sea
- Aerial and surface surveillance

All vessels participating in a parallel groundfish fishery, except those using jig or hand troll gear, must have a NMFS-approved VMS (NOAA 2019c).

The USCG, NMFS OLE, and AWT conduct at-sea and shore-based inspections. At-sea, dockside monitoring, aerial surveillance, and satellite VMS are in operation within the fisheries and developmental of electronic monitoring is ongoing. There are three entities that provide enforcement for Alaska fisheries: NOAA Office of Law Enforcement (OLE), US Coast Guard (USCG) and Alaska Wildlife Troopers (AWT). There is a Joint Enforcement Agreement (JEA) between NOAA-OLE and the AWT to enable AWT to support and enforce federal laws and regulations under the Magnuson Stevens Act (MSA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Lacey Act and Northern Pacific Halibut Act (NPHA). Monitoring, control, and surveillance (MCS) is carried out at-sea and shore-side for the federal fisheries by the OLE and the USCG. The AWT fulfils the MCS function for the state water fisheries. Outreach was conducted by AK OLE throughout the year to meet with fleet representatives for the various AK fisheries and discuss issues and potential violations reported in the first half of 2021 (NOAA 2021).

Current enforcement updates and violations are reported in the OLE Report to the Council. According to the December 2021 Report to the Council, there were no violations directly linked to the AK Atka mackerel, POP, and rockfish fisheries, there is no evidence that specifically implicates this fishery. Personal interviews with AWT and the USCG confirm overall compliance with the AK mackerel and rockfish fisheries, noting only minor infractions.

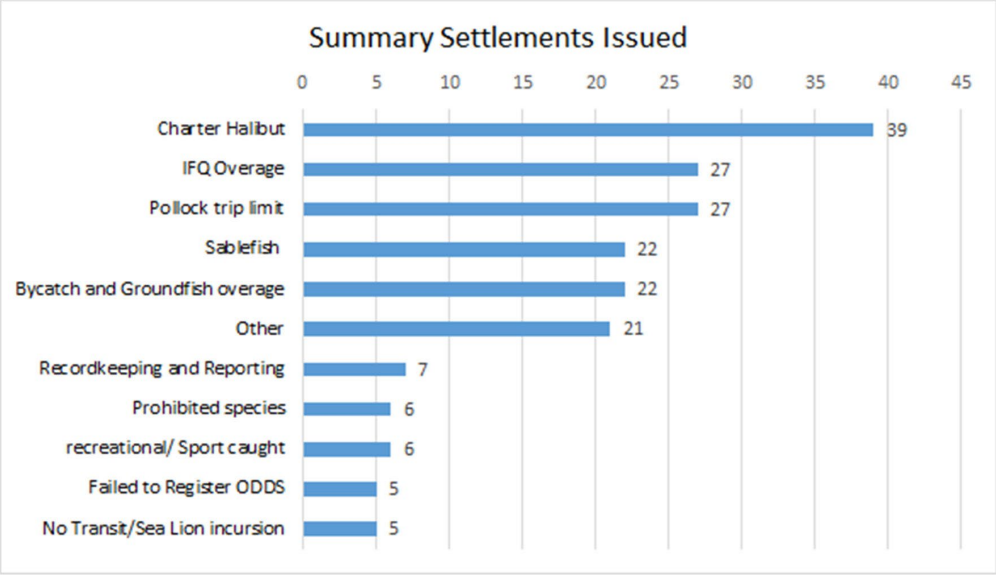

Figure 3. Summary of Settlements from October 1, 2020, to September 30, 2021, Source: NOAA 2021

There have been extensions to observer deployment contracts due to COVID-19, but this has not changed the level of monitoring.

Evidence of continuous compliance with the supporting clauses
There is no material change in compliance with any of the following supporting clauses. Clauses 10.3, 10.3.1, 10.4, and 10.4.1 are not applicable.

10.1. Effective mechanisms shall be established for fisheries monitoring, surveillance, control and enforcement measures including, where appropriate, observer programs, inspection schemes and vessel monitoring systems, to ensure compliance with the conservation and management measures for the

fishery in question. This could include relevant traditional, fisher or community approaches, provided their performance could be objectively verified.

10.2 Fishing vessels shall not be allowed to operate on the resource in question without specific authorization.

10.3 States involved in the fishery shall, in accordance with international law, within the framework of sub-regional or regional fisheries management organizations or arrangements, cooperate to establish systems for monitoring, control, surveillance and enforcement of applicable measures with respect to fishing operations and related activities in waters outside their national jurisdiction. *Not applicable to this fishery.

10.3.1 States which are members of or participants in sub-regional or regional fisheries management organizations or arrangements shall implement internationally agreed measures adopted in the framework of such organizations or arrangements and consistent with international law to deter the activities of vessels flying the flag of non-members or non-participants which engage in activities which undermine the effectiveness of conservation and management measures established by such organizations or arrangements. In that respect, Port States shall also proceed, as necessary, to assist other States in achieving the objectives of the FAO CCRF (1995), and should make known to other States details of regulations and measures they have established for this purpose without discrimination for any vessel of any other State. *Not applicable to this fishery.

10.4 Flag States shall ensure that no fishing vessels entitled to fly their flag fish on the high seas or in waters under the jurisdiction of other States unless such vessels have been issued with a Certificate of Registry and have been authorized to fish by the competent authorities. Such vessels shall carry on board the Certificate of Registry and their authorization to fish. *Not applicable to this fishery.

10.4.1 Fishing vessels authorized to fish on the high seas or in waters under the jurisdiction of a State other than the flag State shall be marked in accordance with uniform and internationally recognizable vessel marking systems such as the FAO Standard Specifications and Guidelines for Marking and Identification of Fishing Vessels. *Not applicable to this fishery.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 11.

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

No. supporting clauses	**3**
Applicable supporting clauses	2
Non-applicable supporting clauses	1 (11.3)
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

Penalties for fisheries related fisheries related violations include fines; forfeiture of fish, vessels, other property and quota; and imprisonment. With respect to permit sanctions, where applicable, the statutes that NOAA enforces generally provide broad authority to suspend or revoke permits. OLE agents and officers can assess civil penalties directly to the violator in the form of a summary settlement or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation who can impose a sanction on the vessels permit or further refer the case to the U.S. Attorney's Office for criminal proceedings. The

low proportion of violations encountered during at-sea patrols of the Alaska fisheries demonstrates effective deterrence.

Alaska state law describes the penalties for violating a BOF regulation. Fines, up to a maximum of $15,000 or imprisonment for not more than 1 year are stipulated, along with forfeiture of any fish, its market value, forfeiture of vessel and any fishing gear. The option of pursuing criminal action is also available to the state.

There is no material change in compliance with any of the following supporting clauses. Clause 11.3 is not applicable.

11.1 National laws of adequate severity shall be in place that provide for effective sanctions.

11.2 Sanctions applicable in respect of violations and illegal activities shall be adequate in severity to be effective in securing compliance and discouraging violations wherever they occur. Sanctions shall also be in force that affects authorization to fish and/or to serve as masters or officers of a fishing vessel, in the event of non-compliance with conservation and management measures.

11.3 Flag States shall take enforcement measures in respect of fishing vessels entitled to fly their flag which have been found by them to have contravened applicable conservation and management measures, including, where appropriate, making the contravention of such measures an offence under national legislation. *Not applicable to this fishery.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

8.6 Serious Impacts of the Fishery Ecosystem

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 of the fishery on the ecosystem shall be appropriately assessed and effectively addressed.

No. supporting clauses	**16**
Applicable supporting clauses	16
Non-applicable supporting clauses	0
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

GOA

Monitoring is carried out through the Observer Program operated by the NMFS. In 2020, the Program was dramatically scaled back due to Covid-19 and related precautions. Industry worked closely with the Program to maintain data collection.

The groundfish, Prohibited Species Catch (PSC), and non-target species catch composition for each fishery and area was updated for the most recent five full years and is given in the tables below. There have been no notable trends in any of this data over the past five years that would indicate fishery changes in need of further

investigation. The number of bird interactions noted and recorded to species level in 2018 reflects a special observer protocol followed in that year specifically to note bird interactions.

GOA Rockfish Fishery

Table 8. Groundfish catch composition in the Gulf of Alaska Rockfish fishery from 2016-2020 showing all stocks comprising at least 0.1% of the catch. Green rows indicate target stocks. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Total	Percentage
Pacific ocean perch	20,402.18	19,077.09	22,164.86	22,258.24	22,880.94	106,783.32	67.7%
dusky rockfish	3,004.20	2,191.91	2,690.57	2,152.52	2,061.72	12,100.93	7.7%
northern rockfish	3,155.04	1,602.23	2,151.83	2,313.20	2,316.68	11,538.97	7.3%
arrowtooth flounder	1,199.77	1,405.14	737.91	732.01	890.08	4,964.92	3.1%
Alaska pollock	572.06	1,056.73	905.52	685.66	647.30	3,867.26	2.5%
Atka mackerel	594.88	542.66	1,138.33	823.82	602.12	3,701.81	2.3%
sablefish	480.64	585.41	678.64	801.23	646.82	3,192.73	2.0%
harlequin rockfish	584.33	442.82	550.35	339.95	222.51	2,139.96	1.4%
p cod	363.08	253.13	391.75	321.88	170.18	1,500.02	1.0%
thornyhead rockfish	336.41	360.02	357.84	176.77	137.58	1,368.62	0.9%
rougheye rockfish	350.66	269.39	316.71	320.21	88.53	1,345.51	0.9%
shortraker rockfish	290.82	253.57	268.01	269.09	224.96	1,306.46	0.8%
rex sole	140.15	112.02	133.38	116.51	189.23	691.30	0.4%
sharpchin rockfish	138.24	116.31	162.77	66.80	65.37	549.49	0.3%
redstripe rockfish	109.07	56.59	159.61	117.39	83.21	525.87	0.3%
yelloweye rockfish	87.04	77.40	92.87	90.78	55.61	403.70	0.3%
flathead sole	26.45	80.57	43.83	40.44	95.00	286.29	0.2%
dover sole	62.65	56.04	40.92	38.19	14.92	212.72	0.1%
silvergray rockfish	45.20	43.25	22.39	63.13	28.93	202.89	0.1%
longnose skate	46.07	41.74	44.17	27.62	24.36	183.96	0.1%
spiny dogfish	3.46	26.19	37.51	53.20	18.62	138.97	0.1%
widow rockfish	12.52	16.26	26.04	27.92	53.56	136.30	0.1%
redbanded rockfish	30.58	26.12	31.19	13.57	17.12	118.59	0.1%
rock sole	11.31	9.67	16.80	32.57	18.64	88.99	0.1%
bigmouth sculpin	29.33	25.06	34.08			88.47	0.1%

Table 9. Prohibited Species Catch (PSC) in the GOA rockfish-directed fishery. Crab and salmon species are listed in numbers of individuals, herring and halibut are given in mt. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Average
Blue King Crab	-	-	-	-	-	-
Bairdi Tanner Crab	5.02	757.15	201.90	67.41	1,146.08	435.51
Chinook Salmon	383.45	519.88	325.36	410.04	655.43	458.83
Golden King Crab	19.79	209.00	323.92	223.35	60.00	167.21
Herring	0.00	0.04	0.01	2.21	0.08	0.47
Pacific Halibut	124.91	126.74	79.19	117.43	111.00	111.85
Non-Chinook Salmon	217.28	641.03	314.53	380.08	723.23	455.23
Opilio Tanner Crab	0.02	0.01	-	-	-	0.01

Red King Crab	0.14	-	0.05	-	-	0.06

Table 10. Non-target species catch in the BSAI rockfish-directed fishery. Birds are given in numbers of individuals, other species in mt. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Average
Birds - Northern Fulmar	-	-	49.53	-	-	9.91
Giant Grenadier	-	-	-	825.10	302.08	225.44
Misc fish	101.97	114.76	161.50	764.49	87.25	245.99
State-managed Rockfish	13.36	24.48	50.24	46.46	53.11	37.53
Squid	11.74	21.98	28.78	10.87	31.80	21.03
Greenlings	5.80	3.90	4.48	9.63	3.50	5.46
Sponge unidentified	2.88	3.20	14.63	5.88	0.52	5.42
Scypho jellies	8.07	0.54	0.97	8.44	3.52	4.31
Grenadier - Rattail Grenadier Unidentified	-	-	-	4.01	1.73	1.15
Sea star	1.81	3.65	5.69	1.37	1.14	2.73
Snails	0.18	0.18	6.19	1.79	0.08	1.68
Sea anemone unidentified	1.28	0.79	0.50	1.66	1.24	1.09
Corals Bryozoans - Corals Bryozoans Unidentified	0.85	0.47	1.57	0.88	0.17	0.79
Other osmerids	0.03	-	-	-	0.98	0.20
Misc crabs	0.35	1.14	0.72	0.14	0.10	0.49
urchins dollars cucumbers	0.34	0.43	0.29	0.21	0.91	0.43
Benthic urochordata	0.50	0.20	0.07	0.40	0.12	0.26
Invertebrate unidentified	0.09	0.07	0.64	0.07	-	0.17
Eulachon	-	-	-	0.27	0.10	0.07
Pandalid shrimp	0.22	0.14	0.07	0.11	0.17	0.14
Brittle star unidentified	0.03	0.60	0.01	0.02	0.01	0.14
Capelin	-	-	-	0.16	0.04	0.04
Misc crustaceans	0.03	0.01	0.13	0.20	0.07	0.09
Eelpouts	0.02	0.13	0.22	0.00	0.01	0.08
Pacific Hake	0.04	-	0.06	-	0.03	0.03
Lanternfishes (myctophidae)	-	-	-	0.06	0.02	0.02
Polychaete unidentified	-	0.02	-	-	-	0.00
Sea pens whips	0.02	0.03	0.00	0.03	0.00	0.02
Hermit crab unidentified	0.01	0.03	0.01	-	0.00	0.01

Monitoring and management regarding aquatic ecosystems

The GOA Ecosystem Status Report includes continuing monitoring of a range of ecosystem indicators, all considered by the Council in the decision-making process (Ferriss and Zador 2020). Covid-19 has impacted many surveys and data collections in 2020. The team concludes that the risk is low though since the fishery has had a high level of monitoring in the past.

No changes that would affect the existing confidence ratings are evident.

Monitoring and management regarding essential habitats

The most recent five-year review of EFH took place in 2016 using a new Fishing Effects model to assess the impacts of fishing activities on EFH (Simpson et al. 2017). The final environmental assessment (for EFH Omnibus Amendments was published in June 2018. Amendment 105 is the relevant omnibus amendment to the FMP for the groundfish fishery of the GOA (NMFS 2018). Based on the most recent five-year review of EFH, the Council determined that new habitat and life history information is available to revise many of the EFH descriptions and maps. These amendments (105 for the GOA) to the EFH provisions in the Council's FMPs would not substantively

change the impacts of EFH as analyzed in the 2005 EFH EIS. Currently, the new 5-year EFH review is officially underway. The species distribution modelling team at AFSC has done one round with SSC, no model results yet, some examples so far. The outputs by species and life stage will go to stock assessment scientists, etc. The SSC will review species distribution model outputs in February. Dr. Jim Thorsen and his team at AFSC are developing more advanced species distribution models than previously used.

The Fishing Effects model is being re-run with updates to impact and recovery parameters, fishing gear parameters and fishing effort. He expects the modelling work will be further improved via the SSC review process.

No changes that would affect the existing confidence ratings are evident.

BSAI

Monitoring is carried out through the Observer Program operated by NMFS.. Industry worked closely with the Program to maintain data collection during the COVID-19 pandemic.

The groundfish, Prohibited Species Catch (PSC), and non-target species catch composition for each fishery and area was updated for the most recent five full years and is given in the tables below. There have been no notable trends in any of this data over the past five years that would indicate fishery changes in need of further investigation. The number of bird interactions noted and recorded to species level in 2018 reflects a special observer protocol followed in that year specifically to note bird interactions.

BSAI Atka mackerel directed fishery

Table 11. Groundfish catch composition in the BSAI Atka mackerel fishery from 2016-2020 shown all stocks comprising at least 0.1% of the catch. Green rows indicate target stocks in the present assessment. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Total	Percentage
Atka mackerel	48,366.58	58,698.79	64,070.14	48,250.41	49,659.93	269,045.86	76.1%
Pacific ocean perch	7,762.92	6,945.42	9,139.55	6,870.95	6,977.03	37,695.87	10.7%
northern rockfish	2,940.77	3,070.51	3,865.49	4,360.69	4,681.71	18,919.17	5.4%
Pacific cod	2,511.54	3,939.74	3,361.28	2,226.37	2,200.92	14,239.84	4.0%
Alaska pollock	451.08	506.07	910.19	589.00	521.22	2,977.56	0.8%
white blotched skate	495.68	499.84	657.75	374.57	370.09	2,397.95	0.7%
kamchatka flounder	399.68	388.97	441.74	428.55	187.82	1,846.75	0.5%
dusky rockfish	267.23	335.11	497.82	241.46	260.17	1,601.80	0.5%
Arrowtooth flounder	223.06	131.53	353.06	97.85	180.86	986.36	0.3%
yellow Irish lord	153.36	325.25	229.67			708.28	0.2%
Alaska skate	109.61	150.67	131.92	71.78	66.05	530.02	0.1%
rock sole	57.09	72.43	104.64	76.98	66.53	377.67	0.1%
sculpin	80.86	72.30	83.48	53.78	50.70	341.12	0.1%
rougheye rockfish	34.80	38.37	79.36	75.52	98.25	326.30	0.1%
sablefish	13.45	56.34	101.30	41.85	55.95	268.89	0.1%
harlequin rockfish	21.72	35.07	75.39	65.19	52.72	250.08	0.1%
bigmouth sculpin	58.25	78.21	68.95			205.42	0.1%
Aleutian skate	28.51	50.46	51.80	33.57	32.48	196.82	0.1%

Table 12. Prohibited Species Catch (PSC) in the BSAI Atka mackerel-directed fishery. Crab and salmon species are listed in numbers of individuals, herring and halibut are given in mt. NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Average
Blue King Crab	-	-	-	-	-	-
Bairdi Tanner Crab	-	44.00	-	-	-	14.67
Chinook Salmon	535.00	1,109.00	650.39	532.20	679.66	701.25

Golden King Crab	2,898.00	1,409.00	7,073.74	14,236.48	2,107.12	5,544.87
Pacific Halibut	112.00	99.27	110.97	110.51	68.80	100.31
Non-Chinook Salmon	1,162.00	1,611.00	1,476.44	3,640.00	1,194.00	1,816.69
Opilio Tanner Crab	-	-	-	40.32	9.25	9.91
Red King Crab	348.00	239.00	239.00	149.43	131.00	221.29

Table 13. Non-target species catch in the BSAI Atka mackerel-directed fishery. Birds are given in numbers of individuals, other species in mt. NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Average
Birds - Northern Fulmar	0.0	0.0	220.6	0.0	0.0	44.1
Birds - Storm Petrels	0.0	0.0	197.1	0.0	0.0	39.4
Birds - Shearwaters	0.0	0.0	138.9	0.0	0.0	27.8
Birds - Auklets	0.0	0.0	53.8	0.0	0.0	10.8
Misc fish	123.1	185.9	179.9	115.3	119.2	124.6
Sponge unidentified	75.6	150.2	161.3	173.0	110.5	100.9
Giant Grenadier	0.0	0.0	0.0	106.8	68.6	35.1
Squid	16.3	12.4	6.0	8.8	8.5	13.8
Sea star	8.4	16.1	17.4	26.9	12.7	12.6
Corals Bryozoans - Corals Bryozoans Unidentified	6.9	9.6	15.5	13.5	8.1	11.1
Invertebrate unidentified	6.9	0.1	0.7	4.7	4.3	7.9
urchins dollars cucumbers	2.0	2.1	3.9	3.2	1.6	2.9
Sea anemone unidentified	1.4	2.0	1.6	1.5	0.9	2.0
Scypho jellies	1.3	0.4	1.2	9.5	3.9	1.8
State-managed Rockfish	1.2	2.2	1.6	0.7	1.7	1.4
Eelpouts	0.6	0.2	2.2	1.2	1.6	1.3
Benthic urochordata	0.2	0.6	3.2	1.9	4.2	1.1
Snails	0.3	0.5	0.8	1.1	1.3	0.6
Misc crabs	0.2	0.2	0.4	0.3	0.4	0.5
Greenlings	0.0	0.1	0.4	0.3	0.9	0.3
Pandalid shrimp	0.2	0.2	0.2	0.2	0.1	0.3
Misc crustaceans	0.2	0.1	0.3	0.0	0.1	0.1
Brittle star unidentified	0.1	0.1	0.1	0.4	0.1	0.1
Bivalves	0.1	0.1	0.1	0.1	0.1	0.1

BSAI rockfish-directed fishery

Table 14. Groundfish catch composition in the BSAI rockfish fishery from 2016-2020 shown all stocks comprising at least 0.1% of the catch. Green rows indicate target stocks. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Total	Percentage
Pacific Ocean Perch	19,588.59	20,422.26	21,091.19	27,650.99	25,802.08	114,555.09	62.3%
Atka mackerel	5,255.28	5,365.33	5,512.63	8,733.80	8,527.30	33,394.34	18.2%
northern rockfish	1,338.17	1,475.92	1,767.72	4,526.73	3,511.57	12,620.12	6.9%
Alaska pollock	874.91	1,423.77	1,523.92	2,254.21	1,997.04	8,073.86	4.4%
Pacific cod	625.01	812.67	637.22	1,216.81	972.29	4,264.01	2.3%
Kamchatka flounder	461.73	427.48	322.40	517.53	714.39	2,443.54	1.3%

arrowtooth	362.66	358.70	256.98	464.81	579.13	2,022.28	1.1%
sablefish	14.32	142.78	147.39	285.85	369.87	960.20	0.5%
rougheye rockfish	69.98	64.92	115.58	246.30	288.05	784.82	0.4%
thornyhead rockfish	56.61	78.24	96.39	180.55	194.77	606.57	0.3%
dusky rockfish	58.38	71.33	80.15	131.37	164.00	505.24	0.3%
white blotched skate	62.30	43.13	71.08	165.71	142.76	484.97	0.3%
shortraker rockfish	37.27	36.47	115.61	121.16	145.91	456.41	0.2%
rex sole	15.70	50.77	86.61	155.66	139.81	448.55	0.2%
flathead sole	40.90	52.92	67.00	119.26	89.22	369.30	0.2%
Greenland turbot				118.51	164.83	283.34	0.2%
Alaska skate	34.93	63.43	43.80	55.59	55.31	253.06	0.1%
sculpin	42.95	56.27	47.51	52.16	53.90	252.78	0.1%
rock sole	14.71	32.18	35.92	66.61	61.00	210.42	0.1%
Aleutian skate	29.67	22.20	26.04	44.72	62.75	185.38	0.1%
harlequin rockfish	14.09	13.08	20.07	29.30	44.55	121.10	0.1%
turbot	27.84	37.20	53.17			118.22	0.1%
skate, other	12.36	15.44	23.96	26.32	20.87	98.95	0.1%

Table 15. Prohibited Species Catch (PSC) in the BSAI rockfish-directed fishery. Crab and salmon species are listed in numbers of individuals, herring and halibut are given in mt. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Average
Blue King Crab	-	-	0.00	0	0	0.00
Bairdi Tanner Crab	70.00	100.00	844.03	616.00	251.08	376.22
Chinook Salmon	211.00	577.00	275.00	1,035.80	170.06	453.77
Golden King Crab	5,289.06	3,016.00	4,950.55	6,298.29	3,655.85	4,641.95
Herring	-	0.01	0.04	1.34	-	0.28
Pacific Halibut	22.61	34.48	20.89	86.00	59.64	44.72
Non-Chinook Salmon	185.00	124.00	764.00	1,140.18	404.80	523.60
Opilio Tanner Crab	17.00	73.00	14,541.06	714.97	96.79	3,088.56
Red King Crab	58.09	631.00	477.03	327.00	63.24	311.27

Table 16. Non-target species catch in the BSAI rockfish-directed fishery. Birds are given in numbers of individuals, other species in mt. Source: NMFS 2021, AK region, Catch Accounting System

Species	2016	2017	2018	2019	2020	Average
Birds - Shearwaters				860.75		860.75
Birds - Laysan Albatross			92.51			92.51
Birds - Auklets			48.73			48.73
Giant Grenadier				95.36	181.68	138.52
Misc fish	58.93	107.35	76.02	104.32	78.92	85.11
Sponge unidentified	48.31	71.48	76.78	96.75	92.48	77.16
Squid	25.73	30.62	49.60	23.41	56.42	37.16
Grenadier - Rattail Grenadier Unidentified				23.44		23.44
Sea star	3.29	4.27	38.68	32.71	16.01	18.99
Corals Bryozoans - Corals Bryozoans Unidentified	11.15	26.61	5.89	23.56	9.25	15.29

Benthic urochordata	0.18	0.32	0.68	12.16	6.08	3.88
Scypho jellies	0.52	0.39	0.70	11.50	3.43	3.31
Brittle star unidentified	0.12	0.14	5.80	3.21	6.08	3.07
Eelpouts	1.33	4.56	2.39	2.46	3.57	2.86
Invertebrate unidentified	1.86	0.13	0.13	4.86	1.69	1.73
urchins dollars cucumbers	0.37	1.14	1.90	2.64	0.69	1.35
State-managed Rockfish	0.62		0.35	0.34	1.13	0.61
Greenlings			0.17	0.67	0.79	0.54
Snails	0.13	0.31	0.67	0.80	0.79	0.54
Sea anemone unidentified	0.19	0.25	0.33	1.22	0.36	0.47
Misc crabs	0.40	0.24	0.29	1.00	0.30	0.45
Sea pens whips	0.06		0.50	0.14	0.20	0.22
Misc crustaceans	0.11	0.38	0.23	0.18	0.18	0.22
Pandalid shrimp	0.15	0.10	0.35	0.14	0.16	0.18
Lanternfishes (myctophidae)				0.11		0.11
Bivalves	0.05	0.02	0.04	0.15	0.03	0.06
Hermit crab unidentified	0.02	0.01	0.04	0.10	0.04	0.04
Polychaete unidentified			0.02	0.03		0.02
Misc inverts (worms etc)			0.00	0.00	0.03	0.01
Misc deep fish			0.01			0.01

Monitoring and management regarding aquatic ecosystems

The EBS and AI Ecosystem Status Reports include continuing monitoring of a range of ecosystem indicators, all considered by the Council in the decision-making process (Siddon 2020; Ortiz and Zador 2020). However, Covid-19 has impacted many surveys and data collections. The team concludes that the risk is low though since the fishery has had a high level of monitoring in the past.

No changes that would affect the existing confidence ratings are evident.

Monitoring and management regarding essential habitats

The most recent five-year review of EFH took place in 2016 using a new Fishing Effects model to assess the impacts of fishing activities on EFH (Simpson et al. 2017). The average percentage impact for 2003-2016 was 4.5% in the BS and 1.9% in the AI, which is well below the 10% habitat impact that was established as the trigger for further analysis (https://www.npfmc.org/habitat-protections/essential-fish- habitat-efh/). On this basis, the Council agreed that the effects of fishing on EFH do not currently meet the threshold of more than minimal and not temporary, and mitigation action is not needed at this time. In addition, the final environmental assessment for EFH Omnibus Amendments was published in June 2018. Amendment 115 is the relevant omnibus amendment to the FMP for the groundfish fishery of the BSAI (NMFS 2018). Based on the most recent five-year review of EFH, the Council determined that new habitat and life history information is available to revise many of the EFH descriptions and maps. These amendments (115 for the BSAI) to the EFH provisions in the Council's FMPs would not substantively change the impacts of EFH as analyzed in the 2005 EFH EIS.

Currently, the new 5-year EFH review is officially underway. The species distribution modelling team at AFSC has done one round with SSC, no model results yet, some examples so far. The outputs by species and life stage will go to stock assessment scientists, etc. The SSC will review species distribution model outputs in February. Dr. Jim Thorsen and his team at AFSC are developing more advanced species distribution models than previously used.

The Fishing Effects model is being re-run with updates to impact and recovery parameters, fishing gear parameters and fishing effort. He expects the modelling work will be further improved via the SSC review process.

No changes that would affect the existing confidence ratings are evident.

Evidence of continuous compliance with the applicable supporting clauses:

There is no material change in compliance with any of the following supporting clauses.

12.1 States shall assess the impacts of environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks and assess the relationship among the populations in the ecosystem.

12.2 Adverse environmental impacts on the resources from human activities shall be assessed and, where appropriate, corrected.

12.3 The most probable adverse impacts of the fishery on the ecosystem/environment shall be considered, taking into account available scientific information, and local knowledge. In the absence of specific information on the ecosystem impacts of fishing for the unit of certification, generic evidence based on similar fishery situations can be used for fisheries with low risk of severe adverse impact. However, the greater the risk the more specific evidence shall be necessary to ascertain the adequacy of mitigation measures.

12.4 Impacts that are likely to have serious consequences shall be addressed. This may take the form of an immediate management response or a further analysis of the identified risk. In this context, full recognition should be given to the special circumstances and requirements in developing countries and countries in transition, including financial and technical assistance, technology transfer, training and scientific cooperation.

12.5 Appropriate measures shall be applied to minimize:

- *catch, waste and discards of non-target species (both fish and non-fish species).*
- *impacts on associated, dependent or endangered species*

12.5.1 There shall be management objectives that seek to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification and any associated culture or enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.6 Non target catches, including discards, of stocks other than the "stock under consideration" shall be monitored and shall not threaten these non-target stocks with serious risk of extinction, recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible; if such impacts arise, effective remedial action shall be taken.

12.7 The role of the "stock under consideration" in the food web shall be considered, and if it is a key prey species in the ecosystem, management objectives and measures shall be in place to avoid severe adverse impacts on dependent predators.

12.8 States shall introduce and enforce laws and regulations based on the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).

12.9 There shall be knowledge of the essential habitats for the "stock under consideration" and potential fishery impacts on them. Impacts on essential habitats and on habitats that are highly vulnerable to damage by the fishing gear involved shall be avoided, minimized or mitigated. In assessing fishery impacts, the full spatial range of the relevant habitat shall be considered, not just that part of the spatial range that is potentially affected by fishing.

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.

12.11 There shall be outcome indicator(s) consistent with achieving management objectives for non-target stocks (i.e. avoiding overfishing and other impacts that are likely to be irreversible or very slowly reversible).

12.12 There shall be outcome indicator(s) consistent with achieving management objectives that seek to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification and any associated culture or enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.13 There shall be outcome indicator(s) consistent with achieving 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.

12.14 There shall be outcome indicator(s) consistent with achieving management objectives that seek to avoid severe adverse impacts on dependent predators resulting from the unit of certification fishing on a stock under

consideration that is a key prey species.

12.15 There shall be outcome indicator(s) consistent with achieving 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. Any modifications to the habitat for enhancing the stock under consideration must be reversible and not cause serious or irreversible harm to the natural ecosystem's structure, processes and function.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Fundamental Clause 13.

Where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity.

No. supporting clauses	**19**
Applicable supporting clauses	0
Non-applicable supporting clauses	19
Overall level of conformity	NA
Non-conformance	NA

Evidence of continuous compliance with the fundamental clause:

Not applicable

Evidence of continuous compliance with the applicable supporting clauses:

The following clauses are not applicable because this is not an enhanced fishery.

13.1 State shall promote responsible development and management of aquaculture, including an advanced evaluation of the effects of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information (and/or traditional, fisher or community objective and verifiable knowledge). Significant uncertainty is to be expected in assessing possible adverse ecosystem impacts of fisheries, including culture and enhancement activities. This issue can be addressed by taking a risk assessment/risk management approach.

13.1.1 In the case of enhanced fisheries, the fishery management system should take due regard of the natural production processes and be appropriate for the conservation of genetic diversity, biodiversity, protection of endangered species, maintenance of integrity of aquatic communities and ecosystems, minimizing adverse impacts on ecosystem structure and function.

13.2 State shall produce and regularly update aquaculture development strategies and plans, as required, to ensure that aquaculture development is ecologically sustainable and to allow the rational use of resources shared by aquaculture and other activities.

13.2.1 State shall ensure that the livelihoods of local communities, and their access to fishing grounds, are not negatively affected by aquaculture developments.

13.3 Effective procedures specific to aquaculture of fisheries enhancement shall be established to undertake appropriate environmental assessment and monitoring with the aim of minimizing adverse ecological changes such as those caused by inputs from enhancement activities and related economic and

social consequences.

13.4 With due regard to the assessment approach employed, stock assessment of fisheries that are enhanced through aquaculture inputs shall consider the separate contributions from aquaculture and natural production.

13.5 Any modification to the habitat for enhancing the stock under consideration is reversible and do not cause serious or irreversible harm to the natural ecosystem's structure and function.

13.5.1 Efforts shall be undertaken to minimize the harmful effects of introducing non-native species or genetically altered stocks used for aquaculture including culture-based fisheries into waters.

13.5.2 Steps shall be taken to minimize adverse genetic disease and other effects of escaped farmed fish on wild stocks.

13.5.3 Research shall be promoted to develop culture techniques for endangered species to protect, rehabilitate and enhance their stocks, taking into account the critical need to conserve genetic diversity of endangered species.

13.6 State shall protect transboundary aquatic ecosystems by supporting responsible aquaculture practices within their national jurisdiction and by cooperation in the promotion of sustainable aquaculture practices.

13.7 State shall, with due respect to their neighboring States and in accordance with international law, ensure responsible choice of species, siting and management of aquaculture activities which could affect trans boundary aquatic ecosystems.

13.8 State shall consult with their neighboring States, as appropriate, before introducing non-indigenous species into trans-boundary aquatic ecosystems.

13.9 State shall establish appropriate mechanisms, such as databases and information networks to collect, share and disseminate data related to their aquaculture activities to facilitate cooperation on planning for aquaculture development at the national, subregional, regional and global level.

13.10 State shall cooperate in the elaboration, adoption and implementation of international codes of practice and procedures for introductions and transfers of aquatic organisms.

13.11 States shall, in order to minimize risks of disease transfer and other adverse effects on wild and cultured stocks, encourage adoption and promote the use of appropriate practices/procedures in the selection and genetic improvement of broodstocks, the introduction of non-native species, and in the production, sale and transport of eggs, larvae, fry, broodstock or other live materials. States shall facilitate the preparation and implementation of appropriate national codes of practice and procedures to this effect.

13.12 Enhanced fisheries may be supported in part by stocking of organisms produced in aquaculture facilities or removed from wild stocks other than the "stock under consideration". Aquaculture production for stocking purposes should be managed and developed according to the above provisions, especially in relation to maintaining the integrity of the environment, the conservation of genetic diversity, disease control, and quality of stocking material.

13.13 Regarding the enhanced components of the "stock under consideration", provided that a natural reproductive stock component is maintained and fishery production is based primarily on natural biological production within the ecosystem of which the "stock under consideration" forms a part, enhanced fisheries shall meet the following criteria:

- *the species shall be native to the fishery's geographic area or introduced historically and have subsequently become established as part of the "natural" ecosystem;*
- *there shall be natural reproductive components of the "stock under consideration;*
- *the growth during the post-release phase shall be based upon food supply from the natural environment and the production system shall operate without supplemental feeding.*

13.14 In the case of enhanced fisheries, "stock under consideration" may comprise naturally

reproductive components and components maintained by stocking. In the context of avoiding significant

negative impacts of enhancement activities on the natural reproductive components of "stock under consideration":

- *naturally reproductive components of enhanced stocks shall not be overfished;*
- *naturally reproductive components of enhanced stocks shall not be substantially displaced by stocked components.*

In particular, displacement shall not result in a reduction of the natural reproductive stock component below abundance-based target reference points (or their proxies) defined for the regulation of harvest.

Changes to Fundamental Clause Confidence Ratings.

Not applicable

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