DNV

WHEN TRUST MATTERS

CERTIFICATION REPORT

RESPONSIBLE FISHERIES MANAGEMENT CERTIFICATION SCHEME, VERSION 2.1

REASSESSMENT OF THE ALASKA POLLOCK FISHERY

Certification Body	DNV Business Assurance USA
Assessment Team	Jodi Bostrom, Giuseppe Scarcella, Paul Knapman
Fishery Client	At-sea Processors Association
Assessment Type	Second Reassessment
Date	2/5/2023

Certified Sustainable
ALASKA RFM

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GLOSSARY

Abbreviations and acronyms

ABC	Allowable biological catch
ADFG	Alaska Department of Fish and Game
AFA	American Fisheries Act
AFSC	Alaska Fisheries Science Center
AI	Aleutian Islands
AP	Advisory Panel
AWT	Alaska Wildlife Troopers
B	Biomass
BOF	Board of Fisheries
BSAI	Bering Sea and Aleutian Islands
CAS	Catch accounting system
CCRF	Code of Conduct for Responsible Fisheries
CDQ	Community Development Quota
CEA	Core EFH area
CEC	Community Engagement Committee
CIE	Center for Independent Experts
CITES	Convention on International Trade in Endangered Species
C/P	Catcher/processor
CPUE	Catch per unit effort
CSC	Certified Seafood Cooperative
CV	Catcher vessel
EBS	Eastern Bering Sea
EEZ	Exclusive economic zone
EFH	Essential fish habitat
EFP	Exempted fishing permit
EIS	Environmental impact statement
EM	Electronic monitoring
ESA	Endangered Species Act
ETP	Endangered, threatened, protected (species)
F	Fishing mortality
FAO	Food and Agriculture Organization of the United Nations
FMP	Fishery management plan
GOA	Gulf of Alaska
GHL	Guideline harvest level
HAPC	Habitat area of particular concern
HCR	Harvest control rule
ICC	Intergovernmental Consultative Committee
IUCN	International Union for the Conservation of Nature
IUU	Illegal, unreported, unregulated (fishing)
LLP	License Limitation Program
MCS	Monitoring, control, and surveillance
MMPA	Marine Mammal Protection Act
MPA	Marine protected area
MSA	Magnuson-Stevens Fisheries Management and Conservation Act
MSST	Minimum stock size threshold
MSY	Maximum sustainable yield
mt	Metric tons
NC	Non-conformance
NEPA	National Environmental Policy Act
nm	Nautical miles
NMFS (NOAA Fisheries)	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

NPFMC (the Council)	North Pacific Fishery Management Council
NPRB	North Pacific Research Board
OFL	Overfishing level
OLE	Office of Law Enforcement
OY	Optimum yield
PBR	Potential biological removal
PSC	Prohibited species catch
PSEIS	Programmatic Supplemental Environmental Impact Statement
PWS	Prince William Sound
RFM	Responsible Fisheries Management
SAFE	Stock Assessment and Fishery Evaluation (Report)
SRR	Stock-recruitment relationship
SSB	Spawning stock biomass
SSC	Scientific and Statistical Committee
TAC	Total allowable catch
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service

1 SUMMARY AND THE UNIT OF THE CERTIFICATION

The purpose of this report is a second reassessment of the Alaska Pollock fishery against the Responsible Fisheries Management (RFM) standard v2.1. This report contains the findings of the RFM Fisheries re-assessment audit conducted for the Alaska Pollock fishery on January 18-21, 2022.

The RFM Certification Program is a voluntary program that is owned and managed by the Certified Seafood Collaborative (CSC) to provide an independent, third-party certification that can be used to verify that these fisheries are responsibly managed according to the RFM standard. Additionally, application to the RFM is only available for fisheries operating within the North American fisheries operating in the U.S. and Canadian 200 nm exclusive economic zone (EEZ).

The RFM Certification Program uses the fundamental clauses of the RFM Fisheries Standard Version 2.1 and is in accordance with ISO 17065 accredited certification procedures. The assessment is based on the fundamental clauses specified in the RFM Fisheries Standard Version 2.1. It is based on four key components of responsible management derived from the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labeling of products from marine capture fisheries (2009).

A The Fisheries Management System
B Science, Stock Assessment Activities, and the Precautionary Approach
C Management Measures, Implementation, Monitoring, and Control
D Serious Impacts of the Fishery on the Ecosystem

Table 1. General information and the fishery being assessed

Fishery name	Alaska Pollock Fishery		
Unit of Certification	**Applicant Group:** At-sea Processors Association **Product Common Name (*Species*):** Alaska pollock (*Gadus chalcogrammus*) **Geographic Location:** Gulf of Alaska and Bering Sea and Aleutian Islands within Alaska jurisdiction (200 nm EEZ) **Gear Types:** Pelagic Trawl (main), other gears (bottom trawl, jig, longline, pot) from other non-directed pollock fisheries legally landing pollock **Principal Management Authority:** National Marine Fisheries Service; North Pacific Fishery Management Council; Alaska Department of Fish and Game; Alaska Board of Fisheries		
Date certified	December 6, 2011; recertified December 6, 2017	Date of certificate expiry	December 5, 2017 and then December 5, 2022, following first recertification (See Section 1.1 for details on a certificate extension.) *Note: Due to extenuating circumstances, DNV requested a two-month extension so the current certificate expires on February 5, 2023.*
Audit type	Second re-assessment		
Date of audit	January 18-21, 2022		
Assessment team	Lead assessor: Jodi Bostrom Assessor(s): Giuseppe Scarcella, Paul Knapman		

1.1 Assessment timeline

Table 2 provides an estimated timeline for the assessment. Due to extenuating circumstances, DNV requested a certificate extension. The certificate now expires on February 5, 2023; this is the date of recertification.

Table 2. Assessment timeline

Event	Date
Announcement of second re-assessment:	December 14, 2021
Site visit and stakeholder consultations:	January 18-21, 2022
Expected date of recertification:	February 5, 2023

1.2 A summary of the conformance of the fishery to the RFM Fisheries Standard

Table 3. Summary of the conformance of the fishery to the RFM Fishery Standard

Fundamental Clause	Evidence Adequacy Rating	Justification
A. The Fisheries Management System		
1. There shall be a structured and legally mandated management system based upon andrespecting international, national, and local fishery laws, for the responsible utilization of the target stock and conservation of the marine environment.	High	The Alaska pollock (*Gadus chalcogrammus*) fisheries are managed by the North Pacific Fishery Management Council (NPFMC; the Council) and the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NMFS; NOAA Fisheries) in the federal waters (3-200 nautical miles [nm]); and by the Alaska Department of Fish and Game (ADFG) and the Board of Fisheries (BOF) in the state waters (0-3 nm). In federal waters, Alaska pollock fisheries are managed under the Council's Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) Groundfish fishery management plans (FMPs), written and amended subject to the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The state pollock fishery in Prince William Sound (PWS) is managed using a guideline harvest level (GHL) set as a percentage of the GOA federal allowable biological catch (ABC). The US Coast Guard (USCG), the NMFS Office of Law Enforcement (OLE) and the Alaska Wildlife Troopers (AWT) and/or deputized ADFG staff, enforce fisheries regulations in federal and state waters respectively.
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, integrated, resource use and conflict avoidance.	High	The NMFS and the Council participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes. These include decision-making processes and activities relevant to fishery resources and users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. The NEPA processes provide public information and opportunity for public involvement that are robust and inclusive at both the state and federal levels. With regards to conflict avoidance and resolution between different fisheries, the Council and the BOF tend to avoid conflict by actively involving stakeholders in the process leading up to decision making. Both entities provide information on their websites, including agenda of meetings, discussion papers, and records of decisions. The Council and the BOF actively encourage stakeholder participation, and their deliberations are conducted in open, public sessions. The Community Development Quota (CDQ) Program was created by the Council in 1992 to provide western Alaska communities an opportunity to participate in BSAI fisheries. There are 65 communities within a 50-mile radius of the BS. The program allocates a percentage of all BSAI total allowable catches (TACs) for pollock as well as allocations for other species.
3. Management objectives shall be implemented through management rules and actions formulated in	Medium	The MSA is the primary domestic legislation governing the management of the U.S. marine fisheries. Under the MSA, Council is authorized to prepare and submit

a plan or other framework.		to the Secretary of Commerce an FMP and any necessary amendments, for each fishery under its authority that requires conservation and management. These include groundfish FMPs for the GOA and BSAI which incorporate the pollock fisheries in those regions. Both FMPs present long-term management objectives for the Alaska pollock fishery. These are reviewed annually by the Council. In state waters, there are no explicit long-term objectives within any ADFG plan or any other management document with regard to state managed pollock fisheries. Hence, a medium rating is concluded.
B. Science, Stock Assessment Activities, and the Precautionary Approach		
4. There shall be an effective fishery data (dependent and independent) collection and analysis system for stock management purposes.	High	The NMFS and the ADFG collect fishery data and conduct fishery independent surveys to assess the pollock fishery and ecosystems in GOA and BSAI areas. GOA and BSAI Stock Assessment and Fishery Evaluation (SAFE) reports provide complete descriptions of data types and years collected. Records of catch and effort are firstly recorded through the e-landing (electronic fish tickets) catch recording system and secondly, collected by vessel captains in voluntary and required logbooks. Fishery independent data are collected in regular surveys of both the GOA and BSAI regions and additional fishery dependent data are collected by the observer program present in both regions. A summer acoustic trawl survey is carried out annually, alternating between the GOA and Eastern Bering Sea (EBS) areas. Bottom trawl surveys are carried out yearly in the EBS and biennially in the GOA and AI. Other sources of data (such as vessel-of-opportunity, crab, and international surveys) are also considered during the stock assessment process. The PWS pollock stock is estimated by ADFG bottom trawl surveys in summer and hydroacoustic surveys in winter (when possible).
5. To support its optimum utilization, there shall be regular stock assessment activities appropriate for the fishery resource—its range, the species biology, and the ecosystem—all undertaken in accordance with acknowledged scientific standards.	High	Guided by MSA standards, and other legal requirements, NMFS has a well-established institutional framework for research developed within the Alaska Fisheries Science Center (AFSC). Scientists at the AFSC conduct research and stock assessments on pollock in Alaska each year, producing annual SAFE reports for the federally managed EBS, GOA, Aleutian Islands and Bogoslof pollock stocks. ADFG also conducts scientific research and surveys on its state-managed Pollock fisheries. These SAFE reports summarize the best-available science, including the fishery dependent and independent data, document stock status, significant trends or changes in the resource, marine ecosystems, and fishery over time, assess the relative success of existing state and Federal fishery management programs, and produce recommendations for annual quotas and other fishery management measures. The annual stock assessments are peer reviewed by experts and recommendations are made annually to improve the

		assessments. An additional level of peer review by external experts is conducted periodically.
6. The current state of the stock shall be defined in relation to reference points, relevant proxies, or verifiable substitutes, allowing for effective management objectives and targets. Remedial actions shall be available and taken where reference points or other suitable proxies areapproached or exceeded.	High	The SAFE reports consist of three volumes: a volume containing stock assessments, a volume containing economic analysis, and a volume describing ecosystem considerations. The stock assessment volume contains a chapter or sub-chapter for each stock or stock complex in the “target species” category, and a summary chapter prepared by the Groundfish Plan Team. Each chapter contains estimates of all annual harvest specifications except TAC, all reference points needed to compute such estimates, and all information needed to make annual status determinations with respect to “overfishing” and “overfished”. The Council harvest control system is a complex and multi- faceted suite of management measures to address issues related to sustainability, legislative mandates, and quality of information. The tier system specifies the maximum permissible ABC and overfishing level (OFL) for each stock in the complex (usually individual species but sometimes species groups). The EBS pollock stock in Alaska is categorized as tier 1a while the GOA pollock and AI stocks are categorized as tier 3. For Tier 1 stocks, reliable estimates are available of B and BMSY, and a reliable probability density function is available for FMSY. For Tier 3 stocks, the spawner-recruit relationship is uncertain, maximum sustainable yield (MSY) cannot be estimated with confidence, and the MSY proxy level is defined as B35%. Stocks in tiers 1-3 are further categorized (a) (b) or (c) based on the relationship between B and BMSY (Tier 1) or B40% (Tier 3). The category assigned to a stock determines the method used to calculate ABC and OFL. For pollock stocks, there is an additional threshold, B20%, used as a measure to protect Steller Sea Lions.
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.	High	There are three core components to the application of the precautionary approach in Alaskan groundfish fisheries. Firstly, the FMP for each management area sets out an optimum yield (OY) for the groundfish complex in each of BSAI and GOA regions, which includes pollock along with the majority of targeted groundfish species. The second component is the tier system, which assigns each groundfish stock to a tier according to the level of scientific understanding, data available and uncertainty associated with the fishery. Each tier has an associated set of management guidelines, particularly in relation to calculating the level of catch permitted. The more data-deficient a stock, the higher the tier’s number, and the more conservatively catch limits are set. At present the GOA and AI pollock fisheries are assigned to Tier 3 and the EBS pollock fishery to tier 1. The third component is OFL, ABC, and TAC system. OFL is the limit reference point of annual catch above which overfishing is determined to be occurring. ABC is a recommended level of annual catch that accounts for the scientific

		uncertainty in the estimate of OFL and any other scientific uncertainty. TAC is the annual catch target for a stock or stock complex, derived from the ABC by considering social and economic factors and management uncertainty.
C. Management Measures, Implementation, Monitoring, and Control		
8. Management shall adopt and implement effective management measures designed tomaintain stocks at levels capable of producing maximum sustainable yields, including harvest control rules and technical measures applicable to sustainable use of the fishery and based upon verifiable evidence and advice from available scientific and objective, traditional sources.	High	The MSA is the federal legislation that defines how fisheries off the U.S. EEZ are to be managed. From this legislation and Council objectives, the management system for the Alaska groundfish fisheries has developed into a complex suite of measures comprised of harvest controls (e.g., OY, TAC, ABC, OFL), effort controls (limited access, licenses, cooperatives), time and/or area closures (habitat protected areas, marine reserves), bycatch controls (prohibited species catch [PSC] limits, Maximum Retainable Allowances), gear modifications, retention and utilization requirements, observers, monitoring and enforcement programs, social and economic protections, and rules responding to other constraints (e.g., regulations to protect Steller sea lions). Excess fishing capacity in the BSAI is avoided by the American Fisheries Act (AFA), which limits participation and allocates percentages of the BSAI pollock fishery TAC among the fishery sectors. Stocks are measured against metrics defined in the MSA and if they are overfished, approaching an overfished condition, or overfishing is occurring, specific measures must be taken, such as implementing a rebuilding program within specified timeframes. The Council's harvest control system is complex and multi-faceted in order to address issues related to sustainability, legislative mandates, and quality of information.
9. Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards, guidelines, and regulations.	High	Alaska enhances through education and training programs the education and skills of fishers and, where appropriate, their professional qualifications. Records of fishers are maintained along with their qualifications.
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.	High	The Alaska pollock fishery uses enforcement measures including vessel monitoring systems on board vessels, USCG boardings and inspection activities. The USCG and NMFS's OLE enforce fisheries laws and regulations. OLE special agents and enforcement officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, and conduct patrols on land, in the air and at sea. Observers are required to report infringements, and OLE and USCG officers conduct de-briefing interviews with observers, checking on vessels fishing practices and the conduct of the crew. NOAA agents and officers can assess civil penalties directly to the violator in the form of Notices of Violation and Assessment or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation. State regulations are enforced by the AWT.

11. There shall be a framework for sanctions of adequate severity to support compliance and discourage violations and illegal activities.	High	The MSA provides four basic enforcement remedies for violations: 1) Issuance of a citation (a type of warning), usually at the scene of the offense, 2) Assessment by the Administrator of a civil money penalty, 3) for certain violations, judicial forfeiture action against the vessel and its catch, 4) Criminal prosecution of the owner or operator for some offenses. In some cases, the MSA requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine. The 2011 NOAA Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions issued by NOAA Office of the General Counsel – Enforcement and Litigation, provides guidance for the assessment of civil administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA. The AWT enforce state water regulations with a number of statutes that enable the government to fine, imprison, and confiscate equipment for violations and restrict an individual's right to fish if convicted of a violation. The low proportion of violations encountered during at-sea patrols of the Alaska fisheries demonstrates effective deterrence. No recent sanctions have been applied by State of Alaska authorities in the PWS pollock fishery and ADFG staff consider that sanctions are effective deterrents.
D. Serious Impacts of the Fishery on the Ecosystem		
12. Considerations of fishery interactions and their effects on the ecosystem shall be based on best available science, local knowledge where it can be objectively verified, and a risk-based management approach to determine the most probable adverse impacts. Adverse impacts on the fishery on the ecosystem shall be appropriately assessed and effectively addressed.	High	The Council, NOAA Fisheries, and other relevant organizations continue to closely monitor the fisheries and their respective environmental effects. Appropriate significance appears to be allocated to issues of concern (including in response to stakeholder concerns – such as effects on bycatch populations and effects on habitat). Fishery management plans, Environmental Impact Assessments and other assessments are kept under review. No changes are apparent in the management of the GOA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses. Full conformance continues against all supporting clauses.
13. Where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity.	NA	Not an enhanced fishery.

1.3 Non-conformance raised and corrective action plan

One minor non-conformance (NC) was raised on supporting clause 3.1 during the reassessment of the Alaska pollock fishery. The corrective action plan from the client is provided in Section 6.

1.4 Recommendation for certification of the assessment team

Table 4. Certification recommendation

Fishery	Status of Certification	Comment

Alaska pollock (*Gadus chalcogrammus*) caught by vessels within the At-sea Processors Associationusing pelagic trawl and other gears (bottom trawl, jig, longline, and pot) from other non-directed pollock fisheries legally landing pollock caught in the Gulf of Alaska and Bering Sea and Aleutian Islands within Alaska jurisdiction (200 nm EEZ) managed by the National Marine Fisheries Service, North Pacific Fishery Management Council, Alaska Department of Fish and Game, and Alaska Board of Fisheries	**Certified, undergoing reassessment**	Following the results of the reassessment audit conducted in January 18-21, 2022 and the reassessment process, the assessment team recommends the recertification of this fishery according to the RFM Fisheries Standard v2.1.

2 ASSESSMENT TEAM AND PEER REVIEWER DETAILS

2.1 Assessment team

Jodi Bostrom DNV Lead Assessor and main area of responsibility Fundamental clause D (Serious Impacts of the Fishery on the Ecosystem)	Jodi Bostrom is a senior assessor and team leader for MSC Fisheries and RFM Fisheries at DNV Business Assurance. She earned an M.Sc. in Environmental Science from American University and a B.Sc. in Zoology from the University of Wisconsin. She has over five years of experience in MSC fisheries assessment services. Prior to that, she worked for five years at the MSC as a Senior Fisheries Assessment Manager. Among other things, she developed the MSC's benthic habitats policy and the Consequence Spatial Analysis (a risk-based framework for assessing habitat impacts in data-deficient situations) as part of the MSC Standard revision. Prior to the MSC, Jodi spent 11 years with the US National Academy of Sciences' Ocean Studies Board where she worked on various projects from fisheries management and policy to bycatch and dredging impacts to eutrophication and sea level rise.
Paul Knapman Main areas of responsibility Fundamental clause A (Fisheries Management System) and C (Science, Stock Assessment Activities, and the Precautionary Approach)	Paul is an independent consultant based in Halifax, Nova Scotia, Canada. Paul began his career in fisheries more than 30 years ago as a fisheries officer in the UK, responsible for the enforcement of UK and EU fisheries regulations. He then joined the UK government's nature conservation advisors, establishing and managing their marine fisheries program. He developed an extensive program of work with fisheries managers, scientists, the fishing industry and ENGOs to integrate national and European fisheries and nature conservation requirements. He also helped lead a national four-year project contributing to the 2002 review of the Common Fisheries Policy. He then became Head of the largest inshore fisheries management organization in England, with responsibility for managing an extensive area of inshore fisheries on the North Sea coast. The organization's responsibilities and roles included: stock assessments; habitat monitoring; setting and ensuring compliance with total allowable catches and quotas; establishing and applying regional fisheries regulations; the development and implementation of fisheries management plans; the lead authority for the largest marine protected area in England. In 2004, Paul moved to Canada and established his own consultancy providing analysis, advisory and developmental work on fisheries management policy in Canada and Europe. He drafted the first management plan for one of Canada's marine protected areas, undertook an extensive review on illegal, unreported, and unregulated fishing in the Baltic Sea and was appointed as rapporteur to the European Commission's Baltic Sea Regional Advisory Council. In 2008, Paul joined Moody Marine as their Americas Regional Manager, responsible for managing and developing their regional MSC business. He became General Manager of the business in 2012. Paul returned to consultancy in 2015.
Giuseppe Scarcella Main area of responsibility Fundamental clause B (Science, Stock Assessment Activities, and the Precautionary Approach)	Giuseppe Scarcella is an experienced fishery scientist and population analyst and modeler, 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 now Institute for Biological Resources and Marine Biotechnologies. During the years of employment, he has gained experience in benthic ecology, statistical analyses of fish assemblages 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 and Scientific, Technical and Economic Committee for Fisheries for the European Commission. He is author and co-author of more than 50 scientific paper peer reviewed journals and more than 200 national and international technical reports, most of them focused on the evolution of fish assemblages in artificial habitats and stock assessment and fishery management.

2.2 Peer reviewers

Wes Toller	Dr. Wes Toller has been an independent consultant in standard setting, sustainability and eco-certification since 2010. His current work includes developing standards, methodologies, guidelines and assessment tools for use in improving sustainability and accountability in the seafood and other natural resources sectors. He has worked closely with leading certification schemes including the Marine Stewardship Council (MSC) and Aquaculture Stewardship Council (ASC) to develop and improve processes for auditing and accreditation of sustainability standards. Wes was previously a program manager with Accreditation Services International (ASI) where he helped establish the company's MSC Program. He has an in-depth knowledge of ISO requirements and international best practices relating to eco-certification. Wes sees his move into the sustainability sector as a natural progression from his background in fisheries management and habitat conservation. Wes received his doctorate in biological sciences from the University of Southern California. He has also reviewed several RFM reports.
Jim Andrews	Dr. Jim Andrews has over 25 years' experience working in marine fisheries and environmental management. His previous experience includes running the North Western and North Wales Sea Fisheries Committee as its Chief Executive from 2001 to 2005, and previously working as the SFC's Marine Environment Liaison Officer. During this time, he was responsible for the regulation, management and assessment of inshore finfish and shellfish stocks along a 1,500km coastline. He has an extensive practical knowledge of both fisheries and environmental management and enforcement under UK and EC legislation. Jim has formal legal training & qualifications, with a special interest in the policy, governance and management of fisheries impacts on marine ecosystems. He has worked as an assessor and lead assessor on more than 25 MSC certifications within the UK,

Europe, Africa, Australia, South America and Asia since 2007. In 2008 he worked with the MSC and WWF on one of the pilot assessments using the MSC Risk Based Assessment Framework (RBF) and is fully trained in the use of the RBF. He has carried out many peer reviews of MSC assessments and is a member of the MSC Peer Review College. He has also reviewed several RFM reports.

3 BACKGROUND OF THE FISHERY BEING ASSESSED

3.1 General historical background information on the area of the fishery

Walleye pollock (*Gadus chalcogrammus*) is a semi-pelagic schooling fish distributed widely in the North Pacific Ocean from California through the Bering and Chukchi Seas to Japan, with the largest fisheries occurring in the BS (Figure 1). In the GOA, pollock is considered to be a single stock separate from those in the BSAI. For management purposes, the pollock population in the EBS and AI has been split into three stocks (Figure 2):

- EBS pollock occupying the eastern Bering Sea shelf from Unimak Pass to the U.S.-Russia Convention line;
- AI pollock encompassing the pollock in the Aleutian Islands shelf region from 170°W to the U.S.-Russia Convention line (Figure 3);
- Central Bering Sea-Bogoslof Island pollock.

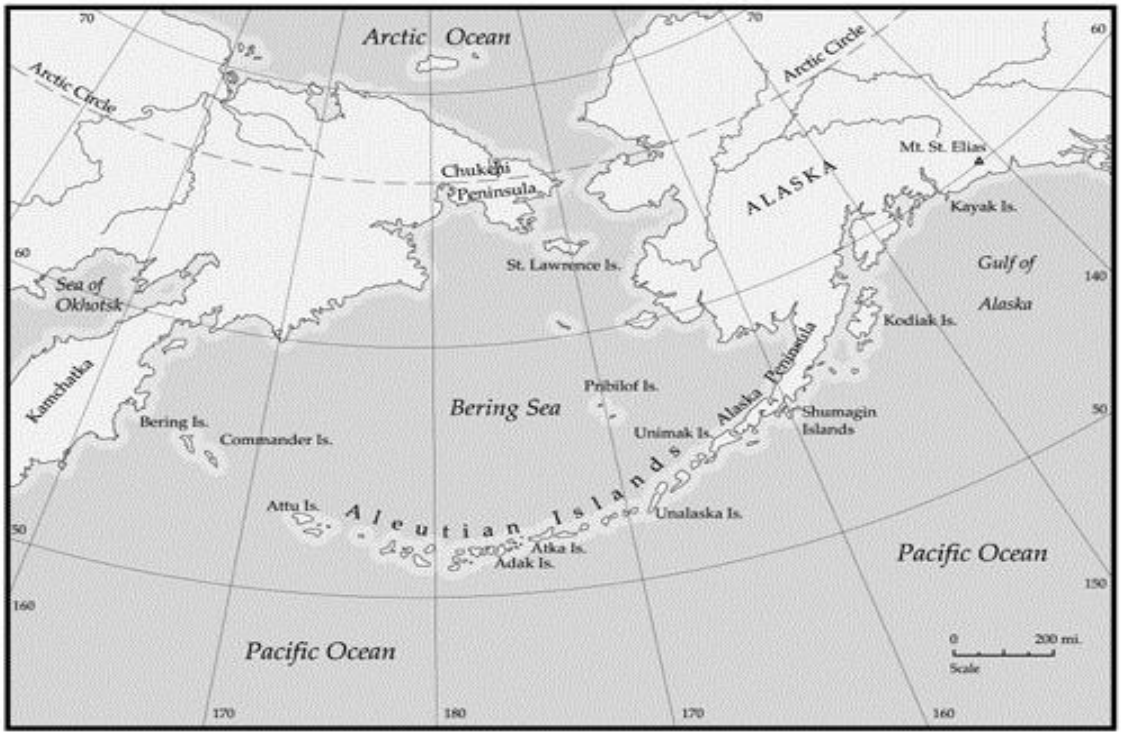

Figure 1. Map showing BS, GOA, and some place names referred to in this report. Source: http://www.common-place-archives.org/vol-05/no-02/namias/index.shtml

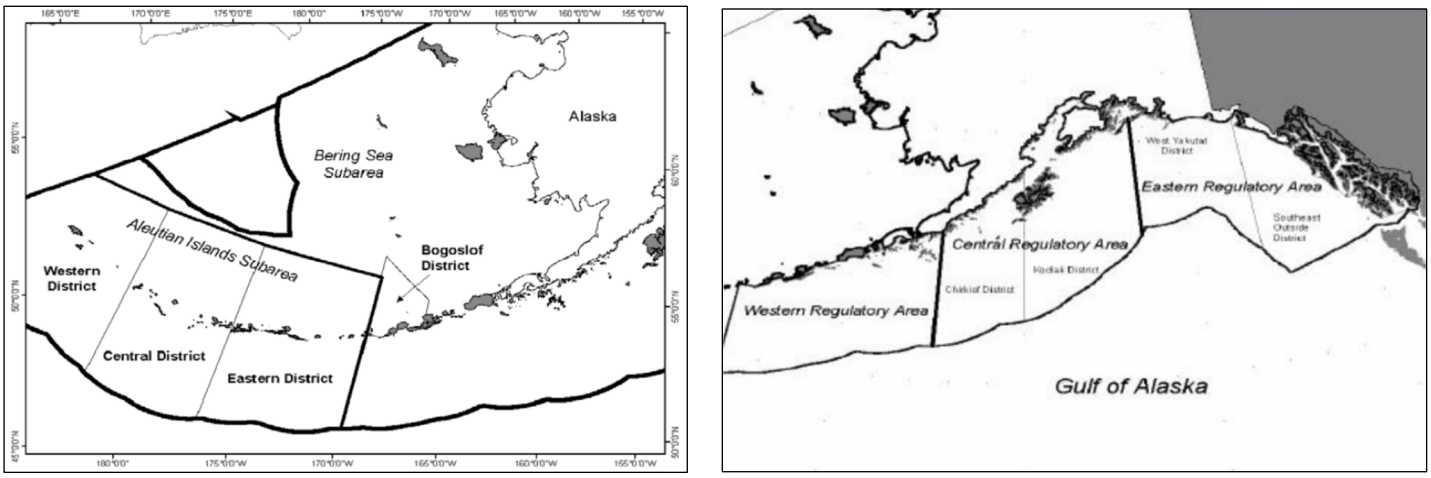

Figure 2. Management areas for BS, AI, and Bogoslof (left panel), and GOA (right panel). Sources: NPFMC 2020a, b

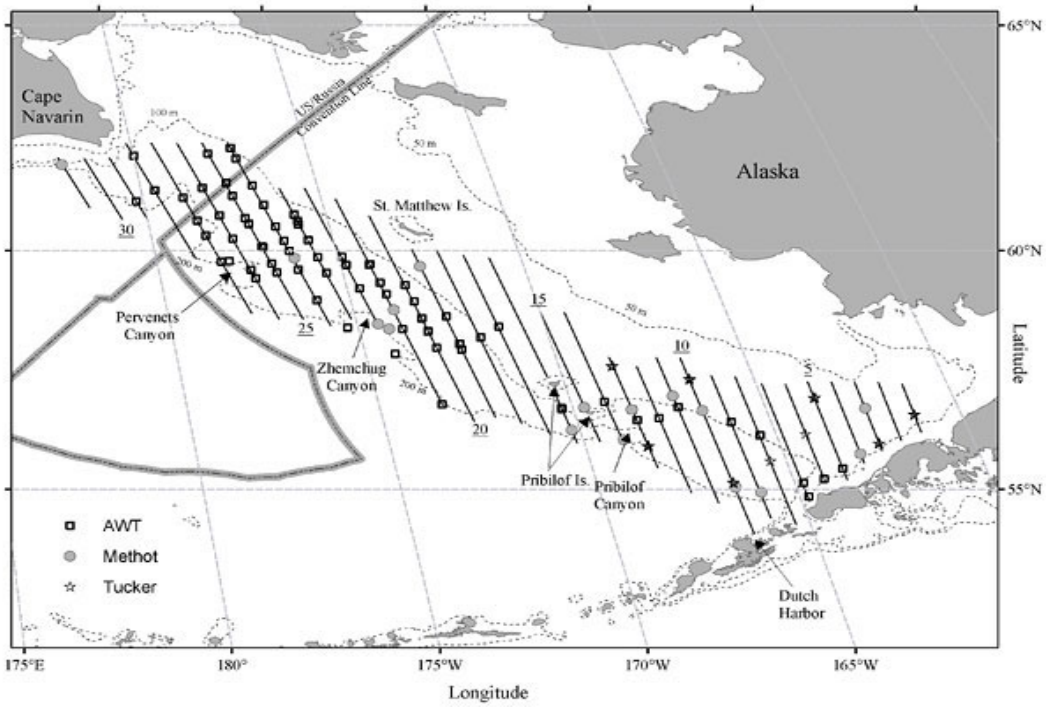

Figure 3. Map showing location of NMFS/AFSC acoustic survey for pollock survey in Bering Sea, and U.S.-Russia Convention Line. Source: https://www.afsc.noaa.gov/Quarterly/jas2010/divrptsRACE5.htm

These three management stocks likely have some degree of exchange. The Bogoslof stock is thought to form a distinct spawning aggregation that has some connection with the deep water region of the Central Bering Sea/Aleutian Basin.

There is seasonal and interannual variation in both area and patchiness of pollock distribution, along with general preference for waters between 2 and 3°C. In late winter/early spring pollock form very large spawning aggregations in both the EBS and GOA regions, in areas such as Shelikof Strait (west side of Kodiak Island) and northwest of Unimak Island (Figure 1). In summer, large aggregations have been found in GOA areas such as the east side of Kodiak Island, and nearshore along the southern Alaska Peninsula, and in EBS areas such as west of the Pribilof Islands and north of Unimak Island. Pollock migrate seasonally between spawning and feeding areas, and fishing is divided into seasons in the BSAI and GOA management areas.

In Alaska state waters (within 3 nm of shoreline), ADFG permit a 'parallel fishery' where the state allows fishing against the federal TAC from the adjacent federal waters. The state-managed pollock fishery occurs in PWS (Figure 4).

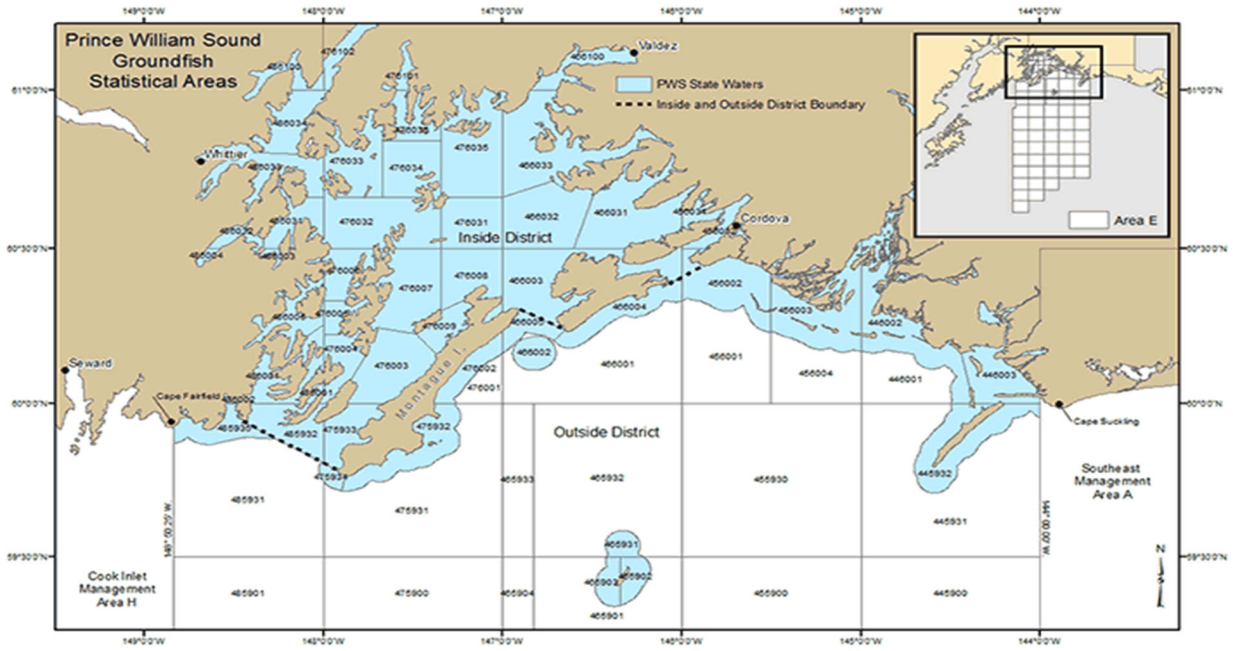

Figure 4. Map of PWS groundfish management area, also showing ADFG state-managed waters. Source: http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareapws.pws_groundfish_stat_area_map

3.1.1 Fishery sector landings and the general economic situation of the fishery

Pollock or walleye pollock is currently the largest single-species fishery in the world, with stocks concentrated in the North Pacific Ocean. Pollock are commercially harvested by several countries, but U.S. (Alaska) and Russia are the largest producers by a wide margin. Pollock harvests in Alaska are significant on a national scale, accounting for 28% of total U.S. commercial fishery in 2017. Alaska pollock accounted for 63% of Alaska's groundfish production volume and 57% of first wholesale value in 2017 (Table 5). Alaska pollock is processed into fillets, surimi, roe, head/gut, fish meal, fish oil, and other products. Europe, Japan, and U.S. are the primary consumer markets.

Table 5. Summary profile of Alaska pollock wholesale production and markets, 2017. Source: Fissel et al. 2021

Value and Volume		Key Products	Fillets	Surimi	Roe	Meal	Other
First Wholesale Production (mt)	604,426	Pct. of Value	33%	41%	8%	7%	11%
Pct. of Global Pollock Harvest	45%	Key Markets	Japan	Europe	US	Korea	China
First Wholesale Value ($millions)	$1,438	Pct. of 1st Sales	18%	24%	23%	17%	14%
Pct. Change in Value from 2013-2017	3.2%	YoY Change	13%	-6%	-9%	-14%	16%
Pct. of Alaska Groundfish Value	57%	Competing Species: Russian pollock, hake, hoki, tropical surimi, & cod.					

Pollock is one of the most valuable fisheries in Alaska, and even the world, due to its tremendous volume, production versatility, and white, mild-flavored flesh. Virtually all edible pollock products are frozen before being sold into wholesale markets. Alaska pollock harvests yielded 604,426 mt of processed product in 2017, with a first wholesale value of $1.44 billion (Figure 5). Alaskan pollock yield five primary product types: surimi, fillets, head/gut, roe, and fish meal/oil. In 2017, 34% of that volume was surimi, followed by 29% fillet, 11% fish meal, 10 % head/gut, 3 % roe, and the remainder in other products such as minced meat, fish oil, and organs.

Fillets typically provide the most revenue of any product type, though surimi topped the list in 2017. Together fillets and surimi accounted for 75% of Alaska pollock's first wholesale value in 2017. Although roe is only 3% of the production volume, it accounts for 8% of the fish's value and typically has the highest profit margin per unit of production. Fish meal/oil, minced meat, and other ancillary products account for 10% of the value, while head/gut production is 7%.

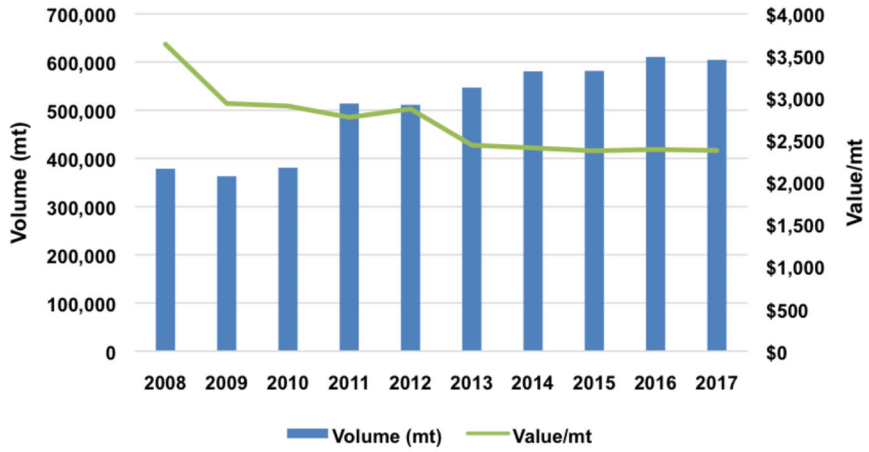

Figure 5. First wholesale volume and value for Alaska pollock, 2008-2017. Source: Fissel et al. 2021

BSAI: Pollock accounted for 74% of the ex-vessel value for the BSAI (EBS + AI) catcher vessels (CV) in 2019 and is targeted using trawl gear. BSAI trawl CV pollock retained catch increased 2% in 2019, correspondingly with the TAC. The realized ex-vessel price of BSAI trawl pollock increased 7% to $0.167/lb in 2019. Price projections from last year's report indicated an increase as well and had 95% confidence bounds of $0.163/lb to $0.170/lb with a median of $0.166/lb, placing the realized price within the projected range. This year's price projections for the 2020 BSAI trawl pollock ex-vessel price have a median of $0.157/lb with 95% confidence bounds of $0.153/lb to $0.161/lb. (Fissel et al. 2021). These estimates imply that a price decrease in 2020 is likely. Catch data through Sept. 2020 show a 7% decrease in the year-over-year BSAI trawl CV pollock catch. BSAI trawl pollock ex-vessel price projections for 2021 and beyond based on historical trends indicate that expected prices may bounce back in 2021. Because of the substantial volatility a range of potential increases or decreases are plausible (Fissel et al. 2021).

GOA: Pollock accounted for 29% of the ex-vessel value for the GOA CV in 2019 and is targeted using trawl gear. GOA trawl CV pollock retained catch decreased 24% in 2019. The realized ex-vessel price of GOA trawl pollock increased 12% to $0.138/lb. Price projections from last year's report indicated an increase as well and had 95% confidence bounds of $.119/lb to $0.134/lb with a median of $0.127/lb, placing the realized price $.004/lb above the projected range. This year's price projections for the 2020 GOA trawl pollock ex-vessel price have a median of $0.117/lb with 95% confidence bounds of $0.112/lb to $0.124/lb (Fissel et al., 2021). These estimates imply that the 2020 price will likely decrease. Catch data through Sept. 2020 show a 12% decrease in the year-over-year GOA trawl CV pollock catch. GOA trawl pollock ex-vessel price projections for 2021 and beyond based on historical trends indicate that expected prices do not exhibit a significant trend or potential mean reversion. Because of the substantial volatility a range of potential increases or decreases are plausible. Fishing is conducted year-round, and in recent years has been divided into two seasons in EBS, and four seasons in GOA, as well as into areas for each stock. Pelagic trawls are by far the dominant gear in Alaskan pollock fisheries, taking 100% of directed pollock catches in the BSAI, and 90% in GOA. There is no directed fishing for pollock in the AI or Bogoslof areas in recent years (Fissel et al. 2021).

In the North Pacific FMP groundfish fisheries, 66% of the wholesale value came from Alaska pollock in 2019 (Fissel et al. 2021). The primary products produced from pollock are surimi, fillets and roe. Fillets have been divided into deep-skin fillets and all other fillets (which are simply labeled fillets). The production of pollock surimi decreased 3.4% in 2019 and the first-wholesale price increased 8.5% to $1.363/lb. The price decrease was consistent with the decrease estimated last year and was inside last year's estimated 95% confidence bounds for the 2019 price which were $1.350/lb and $1.448/lb with a median of $1.396/lb. The current first-wholesale surimi 2020 price projection 95% confidence bounds are $1.303/lb and $1.411/lb with a median of $1.358/lb (Fissel et al. 2021). Surimi export prices tend to provide a reasonably good prediction of the state of surimi prices. These estimates imply that a price decrease in 2020 is

somewhat likely though stable or a slight increase are also within the estimated range. Production data through October 3, 2020 show a 15% decrease in year-over-year surimi production. Projections of surimi prices for 2021 and beyond indicate that based on historical patterns may fluctuate with no expected trend up or down. Volatility projections suggest that the recent level of volatility will persist in the near-term and are consistent with the historical average (Fissel et al. 2021). The production of pollock fillets increased 11% in 2019 and the price increased 15% to $1.481/lb. The price increase was inconsistent with the projected stable prices from last year projection and was above last year's estimated confidence bounds which had a median of $1.286/lb and 95% confidence bounds of $1.226/lb and $1.349/lb. Current projections for the 2020 fillet price have 95% confidence bounds of $1.312/lb to $1.456/lb with a median of $1.384/lb (Fissel et al. 2021). These estimates imply that prices are likely to decrease in 2020. Production data through October 3, 2020 show that year-over-year fillet production is down 25% in 2020. Projections of fillet prices for 2021 and beyond indicate that based on historical patterns expected prices do not exhibit a significant trend or potential mean reversion. Volatility projections indicate that future volatility may decrease. Because of the substantial volatility a range of potential increases or decreases are plausible (Fissel et al. 2021).

3.1.2 Overview of the fishery to be certified, including management practices, scientific assessment of the stocks, and a clear definition of the unit of certification being proposed

3.1.2.1 EBS

There is a detailed description of the recent fishery in the 2021 EBS pollock SAFE by Ianelli et al. (2021a). Much of the following section and related figures are from that report.

Historically, EBS pollock catches were low until directed foreign fisheries began in 1964. Catches increased rapidly during the late 1960s and reached a peak in 1970-75 when they ranged from 1.3 to 1.9 million t annually. Following the peak catch in 1972, bilateral agreements with Japan and the USSR resulted in reductions. During a 10-year period, catches by foreign vessels operating in the “Donut Hole” region of the Aleutian Basin were substantial totaling nearly 7 million t. A fishing moratorium for this area was enacted in 1993 and only trace amounts of pollock have been harvested from the Aleutian Basin region since then. Since the late 1970s, the average EBS pollock catch has been about 1.2 million t, ranging from 0.810 million t in 2009 to nearly 1.5 million t during 2003-2006. U.S. vessels began fishing for pollock in 1980 and by 1988 the fishery became fully domestic. The current observer program for the domestic fishery formally began in 1991 and prior to that, observers were deployed aboard the foreign and joint-venture operations since the late 1970s. From the period 1991 to 2011 about 80% of the catch was observed at sea or during dockside offloading. Since 2011, regulations require that all vessels participating in the pollock fishery carry at least one observer so nearly 100% of the pollock fishing operations are monitored by scientifically trained observers. Historical catch estimates used in the assessment, along with management measures (i.e., OFLs, ABCs, and TACs) are shown in Table 6.

Table 6. Time series of 1964-1976 catch (left) and ABC, TAC, and catch for EBS pollock, 1977-2020 in t. Note that the 2020 value is based on catch reported to October 25, 2020 plus an added component due to bycatch of pollock in other fisheries. Source: compiled from NMFS Regional office web site and various NPFMC reports

Year	Catch	Year	OFL	ABC	TAC	Catch
1964	174,792	1977	-	950,000	950,000	978,370
1965	230,551	1978	-	950,000	950,000	979,431
1966	261,678	1979	-	1,100,000	950,000	935,714
1967	550,362	1980	-	1,300,000	1,000,000	958,280
1968	702,181	1981	-	1,300,000	1,000,000	973,502
1969	862,789	1982	-	1,300,000	1,000,000	955,964
1970	1,256,565	1983	-	1,300,000	1,000,000	981,450
1971	1,743,763	1984	-	1,300,000	1,200,000	1,092,055
1972	1,874,534	1985	-	1,300,000	1,200,000	1,139,676
1973	1,758,919	1986	-	1,300,000	1,200,000	1,141,993
1974	1,588,390	1987	-	1,300,000	1,200,000	859,416
1975	1,356,736	1988	-	1,500,000	1,300,000	1,228,721
1976	1,177,822	1989	-	1,340,000	1,340,000	1,229,600
		1990	-	1,450,000	1,280,000	1,455,193
		1991	-	1,676,000	1,300,000	1,195,664
		1992	1,770,000	1,490,000	1,300,000	1,390,299
		1993	1,340,000	1,340,000	1,300,000	1,326,602
		1994	1,590,000	1,330,000	1,330,000	1,329,352
		1995	1,500,000	1,250,000	1,250,000	1,264,247
		1996	1,460,000	1,190,000	1,190,000	1,192,781
		1997	1,980,000	1,130,000	1,130,000	1,124,433
		1998	2,060,000	1,110,000	1,110,000	1,102,159
		1999	1,720,000	992,000	992,000	989,680
		2000	1,680,000	1,139,000	1,139,000	1,132,710
		2001	3,536,000	1,842,000	1,400,000	1,387,197
		2002	3,530,000	2,110,000	1,485,000	1,480,776
		2003	3,530,000	2,330,000	1,491,760	1,490,779
		2004	2,740,000	2,560,000	1,492,000	1,480,552
		2005	2,100,000	1,960,000	1,478,500	1,483,022
		2006	2,090,000	1,930,000	1,485,000	1,488,031
		2007	1,640,000	1,394,000	1,394,000	1,354,502
		2008	1,440,000	1,000,000	1,000,000	990,578
		2009	977,000	815,000	815,000	810,784
		2010	918,000	813,000	813,000	810,206
		2011	2,450,000	1,270,000	1,252,000	1,199,041
		2012	2,474,000	1,220,000	1,200,000	1,205,293
		2013	2,550,000	1,375,000	1,247,000	1,270,827
		2014	2,795,000	1,369,000	1,267,000	1,297,849
		2015	3,330,000	1,637,000	1,310,000	1,322,317
		2016	3,910,000	2,090,000	1,340,000	1,353,686
		2017	3,640,000	2,800,000	1,345,000	1,359,367
		2018	4,797,000	2,592,000	1,364,341	1,379,301
		2019	3,914,000	2,163,000	1,397,000	1,409,235
		2020	4,085,000	2,043,000	1,425,000	1,325,792
		2021	2,594,000	1,626,000	1,375,000	1,339,000
1977–2021 mean			2,471,333	1,495,022	1,221,947	1,204,343

The “A-season” for directed EBS pollock fishing opens on January 20th and fishing typically extends into early mid-April. During this season the fishery targets pre-spawning pollock and produces pollock roe that, under optimal conditions, can comprise over 4% of the catch in weight. The summer, or “B-season” presently opens on June 10th and fishing extends through noon on November 1st. The A-season fishery concentrates primarily north and west of Unimak Island depending on ice conditions and fish distribution. There has also been effort along the 100m depth contour (and deeper) between Unimak Island and the Pribilof Islands. The general pattern by season (and area) has varied over time with recent B-season catches occurring in the southeast portion of the shelf (east of 170° W longitude). Since 2011, regulations and industry-based measures to reduce Chinook salmon bycatch have affected the spatial distribution of the fishery and to some degree, the way individual vessel operators fish (Stram and Ianelli 2015). In 2020, the fishing fleet encountered higher than normal bycatch of herring and this has further constrained the fishing grounds due to area closures. Additionally, sablefish

appear to be highly abundant in the region and have comprised a significant proportion of the incidental catches in the pollock fishery (proportionally still less than 1% of the total landings). Comparing encounters of bycatch relative to the effort (total duration of all tows) the pollock fleet had a relatively flat trend in the Chinook salmon bycatch while sablefish and herring was down from the relatively high levels last year. The catch estimates by sex for the seasons indicate that over time, the number of males and females has been fairly equal but in the period 2017-2020 the A-season catch of females has been slightly higher and conversely, in the B-season there has been a slightly higher number of males taken. The 2021 A-season fishery spatial pattern had a relatively higher concentrations of fishing near the Pribilof Islands and catches near Unimak and east compared to recent years (Figure 6). The 2021 A-season nominal catch rates were lower than the 2020 peak (for the fleet in aggregate). Beginning in 2017, due to a regulatory change, up to 45% of the TAC could be taken in the A-season (previously only 40% of the TAC could be taken). This conservation measure was made to allow greater flexibility to avoid Chinook salmon in the B-season. To date, it appears that the pollock fleet as a whole took advantage of this added flexibility. However, this figure indicates that in 2021, the proportion of catch in February dropped relative to recent patterns but was made up by the end of April. Pollock roe is an important product coming from the winter fishery. The amount produced in the 2021 A-season was the lowest since 2016 and a considerable drop from the previous two years.

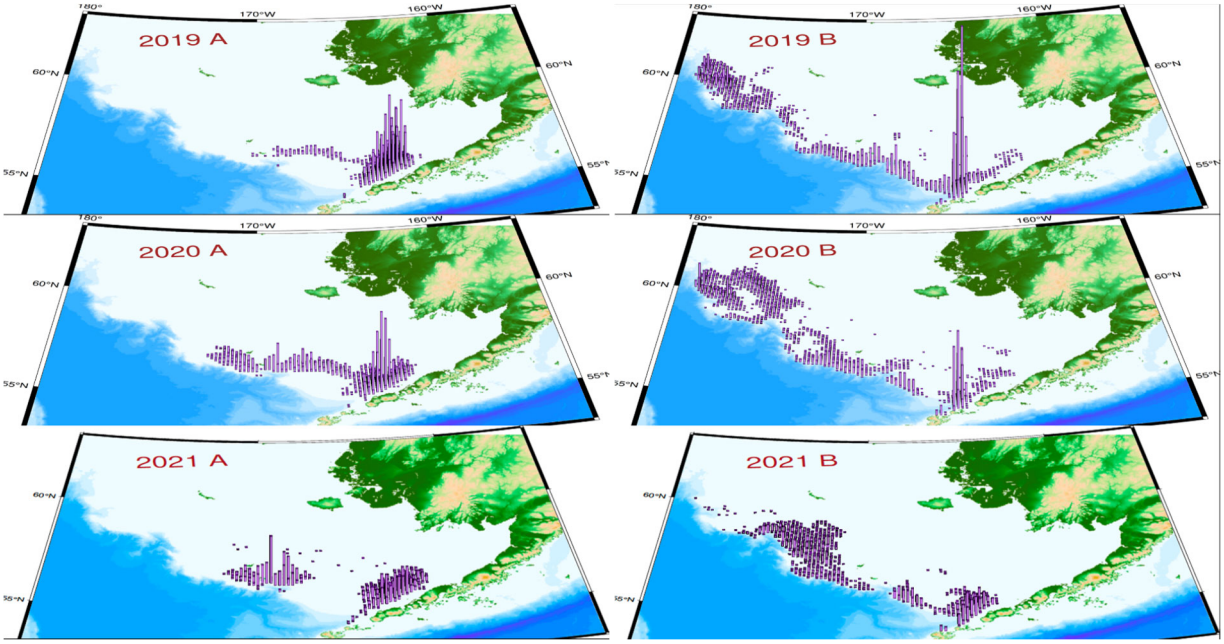

Figure 6. EBS pollock catch distribution during A-season (left panels) and during B-season (right panels), 2019-2021. Column height is proportional to total catch. Source: Ianelli et al. 2021a

The summer-fall fishing conditions for 2021 improved considerably over 2020 and was about average on nominal catch rates. The number of hours the fleet required to catch the same tonnage of pollock was also improved relative to 2020. In the B-season catches in the northwestern area dropped relative to the previous two years (Figure 6). In addition, the 2021 SAFE report presents an approach first shown in 2019 to evaluate how concentrated the fleet was on average. The approach provides a measure of fleet dispersion: the relative distance or spread of the fishery in space. Briefly, the calculation computes for a given day, the distance between all trawl tows (within and across boats). These distances are then averaged for year and season. Updated to this year, results indicated that in both seasons the fleet was less disperse than last year and was roughly similar to the recent lower concentration levels compared to other years since 2000 (Figure 7).

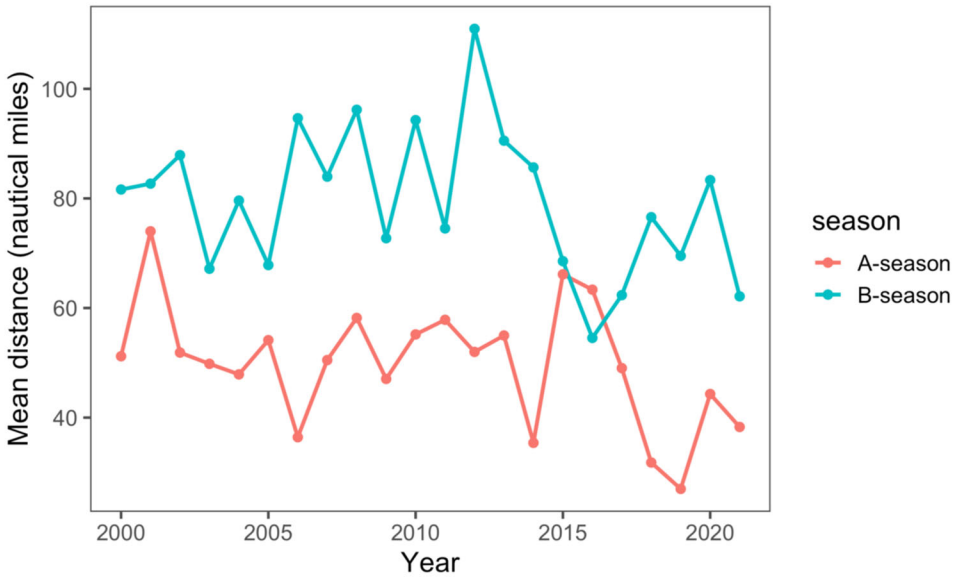

Figure 7. Estimated mean daily distance between operations, 2000-2021. Source: Ianelli et al. 2021a

In 2020, there was an investigation of the preponderance of small pollock in the catch. This was pursued further this year. As noted last year, in addition to the extensive NMFS observer collections, a little used component of their data are estimates of observed tow tonnages compared to numbers of pollock. These can provide a direct mean somatic mass (pollock body weight) for pollock within that tow. The data arise from the sampled total weight (e.g., of several baskets of pollock) divided by the enumerated number of fish in that sample. Such records exist for each tow. Summing these by extrapolated weight of the pollock catch within that tow, and binning by weight increments (here by 50 gram intervals), allows us to obtain some additional fine-scale information on the size trends in the pollock fishery. The annual patterns of these data show that overall, the B-season of 2020 was different with the small mode of fish persisting into the 2021 B-season. Compiling the data by week we show that the small fish were a consistent basis of the catch for this B-season.

The catch of EBS pollock has averaged 1.21 million t in the period since 1979. The lowest catches occurred in 2009 and 2010 when the limits were set to 0.81 million t due to stock declines (Table 6). The recent 5-year average (2017-2021) catch has been 1.378 million t. Pollock catches that are retained or discarded (based on NMFS observer estimates) in the EBS and AI for 1991-2021 are shown in Table 6. Since 1991, estimates of discarded pollock have ranged from a high of 9.1% of total pollock catch in 1992 to recent lows of around 0.6%. These low values reflect the implementation of the NMFS' Improved Retention /Improved Utilization program. Prior to the implementation of the AFA in 1999, higher discards may have occurred under the "race for fish" and pollock marketable sizes were caught incidentally. Since implementation of the AFA, the vessel operators have more time to pursue optimal sizes of pollock for market since the quota is allocated to vessels (via cooperative arrangements). In addition, several vessels have made gear modifications to avoid retention of smaller pollock. In all cases, the magnitude of discards counts as part of the total catch for management (to ensure the TAC is not exceeded) and within the assessment. Bycatch of other non-target, target, and prohibited species is presented in the section titled Ecosystem Considerations below. In that section it is noted that the bycatch of pollock in other target fisheries is more than double the bycatch of other target species (e.g., Pacific cod) in the pollock fishery.

The EBS pollock stock is managed by NMFS regulations that provide limits on seasonal catch. The NMFS observer program data provide near real-time statistics during the season and vessels operate within well-defined limits. In most years, the TACs have been set well below the ABC value and catches have stayed within these constraints (Table 6**Error! Reference source not found.**). Allocations of the TAC split first with 10% to western Alaska communities as part of the CDQ program and the remainder between at-sea processors and shore-based sectors. For a characterization of the CDQ program see Haynie (2014). Seung and Ianelli (2016) combined a fish population dynamics model with an economic model to evaluate regional impacts. Due to concerns that groundfish fisheries may impact the rebuilding of the Steller sea lion population, a number of management measures have been implemented over the years. Some measures were designed to reduce the possibility of competitive interactions between fisheries and Steller sea lions.

For the pollock fisheries, seasonal fishery catch and pollock biomass distributions (from surveys) indicated that the apparent disproportionately high seasonal harvest rates within Steller sea lion critical habitat could lead to reduced sea lion prey densities.

Consequently, management measures redistributed the fishery both temporally and spatially according to pollock biomass distributions. This was intended to disperse fishing so that localized harvest rates were more consistent with estimated annual exploitation rates. The measures include establishing:

1. pollock fishery exclusion zones around sea lion rookery or haulout sites;
2. phased-in reductions in the seasonal proportions of TAC that can be taken from critical habitat;
3. additional seasonal TAC releases to disperse the fishery in time.

Prior to adoption of the above management measures, the pollock fishery occurred throughout each of the three major NMFS management regions of the North Pacific Ocean: the AI (1,001,780 km^2 inside the EEZ), the EBS (968,600 km^2), and the GOA (1,156,100 km^2). The marine portion of Steller sea lion critical habitat in Alaska west of 150°W encompasses 386,770 km^2 of ocean surface, or 12% of the fishery management regions.

From 1995-1999, 84,100 km^2, or 22% of the Steller sea lion critical habitat was closed to the pollock fishery. Most of this closure consisted of the 10 and 20 nm radius all-trawl fishery exclusion zones around sea lion rookeries (48,920 km^2, or 13% of critical habitat). The remainder was largely in Bogoslof (35,180 km^2, or 9% of critical habitat) that was closed pursuant to an international agreement to protect spawning stocks of central BS pollock. In 1999, an additional 83,080 km^2 (21%) of critical habitat in the AI was closed to pollock fishing along with 43,170 km^2 (11%) around sea lion haulouts in the GOA and EBS. In 1998, over 22,000 t of pollock were caught in the Aleutian Island region, with over 17,000 t taken within critical habitat region. Between 1999 and 2004 a directed fishery for pollock was prohibited in this region. Subsequently, 210,350 km2 (54%) of critical habitat in the AI was closed to the pollock fishery. In 2000, the remaining phased-in reductions in the proportions of seasonal TAC that could be caught within the BSAI Steller sea lion Conservation Area were implemented.

On the EBS shelf, an estimate (based on observer at-sea data) of the proportion of pollock caught in the Steller sea lion Conservation Area has averaged about 44% annually. During the A-season, the average is also about 44%. Nonetheless, the proportion of pollock caught within the Steller sea lion Conservation Area varies considerably, presumably due to temperature regimes and the relative population age structure. The annual proportion of catch has ranged from an annual low of 11% in 2010 to high of 60% in 1998. the 2019 annual value was 58% and quite high again in the A-season (68%; Ianelli et al. 2021a). The higher values in recent years were likely due to good fishing conditions close to the main port. The recent transition from at-sea observer sampling of many catcher vessels to a combination of at-sea electronic monitoring (EM) and shore-based observer sampling has resulted in a temporary hiatus in the ability to associate catches with specific areas. However, this should once again become possible when the position information is fully operational and offloads can be easily linked to haul records. Initial investigations on configuring these data for this purpose were promising and should be possible retroactively when the routines for the new database are developed further.

The AFA reduced the capacity of the catcher/processor fleet and permitted the formation of cooperatives in each industry sector by the year 2000. Because of some of its provisions, the AFA gave the industry the ability to respond efficiently to changes mandated for sea lion conservation and salmon bycatch measures. Without such a catch-share program, these additional measures would likely have been less effective and less economical (Strong and Criddle 2014).

An additional strategy to minimize potential adverse effects on sea lion populations is to disperse the fishery throughout more of the pollock range on the EBS shelf. While the distribution of fishing during the A-season is limited due to ice and weather conditions, there appears to be some dispersion to the northwest area.

The majority (about 56%) of Chinook salmon caught as bycatch in the pollock fishery originate from western Alaska rivers. An Environmental Impact Statement (EIS) was completed in 2009 in conjunction with the Council's recommended bycatch management approach. This EIS evaluated the relative impacts of different bycatch management approaches as well as estimated the impact of bycatch levels on adult equivalent salmon returning to river systems (NPFMC/NMFS 2009). As a result, revised Chinook salmon bycatch management measures went into effect in 2011 which imposed new PSC limits. These limits, when reached, close the fishery by sector and season (Amendment 91 to the BSAI groundfish FMP resulting from the Council's 2009 action). Previously, all measures for salmon bycatch imposed seasonal area closures when PSC levels reached the limit (fishing could continue outside of the closed areas). The current program imposes a dual cap system by fishing sector and season. A goal of this system was to maintain incentives to avoid bycatch at a broad range of relative salmon abundance (and encounter rates). Participants are also required to take part in an incentive program agreement, which are approved and reviewed annually by NMFS to ensure individual vessel accountability. The fishery has been operating under rules to implement this program since January 2011.

Further measures to reduce salmon bycatch in the pollock fishery were developed and the Council took action on Amendment 110 to the BSAI groundfish FMP in April 2015. These additional measures were designed to add protection for Chinook salmon by imposing more restrictive PSC limits in times of low western Alaska Chinook salmon abundance. This included provisions within the incentive program agreements that reduce fishing in months of higher bycatch encounters and mandate the use of salmon excluders in trawl

nets. These provisions were also included to provide more flexible management measures for chum salmon bycatch within the incentive program agreements rather than through regulatory provisions implemented by Amendment 84 to the FMP. The new measure also included additional seasonal flexibility in pollock fishing so that more pollock (proportionally) could be caught during seasons when salmon bycatch rates were low. Specifically, an additional 5% of the pollock can be caught in the A-season (effectively changing the seasonal allocation from 40% to 45%. These measures are all part of Amendment 110, and a summary of this and other key management measures is provided in Table 7.

Table 7. Highlights of some management measures affecting the pollock fishery. Source: Ianelli et al. 2021a

Year	Management
1977	Preliminary BSAI FMP implemented with several closure areas
1982	FMP implement for the BSAI
1982	Chinook salmon bycatch limits established for foreign trawlers
1984	2 million t groundfish OY limit established
1984	Limits on Chinook salmon bycatch reduced
1990	New observer program established along with data reporting
1992	Pollock CDQ program commences
1994	NMFS adopts minimum mesh size requirements for trawl codends
1994	Voluntary retention of salmon for foodbank donations
1994	NMFS publishes individual vessel bycatch rates on internet
1995	Trawl closures areas and trigger limits established for chum and Chinook salmon
1998	Improved utilization and retention in effect (reduced discarded pollock)
1998	American Fisheries Act (AFA) passed
1999	The AFA was implemented for catcher/processors
1999	Additional critical habitat areas around sea lion haulouts in the GOA and Eastern Bering Sea are closed.
2000	AFA implemented for remaining sectors (catcher vessel and motherships)
2001	Pollock industry adopts voluntary rolling hotspot program for chum salmon
2002	Pollock industry adopts voluntary rolling hotspot program for Chinook salmon
2005	Rolling hotspot program adopted in regulations to exempt fleet from triggered time/area closures for Chinook and chum salmon
2011	Amendment 91 enacted, Chinook salmon management under hard limits
2015	Amendment 110 (BSAI) Salmon prohibited species catch management in the Bering Sea pollock fishery (additional measures that change limits depending on Chinook salmon run-strength indices) and includes additional provisions for reporting requirements (see https://alaskafisheries.noaa.gov/fisheries/chinook-salmon-bycatch-management for update and general information)
2016	Measures of amendment 110 go into effect for 2017 fishing season; Chinook salmon runs above the 3-run index value so bycatch limits stay the same
2017	Due to amendment 110 about 45% of the TAC is taken in the A-season (traditionally only 40% was allowed).
2018	In-river estimates of Chinook salmon (three river index) fell below the threshold and therefore a lower PSC limit applies (from a performance standard of 47,491 to 33,318 and a PSC limit from 60,000 to 45,000 Chinook salmon overall). Additionally, squid have been recategorized as an ecosystem component.
2019	Some pollock sectors experienced high bycatch levels for chum and Chinook salmon and also for sablefish.
2020	Bycatch rates unusually high again for sablefish. Herring PSC occurred in the A season and triggered area closures that will persist into 2021. Salmon bycatch rates (relative to hours fished) was lower than last year for both chum and Chinook.
2021	Bycatch rates for sablefish and herring moderate (but above average). Chinook salmon bycatch rates (relative to hours fished) was lower than last year but there was a marked increase in the rate for chum salmon (2nd highest since 1991). In-river estimates of Chinook salmon (three river index) fell below the threshold and therefore a lower PSC limit applies (from a performance standard of 47,491 to 33,318 and a PSC limit from 60,000 to 45,000 Chinook salmon overall).

There are three time/area closures in regulation to minimize herring PSC impacts: Summer Herring Savings Area 1 an area south of 57°N latitude and between 162°W and 164°W longitude from June 15 through July 1st. Summer Herring Savings Area 2 an area south of 56° 30' N latitude and between 164°W and 167°W longitude from July 1 through August 15. Winter Herring Savings Area an area between 58° and 60°N latitude and between 172°W and 175°W longitude from September 1st through March 1st of the next fishing year.

The pollock fishery exceeded the herring PSC limit late in the 2020 A season which invoked three directed pollock fishing closures: the Summer Herring Savings Area 1, the Summer Herring Savings Area 2, and the Winter Herring Savings Area (closed since September 1, 2020 through March 1, 2021). NMFS opened directed fishing for pollock for AFA inshore sector, AFA mothership sector, and CDQ program in the Summer Herring Savings Area 2 of the BSAI from July 1, 2020 through August 15, 2020. This opening was necessary to prevent the underharvest of the 2020 pollock total allowable catch and facilitate pollock harvest by the AFA inshore sector, AFA mothership sector, and CDQ program in the Bering Sea subarea of the BSAI. Additionally, voluntary closure areas were announced throughout the B-season 2020 that were intended to minimize herring bycatch.

3.1.2.2 AI

There is a detailed description of the recent fishery in the 2020 AI pollock SAFE by Barbeaux et al. (2021). Much of the following section and related figures are from that report.

The nature of the pollock fishery in the AI Region has varied considerably since 1977 due to changes in the fleet makeup and in regulations. During the late 1970s through the 1980s the fishing fleet was primarily foreign and joint venture where U.S. catcher vessels delivered to foreign motherships. The last joint venture delivery was conducted in 1989 when the domestic fleet began operating in earnest. The distribution of observed catch differed between the foreign and joint venture fishery (1977-1989) and the domestic fishery (1989-2009). The joint venture and foreign fishery operated in the deep basin area extending westward to Bowers Ridge and in the eastern most portions of the AI. Some operations took place out to the west, but observer coverage was limited. In the early domestic period (1991-1998) the fishery was more dispersed along the AI chain with no observed catches along Bowers Ridge and fewer operations in the deep basin area. The majority of catch in the beginning of the domestic fishery came from the eastern areas along the 170°W longitude line, and around Seguam Island in both Seguam and Amukta passes. As the fishery progressed more pollock were removed from the north side of Atka Island around 174°W and later near 177°W northwest of Adak Island inside Bobrof Island. While the overall catch level was relatively low, the domestic fishery moved far to the west near Buldir Island in 1998 (Table 8). In 1999, the Council closed the AI region to directed pollock fishing due to concerns for Steller sea lion recovery.

Table 8. Estimates of AI region walleye pollock catch by the three management sub-areas. Units are in metric tons. Source: Barbeaux et al. 2021

Year	East 541	Central 542	West 543	Total	Year	East 541	Central 542	West 543	Total
1977	4,402	0	2,965	7,367	1999	484	420	105	1,010
1978	5,267	712	305	6,283	2000	615	461	169	1,244
1979	1,488	1,756	6,203	9,446	2001	333	387	105	1,010
1980	28,284	7,097	22,775	58,157	2002	862	182	133	1,177
1981	43,461	10,074	1,982	55,517	2003	565	758	326	1,649
1982	54,173	1,205	2,376	57,753	2004	397	513	248	1,158
1983	56,577	1,250	1,194	59,021	2005	689	415	517	1,621
1984	64,172	5,760	7,663	77,595	2006	1,036	488	220	1,745
1985	19,885	38,163	100	58,147	2007	1,919	476	124	2,519
1986	38,361	7,078	0	45,439	2008	872	293	112	1,278
1987	28,086	386	0	28,471	2009	1,020	400	243	1,662
1988	40,685	517	0	41,203	2010	754	382	150	1,285
1989	10,569	0	0	10,569	2011	695	447	66	1,208
1990	69,170	9,425	430	79,025	2012	503	427	45	975
1991	98,032	561	11	98,604	2013	2,342	309	313	2,964
1992	52,140	206	6	52,352	2014	2,088	176	111	2,375
1993	54,512	2,536	83	57,132	2015	565	264	87	916
1994	58,091	554	15	58,659	2016	899	195	162	1,257
1995	28,109	36,714	102	64,925	2017	688	517	302	1,507
1996	9,226	19,574	261	29,062	2018	1,060	546	254	1,860
1997	8,110	16,799	1,031	25,940	2019	1,000	415	248	1,663
1998	1,374	2,603	19,821	23,798	2020*	1,724	556	206	2,486

*as of August 25, 2020

In 2003, the entire AI pollock quota was allocated to the Aleut Corporation and in 2005 the directed fishery was reopened. The fishery was still restricted to areas outside of 20 nm of Steller sea lion rookeries and haulouts, limiting fishing to two small areas with commercial concentrations of pollock within easy delivery distance to Adak Island. One area is a 4-mile stretch of shelf break located northwest of Atka Island between Koniuji Island and North Cape of Atka Island, the other is a 7-mile stretch located east of Nazan Bay in an area referred to as Atka flats. Bycatch of Pacific ocean perch can be very high in both these areas, and it appears that pollock and Pacific ocean perch share these areas intermittently; depending on time of day, season, and tide. Although there may be other areas further west that may have commercial concentrations of pollock, to date there have been no attempts by the reopened directed fishery to explore these areas.

Two catcher processor vessels attempted directed fishing for pollock in February 2005 but failed to find commercially harvestable quantities outside of Steller sea lion critical habitat closure areas and in the end removed less than 200 t of pollock. In addition, bycatch rates of Pacific ocean perch were prohibitively high in areas where pollock aggregations were observed. The 2005 fishery is thought to have resulted in a net loss of revenue for participating vessels. Data on specific bycatch and discard rates for the 2005 fishery are not presented due to issues of data confidentiality.

In 2006 and 2007, the Aleut Corporation, in partnership with the AFSC, Adak Fisheries LLC, and the owners and operators of the F/V Muir Milach, conducted the Aleutian Islands Cooperative Acoustic Survey Study to test the technical feasibility of conducting acoustic surveys of pollock in the Aleutian Islands using small (<32 m) commercial fishing vessels (Barbeaux and Fraser 2009). This work was supported under an exempted fishing permit (EFP) that allowed directed pollock fishing within Steller sea lion critical habitat. A total of 932 t and 1,100 t of pollock were harvested during these studies in 2006 and 2007 respectively, and biological data collected during the studies were treated in the stock assessment as fishery data. In 2008, additional surveys of Aleutian Islands region pollock in the same area were conducted on board the R/V Oscar Dyson and in cooperation with the F/V Muir Milach; the work was funded through a North Pacific Research Board (NPRB) grant and less than 10 t of groundfish were taken for the study. In 2009 the directed pollock fishery in the AI region took 403 t, and 1,326 t were taken as bycatch in other fisheries, predominantly the Pacific cod and rockfish fisheries.

In 2010 through 2012, financial problems with the Adak processing plant greatly hindered the directed fishery. In 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, and 2018 catches of 295 t, 0 t, 0 t, 145 t, 0 t, 54 t, 70 t, 0 t, and 235 t, were harvested in the directed fishery. In 2019 and 2020 an EFP allowed fishers to take up to 500 t of Pacific ocean perch for the entirety of the fishing season instead of a 5% maximum per delivery. This allowed additional flexibility in 2019 the fishery was hindered by weather and the directed fishery catch remained low at 70 t, but in 2020 the fishery was more successful, and as of August 24, 2020, 711 t had been taken in the directed fishery for 2020. In 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019 993 t, 1,208 t, 975 t, 2,819 t, 2,375 t ,860 t, 1,186 t, 1,507 t, 1,625t and 1,592 t were harvested as bycatch in other fisheries. In 2020, as of August 24, 1,774 t had been taken as bycatch in other fisheries. The increase in catch in 2013 and 2014 had been primarily in the arrowtooth flounder fishery. This fishery changed fishing tactics to fish shallower than in previous years to avoid Greenland turbot bycatch. Table 9 provides a history of ABC, OFL, TAC, and catch for AI pollock since 1991. Since 2005, the TAC has been constrained to 19,000 t or the ABC, whichever is lower, by statute.

Estimates of pollock discard levels have been available since 1990. During the years when directed fishing was allowed pollock discards represented a small fraction of the total catch. The majority of catch in the last 11 years has been as bycatch in other target fisheries.

Table 9. Time series of ABC, TAC, OFL, and total catch for AI region walleye pollock fisheries 1991-2016. Units are in metric tons.

YEAR	ABC	TAC	OFL	CATCH	CATCH/TAC
1993	58,700	51,600	NA	57,132	111%
1994	56,600	56,600	60,400	58,659	104%
1995	56,600	56,600	60,400	64,925	115%
1996	35,600	35,600	47,000	29,062	82%
1997	28,000	28,000	38,000	25,940	93%
1998	23,800	23,800	31,700	23,798	100%
1999	23,800	2,000	31,700	1,010	51%
2000	23,800	2,000	31,700	1,244	62%
2001	23,800	2,000	31,700	825	41%
2002	23,800	1,000	31,700	1,177	116%
2003	39,400	1,000	52,600	1,649	167%
2004	39,400	1,000	52,600	1,158	116%
2005	29,400	19,000	39,100	1,621	9%
2006	29,400	19,000	39,100	1,745	9%
2007	44,500	19,000	54,500	2,519	13%
2008	28,160	19,000	34,040	1,278	7%
2009	26,873	19,000	32,553	1,662	9%
2010	33,100	19,000	40,000	1,285	7%
2011	36,700	19,000	44,500	1,208	6%
2012	32,500	19,000	39,600	975	5%
2013	37,300	19,000	45,600	2,964	16%
2014	35,048	19,000	42,811	2,375	13%
2015	29,659	19,000	36,005	915	5%
2016	32,227	19,000	39,075	1,257	7%
2017	36,061	19,000	43,650	1,507	8%
2018	40,788	19,000	49,289	1,860	10%
2019	52,887	19,000	64,240	1,663	9%
2020	55,120	19,000	66,973	2,486*	13%

* as of August 25, 2020

3.1.2.3 GOA

There is a detailed description of the recent fishery in the 2021 GOA pollock SAFE by Monnahan, et al. (2021). Much of the following section and related figures are from that report.

The commercial fishery for walleye pollock in the GOA started as a foreign fishery in the early 1970s (Megrey 1989). Catches increased rapidly during the late 1970s and early 1980s. A large spawning aggregation was discovered in Shelikof Strait in 1981, and a fishery developed for which pollock roe was an important product. The domestic fishery for pollock developed rapidly in the GOA with only a short period of joint venture operations in the mid-1980s. The fishery was fully domestic by 1988.

The pollock target fishery in the GOA is entirely shore-based with approximately 96% of the catch taken with pelagic trawls. During winter, fishing effort targets pre-spawning aggregations in Shelikof Strait and near the Shumagin Islands. Fishing in summer is less predictable, but typically occurs in deep-water troughs on the east side of Kodiak Island and along the Alaska Peninsula.

Incidental catch in the GOA directed pollock fishery is low. For tows classified as pollock targets in the GOA between 2016 and 2020, on average about 96% of the catch by weight of FMP species consisted of pollock. Nominal pollock targets are defined by the dominance of pollock in the catch, and may include tows where other species were targeted, but pollock were caught instead. The most common managed species in the incidental catch are arrowtooth flounder, Pacific ocean perch, Pacific cod, sablefish, shallow-water flatfish, and flathead sole. Sablefish incidental catch has trended upwards since 2018, perhaps reflecting both the recent increase in

sablefish abundance and a wider spatial distribution. The most common recent non-target species are grenadiers, squid, capelin, jellyfish and miscellaneous fish. Chinook salmon are the most important prohibited species caught as bycatch in the pollock fishery. A sharp spike in Chinook salmon bycatch in 2010 led the Council to adopt management measures to reduce Chinook salmon bycatch, including a cap of 25,000 Chinook salmon bycatch in the directed pollock fishery. Estimated Chinook salmon bycatch since 2010 has been less than the peak in 2010, with increases in 2016, 2017, and 2019, and reduced to 10,867 in 2020.

Since 1992, the GOA pollock TAC has been apportioned spatially and temporally to reduce potential impacts on Steller sea lions. The details of the apportionment scheme have evolved over time, but the general objective is to allocate the TAC to management areas based on the distribution of surveyed biomass, and to establish three or four seasons between mid-January and fall during which some fraction of the TAC can be taken. The Steller Sea Lion Protection Measures implemented in 2001 established four seasons in the central and western GOA beginning January 20, March 10, August 25, and October 1, with 25% of the total TAC allocated to each season. Allocations to management areas 610, 620 and 630 are based on the seasonal biomass distribution as estimated by groundfish surveys. In addition, a harvest control rule was implemented that requires suspension of directed pollock fishing when spawning stock biomass (SSB) declines below 20% of the reference unfished level.

Recently NMFS approved the final rule for Amendment 109 to GOA FMP developed by the Council. Amendment 109 combines pollock fishery A and B seasons into a single season (redesignated as the A season), and the C and D seasons into a single season (redesignated as the B season) and changes the annual start date of the redesignated pollock B season from August 25 to September 1. These changes will be implemented beginning in 2021 and affect the seasonal allocation only in the Central and Western GOA.

3.2 Target species biology

There are numerous sources of information on pollock biology, including the SAFE documents, various primary publications, other NMFS and ADFG reports, and a book by Bailey (2013). Much of the information that follows in this section has been taken from the AFSC website which provides summaries for pollock biology and relevant studies (see https://www.afsc.noaa.gov/species/pollock.php) under various headings.

Pollock is widely distributed in the North Pacific Ocean with the largest concentrations found in the EBS. It is considered a relatively fast growing and short-lived species and currently represents a major biological component of the BS ecosystem. The separation of pollock in Alaska waters into BS and GOA stocks is supported by analysis of larval drift patterns from spawning locations, as well as genetics and DNA.

As semi-pelagic schooling fish, pollock are found on or near the sea bottom as well as at mid water and near-surface depths, although most catches are found between 50 and 300 m. Juvenile (age 0) pollock in their first months of life are found above the thermocline in the Bering Sea. It has been observed that age 0 pollock avoid depths where water temperature is less than approximately 2.5 to 3.0°C (Mueter et al. 2011). Age 0 pollock begin to settle to the bottom in the fall months, after which they mainly occupy semi demersal waters. Concentrations of adult pollock in the Bering Sea are usually found in water temperatures between 2 and 4°C.

Pollock spawn in shallow (90 to 200 m) waters of the outer EBS continental shelf. Oceanic spawning has been reported over waters 640 m deep, south of Seward, Alaska, and in the Aleutian basin. Spawning aggregations of pollock in the EBS occur near Bogoslof Island, north of Unimak Island and the Alaska Peninsula, and northwest of the Pribilof Islands, while in the GOA, they occur mainly in the Shelikof Strait and the Shumagin islands. Spawning in the BS occurs at temperatures of 1 to 3°C. However, temperature at time of spawning is apparently not as important for the Shelikof Strait spawning population. In the BS, spawning begins in late February, with fish in the southeastern Bering Sea spawning first. Most spawning occurs from late March to mid-June, with a peak in May. In the western GOA most spawning occurs in March and April. Spawning and pre-spawning fish move high in the water column, forming dense schools. Some spawning may also occur under the sea ice.

Seasonal migration of pollock occurs between spawning and feeding areas. In the BS, pollock follow a circular pattern of migration, moving inshore to the shallow (90-140 m) waters of the continental shelf to breed and feed in the spring (March), and moving to warmer, deeper areas of the shelf (160-300 m) in the winter months (December-February). Similar movement has also been noted in the GOA.

Pollock enter the fishery around age 3, may live up to 17 years and reach a length of 100 cm. Males and females are indistinguishable externally and typically begin to reproduce around 2-3 years of age, with age of 50% maturation being about 4. Spawning occurs at different seasons depending upon location, in Alaska between March and May. Females spawn in several batches over a few weeks, producing up to 2 million small eggs, although fecundity is sometimes difficult to estimate. The eggs hatch in 1-3 weeks at the depth of

spawning (usually 100-250 m), and larvae develop in shallow water (<30 m). There is some effect of spawner biomass on production of recruits, but the effect is generally considered to be smaller than the impact of environmental conditions.

Young-of-the-year juveniles feed on plankton near the surface at night and descend during the day, while older fish consume copepods, shrimp, and euphausiids, with fish becoming more important in the diet as pollock grow larger, particularly in EBS. In GOA, all ages of pollock feed mainly on zooplankton during the summer growing season, and cannibalism is not as prevalent as in the EBS. Fish consumption in GOA is low even for large pollock (Yang and Nelson 2000), while data for EBS indicate that pollock is the third largest prey item for adult pollock.

Pollock are an important prey for a wide range of piscivorous fishes and marine mammals, including arrowtooth flounder, Pacific halibut, Steller sea lions, and fur seals. In GOA, it is estimated that for pollock less than 20 cm in length, arrowtooth flounder represent close to 50% of total mortality.

3.3 Scientific stock assessment

The assessment models used for the pollock stocks in Alaska take into account all sources of fishing mortality and are based on complete catch reporting systems including extensive observer data. All retained catch and discards of pollock are included in the total catch amounts input into the models. The assessments take into account various relevant aspects of pollock biology. The assessments of EBS, AI, and GOA pollock use a Bayesian approach, consider sources of uncertainty where possible, and evaluate stock status relative to reference points in a probabilistic way. The software used in the assessments is AD Model Builder-based (see Fournier et al., 2012 for further description). The Bogoslof pollock assessment relies on survey biomass estimates and a simpler random effects model.

3.3.1 EBS

Full description of the assessment model formulations, input data, and results can be found in the 2021 EBS pollock SAFE by Ianelli et al. (2021a).

A statistical age-structured assessment model conceptually outlined in Fournier and Archibald (1982) and like Methot's (1990) stock synthesis model was applied over the period 1964-2021. A technical description is presented in the "EBS Pollock Model Description" appendix. The analysis was first introduced in the 1996 SAFE report and compared to the cohort analyses that had been used previously and was later documented in Ianelli and Fournier (1998). The model was written in ADMB—a library for non-linear estimation and statistical applications (Fournier et al. 2012).

The data updated from last year's analyses include:

- The 2020 fishery age composition data were added and down-weighted preliminary size and age composition data for 2021 were trialed
- The catch biomass estimates were updated through to the current year
- The Acoustic-Vessels-of-Opportunity backscatter data collected opportunistically from the 2021 bottom trawl survey, and post processed into the Acoustic-Vessels-of-Opportunity backscatter index were included.

A simplified version of the assessment (with mainly the same data and likelihood-fitting method) is included as a supplemental multi-species assessment model. As presented since 2016, it allows for trophic interactions among key prey and predator species and for pollock, and it can be used to evaluate age and time-varying natural mortality estimates in addition to alternative catch scenarios and management targets (see this volume: EBS multi-species model).

In the 2019 assessment, the spatio-temporal model fit to Bottom Trawl Survey catch per unit effort (CPUE) data including stations from the North Bering Sea was expanded using the VAST methods detailed in Thorson (2018). This data treatment was included as a model alternative and adopted for ABC/OFL specifications by the Scientific and Statistical Committee (SSC) in 2020 along with other modifications including a spatio-temporal treatment of the age composition data. This year, the same model configuration has been presented and simply examined the influence of additional data that became available in 2020. For projections the ability to test alternative Tier scenarios were performed. The current base model is Model 20.0a, which was adopted last year by the SSC, and which differed from the previous base model (Model 16.2) in that it included the 2020 USV acoustic biomass estimate as an extension of the standard AT survey biomass time series and excluded the 1978 year class from the estimation of the stock-recruitment relationship. Following from last year the models examined were:

- 20.0a: The model selected last year which omitted the 1978 year-class from affecting the stock-recruitment relationship (SRR).

- 20.0b: As last year but with added fishery length frequency data for 2021 to better reflect the apparent change in fish sizes (and ages) taken by the fishery.
- 20.0c: As 20.0b but including the 2021 fishery preliminary age composition as derived from the application of a global age-length key.

In an effort to test different stock assessment software, the pollock data and used some of the model software that was simulation tested in Li et al. (2021) were adopted. While preliminary, the results were consistent with the bespoke model used here. However, the impact of missing features in the more generalized models tested in Ianelli et al (2021a) requires more investigation. Specifically, the bespoke model used here includes an informed fixed-effects model for projecting weight-at-age and uses a covariance matrix for index time series that is unavailable in the models tested in Li et al. (2021).

In the 2020 assessment the factors affecting Tier 1 classifications including the required "reliability" of the estimated pdf of F_{MSY}, i.e., the influence of assumptions related to the uncertainties on the stock recruitment relationship, body mass-at-age, maturation, and fishery selectivity, were examined.

For a number of years, the Tier 1 ABC and OFL specifications for EBS pollock have been very high, in excess of the 2 million t OY for combined groundfish stocks managed within this FMP area. This has been because the spawning stock estimates have been well above target and mean levels. To add precaution to these estimates, ABC recommendations have been below the maximum permissible under Tier 1 but the rationale for such an adjustment could be improved.

As such, the SSC requested an examination of the issues related to classifying this stock in Tier 1 versus Tier 3. The FMP (under amendment 56) guides this classification. It notes that a reliable estimate of F_{MSY} and its uncertainty is required. Since these values depend primarily on the SRR, the following sensitivities were pursued relative to the status quo (Model 20.0a) configuration:

- As status quo (i.e., ignoring the influence of the 1978 year class on the SRR).
- As in sensitivity a) but with a less informative prior on steepness
- As in status quo but the SRR conditioned such that $F_{MSY} = F_{35\%}$
- As in status quo but the SRR conditioned such that $F_{MSY} = F_{45\%}$

The first option was intended to reflect that the high value observed of the 1978 year-class occurred under an estimated low level of SSB (designated Model 20.0a). The rationale for excluding this influential value was that the stock structure and environmental conditions may differ now, indicating non-stationarity in the relationship. Results showed that it mattered but was relatively minor and seemed unlikely to disqualify the estimates required for Tier 1. Sensitivity test b) was intended to illustrate the role of the prior mean and variance on the steepness estimate. Finally, sensitivities c) and d) were considered as how the SRR may translate an implicit assumption under Tier 3 since $F_{35\%}$ is a proxy for F_{MSY} and $F_{45\%}$ is closer to the recent mean SPR rate.

A sequential sensitivity of available new data showed that adding the 2020 fishery catch-at-age data and the 2021 catch biomass information had a fairly big impact on the SSB estimates. As the new 2021 bottom-trawl survey estimates were added to the model (named Model 20.0a), the biomass estimate dropped further but adding the 2021 AVO data resulted in a slight increase. Adding the 2021 length composition and preliminary catch-at-age data had a minor impact on biomass and recruitment. For setting advice, Model 20.0c was selected, which was the same model selected for 2020 but includes the preliminary 2021 fishery age and length composition data. As noted, these data are preliminary, but we considered that including them was worthwhile since they reflect the younger fish taken by the fishery in recent years. This impacts the estimates of selectivity and consequently estimates of reference fishing mortality rates (e.g., F_{MSY}). In the 2020 assessment, SRR evaluations related to Tier 1 classification showed that dropping the influence of the 1978 year-class in the estimation lowered the steepness of the curve and that when the influence of the prior distribution was removed the residual pattern for estimates near the origin was particularly bad (all below the curve). From those results we conclude that the prior specification was appropriate because we place priority on fitting estimated recruits near the slope at the origin better. Last year's assessment also showed that conditioning the SRR to fit the condition of having the "actual" F_{MSY} equal some F_{MSY} proxies (e.g., equal $F_{35\%}$) shows that the results were more conservative (shallower initial slopes). A conclusion from these exercises was that the SPR proxy for $FMSY$ implies a reasonable "shape" to the SRR. The fit to the early Japanese fishery CPUE data (Low and Ikeda 1980) was consistent with the estimated population trends for this period. The model fits the fishery-independent index from the 2006–2021 AVO data well through most of the period but the model predicts lower biomass than the index data indicate in 2021. The model fits to the bottom-trawl survey biomass (the density-dependent corrected series) were reasonable and within the observation error bounds. The fit to the acoustic-trawl survey biomass series (including the USV data from 2020) was consistent with the specified observation uncertainty.

The estimated parameters and standard errors are provided in Ianelli et al. (2021a). The input sample size (as tuned in 2016 using "Francis Weights") can be evaluated visually for consistency with expectations of mean annual age for the different gear types (Francis

2011). The estimated selectivity pattern changes over time and reflects to some degree the extent to which the fishery is focused on particularly prominent year-classes. The model fits the fishery age-composition data quite well under this form of selectivity. The model fit to the Bottom Trawl Survey biomass index predicts fewer pollock than observed in the 2014 and 2015 survey but then varied in subsequent years. The pattern of bottom trawl survey age composition data in recent years shows a decline in the abundance of age 10+ pollock since 2011. Through the time series of the available data, the model predicted proportions of the 2012 and 2013-year classes varied in terms of under- and over-estimates as the 2013 year-class became more common in the data. The age compositions consistently track large year classes through the population and the model fits these patterns reasonably well. As in past assessments, an evaluation of the multivariate posterior distribution was performed by running a chain of 3 million Monte-Carlo Markov chain simulations and saving every 600th iteration (final posterior draws totaled 5,000).

Running the assessment model over a grid with progressively fewer years included (going back to 10 years, assuming the data extent ended in 2011) results in a fair amount of variability in SSB. The 2020 year showed a lower-than-expected survey biomass estimate, the retrospective pattern degraded considerably with an increased average bias (Mohns rho equal to 0.172 for the 10-year retrospective). Since selectivity varies over time, and the fact that fishing mortality rates for management advice depend on the assumed future selectivity, we evaluate the pattern of F_{MSY} rates given different selectivity assumptions. In the 2020 assessment, because of the indications of small pollock being unusually present in the fishery, a selectivity pattern from history that reflected tendency towards younger fish (specifically, that from 2005) was closed. Using the statistic on mean selected age, the corresponding F_{MSY} was estimated (Figure 8). This figure reveals how shifts in the relative age of fish selected impact F_{MSY} estimates.

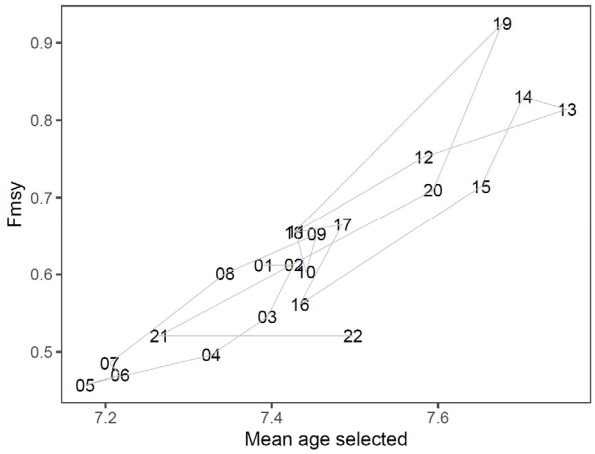

Figure 8. Comparison of F_{MSY} and mean selected age. The horizontal axis is a way to summarize if selectivity is trending toward younger or older fish. Labels indicate the year that demographic parameters (weight-at-age, selectivity) were used to compute F_{MSY}. Source: Ianelli et al. 2021a

The time series of begin-year biomass estimates (ages 3 and older) suggests that the abundance of EBS pollock remained at a high level from 1982-88, with estimates ranging from 9 to 12 million t. Historically, biomass levels increased from 1979 to the mid-1980s due to the strong 1978 and relatively strong 1982 and 1984-year classes recruiting to the fishable population.

The stock is characterized by peaks in the mid-1980s, the mid-1990s and again appears to be increasing to a peak of nearly 12 million t in 2016 following the low in 2008 of 4.46 million t. The estimate for 2021 is trending downward and at 6.81 million t with 2022 estimated at 6.84 million t. The level of fishing relative to biomass estimates shows that the spawning exploitation rate (defined as the percent removal of egg production in each spawning year) has been mostly below 20% since 1980 (Figure 9). During 2006 and 2007 the rate averaged more than 20% and the average fishing mortality increased during the period of stock decline. The estimate for 2009 through 2018 was below 20% due to the reductions in TACs relative to the maximum permissible ABC values and increases in the SSB.

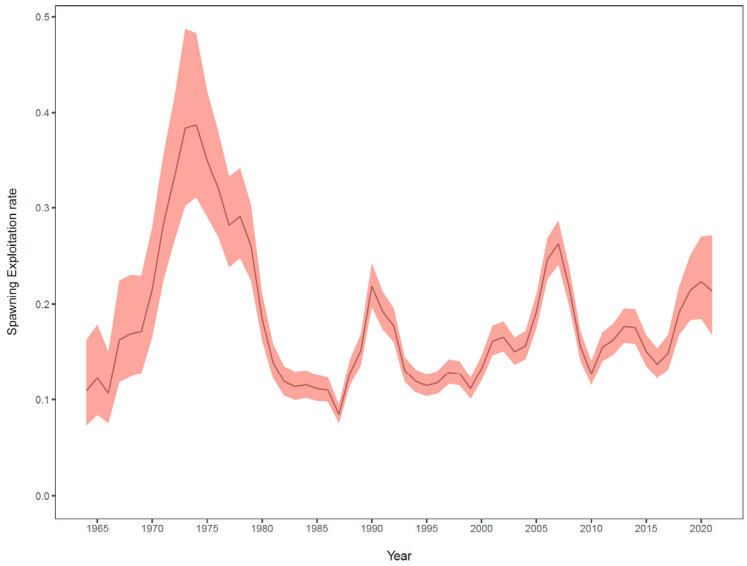

Figure 9. Estimated spawning exploitation rate (defined as the % removal of egg in a year). Source: Ianelli et al. 2021a

The fishing mortality has fluctuated since 2010-2015 but has since increased steadily and been above 20% in the last three years. Age specific fishing mortality rates reflect these patterns and show some increases in the oldest ages from 2011-2013 and again in recent years (Figure 10).

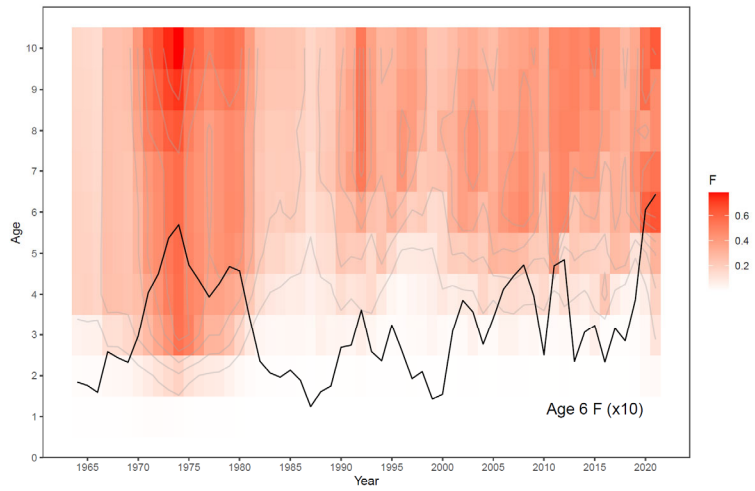

Figure 10. Estimated instantaneous age-specific fishing mortality rates for EBS pollock. Source: Ianelli et al. 2021a

To evaluate past management and assessment performance it can be useful to examine estimated fishing mortality relative to reference values. For EBS pollock, the reference fishing mortality from Tier 1 (unadjusted) and recalculated the historical values for F_{MSY} (since selectivity has changed over time). Since 1977 the current estimates of fishing mortality suggest that during the early period, harvest rates were above F_{MSY} until about 1980. Since that time, the levels of fishing mortality have averaged about 35% of the F_{MSY} level (Figure 11). Projections of SSB given the 2022 estimate of F rate given catches equal to the 2021 values shows a decline through 2021 and then an increase after, albeit with considerable uncertainty due to uncertainty in recruitment.

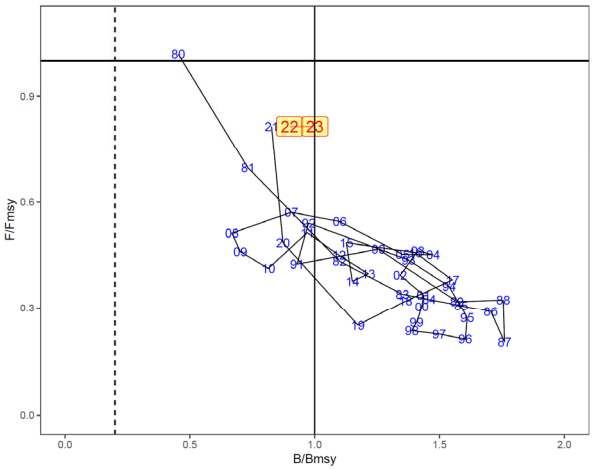

Figure 11. Estimated SSB relative to annually estimated F_{MSY} values and F rates for EBS pollock. Two projection years are shaded in yellow. Source: Ianelli et al. 2021a

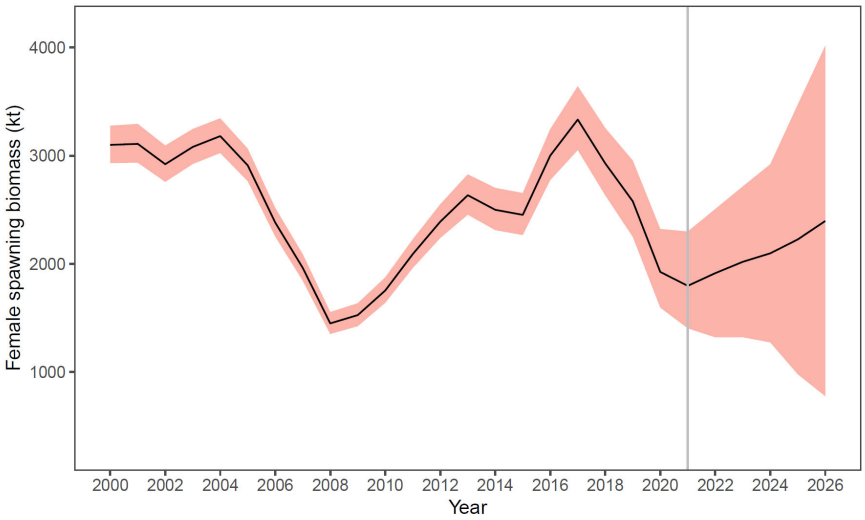

Figure 12. The estimated EBS pollock SSB for model 20.0 with projections equal to the estimated F from 2021. Source: Ianelli et al. 2021a

The following Table 10 is based on results from Model 20.0c, the same used for last year's assessment (with the addition of preliminary, and usually unavailable, current-year fishery data). The ABC recommendation includes an additional 10% buffer from the arithmetic mean F_{MSY} value under Tier 1 (the OFL). Along with the risk-averse buffer due to uncertainty in the F_{MSY} (about 14% lower because it is based on the harmonic mean) the recommendation results in a buffer of about 24% below F_{MSY}. This corresponds to a Tier 2 ABC. The Tier 3 ABC estimate for 2022 and 2023 would be 904,000 and 1,067,000 t, respectively.

Table 10. Summary table of assessment outputs of EBS pollock. Source: Ianelli et al. 2021a

	As estimated or *specified* *last* year for:		As estimated or *recommended* *this* year for:	
Quantity	2021	2022	2022	2023
M (natural mortality rate, ages 3+)	0.3	0.3	0.3	0.3
Tier	1a	1a	1b	1b
Projected total (age 3+) biomass (t)	8,145,000 t	7,641,000 t	6,839,000 t	6,969,000 t
Projected female spawning biomass (t)	2,602,000 t	2,406,000 t	1,881,000 t	1,905,000 t
B_0	5,792,000 t	5,792,000 t	5,575,000 t	5,575,000 t
B_{msy}	2,257,000 t	2,257,000 t	2,220,000 t	2,220,000 t
F_{OFL}	0.341	0.341	0.392	0.415
$maxF_{ABC}$	0.304	0.304	0.334	0.353
F_{ABC}	0.214	0.214	0.296	0.314
OFL	2,594,000 t	2,366,000 t	1,469,000 t	1,704,000 t
$maxABC$	2,307,000 t	2,105,000 t	1,251,000 t	1,451,000 t
ABC	1,626,000 t	1,484,000 t	1,111,000 t	1,289,000 t
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

3.3.2 AI/Bogoslof

Assessment results for this pollock stock component is published annually. Based on the current assessments, none of these stocks are overfished, and little or no directed fishing for pollock occurs in the AI and Bogoslof areas. Details on these stock components can be found in the relevant SAFE reports but will not be shown here due to the small amounts of catch involved in those fisheries. Status summary tables for Bogoslof and AI pollock are shown below, as taken from the 2021 SAFE reports (Ianelli et al. 2021b for Bogoslof; Barbeaux et al. 2021 for AI). The AI pollock stock assessment is on a biennial cycle with full assessments in even years timed with the Aleutian Islands bottom trawl survey, and partial assessments in odd years. For AI pollock in partial assessment years, an executive summary to recommend harvest levels for the next two years has been presented in 2021. A full assessment was conducted in 2020 and can be found at (https://apps-afsc.fisheries.noaa.gov/refm/docs/2020/AIpollock.pdf). A full stock assessment document with updated assessment and projection model results will be presented in 2022 SAFE report.

The AI pollock 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 AI walleye pollock stock assessment uses the Assessment Model for Alaska, which is a variation of the “Stock Assessment Toolbox” model presented to the Plan Team in the 2002 Atka mackerel stock assessment (Lowe et al. 2002). The data sets used in this assessment include total catch biomass, fishery age compositions, AI bottom trawl survey abundance estimates, and AI bottom trawl survey age compositions. For a partial assessment year, we do not re-run the assessment model, but do update the projection model with new catch data. This incorporates the most current catch information without re-estimating model parameters and biological reference points. The stock remains at Tier 3b.

There were no changes made to the assessment model inputs since this was an off-cycle year. New data added to the projection model included an updated 2020 catch estimate (3,205 t) and new catch estimates for 2021. The 2021 catch was estimated by increasing the official catch as of September 28, 2021, by an expansion factor of 9.5%, which represents the average fraction of catch taken after September 28 in the last three complete years (2018-2020). The 2022 catch was set at the 3-year average for 2018-2020 of 2,243 t. There were no changes in assessment methodology since this was an off-cycle year.

For the 2022 fishery, the maximum allowable ABC of 50,752 t from the updated projection model was recommended. This ABC is down slightly from the 2021 ABC of 51,241 t and nearly the same as last year’s projected 2022 ABC of 50,789 t. Reference values for AI pollock are summarized in the following table, with the recommended ABC and OFL values for 2022 (

Table 11).

Table 11. Summary table of assessment outputs of AI pollock. Source: Barbeaux et al. 2021

Quantity	As estimated or *specified last* year for: 2021	2022	As estimated or *recommended this* year for: 2022	2023*
M (natural mortality rate)	0.21		0.21	
Tier	3a		3a	
Total (age 1+) biomass (t)	292,967	308,671	308,525	330,375
Female spawning biomass (t)				
Projected	89,906	85,785	89,516	87,650
$B_{100\%}$	185,475		185,475	
$B_{40\%}$	74,190		74,190	
$B_{35\%}$	64,916		64,916	
F_{OFL}**	0.390	0.390	0.390	0.390
$maxF_{ABC}$	0.313	0.313	0.313	0.313
F_{ABC}	0.313	0.313	0.313	0.313
OFL (t)	61,856	61,308	61,264	61,379
maxABC (t)	51,241	50,789	50,752	50,825
ABC (t)	51,241	50,789	50,752	50,825
	As determined *this* year for:		As determined *this* year for:	
Status	2019	2020	2020	2021
Overfishing	no	no	no	n/a
Overfished	n/a	n/a	n/a	no
Approaching overfished	n/a	n/a	n/a	no

* Projection based on estimated catches of 1,656 t for 2021 and 2,243 t for 2022, the three-year average (2018-2020), used in place of maximum permissible ABC .
** Long-term equilibrium F_{OFL} and F_{ABC} were 0.390 and 0.313, respectively.

The stock is not being subject to overfishing, is not currently overfished, nor is it approaching a condition of being overfished. The tests for evaluating these three statements on status determination require examining the official total catch from the most recent complete year and the current model projections of SSB relative to $B_{35\%}$ for 2021 and 2022. The official total catch for 2020 is 3,205 t, which is a small fraction of the 2020 OFL of 66,973 t; therefore, the stock is not being subjected to overfishing. The estimates of SSB for 2021 and 2022 from 2020 assessment model (Barbeaux et al. 2021) and the current year (2021) projection model are 89,906 t and 85,785 t, respectively. The 2021 estimate from the current year projection is above $B_{35\%}$ at 64,916 t and the 2022 estimate is above ½ $B_{35\%}$ and the stock is expected to be above $B_{35\%}$ in 2033 under projection Scenario 7; therefore, the stock is not currently overfished nor approaching an overfished condition (

Table 11).

Although open to fishing, there continues to be very little directed fishing for pollock in the AI. In 2020, there was a total of 712 t of pollock landed from pollock targeted fisheries and in 2021 there was a total of 0 t of pollock landed in targeted fisheries. In 2020 an EFP for a directed pollock fishery was approved and conducted which accounts for the slight increase in catch in that year.

In accordance with the approved schedule, no assessment was conducted for Bogoslof Island Region pollock stock in 2021, however, a full stock assessment will be conducted in 2022. Until then, the values generated from the previous stock assessment (below) will be rolled over for 2022 specifications.

Table 12. Summary results of Assessment of walleye pollock in the Bogoslof Island Region. Source: Ianelli et al. 2021b

Quantity	As estimated or specified last year for: 2020	2021	As estimated or recommended this year for: 2021	2022
M (natural mortality rate)	0.3	0.3	0.3	0.3
Tier	5	5	5	5
Biomass (t)	610,267	610,267	378,262	378,262
F_{OFL}	0.300	0.300	0.300	0.300
$maxF_{ABC}$	0.225	0.225	0.225	0.225
F_{ABC}	0.225	0.225	0.225	0.225
OFL (t)	183,080	183,080	113,479	113,479
maxABC (t)	137,310	137,310	85,109	85,109
ABC (t)	137,310	137,310	85,109	85,109
Status	As determined *this* year for: 2018	2019	As determined *this* year for: 2019	2020
Overfishing	No	n/a	No	n/a

3.3.3 GOA/PWS

The full description of the assessment model formulations, input data, and results can be found in the 2021 GOA pollock SAFE by Monnahan et al. (2021). The state pollock fishery in PWS is managed using a GHL set as a percentage of the GOA federal ABC. Pollock catches used in the GOA assessment include those taken in the state fishery in PWS.

An age-structured model covering the period from 1970 to 2021 (52 years) was used to assess GOA pollock. The modeled population includes individuals from age 1 to age 10, with age 10 defined as a “plus” group (i.e., all individuals age 10 and older). Population dynamics were modeled using standard formulations for mortality and fishery catch (e.g., Fournier and Archibald 1982). Year- and age-specific fishing mortality was modeled as a product of a year effect, representing the full-selection fishing mortality, and an age effect, representing the selectivity of that age group to the fishery. The age effect was modeled using a double-logistic function with time-varying parameters (Dorn and Methot 1990, Sullivan et al. 1997). The model was fit to time series of catch biomass, survey indices of abundance, and estimates of age and length composition from the fishery and surveys.

Model parameters were estimated by maximizing the joint log likelihood of the data, viewed as a function of the parameters. Mean-unbiased log-normal likelihoods were used for survey biomass and total catch estimates, and multinomial likelihoods were used for age and length composition data. Model tuning for composition data was done by iterative re-weighting of input sample sizes using the Francis (2011) method. Variance estimates/assumptions for survey indices were not reweighted. The following table lists the likelihood components used in fitting the model.

Pollock life history characteristics, including natural mortality, weight at age, and maturity at age, were estimated independently outside the assessment model. These parameters are used in the model to estimate spawning and population biomass and obtain predictions of fishery catch and survey biomass. Pollock life history parameters include:

- Natural mortality
- Proportion mature at age
- Weight at age and year by fishery and by survey

Recruitment of GOA pollock is more variable (CV = 1.27 over 1978-2020) than EBS pollock (CV = 0.60). Other North Pacific groundfish stocks, such as sablefish and Pacific ocean perch, also have high recruitment variability. However, unlike sablefish and Pacific ocean perch, pollock have a short generation time (~8 years), so that large year classes do not persist in the population long enough to have a buffering effect on population variability. Because of these intrinsic population characteristics, the typical pattern of biomass variability

for GOA pollock will be sharp increases due to strong recruitment, followed by periods of gradual decline until the next strong year class recruits to the population. GOA pollock is more likely to show this pattern than other groundfish stocks in the North Pacific due to the combination of a short generation time and high recruitment variability.

Since 1980, strong year classes have occurred periodically every four to six years (Figure 13). Because of high recruitment variability, the mean relationship between SSB and recruitment is difficult to estimate despite good contrast in SSB. Strong and weak year classes have been produced at high and low level of SSB. Spawner productivity is higher on average at low spawning biomass compared to high SSB, indicating that survival of eggs to recruitment is density dependent. However, this pattern of density-dependent survival only emerges on a decadal scale and could be confounded with environmental variability on the same temporal scale. The decadal trends in spawner productivity have produced the pattern of increase and decline in the GOA pollock population. The last two decades have been a period of relatively low spawner productivity, though there appears to be a recent increase. Age-1 recruitment in 2020 is estimated to be to be very weak, but the 2021 recruitment is above average, although these estimates will remain very uncertain until additional data become available.

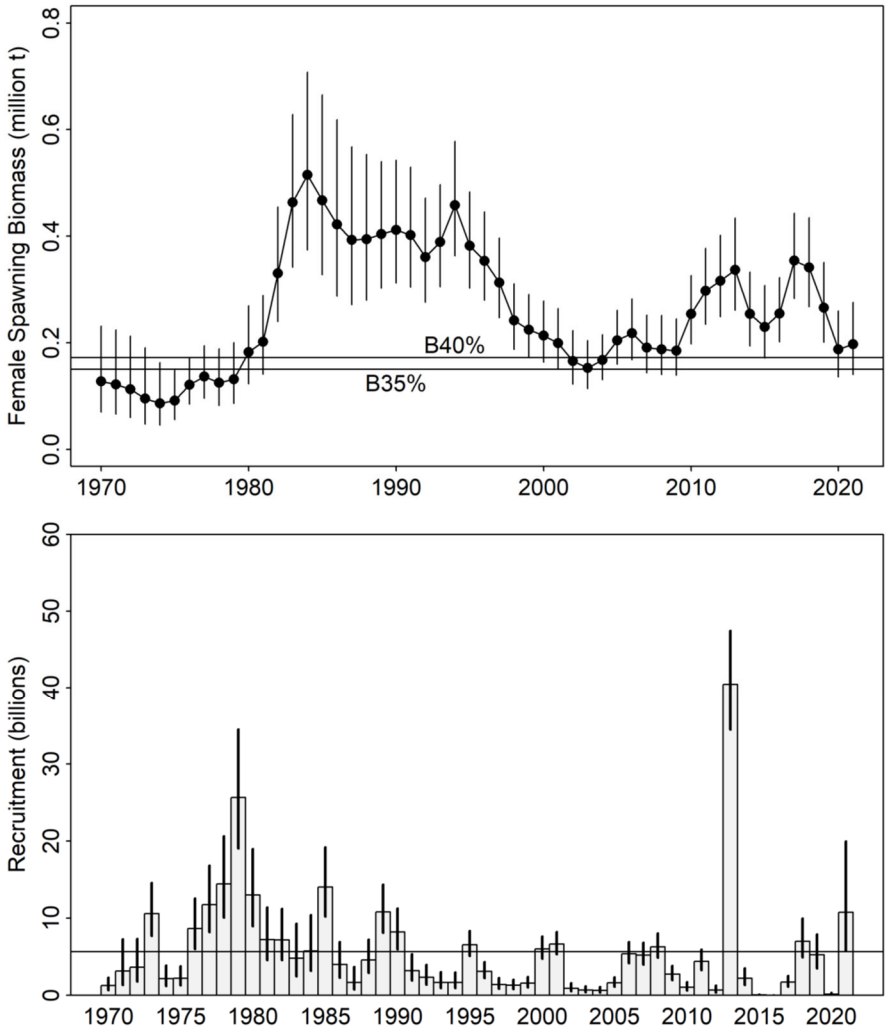

Figure 13. Estimated time series of GOA pollock SSB (top) and age-1 recruitment (bottom) from 1970 to 2021 for the base model, with horizontal line at the average from 1978-2020. Vertical bars represent two standard deviations. The B35% and B40% lines represent the current estimate of these benchmarks. Source: Monnahan et al. 2021

In 2002, the stock dropped below the B40% for the first time since the early 1980s and reached a minimum in 2003 of 35% of unfished stock size. Over the years 2009-2013 stock size showed a strong upward trend, increasing from 43% to 78% of unfished stock size, but declined to 54% of unfished stock size in 2015. The spawning stock peaked in 2017 at 83% as the strong 2012 year class matured, and has declined subsequently to 46% in 2021.

Figure 14 shows the historical pattern of exploitation of the stock both as a time series of SPR and F compared to the current estimates of biomass and F reference points. Except from the mid-1970s to mid-1980s fishing mortalities have generally been lower than the current OFL definition, and in nearly all years were lower than the F_{MSY} proxy of $F_{35\%}$.

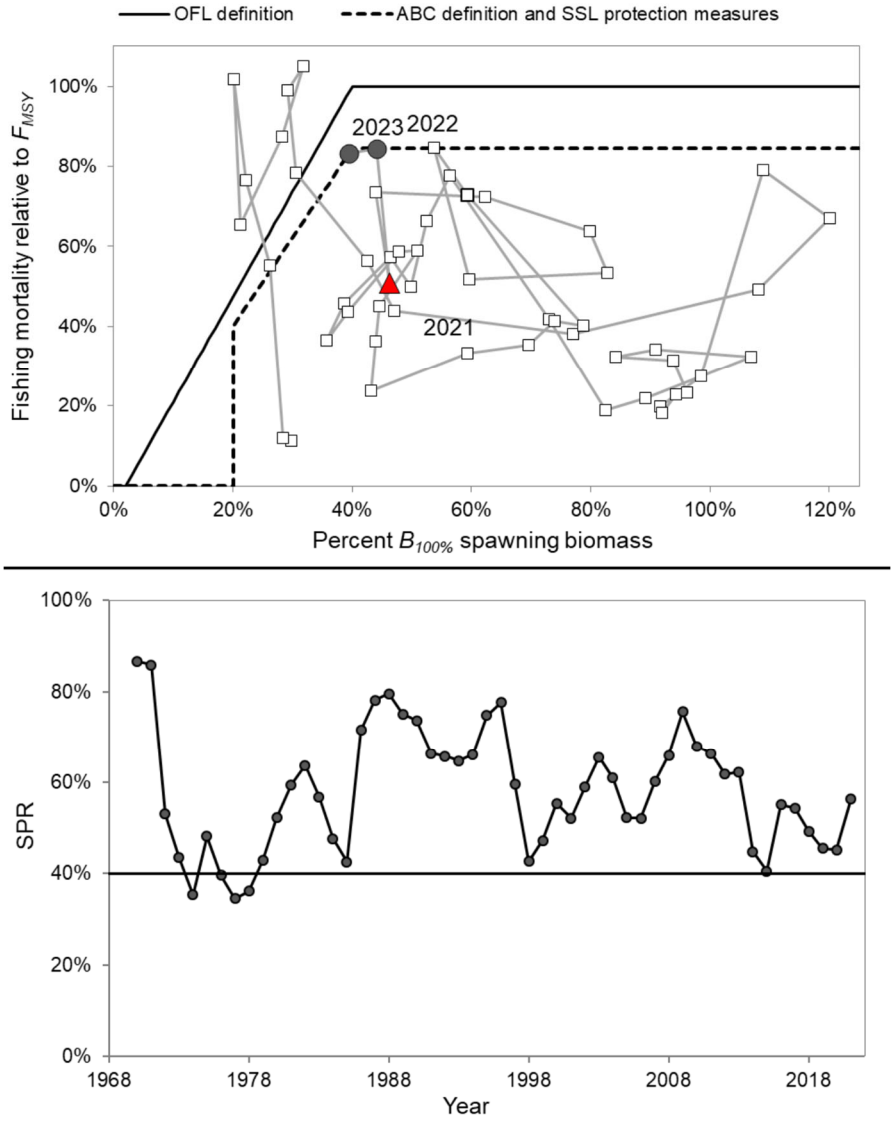

Figure 14. Annual fishing mortality as measured in percentage of unfished SSB per recruit (top). GOA pollock SSB relative to the unfished level and F relative to FMSY (bottom). The ratio of fishing mortality to FMSY is calculated using the estimated selectivity pattern in that year. Estimates of B100% SSB are based on current estimates of maturity at age, weight at age, and mean recruitment. Because these estimates change as new data become available, this figure can only be used in a general way to evaluate management performance relative to biomass and fishing mortality reference levels. Source: Monnahan et al. 2021

The GOA pollock assessment does not show a strong retrospective bias and fits to the age composition data for the fishery and survey biomass indices are generally adequate. The pollock assessment is one of the few assessments in the North Pacific that is fit to multiple abundance indices. In 2021 assessment, the results from new surveys conducted in 2021 showed consistent trends and were able to be fit adequately by the model. While the historical pattern of conflicting survey trends remains, the consistency of 2020 and 2021 survey fits leads to reduced concern.

A continuing assessment issue is the severe decline in the 2018-year class abundance between the 2019 and 2020 Shelikof Strait acoustic surveys. The 2019 estimate was indicative of a strong year class, but the 2020 estimate of age 2 fish was only 10% of the long-term average. Over the full Shelikof Strait time series, high age-1 estimates have always been followed by high age-2 estimates in the next year. It was previously hypothesized that the 2018 year class could have moved out of Shelikof Strait or experienced unusually high mortality. This year, both the 2020 age 2 ADF&G and 2021 age 3 Shelikof survey observed proportions were low relative to the model expectation, providing further evidence of a reduced 2018 cohort. In contrast, the 2020 fishery catch at age was very close to expected for age-2 fish, and there are some apparent age-3 fish in the 2021 length compositions from the summer surveys. Despite new data sources, the initial and current size of this cohort is equivocal. We fit a model in which the high 2019 age-1 estimate was removed and found that the 2022 OFL and ABC were more strongly affected (~9% decrease) than the same exercise in the previous year (~5% decrease). This is because this year class will be more exploitable as age 4 fish in the 2022 fishery (selectivity of 0.76) versus the 3 year olds in 2021 (selectivity of 0.24). As more observations accumulate the fate of this year class should become clearer, and if observations continue to be low, we expect that the model will increasingly predict a smaller year class, essentially fitting other data over the large age-1 index value in 2019.

Another important issue is the notable increase in spawning weight at age data from the winter Shelikof survey from 2020, including the heaviest age 2 fish to date. The model results are sensitive to the spawning weights used. If instead the 2020 data were used in 2021, the 2022 ABC would increase by 8%. We used the 2021 for several reasons. First, comparing the last three years of data from Shelikof it is quite clear that there has been a shift in length at age, not weight at length. Based on this data, the length at age for 2021 is more in line with 2019, and 2020 appears to be more of an anomaly. Second, there was nothing new about either survey protocol or execution, nor the ageing process that would explain these patterns. Finally, weight at age had been declining for older fish since about 2012, and the increase this year is well within historical and recent norms for most ages.

Another new issue identified this year is that the absolute scale of the population is driven heavily by the NMFS bottom trawl survey, which in turn is highly influenced by the prior on catchability. A more thorough analysis is needed to expand and confirm these results, but it is clear that this prior has a large impact on the results of the assessment. The model fits all indices relatively well, except the divergent trends mentioned above, and the assessment scientists generally have no reason to believe the prior is out of line with expert opinion.

The base model projection of female SSB in 2022 is 186,481 t, which is 43.4% of unfished SSB (based on average post-1977 recruitment) and above $B_{40\%}$ (172,000 t), thereby placing GOA pollock in sub-tier “a” of Tier 3. New surveys in 2021 include the winter Shelikof Strait acoustic survey, NMFS bottom trawl survey, summer acoustic survey, and ADFG bottom trawl survey. These surveys indicated similar relative abundance in 2021, unlike previous years when the surveys showed strongly contrasting trends. The risk matrix table recommended by the SSC was used to determine whether to recommend an ABC lower than the maximum permissible. The table is applied by evaluating the severity of four types of considerations that could be used to support a scientific recommendation to reduce the ABC from the maximum permissible. Although we identified some aspects of the stock that merit close tracking, there were no elevated concerns about stock assessment, population dynamics, environment/ecosystem, or fisheries performance categories. We therefore recommend no reduction from maximum permissible ABC.

The ABC recommendation for pollock in the GOA west of 140° W long. (W/C/WYK regions; Table 13) is 133,081 t, which is an increase of 26% from the 2021 ABC. The author’s recommended 2023 ABC is 131,912 t. The OFL in 2022 is 154,983 t, and the OFL in 2023 if the ABC is taken in 2022 is 153,097 t. These calculations are based on a projected 2021 catch of 92,342 t (Mary Furuness, pers. comm. Oct. 14, 2021). It should be noted that the ABC is projected to increase after 2023 even as the large 2012 year class continues to diminish due to new large cohorts entering the exploitable stock, although there is considerable uncertainty about the 2018 year class.

Table 13. Status Summary for GOA Pollock in W/C/WYK Areas. Source: Monnahan et al. 2021

Quantity/Status	As estimated or specified *last* year for 2021	2022	As estimated or recommended *this* year for 2022	2023
M (natural mortality rate)	0.3	0.3	0.3	0.3
Tier	3a	3b	3a	3b
Projected total (age 3+) biomass (t)	1,097,340	812,182	848,878	1,205,850
Female spawning biomass (t)	184,530	169,577	186,481	167,840
$B_{100\%}$	443,000	443,000	430,000	430,000
$B_{40\%}$	177,000	177,000	172,000	172,000
$B_{35\%}$	155,000	155,000	150,000	150,000
F_{OFL}	0.33	0.30	0.31	0.29
$maxF_{ABC}$	0.28	0.26	0.26	0.26
F_{ABC}	0.28	0.26	0.26	0.26
OFL (t)	123,455	106,767	154,983	153,097
maxABC (t)	105,722	91,934	133,081	131,912
ABC (t)	105,722	91,934	133,081	131,912
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

For pollock in southeast Alaska (Southeast Outside region, east of 140° W longitude; Table 14), the ABC recommendation for both 2022 and 2023 is 11,363 t and the OFL recommendation for both 2022 and 2023 is 15,150 t. These recommendations are based on a Tier 5 assessment using the projected biomass in 2022 and 2023 from a random effects model fit to the 1990-2021 bottom trawl survey biomass estimates of the assessment area.

Table 14. Status Summary for Pollock in the Southeast Outside Area. Source: Monnahan et al. 2021

Quantity	As estimated or *specified last* year for: 2021	2022	As estimated or *recommended this* year for: 2022	2023
M (natural mortality rate)	0.3	0.3	0.3	0.3
Tier	5	5	5	5
Biomass (t)	45,103	45,103	50,500	50,500
F_{OFL}	0.30	0.30	0.30	0.30
$maxF_{ABC}$	0.23	0.23	0.23	0.23
F_{ABC}	0.23	0.23	0.23	0.23
OFL (t)	13,531	13,531	15,150	15,150
maxABC (t)	10,148	10,148	11,363	11,363
ABC (t)	10,148	10,148	11,363	11,363
Status	As determined *last* year for: 2019	2020	As determined *this* year for: 2020	2021
Overfishing	No	n/a	No	n/a

3.4 International fishery stock assessment guidance

Guided by MSA standards, and other legal requirements, the NMFS has a well-established institutional framework for research and stock assessment developed within the AFSC. The annual stock assessments use state-of-the-art methodology, and are peer reviewed by experts within NMFS, ADFG, and at committee levels in the Council (e.g., SSC). Recommendations are made annually to improve the assessments. Regular external peer review is also conducted on the assessments (e.g., by the Center of Independent Experts [CIE]), and recommendations from these reviews are addressed when possible.

3.5 Published stock assessments conducted by third party organizations

The assessment team was not aware of any third-party stock assessments for the Alaska pollock stocks.

3.6 Management practices of the competent management authority

The amended MSA (2007) established new statutory requirements to end and prevent overfishing. It required the SSC of the eight fishery management councils to recommend, "*acceptable biological catch, preventing overfishing, maximum sustainable yield and achieving rebuilding targets and reports on stock status and health, bycatch, habitat status, social and economic impacts of management measures and sustainability of fishing practices*" and for the Councils to set annual catch limits that do not exceed the fishing level recommended by their SSC. These new requirements were implemented in 2010 for all stocks subject to overfishing and in 2011 for all stocks not subject to overfishing.

This separation of authorities and responsibilities represented a major step forward in trying to eliminate overfishing and to enhance recovery of overfished stocks nation-wide.

Assuming that catch is measured accurately, annual catch limits provide a transparent measure of the effectiveness of management practices to prevent overfishing. They cannot exceed the fishing level determined by the SSC, but catch thresholds can be established that trigger accountability measures to prevent overfishing. Accountability measures might include: (1) seasonal, area, and gear allocations; (2) bycatch limits; (3) closed areas; (4) gear restrictions; (5) limited entry; (6) catch shares; (7) in-season fishery closures; and (8) observer and vessel monitoring requirements.

Accountability measures allow close monitoring of overall catch levels, as well as seasonal and area apportionments. They might close designated areas, or fisheries, if bycatch limits for prohibited species are attained. They also allow monitoring of any endangered or threatened mammals or seabirds and provide a database for evaluating likely consequences of future management actions.

The Council has consistently adopted the annual OFL[1] and ABC recommendations from its SSC and set the TAC for each of its commercial groundfish stocks at or below the respective ABC.

In 1996, the Council capped the rate of F used to calculate ABC by the rate used to calculate OFL. These rates were prescribed through a set of six tiers defining more and more conservative catch levels as the tiers increased. Harvest rates used to establish ABCs were reduced at low stock size levels, thereby allowing rebuilding of depleted stocks. If the biomass of any stock falls below B_{MSY}, or a proxy for B_{MSY}, the fishing mortality is reduced relative to the stock status.

The Council seeks to maintain a healthy ecosystem to ensure long-term sustainability, therefore, both target and non-target species are regularly assessed and bycatch limits, including PSC[2], are in place to control impacts. Also, essential fish habitat (EFH), defined in MSA as, "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity", are described and evaluated to assure that fishing impacts are not more than minimal or more than temporary. Some areas have been closed to protect

[1] An Over Fishing Limit (OFL) is set at the end of the preceding calendar year on the basis of the most recent stock assessment. For each stock, a determination of status with respect to overfishing is made in-season as the fisheries are monitored to prevent exceeding the TAC. In the event that overfishing is determined to have occurred, an in-season action, an FMP amendment, a regulatory amendment or a combination of these actions will be implemented to end such overfishing immediately. In 1999, the NPFMC prescribed that OFL should never exceed the amount that would be taken if the stock were fished at FMSY (or a proxy for F_{MSY})

[2] Prohibited Species are species that support traditional, near-shore Alaska fisheries. These species include Pacific halibut, Pacific herring, several species of salmon and large spider crabs in the BSAI management area. The bycatch of PSC species is to be avoided while fishing for groundfish, and by regulation PSC species must be returned to the sea with a minimum of injury, except when their retention is authorized by other law (e.g., donation programs)

spawning stocks, such as the Bogoslof (Area 518), or for protected species, such as, Steller sea lion with areas excluded to fishing around rookeries and haulouts (10 and 20 nm closures).

The pollock fishery in the BSAI and GOA has evolved from a bottom trawl fishery into a very target selective, pelagic trawl fishery. The AFA[3] significantly helped in this evolution by creating cooperatives within the pollock sector that only fish with pelagic trawls. This significantly reduced the bycatch of demersal species such as flatfish, cod, and crab. The AFA also limited pollock vessels in the BSAI from competing with GOA pollock vessels.

3.6.1 Overview of the fishery management framework with an organizational plan of the principal management organizations, their roles, and responsibilities

3.6.1.1 National Marine Fisheries Service (NMFS)

NMFS (also known as NOAA fisheries) is responsible for the management, conservation, and protection of living marine resources within the U.S. EEZ. The NMFS Alaska Regional Office oversees fisheries in federal waters (3-200 nm), with responsibilities covering 842,000 nm^2 off Alaska. In addition to stock survey, stock assessment reports and biological studies related to the pollock fisheries, NMFS is charged with carrying out the federal mandates of the U.S. Department of Commerce with regard to commercial fisheries such as approving and implementing FMPs and FMP amendments recommended by the Council. The NMFS's OLE partners the USCG in the monitoring, control, and enforcement of fisheries regulations.

3.6.1.2 North Pacific Fishery Management Council (NPFMC)

The Council is one of eight regional councils established by the MSA as amended 2007 [to oversee management of the nation's fisheries. The Council recommends regulations to govern the directed pollock fisheries in the Alaska's EEZ. Council management measures for pollock include seasonal (i.e., season A and B) and spatial allocation of TAC, time (e.g., Chum Salmon Savings Area) and area restrictions (e.g., protected/conservation areas), bycatch reduction programs, PSC limits, reporting and observer requirements. The Council is supported by the Advisory Panel (AP), the members of which represent major segments of the fishing industry: catching and processing, subsistence and commercial fishermen, observers, consumers, environmental / conservation, and sport fishermen. The SSC also supports the Council with advice on scientific and other technical matters. The Committee is composed of scientists in biology, economics, statistics, and social science.

3.6.1.3 Alaska Department of Fish and Game (ADFG)

ADFG are responsible is the state department responsible for managing fish resources within state waters (0-3 nm). The basis of natural resource management, including fish and fisheries is enshrined in the state constitution. The Department's BOF is established under Alaska Statute for the purposes of the conservation and development of the fisheries resources of the state. The seven-person Board is appointed by the state governor and confirmed by the legislature. The Board's main role is to conserve and develop the fishery resources of the state. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources. The Department is responsible for management of the fisheries based on the BOF decisions. Enforcement of state waters regulations is provided by the Marine Enforcement Section of the AWT.

The PWS pollock fishery takes place entirely within state waters and so is managed by ADFG and the BOF. Fisheries for pollock that overlap with state and federal waters take place in waters around Kodiak Island, in the Chignik Area and along the South Alaska Peninsula. In this instance, the state allows pollock to be fished against the federal TAC.

[3] The American Fisheries Act (AFA) 1998 - The purpose of the AFA was to tighten U.S. ownership standards that had been exploited under the Anti-reflagging Act, and to provide the Bering Sea and Aleutian Islands (BSAI) pollock fleet the opportunity to conduct their fishery in a more rational manner while protecting non-AFA participants in the other fisheries. The AFA established sector allocations in the BSAI pollock fishery, determined eligible vessels and processors, allowed the formation of cooperatives, set limits on the participation of AFA vessels in other fisheries, and imposed special catch weighing and monitoring requirements on AFA vessels https://alaskafisheries.noaa.gov/fisheries/AFA-pollock

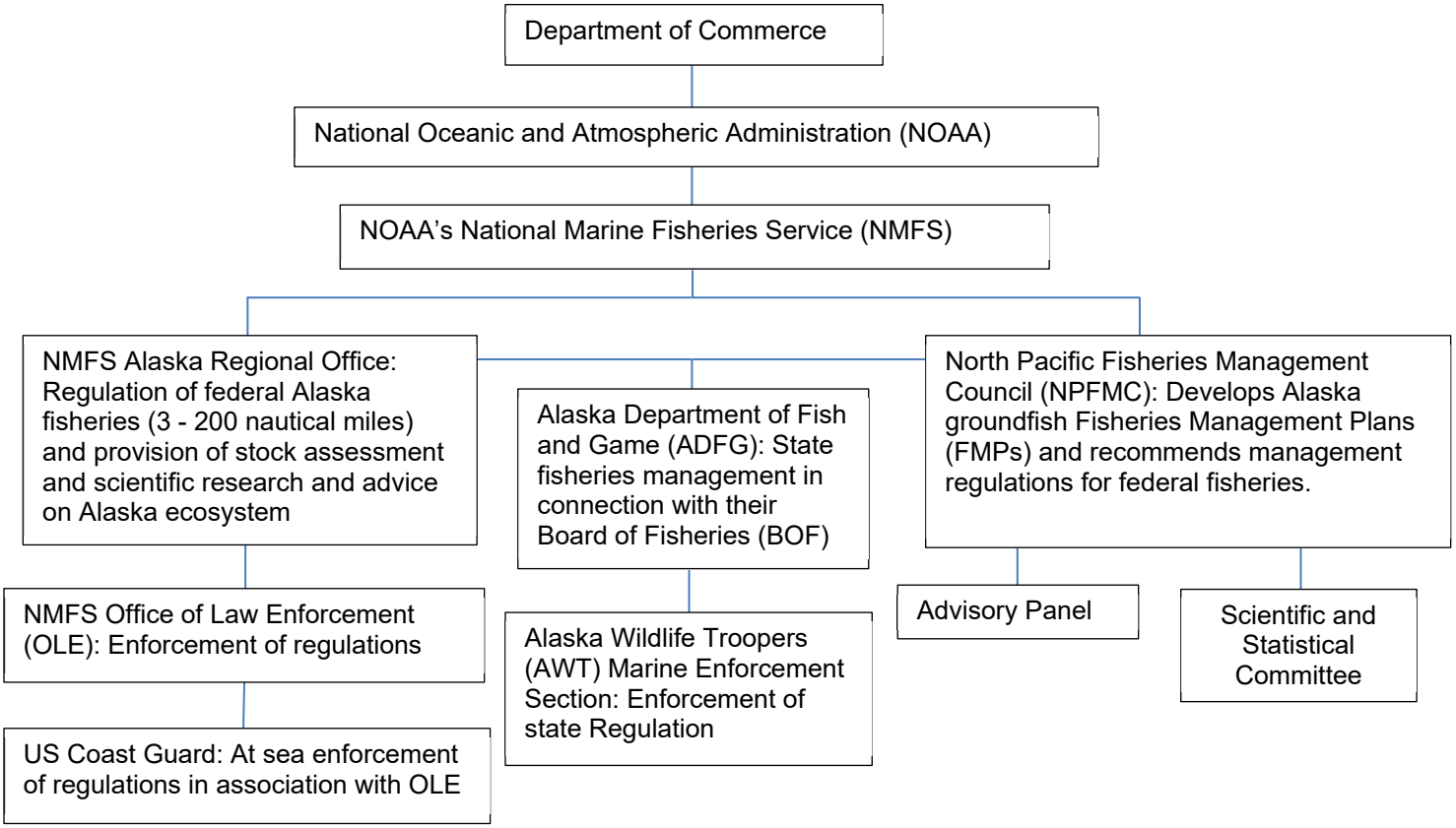

Figure 15. The organizational structure for the management of the Alaska pollock fishery. Source: adapted from Global Trust 2011

3.6.2 Establishment legislation

3.6.2.1 Federal

The principle legislative instrument for fisheries management in the U.S. is the MSA (MSA 2007). The MSA contains 10 National Standards, which fishery managers must consider when preparing an FMP or Amendment. These National Standards are:

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry;
2. Conservation and management measures shall be based upon the best scientific information available;

3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination;
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonable calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of privileges;
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose;
6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches;
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication;
8. Conservation and management measures shall, consistent with the conservation requirements of the Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities;
9. Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch; and,
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

NMFS implements the MSA and the National Standards. The procedures on how NMFS follows the National Standards are published in the U.S. Federal Register at 50 CFR Part 600 subpart D.

The MSA also establishes the Council as one of eight regional councils to manage fisheries in the U.S. EEZ.

3.6.2.2 State

State waters are fished under State of Alaska commercial fisheries regulations. The General Commercial Fisheries Regulations establishes the basic regulations, i.e., those that give the ADFG and BOF the powers to regulate and manage the state fishery resource and describe the extent of their regulatory powers. Article 5, of the Commercial Groundfish Fisheries Regulations (2020-2021), defines the PWS pollock pelagic trawl fishery management plan. State-wide regulations 5 AAC 28.086 and 5 AAC 28.087 give the ADFG authority to manage parallel fisheries (those Council groundfish fisheries within state waters) and parallel fisheries with Stellar sea lion restrictions, respectively, incorporating federal/Council regulations within state waters.

3.6.3 Governance procedure

3.6.3.1 NPFMC

The Council primarily manages groundfish in the BSAI and GOA, targeting pollock, cod, flatfish, mackerel, sablefish, and rockfish harvested by trawl, longline, jig, and pot gear. The Council conducts public hearings so as to allow all interested persons an opportunity to be heard in the development of FMPs and amendments, and reviews and revises, as appropriate, the assessments and specifications with respect to the OY from each fishery (16 U.S.C. 1852(h)). The Council has developed a management policy and objectives to guide its development of management recommendations to the Secretary of Commerce. Other large Alaska fisheries for salmon, crab, and scallops are managed jointly with the State of Alaska. The Council also works very closely with the ADFG and the 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.

The process used by the Council for decision-making is described in the Council guide for navigating the Council process (NPFMC 2017) and the Council Operating Procedures (NPFMC 2019b). The following section draws upon these reports.

The North Pacific fisheries comprise numerous species managed under five FMPs: BSAI groundfish FMP and GOA groundfish FMP, BSAI King and Tanner crab FMP, Alaska scallop FMP, and Alaska salmon FMP.

The Council has eleven voting members and four non-voting members. Council members must balance competing interests while trying to make decisions for the overall benefit of the nation. Council members are advised by the Council APs and committees, Council staff, the public, states, academia, and NMFS. The states of Alaska, Washington, and Oregon are represented on the Council.

The eleven voting members include:

- The director of the ADFG or a designee;
- The director of the Washington Department of Fish and Wildlife or a designee;
- The director of the Oregon Department of Fish and Wildlife or a designee;
- The Regional Administrator of the NMFS Alaska Regional Office or a designee; and
- Seven private citizens who are familiar with the fishing industry, marine conservation, or both. These citizens (five members from Alaska and 2 from Washington) are appointed by the Secretary of Commerce from lists submitted by the Governors of Alaska and Washington.

There are also four non-voting members who assist the Council in decision-making. They represent:

- The Pacific States Marine Fisheries Commission (data and research);
- The U.S. Fish and Wildlife Service (USFWS) (seabirds, ecosystems, otters and walrus);
- The U.S. Department of State (decisions that have international implications); and
- The USCG (enforcement and safety issues).

The Council is supported by two formal advisory groups: the SSC and the AP.

The SSC is composed of experts in biology, statistics, economics, sociology, and other relevant disciplines from the federal, state, and private scientific communities and other appropriate sources. Independent experts on the SSC cannot be employed by an interest group or advocacy group. The AP are recognized experts from the fishing industry and represent a variety of gear types, industry, and related interests as well as a spread of geographic regions of Alaska and the Pacific Northwest. The Council relies on the AP for advice on how various fishery management alternatives will affect the industry and local economies; on potential conflicts between user groups of a given fishery resource or area; and, on the extent to which the U.S. will utilize resources managed by the Council's FMPs. The AP consists of approximately 20 members; however, the Council will not necessarily keep all seats filled.

The Council appoints "Plan Teams" for each of the major FMPs. Members of each team are selected from those agencies and organizations having a role in the research and/or management of fisheries. The Plan Teams review stock assessment information and assist in the preparation of the annual SAFE documents including formulation of recommendations on annual ABC levels for groundfish, crab, and scallop species under the jurisdiction of the Council. The Plan Teams may also prepare and/or amendments and supporting analytical documents for the Council, SSC, and AP; aggregate and evaluate public/industry proposals and comments; summarize and evaluate data related to the biological, economic, and social conditions of the fishery; conduct and evaluate analyses pertaining to management of the fisheries; evaluate the effectiveness of management measures in achieving the plan's objectives; and recommend when and how management measures need to be changed.

The Council may appoint standing and ad-hoc committees from among the voting and non-voting members and knowledgeable members of the public, as it deems necessary for the conduct of Council business. The Council Chair may also appoint standing or ad-hoc Committees that include industry representatives or other participants to address specific management issues or programs.

Under MSA, each Council must reflect the expertise and interests of its constituent States, with membership that is knowledgeable about conservation, management, commercial or recreational harvest, of the fishery resources within the council area. The Secretary of Commerce is charged with ensuring each council has membership that fairly represents the commercial and recreational fisheries under that Council's jurisdiction. Each year the Secretary submits a report on Council membership to the Senate Committee on Commerce, Science, and Transportation that list the fisheries under the jurisdiction of each Council and their characteristics, assesses Council membership in terms of the apportionment of the active participants in each Council's fisheries, and states a plan and schedule for actions to achieve a fair and balanced apportionment on each council (MSA 2007).

The Council normally meets five times each year. Each meeting normally lasts from six to seven days and begins on Wednesday of the meeting week. The Council's SSC and AP generally meet concurrently with the Council, starting two days prior to the Council. All meetings are open to the public, except for a short, closed Council session in which the Council deals with personnel, administrative, or litigation issues. Meeting locations rotate among member state cities. Advisory bodies also meet at various times between Council meetings.

Management measures developed by the Council are recommended to the Secretary of Commerce through the NMFS. Management measures are implemented by NMFS Alaska Regional Office and enforced by the OLE and USCG.

The Council participates in international negotiations concerning any fishery matters under the purview of the Council. The Council also consults during preliminary discussions leading to U.S. positions on international fishery matters, including the allocation of fishery resources to other nations within its area of authority.

Each regular Council meeting and, any emergency meeting, is open to the public. Interested persons may present oral or written statements regarding the matters on the agenda at meetings, within reasonable limits established by the Chair. Current Council policy on oral testimony limits individuals to three minutes, and organizations to six minutes, per agenda item. All written information submitted to the Council by an interested person shall include a statement of the source and date of such information. Any oral or written statement shall include a brief description of the background and interests of the person in the subject of the oral or written statement (NPFMC 2019b).

Proposals for management measures may come from the public, state and federal agencies, advisory groups, or Council members. For those proposals, the Council chooses to pursue, it directs NMFS and/or Council staff to prepare an analysis considering a range of alternatives. The Council reviews the analysis and selects a range of alternatives within which a preliminary preferred alternative may be identified. The analysis is then made available for public review, and the Council makes a final decision at the next meeting. After considering Council recommendations and public comments, NMFS publishes the adopted regulations. For non-routine and annual management decisions, NMFS publishes a Federal Register notice and provides a public comment period before finalizing the recommendations (NPFMC 2019b).

The Council may hold public hearings in order to provide the opportunity for all interested individuals to be heard with respect to the development of fishery management plans or amendments, and with respect to the administration and implementation of other relevant features of the Act. Notice of each hearing must be received by NMFS for publication in the Federal Register at least 23 calendar days prior to the proposed hearing. The Council will also issue notices to announce the time, location, and agenda for each hearing in a manner sufficient to assure all interested parties are aware of the opportunity to make their views known. If it is determined a hearing is appropriate, the Council Chair will designate at least one voting member of the Council to officiate. An accurate record of the participants and their views will be made available to the Council at the appropriate Council meeting and maintained as part of the Council's administrative record (NPFMC 2019b).

The procedure for changing Federal fishing regulations follows a standardized process, set by a combination of laws, regulations, operational guidelines, policies, as well as adjustments and adaptations developed by the Council intended to increase efficiency, provide public participation, and produce quality outcomes (NPFMC 2017, 2019b). All documents are posted on the website in advance of the meeting, and public comment is taken by the Council and advisory bodies before any decisions are made.

Concerns and proposals for change are brought to the Council's attention by the public through the industry advisory panel or other committee, or directly to the Council via written or verbal public comment during the 'Staff Tasking' agenda item at each Council meeting. The following flow chart describes the process for regulatory change.

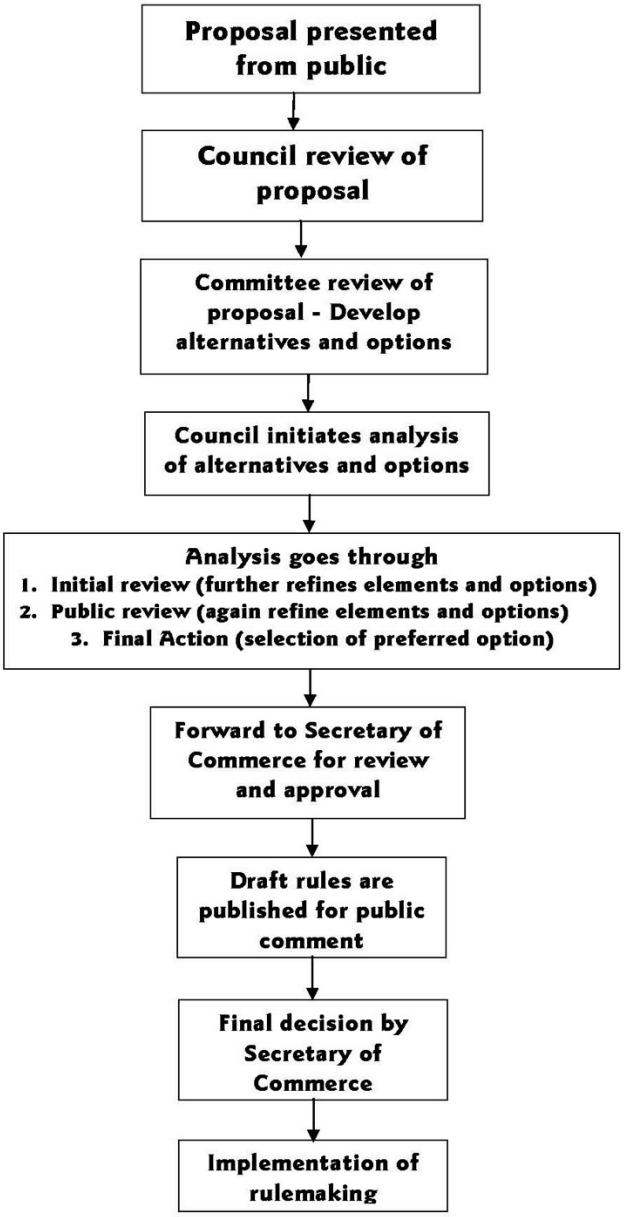

Figure 16. Flow diagram showing the process for regulatory change at the Council. Source: adapted from NPFMC 2019b

A discussion paper is frequently prepared by staff as a first step to flesh out the scope of the problem identified and discuss issues that may be of concern in the development of alternatives. For very complex issues, several discussion papers may be necessary to explore the full scope of an issue before reasonable alternatives can be developed. For relatively simple changes, where the problem and alternatives are self-evident, a discussion paper may not be necessary, and the issue can go straight to analysis, even without developing an official problem statement and range of alternatives. The AP (and other committees if appropriate) provides recommendations to the Council at this stage as to whether the issue should proceed further in the process, if an expanded discussion paper is needed, or if the issue is ready for analysis (and recommends alternatives to be evaluated) (NPFMC 2019b).

The Council usually adopts a problem statement (or thoroughly describes the problem) and identifies alternatives to be considered, and then staff prepare a draft analysis that integrates analytical requirements of applicable laws and executive orders. The analysis is released for review about two weeks before the meeting. The analysis is reviewed by the SSC for scientific merit, and by the AP to

make recommendations regarding any missing information and the suite of alternatives and options evaluated. If the SSC has deemed the analysis inadequate and not ready for public review, or if the Council determines that additional alternatives or other substantial changes to the analysis are required, another initial review may be scheduled before the issue is scheduled for final action. If the analysis is to be released, the Council may designate a preliminary preferred alternative to focus comments on their indicated course of action.

After initial review, staff revise the analysis based on SSC, AP, and Council comments, and the analysis is posted on the Council website about 3 to 4 weeks before the next meeting. The AP makes a recommendation to the Council regarding a preferred alternative. The Council makes a final decision by roll call vote on the motion (NPFMC 2019b).

The NMFS region prepares draft regulations based on Council action, and once cleared by the region and Office of Management Budget, a proposed rule is published in the Federal Register. The public is provided time to comment on the proposed rule (NPFMC 2019b). Final Rule. NMFS region staff summarizes comments and may make adjustments to the rule based on these comments. The response to comments, the revised final rule, and final approval decision is published in the Federal Register (NPFMC 2019b).

3.6.3.2 Alaska Board of Fisheries (BOF)

The BOF consists of seven members serving three-year terms. Members are appointed by the Governor and confirmed by the Legislature. Members are appointed on the basis of interest in public affairs, good judgment, knowledge, and ability in the field of action of the board, with a view to providing diversity of interest and points of view in the membership (see Alaska Statute 16.05.221).

The BOF's main role is to conserve and develop the fishery resources of the state. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources. The BOF is charged with making allocative decisions, and the ADFG is responsible for management based on those decisions.

The BOF meets four to six times per year in communities around the state to consider proposed changes to fisheries regulations around the state. The board uses the biological and socioeconomic information provided by then ADFG, public comment received from people inside and outside of the state, and guidance from the Alaska Department of Public Safety and Alaska Department of Law when creating regulations that are sound and enforceable.

The BOF has the authority to adopt regulations described in Alaska Statute 16.05.251 including: establishing open and closed seasons and areas for taking fish; setting quotas, bag limits, harvest levels and limitations for taking fish; and establishing the methods and means for the taking of fish. The regulations the BOF has authority over are Alaska Administrative Code, Title 5, Chapters 1-77.

The BOF conducts regular reviews of groundfish fisheries within state waters of Alaska. The Board's review of FMPs, amendments and other regulatory changes include input from ADFG staff, Regional ADFG advisory committees, non-ADFG scientists, industry, environmental non-governmental organizations, stakeholders, and the general public.

ADFG staff participate in the Council Plan Team process soliciting peer reviews of stock assessments, and its meetings consider outside views regarding its analyses. As a participant in the Plan Team process, a panel of biologists, from various state and federal agencies and recognized as having expertise in the field of groundfish population dynamics are consulted on an annual basis to review the most recent groundfish survey information from the NMFS. If new data points for biomass estimates suggest a higher or lower ABC, then the outside experts have equal input with assessment authors relative to adjusting these parameters.

Legislative committees have conducted oversight and legislative hearings regarding the BOF's actions in a region's fisheries. The BOF and ADFG frequently turn to outside sources for technical advice, particularly regarding scientific matters and monitoring issues. If there are socio-economic or other ecosystem concerns expressed, the BOF can adjust time or area openings commensurate with the adjusted ABC. When the Plan Team recommends these adjusted ABCs to the Council, and the BOF makes regulatory adjustments based on the adjusted ABCs, the process again gets external review and discussion from commercial fishing groups, sport fishing groups, tourism representatives, etc. This process of external review is repeated in the BOF meeting schedule every three years.

3.6.4 Reporting activities

The NPFMC and BOF management arrangements and decision-making processes are organized in a very transparent manner. The Council (and NMFS) as well as the BOF (and ADFG) provide a great deal of information on their websites including agenda of

meetings, discussion papers, newsletter, minutes, 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. Furthermore, considerable information on the pollock and other fisheries, working groups and committees, research, habitat protection, protected species, current issues, catch share, bycatch controls, regulations and more are available on the websites.

3.6.5 Surveillance and enforcement activities

Monitoring, control, and surveillance (MCS) is carried out at-sea and shore-side for the federal fisheries by the OLE and the USCG (17th District USCG). The USCG also undertake inspections of fishing vessels and enforce mandatory safety of life and property at sea requirements for the fishing fleets. The AWT fulfills the MCS function for the state water fisheries. The AWT also liaise with the OLE and may also request the assistance of the USCG vessels and aircraft to help in their surveillance and enforcement activities.

OLE protects marine wildlife and habitat by enforcing domestic laws (e.g., Federal Fisheries Regulations for Fisheries of the EEZ of Alaska [50 CFR 679]) and international agreements (e.g., combating illegal, unreported, unregulated [IUU] fishing through the Joint Statement on Enhanced Fisheries Cooperation between the U.S. and Russia).

The OLE in Alaska focuses on outreach and education programs to help the fishing industry understand the rationale for regulations and prevent or minimize infractions. The OLE publishes a national annual report (OLE 2021a), and the Alaska region submits six monthly reports to the Council (e.g., OLE 2021b).

OLE agents and officers have the option to provide a written warning for minor offences however, these are taken into account for repeat offenders. More serious offences can be dealt with by a summary settlement (i.e., a violation which is not contested and results in a ticket which may include a discounted fine), thus allowing the violator to quickly resolve the case without incurring legal expenses. Thereafter, an offence is referred to NOAA's Office of General Counsel for Enforcement and Litigation which can impose a sanction on the vessels permit or further refer the case to the US Attorney's Office for criminal proceedings. Penalties may range from severe monetary fines, boat seizure and/or imprisonment. The MSA has an enforcement policy section (50 CFR 600.740) that details these "remedies for violations".

The USCG is the primary agency for at-sea fisheries enforcement. The USCG objectives are to prevent encroachment into the U.S. EEZ, ensure compliance with domestic fisheries regulations, ensure compliance with international agreements and high seas fishing regulations. The 17th Coast Guard District covers the Alaska EEZ and is responsible for the largest amount of coastline and one of the largest areas of responsibility within the USCG.

If the USCG detects a fisheries infringement, they gather evidence and hand over the investigation to the OLE. The USCG provides reports to each Council meeting (e.g., USCG 2021).

The pollock fishery is considered to be a lower risk fishery, with the potential for salmon bycatch at certain times of the year being the main issue, however, voluntary compliance (i.e., recognizing a problem, reporting it, and making appropriate changes to the fishing practice) helps to minimize the issue. The USCG use a software package (FishTactic) to assess risk of infringements and is used to assist the deployment of vessels and aircraft and target enforcement effort.

The "Donut Hole" is the only area in the Central Bering Sea outside the Alaska EEZ where the pollock resource can be found. In the mid- to late 1980s there was a pollock fishery in the central Bering Sea (donut hole) area of the Aleutian Basin, beyond the US and Russian EEZs. The fishery was being conducted by vessels from Japan, Korea, Poland, China, and the former Soviet Union. Catch data indicated the annual harvest from this area were approximately 1.5 million tonnes. Largely due to drastic declines in catch and catch per unit effort from 1990, the governments involved agreed to a voluntary suspension of the fishery in 1993-94, during which a scientific monitoring program was carried out that showed no evidence of recovery of the resource. In 1994, the Convention on the Conservation and Management of Pollock Resources in the central Bering Sea was signed by all the countries participating in the fishery. Its major principles include: no fishing permitted in the donut hole unless the biomass of the Aleutian Basin stock exceeds a threshold of 1.67 million tonnes (if the parties cannot agree on an estimate of the biomass, the estimate of the Alaska Fisheries Science Centre and its Russian counterpart will be used); allocation procedures; 100 percent observer and satellite transmitter coverage; and prior notification of entry into the donut hole and of trans-shipment activities. The Convention entered into force in December 1995 (January 1996 for the Republic of Korea).

The Central Bering Sea Fisheries Enforcement Act prohibits vessels and nationals of the US from conducting fishing operations in the Central Bering Sea, except where such fishing operations are conducted in accordance with an international fishery agreement to which the US is a signatory. The USCG undertake aerial surveillance patrols and, if necessary, vessel patrols within this area.

The North Pacific Observer Program (The Observer Program) is an important component of the monitoring of the pollock fishery. The program is the main data gathering program for all biological and fishery data that feed into pollock stock assessment and management. While observers are not directly part of the federal MCS program they are required to report infringements. OLE and USCG officers conduct de-briefing interviews with observers, checking on vessels fishing practices and the conduct of the crew. Observers will often report potential infringements to the vessel captains, thereby contributing to self-regulation and corrective action.

The Observer Program places all vessels and processors in the groundfish and halibut fisheries off Alaska into one of two observer coverage categories: (1) a full coverage category, and (2) a partial coverage category. Vessels in the full coverage category include:

- catcher/processors (C/Ps)
- motherships
- CVs while participating in the BSAI pollock fisheries
- CVs while participating in CDQ groundfish fisheries (except sablefish; and pot or jig gear CVs)
- CVs while participating in the Central Gulf of Alaska Rockfish Program
- inshore processor when receiving or processing BS pollock

Vessels in the partial coverage category include:

- CVs designated on a federal fisheries permit when directed fishing for groundfish in federally managed or parallel fisheries, except those in the full coverage category
- CVs when fishing for halibut IFQ or CDQ
- CVs when fishing for sablefish IFQ or fixed gear sablefish CDQ
- shoreside or stationary floating processor, except those in the full coverage category

All vessels in the partial coverage category are placed into two pools with differing requirements. These pools and requirements are as follows:

1. “No Selection pool” – This category applies to all vessels fishing with hook-and-line or pot gear that are less than 40 feet overall length, and all catcher vessels of any length fishing with jig, handline, troll, and dinglebar troll gear. (Note: Pollock are not targeted using these fishing methods.)
2. “EM Trip Selection pool” – This category applies to vessels using non-trawl gear in the partial coverage category that have been approved to be in the EM selection pool. Vessels that are approved to participate in the EM selection pool are required to log fishing trips and comply with EM deployment requirements; these vessels are not required to carry an observer. Once NOAA Fisheries approves a vessel for the EM selection pool, that vessel remains in the EM selection pool for the duration of the calendar year.
3. “Observer Trip Selection pool” – This category applies to catcher vessels of any length fishing with trawl gear, and to hook-and-line and pot gear vessels that are greater than or equal to 40 feet overall length.

As a result, the vast majority of BSAI pollock fishing trips are observed; whereas the observer coverage in the GOA is lower and more variable, in 2021 the coverage was approximately 20-25% (NPOB 2022).

The primary responsibility for enforcing fish and wildlife-related statutes and regulations in Alaska lies with the Alaska Department of Public Safety, through its Division of AWT; the division also enforces non-fisheries related regulations passed by the Board of Game). Biologists and other staff of the ADFG sometimes participate in enforcement activities and assist the Wildlife Troopers as needed. Some ADFG field staff have enforcement training and have powers of arrest (ADFG 2022a). The AWT attend the BOF and have an important input in the development of state regulations and legislation.

For fisheries in state waters, landings, buying and production data for Alaska pollock are recorded on ADFG fish tickets or through the eLandings system (internet-based electronic filing) (ADFG 2022b), and the Commercial Operators Annual report, as required by Alaska Statute 16.05.690, “Record of Purchases” and the Alaska Administrative Code 39.130 “Reports required of processors, buyers, fishermen, and operators of certain commercial fishing vessels; transporting requirements”.

The Council has an established Enforcement Committee (NPFMC 2022a) charged with reviewing proposed FMP amendments, regulatory changes, and other management actions on matters related to enforcement and safety at sea. The Committee is made up of governmental agencies (including OLE, USCG, ADFG, AWT) and organizations having expertise relating to the enforcement and monitoring of North Pacific groundfish and crab fisheries. Meetings are held on a regular basis, typically in conjunction with regular Council meetings and, are open to the public.

3.7 Key stakeholders

A considerable number of stakeholders participate in the Council and BOF process. A definitive list of stakeholders is not available but minutes of Council and BOF meetings as well as their various advisory committees and working groups are available on their respective websites and indicate participants and their affiliations.

3.8 Impacts of fishery on ecosystem

3.8.1 Associated and endangered, threatened, and protected (ETP) species

“The ‘Main’ and ‘Minor’ bycatch classification together makes up 95% of the associated species bycatch profile of a given target fishery. The top 95% is assessed, while the bottom 5% is not assessed. Of the 95% assessed, the top 80% is classified as Main Associated Species Catch, while the bottom 15% is classified as Minor Associated Species Catch” (RFM Guidance to Performance Evaluation v2.0). In the case of the Alaska pollock fishery, the target catch is above 300,000 tons so, as per the RFM requirements, the main associated species constitute 85% instead of 80%, and the minor associated species constitute the bottom 10% instead of 15%.

Additionally, “ETP species must be acknowledged as such when recognized by national legislation adopted at the state and federal level in Alaska, or when recognized through a binding international agreement. Alternatively, species listed under Appendix 1 of the Convention on International Trade in Endangered Species (CITES) or under the International Union for the Conservation of Nature (IUCN) Redlist and impacted negatively[4] by the fishery (i.e., direct or indirect mortality) shall be assessed as ETP unless it can be proven that their status in Alaska waters is above the point where recruitment is impaired or where other similar proxies indicate that the species is not biologically depleted” (RFM Guidance to Performance Evaluation v2.0).

It is known that certain gear types are more impacting on certain species (e.g., longline are more likely to catch seabirds than demersal trawl). While gear-specific bycatch data are not available (except for seabirds and marine mammals), Clause 4.2 provides details on the observer program and level of coverage.

Table 15 and Table 16 show catch data for the BSAI pollock and GOA pollock fisheries, respectively. None of the species are listed in CITES Appendix 1 or the IUCN Redlist; however, the ones labeled as PSC (ETP) are protected by federal management measures limiting bycatch of these species. Refer to Key Component D for more details.

[4] “For ETP species, interactions with the stock under consideration shall not cause departure from agreed management measures, such as those designed to allow for species restoration across a given geographical area. In other words, any interaction with or bycatch of ETP species shall be minimal and not considered significant, and/or disruptive in terms of ensuring the effectiveness of agreed management measures set up in order to achieve the management and conservation objectives for the ETP species in question.” (RFM’s Guidance to Performance Evaluation v2.0)

Table 15. Catch data of target, non-target, PSC/ETP, and habitat species for 2017-2021 by the BSAI pollock fishery. Blue = target species, green = main associated species, orange = minor associated species, yellow = PSC/ETP species, purple = habitats. Source: observer data

Species	Target, Main Associated, Minor Associated, Other Bycatch, PSC/ETP, or Habitat	Catch (in metric tons)						Percent of Total Average	Percent of Total Average Bycatch
		2017	2018	2019	2020	2021	Five-Year Average		
Pollock	Target	1,317,962.64	1,333,592.86	1,366,152.99	1,321,270.48	1,338,192.49	1,335,434.29	97.93%	NA
Alaska plaice	Minor associated	47.64	104.50	65.20	213.88	125.73	111.39	0.01%	0.39%
Alaska skate	Minor associated	374.73	391.77	352.25	554.31	703.96	475.40	0.03%	1.68%
Aleutian skate	Minor associated	5.30	5.18	9.03	26.63	6.72	10.57	0.00%	0.04%
Arrowtooth flounder	Minor associated	208.13	281.16	421.96	695.11	413.29	403.93	0.03%	1.43%
Atka mackerel	Minor associated	63.88	558.02	367.21	569.12	544.97	420.64	0.03%	1.49%
Bairdi Tanner Crab*	PSC (ETP)	7,235	2,238	3,146	10,406	8,622	6,329.52	NA	NA
Benthic urochordata	Minor associated	0.57	1.35	2.11	1.92	1.32	1.45	0.00%	0.01%
Big skate	Minor associated	4.97	3.48	5.84	7.08	7.50	5.78	0.00%	0.02%
Bigmouth sculpin	Minor associated	7.70	8.42	8.29	31.18	0.00	11.12	0.00%	0.04%
Birds, unidentified*	Other bycatch	0	0	3	0	0	0.60	NA	NA
Blue King Crab*	PSC (ETP)	0	0	99	1	0	20.15	NA	NA
Butter sole	Minor associated	0.94	9.99	6.44	22.03	31.01	14.08	0.00%	0.05%
Chinook salmon*	PSC (ETP)	27,572	11,170	25,038	32,298	13,851	21,985.90	NA	NA
Corals Bryozoans, unidentified	Habitat	0.02	0.05	0.02	1.04	0.01	0.23	0.00%	0.00%
Dusky rockfish	Minor associated	7.56	11.11	25.54	32.91	12.75	17.97	0.00%	0.06%
Eelpouts	Minor associated	18.32	4.03	2.36	6.42	0.67	6.36	0.00%	0.02%
Flathead sole	Main associated	956.58	1,038.64	1,087.19	1,970.78	1,529.81	1,316.60	0.10%	4.66%
Giant grenadier	Minor associated	0.00	0.00	8.56	42.46	54.94	21.19	0.00%	0.07%
Golden King Crab*	PSC (ETP)	64	616	445	522	135	356.36	NA	NA
Great sculpin	Minor associated	42.66	32.69	22.96	44.21	0.00	28.51	0.00%	0.10%
Kamchatka flounder	Minor associated	28.89	36.14	55.46	181.80	49.38	70.33	0.01%	0.25%
Kittiwakes*	Other bycatch	0	0	13	3	7	4.60	NA	NA
Laysan Albatross*	Other bycatch	0	0	0	8	0	1.60	NA	NA
Misc. fish	Minor associated	48.06	50.67	72.97	93.61	35.17	60.10	0.00%	0.21%
Non-Chinook salmon*	PSC (ETP)	424,019	262,188	348,631	320,478	531,056	377,274.32	NA	NA
Northern Fulmar*	Other bycatch	109	42	105	96	103	91.03	NA	NA
Northern rockfish	Minor associated	63.74	80.25	114.36	157.90	83.82	100.01	0.01%	0.35%

Octopus	Minor associated	7.53	4.59	3.11	6.31	0.99	4.51	0.00%	0.02%
Opilio Tanner Crab*	PSC (ETP)	3,392	5,143	6,228	40,003	5,002	11,953.63	NA	NA
Other Alcids*	Other bycatch	0	0	6	0	0	1.20	NA	NA
Pacific cod	Main associated	5,955.53	4,272.80	6,213.33	9,174.39	9,103.60	6,943.93	0.51%	24.56%
Pacific halibut	PSC (ETP)	85.27	55.81	112.90	101.88	131.09	97.39	0.01%	0.34%
Pacific herring	PSC (ETP)	965.34	474.24	1,101.62	3,861.12	1,708.27	1,622.12	0.12%	5.74%
Pacific ocean perch	Main associated	4,818.26	4,186.62	8,014.02	6,047.70	2,468.19	5,106.96	0.37%	18.06%
Plain sculpin	Minor associated	2.63	1.13	4.61	6.63	0.00	3.00	0.00%	0.01%
Red King Crab*	PSC (ETP)	186	565	453	432	671	461.69	NA	NA
Redstripe rockfish	Minor associated	0.00	0.14	0.05	0.00	0.00	0.04	0.00%	0.99%
Rex sole	Minor associated	124.26	147.47	265.75	499.75	189.79	245.41	0.02%	0.87%
Rock sole	Main associated	1,825.95	1,150.62	1,117.02	853.92	830.40	1,155.58	0.08%	4.09%
Rougheye rockfish	Minor associated	11.09	2.76	12.39	6.12	0.47	6.56	0.00%	0.02%
Sablefish	Main associated	101.77	448.89	1,236.72	3,457.07	1,106.06	1,270.10	0.09%	4.49%
Salmon shark	Minor associated	68.72	47.14	85.51	101.05	194.25	99.34	0.01%	0.35%
Sculpin, unidentified	Minor associated	12.75	15.35	16.63	36.68	70.83	30.45	0.00%	0.11%
Scypho jellies	Main associated	6,156.89	7,943.86	3,889.13	0.00	0.00	3,597.97	0.26%	12.72%
Sea anemone, unidentified	Minor associated	1.06	1.28	0.33	5.51	3.09	2.25	0.00%	0.01%
Sea pens, whips	Habitat	0.95	1.01	0.64	1.12	1.99	1.14	0.00%	0.00%
Sea star	Minor associated	12.31	22.95	50.77	61.36	19.99	33.47	0.00%	0.12%
Shark, unidentified	Minor associated	0.52	1.12	0.76	0.55	72.13	15.02	0.00%	0.05%
Shearwaters*	Other bycatch	0	0	11	1	7	3.81	NA	NA
Shortraker rockfish	Minor associated	36.62	28.13	108.88	32.06	8.83	42.90	0.00%	0.15%
Skate	Minor associated	123.23	188.25	140.35	235.15	190.46	175.49	0.01%	0.62%
Sleeper shark	Minor associated	23.50	14.34	14.61	29.34	40.92	24.54	0.00%	0.09%
Sponge, unidentified	Habitat	0.04	0.62	0.13	0.26	0.17	0.24	0.00%	0.00%
Squid	Main associated	1,887.11	1,644.17	0.00	0.00	0.00	706.26	0.05%	2.50%
Squid, unidentified	Main associated	0.00	0.00	5,756.54	6,178.72	3,821.91	3,151.43	0.23%	11.14%
Starry flounder	Minor associated	33.17	11.75	4.77	25.11	17.07	18.37	0.00%	0.06%
Thornyhead rockfish	Minor associated	8.07	6.47	30.92	11.16	2.07	11.74	0.00%	0.04%
Turbot	Minor associated	18.44	30.37	35.94	146.63	40.27	54.33	0.00%	0.19%
Urchins, dollars, cucumbers	Minor associated	0.02	0.07	1.86	20.62	0.12	4.54	0.00%	0.02%
White blotched skate	Minor associated	0.40	1.69	0.82	3.50	3.01	1.88	0.00%	0.01%

Yellow Irish lord	Minor associated	15.22	4.05	5.41	12.62	0.00	7.46	0.00%	0.03%
Yellowfin sole	Main associated	623.38	788.44	443.83	1,205.46	753.98	763.02	0.06%	2.70%
Total**		1,342,766.45	1,357,710.05	1,397,455.96	1,358,051.97	1,362,580.30	1,363,712.95		

Notes:
Only species with percent of total average bycatch over 0.00% are shown in table.
* Number of individuals instead of metric tons
** Does not include species with individual numbers instead of weight

Table 16. Catch data of target, non-target, PSC/ETP, and habitat species for 2017-2021 by the GOA pollock fishery. Blue = target species, green = main associated species, orange = minor associated species, yellow = PSC/ETP species, purple = habitats. Source: observer data

Species	Target, Main Associated, Minor Associated, Other Bycatch, PSC/ETP, or Habitat	Catch (in metric tons)						Percent of Total Average	Percent of Total Average Bycatch
		2017	2018	2019	2020	2021	Five-Year Average		
Pollock	Target	181,157.42	151,768.28	114,676.98	103,632.95	96,868.59	129,620.85	95.68%	NA
Alaska skate	Other bycatch	1.16	0.73	0.00	0.00	0.00	0.38	0.00%	0.01%
Aleutian skate	Other bycatch	0.00	0.00	0.53	1.03	0.46	0.41	0.00%	0.01%
Arrowtooth flounder	Main associated	1,184.69	2,320.17	2,018.70	2,416.79	794.92	1,747.05	1.29%	29.86%
Atka mackerel	Minor associated	33.30	36.78	122.36	0.20	4.09	39.35	0.03%	0.67%
Bairdi Tanner Crab*	PSC (ETP)	3,015	5,374	41,889	19,003	1,618	14,179.79	NA	NA
Big skate	Minor associated	114.59	88.62	66.53	78.28	53.37	80.28	0.06%	1.37%
Bigmouth sculpin	Other bycatch	9.47	0.00	0.07	6.28	0.00	3.16	0.00%	0.05%
Butter sole	Minor associated	16.75	47.93	31.70	23.79	1.92	24.42	0.02%	0.42%
Capelin	Minor associated	0.00	0.00	80.62	54.00	0.00	26.92	0.02%	0.46%
Chinook salmon*	PSC (ETP)	21,392	14,820	20,992	10,867	10,580	15,730.17	NA	NA
Dover sole	Other bycatch	1.61	4.44	4.71	12.11	0.89	4.75	0.00%	0.08%
Dusky rockfish	Minor associated	12.12	38.68	16.44	24.55	38.40	26.04	0.02%	0.45%
English sole	Minor associated	1.39	18.15	14.89	58.53	13.08	21.21	0.02%	0.36%
Eulachon	Other bycatch	0.00	0.00	7.63	22.33	0.00	5.99	0.00%	0.10%

Flathead sole	Main associated	181.35	283.58	197.14	227.06	107.56	199.34	0.15%	3.41%
Giant grenadier	Other bycatch	0.00	0.00	9.32	11.33	9.48	6.02	0.00%	0.10%
Golden King Crab*	ETP	8	5	0	2	0	3.01	NA	NA
Great sculpin	Other bycatch	8.61	8.83	5.33	8.53	0.00	6.26	0.00%	0.11%
Harlequin rockfish	Other bycatch	0.00	0.00	0.00	0.00	3.13	0.63	0.00%	0.01%
Kamchatka flounder	Other bycatch	0.00	0.00	2.67	0.00	0.00	0.54	0.00%	0.01%
Longnose skate	Minor associated	33.12	34.85	20.65	22.39	14.94	25.19	0.02%	0.43%
Misc. fish	Minor associated	18.77	47.83	87.81	115.11	58.47	65.60	0.05%	1.12%
Non-Chinook salmon*	PSC (ETP)	4,413	8,029	5,063	2,162	1,171	4,167.60	NA	NA
Northern rockfish	Other bycatch	5.17	53.31	7.22	0.93	1.88	13.70	0.01%	0.23%
Octopus	Other bycatch	0.09	5.56	8.30	4.41	0.35	3.74	0.00%	0.06%
Opilio Tanner Crab*	PSC (ETP)	0	0	0	0	0	0.07	NA	NA
Other osmerids	Minor associated	0.89	23.69	46.98	6.62	88.75	33.39	0.02%	0.57%
Pacific cod	Main associated	612.04	600.39	811.25	1,011.31	2,917.09	1,190.41	0.88%	20.35%
Pacific halibut	PSC (ETP)	109.10	289.96	187.20	94.96	75.37	151.31	0.11%	NA
Pacific herring	PSC (ETP)	5.41	40.22	64.31	60.38	16.37	37.34	0.03%	NA
Pacific ocean perch	Main associated	1,266.00	1,598.20	1,070.64	1,130.57	734.01	1,159.89	0.86%	19.82%
Rattail grenadier, unidentified	Minor associated	0.00	0.00	37.68	38.55	46.71	24.59	0.02%	0.42%
Red King Crab*	PSC (ETP)	0	0	0	5	3	1.60	NA	NA
Redstripe rockfish	Other bycatch	0.00	0.00	2.41	0.00	0.00	0.48	0.00%	0.01%
Rex sole	Minor associated	67.31	126.11	89.68	100.42	50.16	86.74	0.06%	1.48%
Rock sole	Main associated	231.56	209.09	199.25	66.21	181.09	177.44	0.13%	3.03%
Rougheye rockfish	Minor associated	2.92	9.40	40.72	30.71	39.77	24.70	0.02%	0.42%
Sablefish	Main associated	46.48	317.38	409.24	794.66	48.08	323.17	0.24%	5.52%
Salmon shark	Other bycatch	10.28	3.75	13.69	29.62	42.63	20.00	0.01%	0.34%
Sculpin	Other bycatch	4.64	0.46	0.33	0.27	0.00	1.14	0.00%	0.02%
Sculpin, unidentified	Other bycatch	0.00	2.18	0.07	13.16	0.00	3.08	0.00%	0.05%

Sculpin, unidentified	Other bycatch	0.00	0.00	0.00	0.00	9.34	1.87	0.00%	0.03%
Scypho jellies	Other bycatch	14.48	13.43	0.00	5.48	9.75	8.63	0.01%	0.15%
Sea star	Other bycatch	0.81	43.29	2.50	3.26	0.90	10.15	0.01%	0.17%
Shark, unidentified	Other bycatch	3.61	0.00	0.77	0.35	1.63	1.27	0.00%	0.02%
Shortraker rockfish	Other bycatch	0.52	0.25	6.32	22.85	28.02	11.59	0.01%	0.20%
Skate	Other bycatch	3.46	2.69	2.86	2.90	2.84	2.95	0.00%	0.05%
Sleeper shark	Other bycatch	0.64	7.27	0.00	16.50	25.38	9.96	0.01%	0.17%
Smelt	Minor associated	0.00	0.00	0.00	0.00	240.51	48.10	0.04%	0.82%
Spiny dogfish	Minor associated	49.04	58.10	44.10	49.02	11.72	42.40	0.03%	0.72%
Sponge, unidentified	Habitat	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%
Squid	Other bycatch	15.40	8.83	0.00	0.00	0.00	4.85	0.00%	0.08%
Squid	Main associated	0.00	0.00	47.52	371.73	268.82	137.61	0.10%	2.35%
Starry flounder	Minor associated	107.64	0.97	17.37	2.71	0.24	25.79	0.02%	0.44%
State-managed rockfish	Other bycatch	0.06	1.90	0.00	0.07	0.01	0.41	0.00%	0.01%
Thornyhead rockfish	Other bycatch	3.43	2.58	0.22	0.45	2.28	1.79	0.00%	0.03%
Turbot	Other bycatch	0.00	0.00	5.33	0.00	0.00	1.07	0.00%	0.02%
Yellow Irish lord	Other bycatch	3.13	4.24	4.35	16.62	0.00	5.67	0.00%	0.10%
Yelloweye rockfish	Other bycatch	0.00	0.18	2.15	0.00	0.37	0.54	0.00%	0.01%
Total**		185,339.79	158,125.29	120,488.00	110,590.46	102,814.22	135,471.55		

Notes:
Only species with percent of total average over 0.00% are shown in table.
* Number of individuals instead of metric tons
** Does not include species with individual numbers instead of weight

3.8.2 Habitats

The BSAI and GOA are extremely large areas, making comprehensive habitat mapping difficult. Habitat has been mapped at a level of 5 km^2 grids, and while this level is likely under sampling habitat, the data provide an idea of what is occurring on the seafloor (Figure 17). Figure 18, Figure 19, and Figure 20 show the percentage of area within each grid cell that has been disturbed (2003-2017) for BS, AI, and GOA, respectively. Figure 17 shows a high occurrence of mud and sand and lesser amounts of gravel, cobble, and boulders.

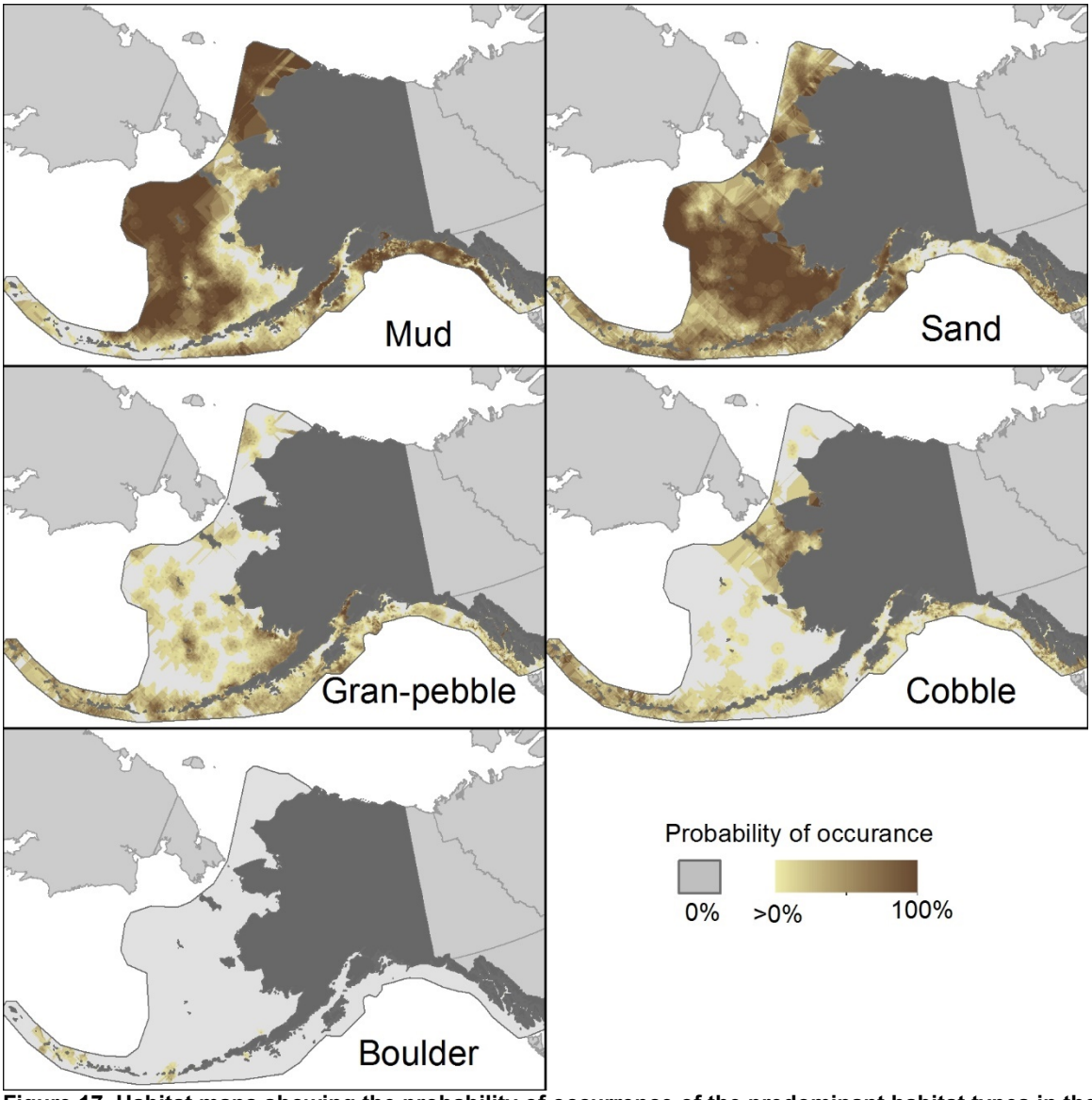

Figure 17. Habitat maps showing the probability of occurrence of the predominant habitat types in the BSAI and GOA. Source: NOAA

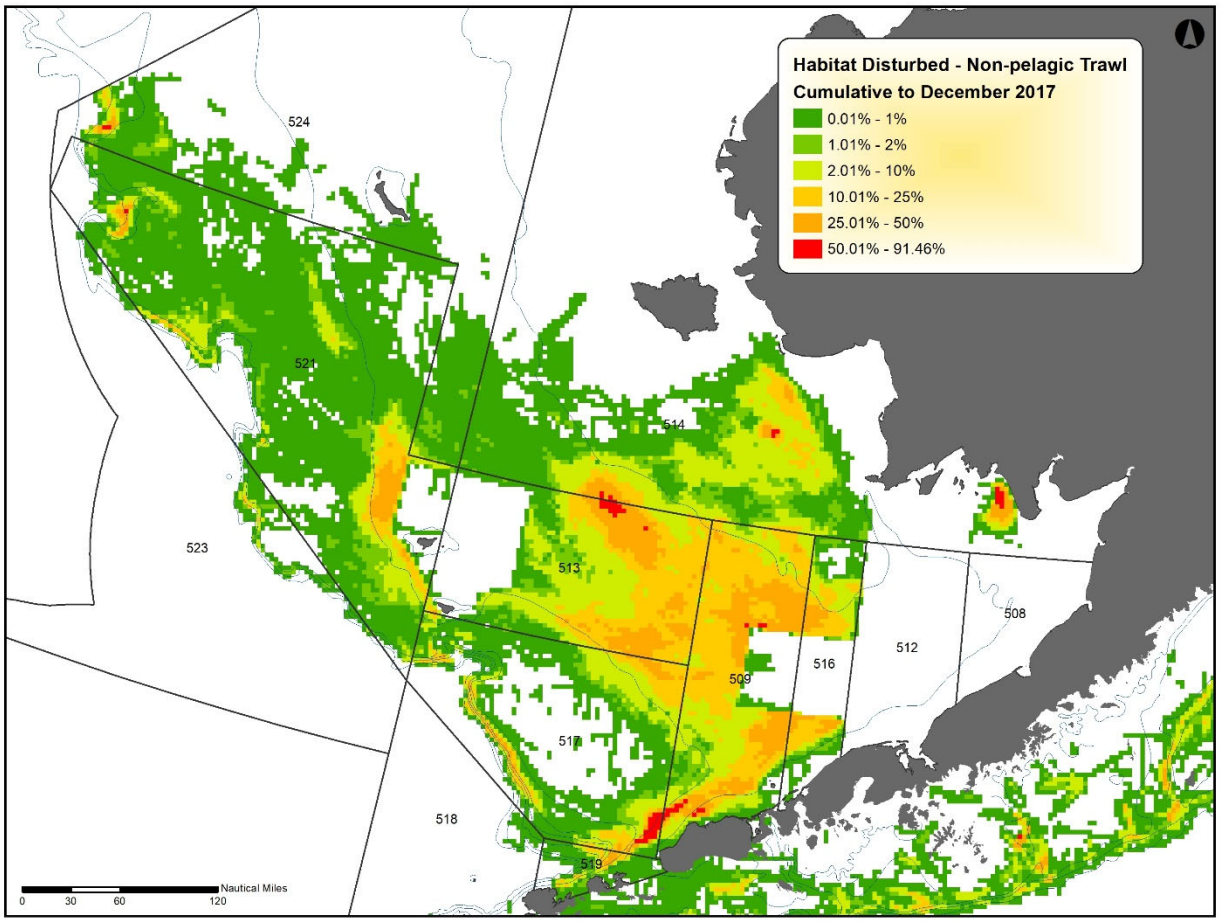

Figure 18. Percentage of area disturbed, 2003-2017, by bottom trawl gear in the BS. Effects are cumulative and consider impact on and recovery of relevant features. Source: NOAA

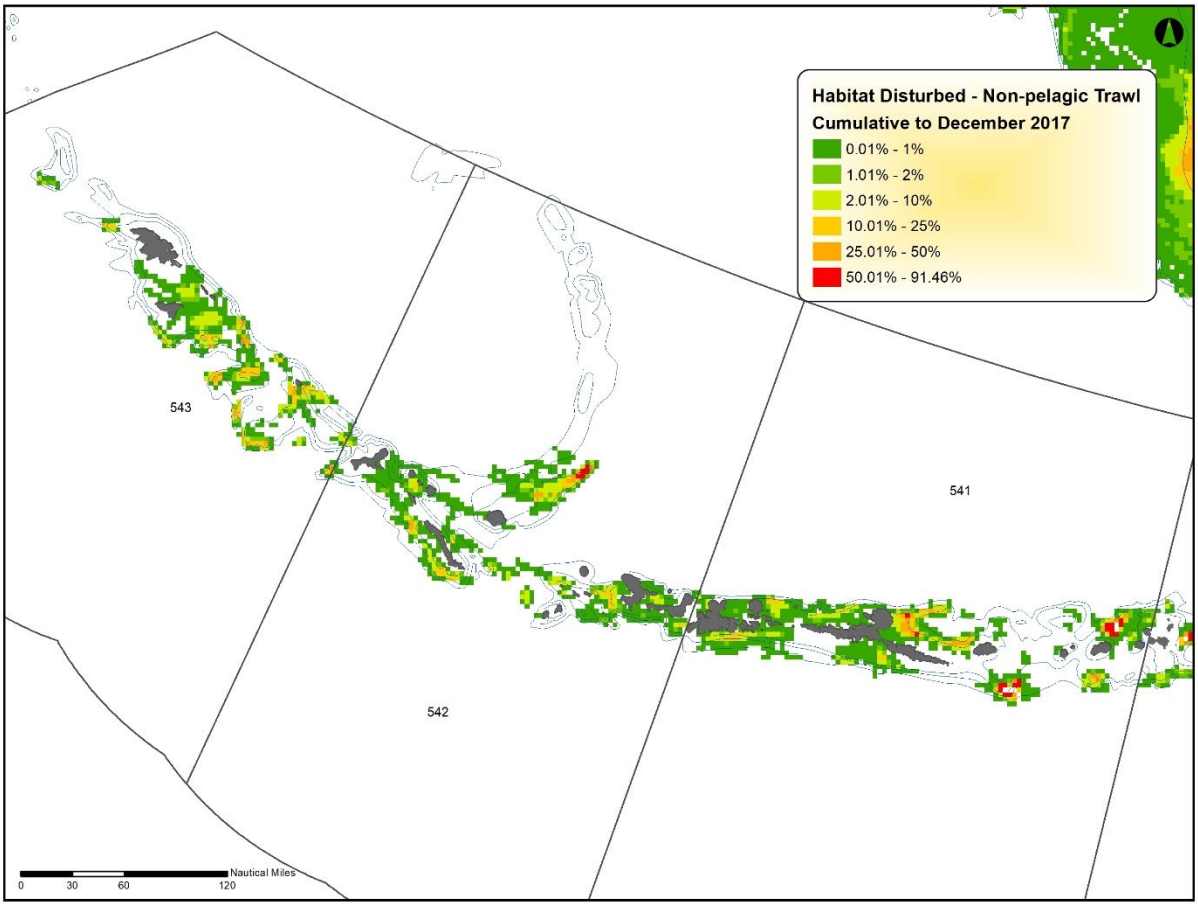

Figure 19. Percentage of area disturbed, 2003-2017, by bottom trawl gear in the AI. Effects are cumulative and consider impact on and recovery of relevant features. Source: NOAA

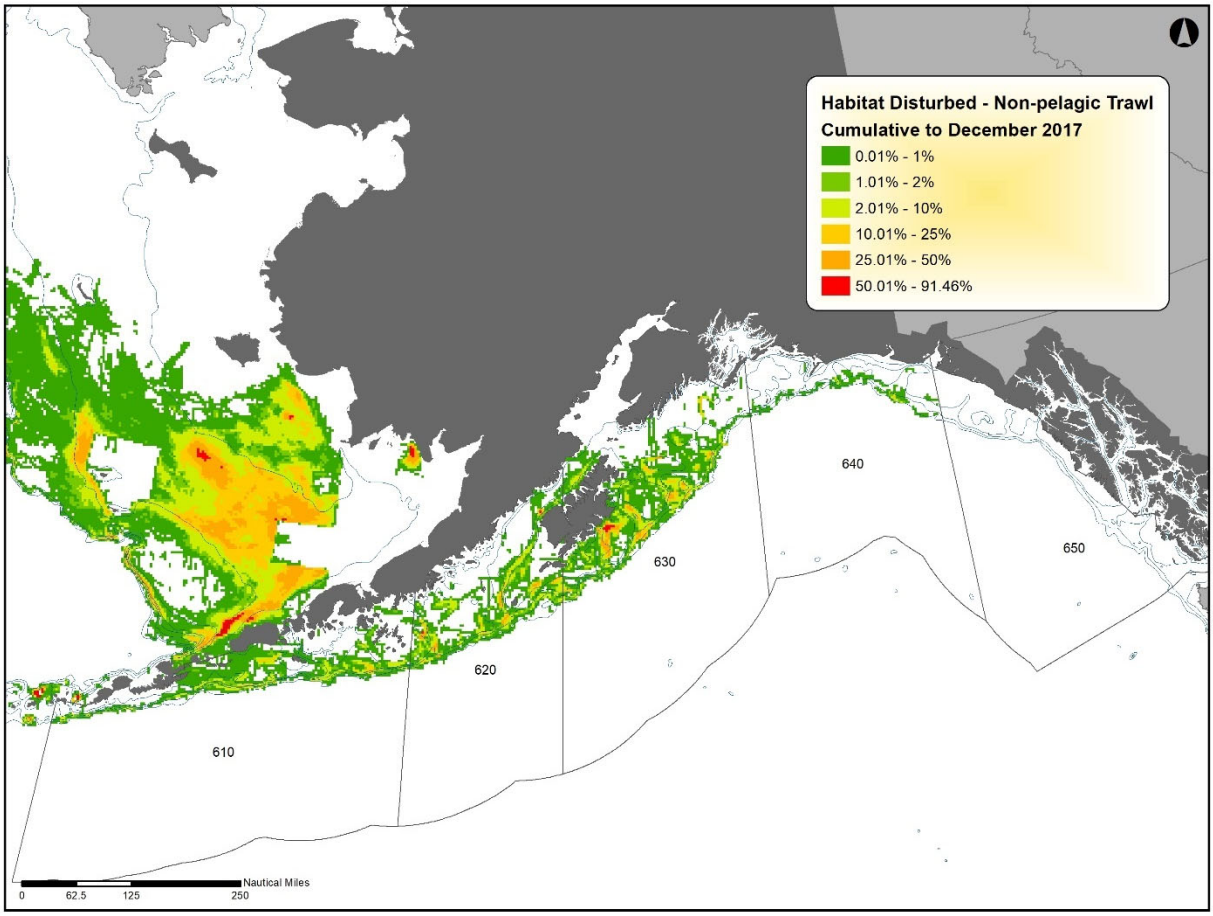

Figure 20. Percentage of area disturbed, 2003-2017, by bottom trawl gear in the GOA. Effects are cumulative and consider impact on and recovery of relevant features. Source: NOAA

3.8.2.1 EBS

The EBS seafloor is a mixture of mud (clay and silt), sand, and gravel with sand and silt being the primary components over most of the seafloor. Sand dominates in waters <60 m deep. The proportions of finer-grade sediments increase with increasing depth and distance from shore. This grading is most noticeable on the southeastern BS continental shelf in Bristol Bay and immediately westward. Generally, nearshore sediments in the east and southeast on the inner shelf (0-50 m depth) are sandy gravel and gravelly sand, giving way to plain sand farther offshore and west. On the middle shelf (50-100 m), sand transitions to muddy sand and sandy mud, continuing over much of the outer shelf (100-200 m) to the start of the continental slope. On the central and northeastern shelf (including Norton Sound), sediment has not been as extensively mapped, and although sand appears dominant, there are areas of silt concentration in shallow nearshore waters and in deep areas near the shelf slope due to the large input of fluvial silt from the Yukon River and northerly current (NPFMC 2018a).

3.8.2.2 AI

The AI is the tip of a submerged volcanic mountain chain that stretches about 2,260 km forming a partial geographic barrier to the exchange of northern Pacific marine waters with EBS waters. The AI continental shelf is narrow compared with the EBS shelf, ranging

in width from about 4 km or less to 42-46 km north to south. The shelf broadens on the eastern portion of the AI arc. Bathymetry changes dramatically over short distance, from the depths of the Aleutian Trench (>7,000 m deep) to sea level. Unlike the soft bottom sediments of the BS, bottom habitats are highly complex, with primarily rough, rocky bottom (rock, boulders, and corals) steep slopes and drop-offs, and few areas of fine sediments. Two distinct bottom-type zones are evident. East of Samalga Pass, the AI rises from shallow continental shelf covered by glacial deposits, whereas west of Samalga, steep rocky slopes to the north and south surround a mostly submerged mountain range resting on the Aleutian ridge (NPFMC 2018a).

3.8.2.3 GOA

The GOA seafloor includes gravel, silty mud, and muddy to sandy gravel, as well as areas of boulders and hardrock. The shelf, between Cape Cleare (148° W) and Cape Fairweather (138° W), is relatively wide (up to 100 km). The dominant shelf sediment is clay silt, which comes primarily from either the Copper River or the Bering and Malaspina glaciers. Sand dominates the nearshore areas. Most of the western GOA shelf (west of Cape Igvak) consist of steep and sharply dissected slopes. The shelf is made up of several banks and reefs with coarse rocky bottoms and patchy bottom sediments. Near Kodiak Island, the shelf is flat with relatively shallow banks cut by transverse troughs of bedrock outcrops and coarsely fragmented sediment interspersed with sandy bottoms (NPFMC 2018b).

3.8.2.4 Vulnerable habitats

Table 15 and Table 16 show catch data for the BSAI pollock and GOA pollock fisheries, respectively. Corals, sea pens and whips, and sponges are caught in the BSAI fishery, and sponges are caught in the GOA fishery. Refer to Key Component D for more details.

3.9 External factors (such as environmental issues) that may affect the fishery and its management

The effects of environmental variation on production of pollock in the BSAI and GOA have been studied extensively in terms of physical oceanography, ecosystem variability, and fish production. NMFS and the regional offices coordinate the production of a vast amount of new environmental and other information expected to improve groundfish fishery management in Alaska. Several ecosystem-wide oceanographic phenomena have been identified. The Pacific Decadal Oscillation, with decadal changes in ‘warm’ and ‘cold’ phases has been correlated with a number of factors, including sea level pressure, precipitation, and salmon landing in the Pacific Ocean (https://www.fisheries.noaa.gov/feature-story/understanding-ocean-changes-and-climate-just-got-harder).

Groundfish species show interannual variability in recruitment that may be related to El Niño Southern Oscillation driven climate variability. Years of strong onshore transport, typical of warm years in the BS, often corresponds with strong recruitment. The extent and timing of the presence of sea ice in the BS also determines the area where cold bottom water temperatures will persist throughout the following spring and summer. This EBS area of cold water, known as the cold pool, varies with the annual extent and duration of the ice pack and can influence fish distributions.

Past conditions have been an unusually warm phase. In 2014-2016, sea surface temperatures were as much as 3° C (about 5.4° F) higher than average, lasted for months, and appeared on large-scale temperature maps as a red-orange mass of warm water many hundreds of miles across (aka ‘the blob’). This appeared to be different from normal patterns of ocean conditions such as the El Niño Southern Oscillation or Pacific Decadal Oscillation (Figure 21). Starting in 2020, sea surface temperatures may be getting closer to normal.

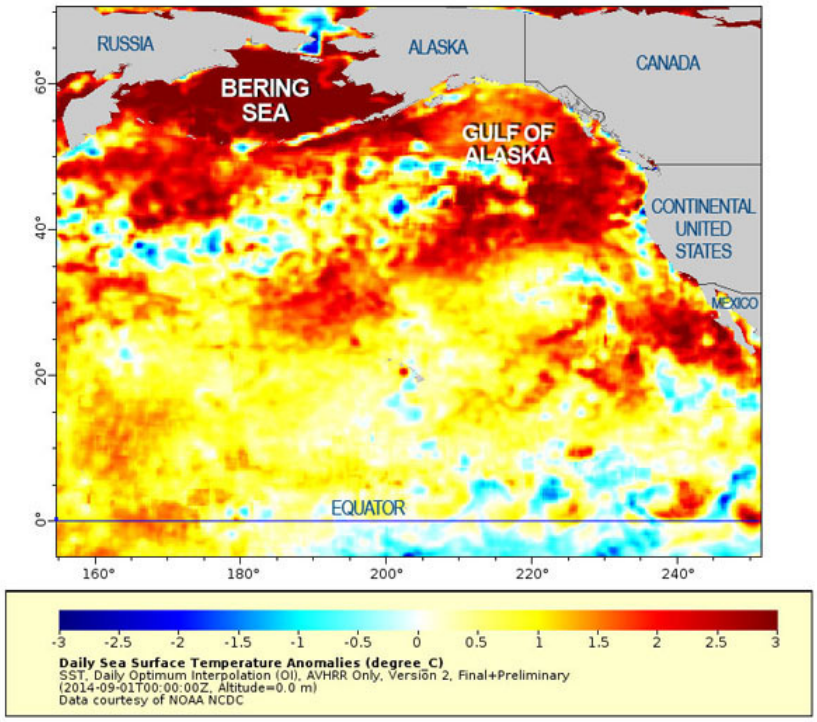

Figure 21. Daily Sea Surface Temperature Anomalies (degree C). Unusually warm temperatures dominate three areas of the North Pacific: the BS, GOA, and an area off Southern California. The darker the red, the further above average the sea surface temperature. Source: https://www.fisheries.noaa.gov/feature-story/unusual-north-pacific-warmth-jostles-marine-food-chain

An unusual physical characteristic of the BS is the annual ice cover. In summer, the ice edge retreats into the Chukchi and Beaufort Seas whereas, in winter, typically much of the shelf is covered. The sea ice affects exchanges with the atmosphere and inhibits the transfer of freshwater and heat. The creation and melting of the sea ice alter the horizontal and vertical density gradients influencing the mixing and transport of nutrients and organisms within the euphotic zone. The ice edge also serves as both source and sink of freshwater that can affect productivity. Sea ice is also important in influencing bottom temperatures. Thus, the extent of sea ice is related to the distribution and abundance of temperature-sensitive bottom-dwelling species. In recent years, there has been an extreme decrease in sea ice, which has likely had an effect on several species' survivability and reproductive success (Siddon and Zador 2018).

4 ASSESSMENT PROCESS

This assessment evaluates the Alaska pollock fishery against the conformance criteria outlined in the RFM's Fishery Standard v2.1, which contains clauses that are categorized into four key components:

- Section A – The Fishery Management System
- Section B – Science and Stock Assessment Activities and the Precautionary Approach
- Section C – Management Measures, Implementation, Monitoring, and Control
- Section D – Serious Impacts of the Fishery on the Ecosystem

Scoring of each clause is based on a series of Evaluation Parameters: Process, Current Status/Appropriateness/Effectiveness, and Evidence Basis. The scoring guidelines, which are used for all clauses, are as follows:

- If all Evaluation Parameters are satisfied, the clause is scored in full conformance.
- If any single Evaluation Parameter is not satisfied, the clause is scored in minor non-conformance.
- If any two Evaluation Parameters are not satisfied, the clause is scored in major non-conformance.
- If any three or more Evaluation Parameters are not satisfied,the clause is scored in critical non-conformance.

The fishery is assigned a confidence rating for each clause, which signifies the confidence of the assessment team that the fishery is demonstrated to be in conformity to the requirements of that clause. Clauses are scored according to the following confidence ratings:

- Low confidence rating (critical non-conformance level) – Information and/or evidence is completely absent or contradictory to whether an element of the fishery complies with the given requirements of a supporting clause. In these cases, a low confidence rating, equivalent to a critical non-conformance, is assigned.
- Medium confidence rating (major non-conformance) – Information and/or evidence is limited. In these cases, major improvement is needed to achieve full conformance, and a medium confidence rating with a major non-conformance is assigned.
- Medium confidence rating (minor non-conformance) – Information and/or evidence is broadly available; however, there are some information gaps. In these cases, minor improvement is needed to achieve full conformance, and a medium confidence rating with a minor non-conformance is assigned.
- High confidence rating (full conformance) – Sufficient information and/or evidence is available to demonstrate full conformance. In these cases, a high confidence rating is assigned.

Any one major non-conformance or three minor non-conformances assigned to any Section will result in a critical non-conformance at the section level. A critical non-conformance for any clause or section will stop the assessment (i.e., the fishery will not reach the next stage, the Peer Review Stage) unless the fishery is able to provide additional information/evidence that demonstrates no critical non-conformance for any clause or section. The assessment will also be stopped prior to the Peer Review Stage if a fishery is assigned four or more major non-conformances or 12 or more minor non-conformances in total. All non-conformances shall be addressed through the issuance of corrective action plans, which are reviewed and accepted by the assessment team, prior to the fishery progressing to the Peer Review Stage.

4.1 Original assessment and previous surveillance audits

The Alaska BSAI and GOA pollock fisheries were first certified under the requirements of the Alaska RFM standard v1.2 on December 6, 2011. The initial certification and four annual surveillance audits were carried out by the certification body Global Trust.

On April 15, 2017, the certificate for this fishery was transferred from Global Trust to DNV GL (now DNV). The certificate transfer and the fourth surveillance audit were carried out by DNV. During June-December 2017, the fishery went through the full reassessment against a newer version of the standard, v1.3. The re-assessment did not result in any changes in the compliance of the fishery with the RFM standard, and no non-conformances were raised. The new certificate was, therefore, issued with the validity date until December 5, 2022.

In January 2021, the fourth surveillance of the recertification took place via an off-site surveillance audit, which was done in conjunction with the reassessment site visit, and the surveillance report was issued on May 27, 2022. Following the results of the fourth surveillance audit, the assessment team concluded that the RFM certificate for this fishery shall remain active until the certificate expiry date of December 5, 2022. Due to extenuating circumstances, DNV requested a certificate extension. The certificate now expires on February 5, 2023.

4.2 Stakeholder input

The reassessment audit for this fishery was publicly announced on December 14, 2021. Due to the ongoing Covid-19 pandemic, an on-site audit was not feasible. Table 17 provides the agenda and list of participants. (Note that the site visit was held in conjunction with the fourth surveillance audit for this fishery and the Alaska Pacific cod fishery, as well as audits for other fisheries against the RFM and MSC Standards.) The assessment team received no written stakeholder input before or during the site visit.

Table 17. Alaska pollock 4th surveillance audit and reassessment site visit agenda and participants

Date	Topic	Attendees	All Times PST
January 18th	RFM/MSC site visit opening meeting with pollock clients	Austin Estabrooks (APA) Julie Bonney (AGDB) Jason Anderson (GFF) Mark Fina (GFF) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	9-10 am
	RFM/MSC site visit opening meeting with Pacific cod client group	Tommy Sheridan (AFDF) Julie Decker (AFDF) Jim Armstrong (FLC) Mark Fina (GFF) Austin Estabrooks (APA) Julie Bonney (AGDB) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	10-11 am
	RFM/MSC site visit meetings for pollock and Pacific cod with AFSC	Jim Ianelli (AFSC; EBS pollock) Steve Barbeaux (AFSC; AI pollock & GOA & EBS Pacific cod) Ingrid Spies (AFSC; AI Pacific cod) Shannon Fitzgerald (AFSC; seabirds) Cole Monnahan (AFSC; GOA pollock) Sandra Lowe (AFSC) Anne Hollowed (AFSC) Tommy Sheridan (AFDF) Julie Decker (AFDF) Jason Anderson (GFF) Kerim Aydin (AFSC; BS ecosystem; available via email) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	11 am-4 pm
January 19th	RFM/MSC site visit meeting with NMFS AKRO Staff	Mary Furuness (AKRO) Steve Whitney (AKRO) Stephanie Warpinski (AKRO) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor)	9-10 am

		Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	
	RFM/MSC site visit meeting with NMFS OLE	Wynn Carney (OLE) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Eileen Ekstrom (ANAB)	10-11 am
	RFM/MSC site visit meeting with NMFS Habitat Division	John Olson (NMFS) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	11 am-12 pm
	RFM/MSC site visit meeting with FMA - Observer Program	Jennifer Ferdinand (FMA) Ruth Christianson (FMA) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	2-3 pm
	RFM/MSC site visit meeting with NPFMC Staff	Dave Witherell (NPFMC) Diana Stram (NPFMC) Diana Evans (NPFMC) Sara Cleaver (NPFMC) John McCracken (NPFMC) Sara Rheinsmith (NPFMC) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	5-6 pm
January 20th	RFM/MSC site visit meeting with USCG	LCDR Jedediah Raskie (USCG) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	9-10 am

	RFM/MSC site visit meeting with ADF&G Staff	Forrest Bowers (ADF&G) Jan Rumble (ADF&G) Mark Stichert (ADF&G) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	10 am-12 pm
	RFM/MSC site visit meeting with BOF Staff	Glenn Haight (BOF) Tommy Sheridan (AFDF) Julie Decker (AFDF) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Erin Wilson (MRAG) Amanda Stern-Pirlot (MRAG) Eileen Ekstrom (ANAB)	2-3 pm
January 21st	RFM/MSC site visit closing meeting with pollock fishery clients	Austin Estabrooks (APA) Chris Barrows (PSPA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Eileen Ekstrom (ANAB)	9-10 am
	RFM/MSC site visit closing meeting with Pacific cod client group	Tommy Sheridan (AFDF) Julie Decker (AFDF) Jim Armstrong (FLC) Mark Fina (GFF) Jason Anderson (GFF) Chris Barrows (PSPA) Austin Estabrooks (APA) Giuseppe Scarcella (DNV and MRAG subcontractor) Paul Knapman (DNV subcontractor) Jodi Bostrom (DNV) Erin Wilson (MRAG) Eileen Ekstrom (ANAB)	10-11 am

5 ASSESSMENT OUTCOME / SCORING OF THE FUNDAMENTAL CLAUSES

According to the RFM Standard Version 2.1, the following fisheries management issues would cause a fishery to fail assessment:

- Dynamiting, poisoning, and other comparable destructive fishing practices.
- Significant IUU fishing activities in the country jurisdiction.
- Shark finning (i.e., removal and retention of shark fins while the remainder of the shark is discarded in the ocean).
- Slavery and slave labor on board fishing vessels.
- Any significant lack of compliance with the requirements of an international fisheries agreement to which the United States is signatory. A fishery will have to be formally cited by the international governing body that has competence with the international treaty in question and that the United States has been notified of that citation of non-compliance.

There is no evidence that the fishery under assessment has undertaken such practices or has been non-compliant. Further, Table 18 shows the scores for each supporting clause for the Alaska pollock fishery.

Table 18. Scoring table

Key Component	Fundamental Clause	Supporting Clause	Applicable?	Score	Confidence Rating	Conformance Level	NC Number
A – Fisheries Management System	1	1.1	Yes	10	High	Full	
		1.2	Yes	10	High	Full	
		1.2.1	Yes	10	High	Full	
		1.3	Yes	10	High	Full	
		1.3.1	Yes	10	High	Full	
		1.4	Yes	10	High	Full	
		1.4.1	Yes	10	High	Full	
		1.5	Yes	10	High	Full	
		1.6	Yes	10	High	Full	
		1.6.1	No	NA	NA	NA	
		1.7	Yes	10	High	Full	
		1.8	Yes	10	High	Full	
		1.9	No	NA	NA	NA	
B – Science, Stock Assessment Activities, and the Precautionary Approach	2	2.1	Yes	10	High	Full	
		2.1.1	Yes	10	High	Full	
		2.1.2	Yes	10	High	Full	
		2.2	Yes	10	High	Full	
		2.3	Yes	10	High	Full	
		2.4	Yes	10	High	Full	
		2.5	Yes	10	High	Full	
		2.6	Yes	10	High	Full	
		2.7	Yes	10	High	Full	
	3	3.1	Yes	7	Medium	Minor NC	1
		3.1.1	Yes	10	High	Full	
		3.1.2	Yes	10	High	Full	
		3.1.3	Yes	10	High	Full	
		3.2	NA	NA	NA	NA	
		3.2.1	Yes	10	High	Full	
		3.2.2	Yes	10	High	Full	
		3.2.3	Yes	10	High	Full	
		3.2.4	Yes	10	High	Full	
	4	4.1	Yes	10	High	Full	
		4.1.1	Yes	10	High	Full	

		4.1.2	Yes	10	High	Full	
		4.2	Yes	10	High	Full	
		4.2.1	Yes	10	High	Full	
		4.3	Yes	10	High	Full	
		4.4	Yes	10	High	Full	
		4.5	Yes	10	High	Full	
		4.6	Yes	10	High	Full	
		4.7	Yes	10	High	Full	
		4.8	Yes	10	High	Full	
		4.9	No	NA	NA	NA	
		4.10	No	NA	NA	NA	
		4.11	No	NA	NA	NA	
	5	5.1	Yes	10	High	Full	
		5.1.1	Yes	10	High	Full	
		5.1.2	Yes	10	High	Full	
		5.2	Yes	10	High	Full	
		5.3	Yes	10	High	Full	
		5.4	Yes	10	High	Full	
		5.5	Yes	10	High	Full	
	6	6.1	Yes	10	High	Full	
		6.2	Yes	10	High	Full	
		6.3	Yes	10	High	Full	
		6.4	Yes	10	High	Full	
		6.5	Yes	10	High	Full	
	7	7.1	Yes	10	High	Full	
		7.1.1	Yes	10	High	Full	
		7.1.2	Yes	10	High	Full	
		7.2	No	NA	NA	NA	
C – Management Measures, Implementation, Monitoring, and Control	8	8.1	Yes	10	High	Full	
		8.1.1	Yes	10	High	Full	
		8.1.2	Yes	10	High	Full	
		8.2	Yes	10	High	Full	
		8.3	Yes	10	High	Full	
		8.4	Yes	10	High	Full	
		8.4.1	Yes	10	High	Full	
		8.5	Yes	10	High	Full	
		8.5.1	Yes	10	High	Full	
		8.6	Yes	10	High	Full	
		8.7	Yes	10	High	Full	
		8.8	Yes	10	High	Full	
		8.9	Yes	10	High	Full	
		8.10	No	NA	NA	NA	
		8.11	Yes	10	High	Full	
		8.12	Yes	10	High	Full	
		8.13	No	NA	NA	NA	
	9	9.1	Yes	10	High	Full	
		9.2	Yes	10	High	Full	
		9.3	Yes	10	High	Full	

	10	10.1	Yes	10	High	Full	
		10.2	Yes	10	High	Full	
		10.3	No	NA	NA	NA	
		10.3.1	No	NA	NA	NA	
		10.4	No	NA	NA	NA	
		10.4.1	No	NA	NA	NA	
	11	11.1	Yes	10	High	Full	
		11.2	Yes	10	High	Full	
		11.3	Yes	10	High	Full	
		11.4	No	NA	NA	NA	
D – Serious Impacts of the Fishery on the Ecosystem	12	12.1	Yes	10	High	Full	
		12.2	No	NA	NA	NA	
		12.2.1	Yes	10	High	Full	
		12.2.2	Yes	10	High	Full	
		12.2.3	Yes	10	High	Full	
		12.2.4	Yes	10	High	Full	
		12.2.5	Yes	10	High	Full	
		12.2.6	Yes	10	High	Full	
		12.2.7	Yes	10	High	Full	
		12.2.8	Yes	10	High	Full	
		12.2.9	Yes	10	High	Full	
		12.2.10	Yes	10	High	Full	
		12.2.11	Yes	10	High	Full	
		12.3	Yes	10	High	Full	
		12.4	Yes	10	High	Full	
		12.5	Yes	10	High	Full	
		12.6	Yes	10	High	Full	
		12.7	Yes	10	High	Full	
	13	13.1	No	NA	NA	NA	
		13.1.1	No	NA	NA	NA	
		13.2	No	NA	NA	NA	
		13.2.1	No	NA	NA	NA	
		13.3	No	NA	NA	NA	
		13.4	No	NA	NA	NA	
		13.5	No	NA	NA	NA	
		13.6	No	NA	NA	NA	
		13.7	No	NA	NA	NA	
		13.7.1	No	NA	NA	NA	
		13.7.2	No	NA	NA	NA	
		13.7.3	No	NA	NA	NA	
		13.8	No	NA	NA	NA	
		13.9	No	NA	NA	NA	
		13.10	No	NA	NA	NA	
		13.11	No	NA	NA	NA	
		13.12	No	NA	NA	NA	
		13.13	No	NA	NA	NA	

A. The Fisheries Management System

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

FAO CCRF (1995) 7.1.3, 7.1.4, 7.1.9, 7.3.1, 7.3.2, 7.3.4, 7.6.8, 7.7.1, 10.3.1
FAO Eco (2009) 28
FAO Eco (2011) 35, 37.3

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

FAO CCRF (1995) 7.7.1
FAO Eco (2009) 28
FAO Eco (2011) 35

Evaluation Parameters

Process: *Management agencies are physically and legally established at international, State and l levels.*

Current Status: *The output of the management organization(s) is in line with fishery resource management needs. Examples may include rule making, scientific research, stock and ecosystem assessments, implementation of rules and regulations, and enforcement activities.*

Appropriateness/Effectiveness: *The management framework is appropriate for managing the resource. For example, the larger the exploitation, vulnerability, or risks of a fish stock, the more work and precision (assessment of the resource ensuring the risks related to overfishing and equivalent negative effects) shall be focused in managing the resource. This shall be done in compliance with legislative and regulatory requirements at the local, national, and international level, including the requirements of any regional fisheries management agreement. The management system shall not be subject to continual unresolved or repeated disputes or political instability.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that an effective legal and administrative framework established at the local and national level is appropriate for fishery resource conservation and management. In addition, 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. Examples may include fishery management plans or other relevant information.*

Evaluation (per parameter)

Process:
The MSA (2007) is the primary law governing marine fisheries management in US federal waters. The MSA, sets 10 National Standards for fishery conservation and management (16 U.S.C. § 1851).

NMFS implements the MSA. NMFS is an office of the NOAA within the Department of Commerce is also referred to as NOAA Fisheries.

For the Alaska region, NMFS have offices in Juneau, Anchorage, Dutch Harbor and Kodiak. They also have the following research laboratories and facilities: AFSC, AFSC Auke Bay Laboratories (Juneau), AFSC Kodiak Laboratory, Auke Bay Marine Station (Juneau), Subport Dock Facility (Juneau), Little Port Walter Marine Station (Sitka), St. George Island Field Station and St Paul Island Field Station. NMFS enforcement offices are in Juneau (Alaska Headquarters), Anchorage, Dutch Harbor, Kodiak, Homer, Ketchikan, Petersburg, Seward, and Sitka.

The Council is one of eight regional councils established by the MSA to manage fisheries in the U.S. EEZ. The Council is authorized to prepare and submit to the Secretary of Commerce for approval, FMPs, and any necessary amendments for each fishery under its

authority that requires conservation and management actions. The Council primarily manages groundfish in the BSAI and GOA, targeting cod, pollock, flatfish, mackerel, sablefish, and rockfish species. The Council offices are in Anchorage.

ADFG is the state department responsible for managing fish resources within state waters (0-3 nm). The basis of natural resource management, including fish and fisheries is enshrined in Article VIII of the state constitution. The Department's BOF is established under Alaska Statute 16.05.221 for the purposes of the conservation and development of the fisheries resources of the state. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources. The board is charged with making allocative decisions, and the department is responsible for management based on those decisions.

The BOF has the authority to adopt regulations described in Alaska Statute 16.05.251 including: establishing open and closed seasons and areas for taking fish; setting quotas, bag limits, harvest levels and limitations for taking fish; and establishing the methods and means for the taking of fish. The regulations the BOF has authority over are 5 AAC Chapters 1-77.

The ADFG consists of the Office of the Commissioner, six divisions, a Boards Support Section, and two associate entities. The six divisions are Commercial Fisheries, Sport Fish, Wildlife Conservation, Habitat, Subsistence, and Administrative Services. The two associated entities are: the Commercial Fisheries Entry Commission and the Exxon Valdez Oil Spill Trustee Council.

ADFG has 35 offices throughout Alaska. The Headquarters are in Juneau.

Pollock are also found in international waters where no country has single jurisdiction. The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') is responsible for the conservation, management, and optimum utilization of pollock resources in this high-seas area of the Bering Sea. Signatories to the Convention (China, Japan, Korea, Poland, Russia, and the United States) have maintained a moratorium on commercial pollock fishing in the Convention Area since 1993 in an effort to allow the stock to rebuild. The Central Bering Sea Fisheries Enforcement Act prohibits vessels and nationals of the US from conducting fishing operations in the Central Bering Sea, except where such fishing operations are conducted in accordance with an international fishery agreement to which the US is a signatory. The USCG undertake aerial surveillance patrols and, if necessary, vessel patrols within this area.

Current Status:
The Council annually prepares and submits to the Secretary of Commerce for approval, FMPs, and any necessary amendments for each fishery under its authority that requires conservation and management actions. The Council primarily manages groundfish in the BSAI (NPFMC 2020a) and GOA (NPFMC 2020b), targeting cod, pollock, flatfish, mackerel, sablefish, and rockfish species.

The Council recommends regulations to govern the directed pollock fisheries in the Alaska EEZ. Council management measures for pollock include seasonal (i.e., season A and B) and spatial allocation of TAC, time, and area restrictions (i.e., protected / conservation areas), bycatch reduction programs, PSC limits, reporting and observer requirements (NPFMC 2020a, b). In 1992, the Council created the Western Alaska CDQ Program, to provide western Alaska communities an opportunity to participate in the BSAI fisheries. The CDQ Program allocates a percentage of all BSAI quotas for groundfish, prohibited species, halibut, and crab to eligible communities.

NMFS is charged with carrying out the federal mandates of the U.S. Department of Commerce with regard to commercial fisheries such as approving and implementing FMPs and FMP amendments recommended by the Council. The NMFS Alaska Regional Office oversees fisheries in federal waters (3-200 nm).

The NMFS's OLE partners the USCG in the monitoring, control, and enforcement of fisheries regulations.

The OLE protects marine wildlife and habitat by enforcing domestic laws (e.g., Federal Fisheries Regulations for Fisheries within the EEZ [50 CFR 679]) and international agreements (e.g., combating IUU fishing through the Joint Statement on Enhanced Fisheries Cooperation between the U.S. and Russia) in line with the UN agreement to promote Compliance with international Conservation and Management Measures by Fishing Vessels on the High Seas, which includes monitoring for fishing activity in the Donut Hole.

The USCG objectives are to prevent encroachment into the U.S. EEZ, ensure compliance with domestic fisheries regulations, ensure compliance with international agreements and high seas fishing regulations. The 17th Coast Guard District covers the Alaska EEZ and is responsible for the largest amount of coastline and one of the largest areas of responsibility within the USCG. If the USCG detects a fisheries infringement, they gather evidence and hand over the investigation to the OLE.

The Observer Program is an important component of the monitoring of the pollock fishery. The program is the main data gathering program for all biological and fishery data that feed into pollock stock assessment and management. While observers are not directly part of the federal MCS program they are required to report infringements. OLE and USCG officers conduct de-briefing interviews with observers, checking on vessels fishing practices and the conduct of the crew.

As outlined in the current groundfish FMPs for BSAI and GOA (NPFMC 2020a, b), scientists from the AFSC, ADFG, other agencies, and universities prepare a SAFE report annually. In addition to stock survey, stock assessment reports and biological studies related to the pollock fisheries, Guided by MSA standards, and other legal requirements, the NMFS also has a well-established institutional framework for research and stock assessment developed within the AFSC. The AFSC conducts annual bottom trawl surveys and biennial acoustic trawl surveys to assess pollock abundance in the Eastern Bering Sea. In the GOA, the AFSC conducts biennial trawl surveys to assess pollock abundance and a yearly Shelikof Strait Echo Integration Trawl Survey. In addition to biological studies, stock survey and stock assessment reports. Furthermore, the biological and oceanographic dynamics of the Alaska region are monitored to detect trends and potential sources of problems, such as overfishing or fishery-induced declines in species not targeted by commercial fisheries.

State waters are fished under State of Alaska commercial fisheries regulations. The General Commercial Fisheries Regulations establishes the basic regulations, i.e., those that give the ADFG and BOF the powers to regulate and manage the state fishery resource and describe the extent of their regulatory powers. The ADFG and the BOF manage the PWS pollock fishery using a GHL strategy and supporting regulations. The ADFG has established a PWS pollock trawl fishery management plan to reduce potential impacts on the endangered population of Steller sea lions by geographically apportioning the catch. Parallel fisheries (where state allows federal species TAC to be harvested in 0-3 nm waters) for pollock take place in state waters around Kodiak Island, in the Chignik Area and along the South Alaska Peninsula. The state can adopt regulations similar to those in place for the Federal fishery if those regulations are approved by the BOF and meet state statute. Enforcement of state waters regulations is provided by the Marine Enforcement Section of the AWT. AWT conduct at-sea and shore-based inspections and collate and present evidence of breeches in regulations.

At an international level, Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') meet regularly to share and review scientific data, agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery. To date, the stock has shown limited recovery and remains in a rebuilding state. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

Appropriateness/Effectiveness:
The Alaska pollock fisheries are the highest volume fisheries in the U.S. The stock assessments are state-of-the-art, single species models that take account of all sources of fishing mortality on the pollock stocks. Considerable resources in the form of stock assessment, ecosystem monitoring and management expertise and capacity; management organizations and structures (e.g., NMFS Alaska region, the Council, OLE, USCG, the Observer Program) are dedicated to the main fisheries in Alaska federal waters. National legislation and the regulatory process by which NPFMC and NMFS are directed and follow, enable the management of the resource at a regional and more localized level. The adaptive and consultative management approach adopted by the Council actively promotes stakeholder participation. The NOAA Office of General Council reviews any proposed management action to assure compliance with the MSA. International obligations (e.g., combating IUU), and the enforcement of federal regulations are upheld by the federal departments such as USCG and OLE. The ability to enforce relevant rules and regulations is demonstrated by extensive patrols showing very low violation rates.

Within state waters, the pollock fishery is undertaken on a much smaller scale and supported by area specific stock assessment surveys as well as shared information from federal assessments. Technical expertise is available in-house and supported through the participation in and with groups established by the Council. The BOF provides a consultative management approach that offers and takes account of stakeholder input. The AWT input into the development of regulations and are responsible for their enforcement at-sea and ashore.

At an international level, information on the pollock resource in the Donut Hole continues to be shared. The consequence of the Russian / Ukraine war and the potential impact that has on cooperation is unclear at this moment and will need to be reviewed at future audits.

During the site visit no evidence was found or provided to indicate the management system is subject to continual unresolved or repeated disputes or political instability.

It is considered that, in combination, the federal, state, and international management framework for the Alaska pollock fisheries is appropriate for managing the resource.

Evidence Basis:
The respective websites for, NMFS (NOAA fisheries), the Council, and ADFG and annual FMPs for BSAI (NPFMC 2020a) and GOA (NPFMC 2020b).

References:

ADFG. 2022c. 2020-2021 Statewide General Commercial Fishing Regulations https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2020_2021_cf_groundfish_regs.pdf
.
Donut Hole Conference, 2020. Final Report of the 25th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, December 2020.
NOAA 2013. Joint Statement on Enhanced Fisheries Cooperation between the US and Russia https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia.
NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.
US Federal Register at 50 CFR Part 600 subpart D https://www.law.cornell.edu/cfr/text/50/part-600/subpart-D.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

1.2 Management measures shall consider (1) stock status (i.e., overfished, biomass) and genetic diversity (stock structure) over its entire area of distribution, and (2) other biological characteristics of the fish stock (stock) including age of maturity and reproductive potential.

FAO Eco (2009) 30.3
FAO Eco (2011) 37.3

Evaluation Parameters

Note on consideration of biological unity and other biological characteristics: *Biological characteristics shall be interpreted as relating to the stability or resilience of the stock—i.e., its ability to recover from or resist a shock or disturbance, such as the impact of a fishery. The management system must consider the relative ability of the stock to recover from or resist potential adverse impacts. Characteristics considered shall include growth, fecundity, reproduction, lifespan, spawning cycle, population dynamics, impact of gear type, and essential habitat(s) needs and availability. Where life cycle and other biological characteristics are unknown, the management system shall ensure these uncertainties are factored into assessment and managing practices, as per the*

precautionary approach. Please note that for salmon fisheries, established goals take into account each stock over its entire area of distribution, because escapement is the net result of all factors, which have influenced each stock during its juvenile stages in freshwater, its oceanic migration, and the fisheries to which it is subjected.

Current Status/Appropriateness: *If a stock is subject to two or more jurisdictions (nations, states, etc.) (either by distribution or migration), then exploitation by all jurisdictions shall be considered when defining exploitation levels and determining stock status to avoid overfishing/depletion of the resource. The scoring of this parameter shall consider that significant migration may take a species outside the jurisdiction of the managing agency (e.g., for significant feeding or ontogenetic migration).*

Effectiveness: *Managers shall have an understanding of stock structure and composition as these relate to stock resilience over its entire distribution area. The underlying objective is to preserve genetic diversity between and within species and avoid localized depletions (overall affecting the stock contributing to its resilience and stability). This assessment shall consider, when appropriate, demographic independence of populations or stocks (i.e., if a component stock of a species is demographically independent from another because it is genetically different, has significant difference in age structure, or if there is insignificant exchange among groups due to distance, environmental barriers, or other reasons).*

Effectiveness: *The stock may spend a portion of its life (migration for feeding, growth, or reproduction) in both fresh and saltwater, in international waters, or in another jurisdiction and may suffer mortality or other pressures. These must be accounted for when assessing stock status.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that management measures consider (1) the stock status over its entire area of distribution, (2) the area through which the stock migrates during its life cycle, and (3) other biological characteristics of the stock. Examples may include the presence of genetic studies, age structure data, stock assessments or other relevant information.*

Evaluation (per parameter)

Current Status/Appropriateness:
Pollock are widely distributed in the North Pacific and are particularly prevalent in the Bering Sea. The biological characteristics of pollock are well known. There are numerous sources of information on pollock biology, including the SAFE reports prepared annually by scientists from the AFSC, ADFG, and other agencies and universities. The AFSC website provides summaries for pollock biology and relevant studies under various headings.

In the GOA, pollock are considered to be a single stock separate from those in the BSAI. The separation of pollock in Alaska waters into BSAI and GOA stocks is supported by analysis of larval drift patterns from spawning locations, as well as genetic/DNA (Bailey et al. 1999 Mulligan et al. 1992, Grant and Utter 1980).

The biological unity and other biological characteristics of the stock are considered within the management system. In the U.S. BS, three pollock stocks have been identified and are managed within the framework of the Council's BSAI groundfish FMP (NPFMC 2020a). EBS pollock occupying the eastern BS shelf from Unimak Pass to the U.S./Russia Convention line; AI pollock encompassing the pollock in the AI shelf region from 170°W to the U.S./Russia Convention line; and the Central Bering Sea-Bogoslof Island pollock. These three management stocks likely have some degree of exchange. The Bogoslof stock is thought to form a distinct spawning aggregation that has some connection with the deep-water region of the Central Bering Sea/Aleutian Basin.

There is seasonal and inter-annual variation in both area and patchiness of pollock distribution, along with general preference for waters between 2° and 3° C. In late winter/early spring, pollock form very large spawning aggregations in both the EBS and GOA Regions, in areas such as Shelikof Strait (west side of Kodiak Island) and northwest of Unimak Island. In summer, large aggregations have been found in GOA areas such as the east side of Kodiak Island, and nearshore along the southern Alaska Peninsula, and in EBS areas such as west of the Pribilof Islands and north of Unimak Island. Pollock migrate seasonally between spawning and feeding areas, and fishing is divided into seasons in the BSAI and GOA management areas.

The three management stocks of pollock within the BSAI area occur largely within the Alaska EEZ, but some migration of pollock to the northwest results in a very small proportion of the EBS pollock stock being found in the Cape Navarin area of Russia. Acoustic research surveys which covered both U.S. and Russian waters, estimated that the Alaska EEZ contained more than 99% of the pollock stock. In the Russian portion of the BS, two pollock stocks are identified, a western Bering Sea stock and a northern stock. There is some indication (based on NMFS surveys) that the fish in the northern region may be a mixture of western and EBS pollock.

The U.S. and Russia cooperate through a bilateral Intergovernmental Consultative Committee (ICC) fisheries forum, established following the signing of the U.S.- Soviet Comprehensive Fisheries Agreement in 1988. The objectives of the Agreement include maintaining a mutually beneficial and equitable fisheries relationship through cooperative scientific research and exchanges. Cooperation has included US and Russian scientist undertaking occasional acoustic surveys with U.S. vessels in Russian waters.

Pollock are also found in international waters where no country has single jurisdiction. The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') is responsible for the conservation, management, and optimum utilization of pollock resources in the high seas area of the Bering Sea. The pollock resource in the Convention Area declined to very low levels by the early 1990s. Member states (China, Japan, Korea, Poland, Russia, and the United States) have maintained a moratorium on commercial pollock fishing in the Convention Area since 1993 in an effort to allow the stock to rebuild. Despite the moratorium, pollock abundance in international areas remains at low levels.

Within PWS (i.e., state waters), there is a directed pollock fishery, it is the only pollock fishery that is prosecuted entirely inside state waters. The ADFG have a pollock management plan – PWS Pollock Pelagic Trawl Management Plan (5 ACC 28.263) - which is based on NMFS/AFSC trawl surveys and setting their own GHL as a percentage of the federal ABC for GOA pollock.

Effectiveness:
The EBS and GOA pollock stocks are assessed independently using statistical age structured assessment models and take into account all sources of fishing mortality and are based on complete catch reporting systems including extensive observer data. Catch at age models synthesize data on biomass and age composition from the fishery, bottom trawl, and echo integrated trawl surveys conducted by the AFSC to estimate the numbers of pollock at age. Each year several assessment models are developed and evaluated by scientists using alternative life history and fishery and survey selectivity assumptions. Additionally, for the EBS and GOA models exploring stock status in relation to changing environmental conditions have also been developed and evaluated. Each model uses information on the status of the stock and potential effects of current management practices. The stock assessments consider the migration and possible removal of pollock in Russian waters using sensitivity analyses and treat this component as additional mortality.

Evidence Basis:
The separation of pollock in Alaska waters into BSAI and GOA stocks is supported by analysis of larval drift patterns from spawning locations, as well as genetic/DNA (Bailey et al. 1999, Mulligan et al. 1992, Grant and Utter 1980).

The NMFS/AFSC website has detailed information on Alaskan pollock research and stock assessment. The SAFE reports are compiled annually by the BSAI and GOA Groundfish Plan Teams, which are appointed by the Council. As outlined in the current Council groundfish FMPs for BSAI and GOA (NPFMC 2020a, b) scientists from the AFSC, ADFG, other agencies, and universities prepare a SAFE report annually. Results of the U.S. acoustic surveys for pollock in Russian waters are considered as part of the annual stock assessment process as appropriate.

Data on catches of Alaskan pollock are maintained and updated by NMFS and are available on their website. The SAFE documents for the four federal-waters pollock stock components contain extensive details on the catch and other data time series used in the stock assessments, including the catches from the PWS pollock fishery.

References:

ADFG Prince William Sound pollock management plan (5 ACC 28.263). http://www.touchngo.com/lglcntr/akstats/aac/title05/chapter028/section263.htm.

Bailey, K. M., Quinn, T. J., Bentzen, P., & Grant, W. S. (1999). Population structure and dynamics of walleye pollock, Theragra chalcogramma. Advances in Marine Biology, 37, 179–255.

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea. https://www.afsc.noaa.gov/refm/cbs/convention_description.htm.

Grant, W.S. and Utter, F.M. 1980. Biochemical genetic variation in walleye pollock, Theragra chalcogramma: population structure in the southeastern Bering Sea and the Gulf of Alaska. Canadian Journal of Fisheries and Aquatic Sciences, 37, 1093-1100.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones; D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Mulligan, T.J., Chapman, R.W., and Brown, B.L. 1992. Mitochondrial DNA analysis of walleye pollock, Theragra chalcogramma, from the Eastern Bering Sea and Shelikof Strait, Gulf of Alaska. Canadian Journal of Fisheries and Aquatic Sciences, 49, 319-326.

NOAA 2013. Joint Statement on Enhanced Fisheries Cooperation between the US and Russia https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia

NOAA. 2022a. Fisheries Catch and Landings Reports in Alaska. https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports-alaska.

NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.

NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

U.S.-Soviet Comprehensive Fisheries Agreement in 1988. http://www.fisheries.noaa.gov/ia/agreements/bilateral_arrangements/russia/us_russia.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.3.1

Evaluation Parameters

Note: *Taken into account means included and accounted in the basis of management decisions. Previously agreed measures include local or national laws or regulations, and also any management measures put into place by regional fisheries management organizations. Previous decisions can be reneged, altered, updated, or maintained intact, but must be included in the decision-making process. If previously agreed measures are reneged, altered, or updated, there shall be a scientific basis for the changes. Not taken into account may refer to management measures that are ignored, although they may still be legally binding in the fishery.*

Process: *There is a process or system that allows the continuity and updating of previously agreed and implemented management measures. Examples may include a specific review process or management plan where these measures can be clearly identified and continued implementation and updating can be carried out.*

Current Status/Appropriateness/Effectiveness: *Previously agreed management measures established and applied in the same region are included and part of current management decisions. Examples may include international or other agreements not honored by the management system or a management agency. The management system is effectively continuing implementation of agreed management measures.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that previously agreed management measures established and applied in the same region are taken into account by management.*

Evaluation (per parameter)

Process:
The Council commits to periodically review all critical components of the FMP and maintain a continuing review of the fisheries managed under their FMPs; annually review objectives in the management policy statement; and, conduct a complete review of EFH once every five years and, in between, will solicit proposals on Habitat Areas of Particular Concern (HAPCs) and/or conservation and enhancement measures to minimize potential adverse effects from fishing (NPFMC 2020a, b).

The Council and BOF hold public meetings (the Council meets five times each year, usually in February, April, June, October, and December; the BOF meetings generally occur from October through March, four to six times per year). These meetings take place in various locations throughout Alaska. The process allows for continuous review and improvement (where needed) of fishery management measures where all fishery stakeholders routinely participate, interact and input within the management process of the pollock fishery. In this way, previously agreed measures are reviewed.

Current Status/Appropriateness/Effectiveness:
The Alaska pollock fishery management system (NMFS/NPFMC and ADFG/BOF) routinely takes into account all previously agreed management measures. For example, The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole) responsible for the conservation, management, and optimum utilization of pollock resources in the high seas area of the Bering Sea maintained a moratorium on commercial pollock fishing in the Convention Area since 1993 in an effort to allow the stock to rebuild.

Despite the moratorium, pollock abundance in international areas remains at low levels. The U.S. continues to promote and support these international conservation measures.

NMFS and the Council have changed management of Atka mackerel and pollock fisheries in the BSAI and GOA. These changes were designed to reduce the possibility of competitive interactions between fisheries and Steller sea lions. Consequently, management measures redistributed the fishery both temporally and spatially according to pollock biomass distributions. Three types of measures were implemented in the pollock fisheries: 1) pollock fishery exclusion zones around sea lion rookery or haul-out sites; 2) phased-in reductions in the seasonal proportions of TAC that can be taken from critical habitat; and 3) additional seasonal TAC releases to disperse the fishery in time. Closed areas for Steller sea lion protection have been not only been maintained through the years but increased.

The fishery continues to respond to issues related to salmon bycatch, for example, annual PSC limits for chinook are in place as are Incentive Plan Agreements that provide incentive to avoid chum salmon bycatch. A total of 32,294 Chinook salmon and 320,478 non-Chinook salmon (i.e., chum salmon) were taken as bycatch in the BS groundfish fisheries in 2020. The 100% monitoring by observers allows for an accurate estimate of salmon bycatch. Since the mid-1990s, the Council and NMFS have developed and implemented a series of measures to minimize the incidental catch of Chinook and chum salmon in the groundfish trawl fisheries. These measures have primarily focused on closure areas and catch limits. Experience over time showed that the industry, working cooperatively, can more effectively avoid salmon bycatch by sharing data and using a system of short-term closure areas in areas where higher rates of salmon bycatch occur, and using salmon bycatch excluders in pollock trawls.

Evidence Basis:
The Council's FMPs (see Table ES-2 in NPFMC 2020a, b) explicitly describe the Council's commitment to review management issues and this is reflected in the agenda and outcomes of the multiple 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.

References:

BOF meeting schedule http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo
BOF review of meetings http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main

The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea – "The Donut Hole Agreement". https://www.state.gov/donut-hole-agreement
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
NPFMC Council Meeting Schedule https://www.npfmc.org/upcoming-council-meetings/
NPFMC Council meeting archive https://www.npfmc.org/council-meeting-archive/
NPFMC upcoming Council meetings https://www.npfmc.org/wp- content/PDFdocuments/meetings/threemeetingoutlook.pdf
NPFMC salmon bycatch in BSAI https://www.npfmc.org/bsai-salmon-bycatch/salmon-bycatch/
NPFMC salmon bycatch reports https://www.npfmc.org/salmon-reports/
NPFMC salmon bycatch in GOA https://www.npfmc.org/goa-salmon-bycatch/salmon-bycatch/

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.3 Where transboundary, shared, straddling, highly migratory, or high seas stocks are exploited by two or more States (neighboring or not), the applicant and appropriate management organizations concerned shall cooperate and take part in the formal fishery commission or arrangements appointed to ensure effective conservation and management of the stock(s) in question and their environment.

Evaluation Parameters

Note: *This clause pertains only if the stock is transboundary, shared, straddling, highly migratory, or high seas. Otherwise, this clause is not applicable. This clause is justified by the evidence provided in clause 1.2. Where sub-stocks are referred to as part of an overall stock, there shall be sufficient information on biology, distribution, and life cycle that demonstrates the degree of association or disassociation, and the basis for the management approach taken, to prevent recruitment failure of the stock or other negative impacts that are likely to be irreversible or very slowly reversible.*

Process: *There is a mechanism in place by which the applicant organization(s) cooperates for the management of the transboundary, shared, straddling, highly migratory or high seas stock. This mechanism has the sustainable total exploitation of the stock as its main objective.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the mechanism described in the process parameter is effective at ensuring the stock is sustainably exploited. This can take the form of evidence that the stock is not overfished or subject to overfishing across the entirety of the range of the stock.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that where transboundary, shared, straddling, highly migratory, or high seas fish stocks are exploited by two or more States, the applicant and appropriate*

management organizations concerned cooperate and take part in formal fishery discussions or arrangements that have been appointed to ensure effective conservation and management of the stock(s) and fisheries in question. Examples may include evidence of formal agreements, records of meetings, and decisions.

Evaluation (per parameter)

Process:
Pollock are found in international waters where no country has single jurisdiction. The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') is responsible for the conservation, management, and optimum utilization of pollock resources in the high seas area of the Bering Sea.

The objectives of the convention are:

- To establish an international regime for conservation management, and optimum utilization of pollock resources in the Convention Area;
- To restore and maintain the pollock resources in the BS at levels which will permit maximum sustainable yield;
- To cooperate in the gathering and examining of factual information concerning pollock and other living marine resources in the Bering Sea; and
- To provide, if the Parties agree, a forum in which to consider the establishment of necessary conservation and management measure for living marine resources other than pollock in the Convention Area as may be required in the future.

The Convention directs the Annual Conference of the Parties to establish by consensus the pollock Allowable Harvest Level (AHL) for the central Bering Sea for the succeeding year, based on the assessment of the total Aleutian Basin pollock biomass by its own Science and Technical Committee.

The Convention allows the coastal states (i.e., the U.S. and Russia) to establish the pollock AHL based on the best available scientific data. If the coastal states have insufficient data to establish the biomass, an annex to the Convention contains a default mechanism that deems the pollock biomass of the "Specific Area" (a subset of the Bogoslof Island pollock spawning grounds in the U.S. zone) to represent 60% of the Aleutian Basin pollock biomass. If the extrapolated estimate of the total Aleutian Basin pollock biomass is less than 1.67 million metric tons, the AHL is set at zero and there is no directed fishing for pollock in the central Bering Sea for the succeeding year.

The pollock resource in the Convention Area declined to very low levels by the early 1990s and has not reached the 1.67 million metric ton biomass level. Therefore, Member states have maintained a moratorium on commercial pollock fishing in the Convention Area since 1993.

Current Status/Appropriateness/Effectiveness:
The EBS pollock stock assessment indicates that the stock is not overfished, and overfishing is not taking place. The stock assessments consider the migration and possible removal of pollock in Russian waters using sensitivity analyses and treat this component as additional mortality.

Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') meet regularly to share and review scientific data, agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery. To date, the stock has shown limited recovery and remains in a rebuilding state. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

Evidence Basis:
Regular meetings of Member States of 'the Donut Hole' Convention have taken place, since 2010, these have been virtual conferences.

This clause is also justified by the evidence provided in Clause 1.2.

References:

The Convention on the Conservation and Management of Pollock Resources – "The Donut Hole Agreement". https://www.state.gov/donut-hole-agreement

Donut Hole Conference, 2020. Final Report of the 25th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, December 2020.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.3.1 Conservation and management measures established for the *stock under consideration* within the jurisdiction of the relevant States for transboundary, shared, straddling, highly migratory, or high seas stocks, shall be compatible in a manner consistent with the rights, competence, and interests of the States concerned.

FAO CCRF (1995) 7.1.3, 7.1.4, 7.1.5, 7.3.2, 10.3

Evaluation Parameters

Note: *This clause pertains only if stock is transboundary, shared, straddling, highly migratory, or high seas. Otherwise, this clause is not applicable. This clause is justified by the evidence provided in clause 1.2. Compatibility of management measures does not mean identical management measures, but the approach shall be consistent with respect to the overall management and conservation goals of the stock.*

Process: *Identification of common objectives for maintenance of stock biomass.*

Current Status/Appropriateness/Effectiveness: *Implementation of measures to achieve the common objectives mentioned above (i.e., similar harvest rates based on stock status, common rebuilding objectives for depleted stocks).*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that conservation and management measures established for the stock within the jurisdiction of the relevant States for shared, straddling, high seas, or highly migratory stocks, are compatible in a manner consistent with the rights, competences, and interests of the States concerned. Examples may include evidence of formal agreements, records of meetings and decisions, stock assessment, and other reports.*

Evaluation (per parameter)

Process:
Pollock are found in international waters where no country has single jurisdiction. The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') is responsible for the conservation, management, and optimum utilization of pollock resources in this high-seas area of the BS. Signatories to the Convention (China, Japan, Korea, Poland, Russia, and the United States) have maintained a moratorium on commercial pollock fishing in the Convention Area since 1993 in an effort to allow the stock to rebuild.

The objectives of the convention are:

- To establish and international regime for conservation management, and optimum utilization of pollock resources in the Convention Area;
- To restore and maintain the pollock resources in the Bering Sea at levels which will permit maximum sustainable yield;

- To cooperate in the gathering and examining of factual information concerning pollock and other living marine resources in the Bering Sea; and
- To provide, if the Parties agree, a forum in which to consider the establishment of necessary conservation and management measure for living marine resources other than pollock in the Convention Area as may be required in the future.

Current Status/Appropriateness/Effectiveness:
The U.S. and Russian scientists work together on gathering and sharing information and monitoring the fishery. In so doing, this contributes to the maintenance of the EBS stock well within sustainable levels.

Evidence Basis:
Parties to the Donut Hole Convention meet regularly to share and review scientific data (this has included joint research on pollock on both sides of the transboundary area of the northern BS), agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery. To date, the stock has shown limited recovery and remains in a rebuilding state. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

Results of the U.S. acoustic surveys for pollock in Russian waters are considered as part of the annual stock assessment process as appropriate.

References:

Bilateral Agreement between the United States and Russia. https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia
The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea – "The Donut Hole Agreement". https://www.state.gov/donut-hole-agreement
Donut Hole Convention - Final Report of the 25th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, December 2020.
US - Soviet Comprehensive Fisheries Agreement in 1988. https://iea.uoregon.edu/treaty/721

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.4 A State's fishery management organization not member or 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 or arrangement.

FAO CCRF (1995) 7.1.5

Evaluation Parameters

Note: *This clause pertains only if stock is transboundary, shared, straddling, highly migratory, or high seas. Otherwise, this clause is not applicable. This clause is justified by the evidence provided in clause 1.2.*

Process: *There is ongoing cooperation in stock assessment, data sharing, and other activities.*

Current Status/Appropriateness/Effectiveness: *Relevant measures are implemented by non-member States.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the State non-member or participant of a sub-regional or regional fisheries management organization cooperates, 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 or arrangement. Examples may include reports detailing results of common surveys or acceptable harvest rates.*

Evaluation (per parameter)

Process:
Pollock are found in international waters where no country has single jurisdiction. The Convention on the Conservation and Management of Pollock Resources in the central BS ('The Donut Hole') is responsible for the conservation, management, and optimum utilization of pollock resources in this high-seas area of the BS. Signatories to the Convention (China, Japan, Korea, Poland, Russia, and the United States) have maintained a moratorium on commercial pollock fishing in the Convention Area since 1993 in an effort to allow the stock to rebuild.

The U.S. and Russia cooperate through the bilateral ICC fisheries forum, established following the signing of the U.S.-Soviet Comprehensive Fisheries Agreement in 1988. The purpose of the Agreement is to establish a common understanding of the principles and procedures to provide for cooperation between the Parties in areas of mutual interest concerning fisheries. The objectives of the Agreement include maintaining a mutually beneficial and equitable fisheries relationship through cooperative scientific research and exchanges; reciprocal allocation of surplus fish within the respective 200-mile EEZs, consistent with national laws; cooperation and the establishment of joint fishing ventures; general consultations on fisheries matters of mutual concern; and cooperation to address illegal fishing on the high seas of the North Pacific and the BS.

Current Status/Appropriateness/Effectiveness:
Parties to the Donut Hole Convention meet regularly to share and review scientific data (this has included joint research on pollock on both sides of the transboundary area of the northern BS), agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery. To date, the stock has shown limited recovery and remains in a rebuilding state. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

The ICC is not fishery specific and is more generic in nature. It has provided the framework for collaboration on acoustic survey work within each other's waters, sharing of survey and ecosystem data, collaborative work between scientists and cooperation to address IUU fishing activities.

The consequence of the Russian/Ukraine war and the potential impact that has on cooperation is unclear at this moment and will need to be reviewed at future audits.

Evidence:
Parties to the Donut Hole Convention meet regularly to share and review scientific data (this has included joint research on pollock on both sides of the transboundary area of the northern BS), agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery. To date, the stock has shown limited recovery and remains in a rebuilding state. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

The ICC does not appear to have met for a number of years but the sharing of acoustic survey and other data and collaboration between scientists has taken place (Ianelli, pers comm.) and efforts to stem IUU fishing activity along the maritime boundary line in the BS and high seas.

References:

Bilateral Agreement between the United States and Russia. https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia
The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea – "The Donut Hole Agreement". https://www.state.gov/donut-hole-agreement

Donut Hole Convention - Final Report of the 25th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, December 2020.
NOAA 2013. Joint Statement on Enhanced Fisheries Cooperation between the US and Russia https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia
US - Soviet Comprehensive Fisheries Agreement in 1988. https://iea.uoregon.edu/treaty/721

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.4.1 A fishery management organization 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.

FAO CCRF (1995) 7.3.5

Evaluation Parameters

Note: *This clause pertains only if stock is transboundary, shared, straddling, highly migratory, or high seas. Otherwise, this clause is not applicable. This clause is justified by the evidence provided in clause 1.2.*

Process: *There is a history of prior consultation.*

Current Status/Appropriateness/Effectiveness: *The views of the managing fishery organization are taken into account.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that a fishery management organization 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 consults with the latter, in advance to the extent practicable, and take its views into account. Examples may include reports detailing action taken by the State(s) in question.*

Evaluation (per parameter)

Process:
Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') have met regularly to share and review scientific data, agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery.

The U.S. and Russia cooperate through the bilateral ICC fisheries forum, established following the signing of the U.S.-Soviet Comprehensive Fisheries Agreement in 1988. The purpose of the Agreement is to establish a common understanding of the principles and procedures to provide for cooperation between the Parties in areas of mutual interest concerning fisheries. The

objectives of the Agreement include maintaining a mutually beneficial and equitable fisheries relationship through cooperative scientific research and exchanges; reciprocal allocation of surplus fish within the respective 200-mile EEZs, consistent with national laws; cooperation and the establishment of joint fishing ventures; general consultations on fisheries matters of mutual concern; and cooperation to address illegal fishing on the high seas of the North Pacific and the BS.

Current Status/Appropriateness/Effectiveness:
The Donut Hole remains closed to fishing for pollock. To date, the stock has shown limited recovery and remains in a rebuilding state. Parties to the Donut Hole Convention have agreed to the moratorium on pollock fishing. The U.S. and Russia have collaborated on the monitoring and enforcement of IUU along the maritime boundary line in the BS and high seas. The consequence of the Russian/Ukraine war and the potential impact that has on cooperation is unclear at this moment and will need to be reviewed at future audits.

Evidence Basis:
The Parties to the 'Donut Hole' Convention last met in 2020. A virtual meeting was planned for 2021. The ICC does not appear to have met for a number of years but the sharing of acoustic survey and other data and collaboration between scientists has taken place (Ianelli, pers. comm.) and efforts to stem IUU fishing activity along the maritime boundary line in the Bering Sea and high seas.

References:

Bilateral Agreement between the United States and Russia. https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia
The Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea – "The Donut Hole Agreement". https://www.state.gov/donut-hole-agreement
Donut Hole Convention - Final Report of the 25th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, December 2020.
NOAA 2013. Joint Statement on Enhanced Fisheries Cooperation between the US and Russia https://www.fisheries.noaa.gov/national/international-affairs/bilateral-agreement-between-united-states-and-russia
US - Soviet Comprehensive Fisheries Agreement in 1988. https://iea.uoregon.edu/treaty/721

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.5 The applicant's fishery management system, when appropriate for the *stock under consideration*, shall actively foster cooperation between States with regard to (1) information gathering and exchange, (2) fisheries research, (3) fisheries management, and (4) fisheries development.

FAO CCRF (1995) 7.3.4

Evaluation Parameters

Note: *This clause pertains only if stock is transboundary, shared, straddling, highly migratory, or high seas. Otherwise, this clause is not applicable. This clause is justified by the evidence provided in clause 1.2.*

Process: *The extent to which a formal process or system is available.*

Current Status/Appropriateness/Effectiveness: *Level of activity, application, and level of engagement.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the applicant's fishery management system, when appropriate for the stock under consideration, fosters active international cooperation on fishery matters with regard to information gathering and exchange, fisheries research, fisheries management, and fisheries development. Example of evidence sources may include outputs from activity (e.g., reports, minutes, common or collective themes).*

Evaluation (per parameter)

Process:
The U.S. and Russia have routinely allowed scientists from the other country onboard research vessels and work through the ICC with respect to management and fisheries development. At the site visit the assessment team heard that Russian scientists have worked with AFSC staff as part of the U.S./Russia commitment to cooperation with respect to fisheries research and information exchange (Ianelli, pers. comm.).

Current Status/Appropriateness/Effectiveness:
The U.S. and Russia meet annually through the ICC and with other Member States who are signatories to the 'Donut Hole' Convention.

Evidence Basis:
This clause is justified by evidence provided in Clauses 1.2, 1.3, and 1.4.

References:

See Clauses 1.2 and 1.3.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.6 A fishery management organization 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 States 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.

FAO CCRF (1995) 7.7.4

Evaluation Parameters

Process: *There is an agreed-upon system to finance the fishery management organizations and arrangements.*

Current Status/Appropriateness/Effectiveness: *The fishery management organizations and arrangements are currently financed using a cost recovery or other system.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there is agreement on the means by which the activities of such organizations and arrangements are financed. Where appropriate, and when possible, such organizations and arrangements aim to recover the costs of fisheries conservation, management, and research. Examples may include data showing the expenditure and cost recovery derived from fisheries management.*

Evaluation (per parameter)

Process:
There is an agreed-upon 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. The federal budget cycle can be summarized in the following steps:

1. Office of Management and Budget issues budget guidance NMFS submits its budget
2. Department of Commerce and NOAA issue budget guidance
3. NMFS submits its budget to NOAA
4. NOAA submits it budget to Department of Commerce
5. Department of Commerce submits its budget to Office of Management and Budget
6. President's budget delivered to Congress
7. NOAA and Department of Commerce discuss the proposed budget with Congress
8. Deliberations by congressional appropriations committees
9. Budget execution
10. Spending and performance information sent to Office of Management and Budget – back to step 1

The state budget cycle can be summarized in the following steps:

1. State agencies (e.g., ADFG) prepare and send their budgets to the Governor's Office of Budget Review.
2. The Governor's Office of Budget Review checks agency requests and prepares recommendations to the Governor.
3. The Governor reviews, sets budget amounts and submits the appropriation bill and budget documents to the State.
4. The House and Senate Rules Committees introduce companion bills (similar or identical bills) for the House and Senate Finance Committees to review.
5. Subcommittees work on the budgets for each department and submit recommendations to the full Finance Committees.
6. The full House Finance Committee finalizes the budget for each Department and moves a Committee Substitute bill out of committee.
7. The bill goes to the floor of the House in second reading and can be amended. Then the bill is moved to third reading, voted on, and sent to the Senate.
8. The Senate Finance Committee completes their work and sends their own Committee Substitute to the floor of the Senate, where it can be amended and then voted on.
9. The Senate version is sent back to the House for concurrence. Typically, the House does not concur, but asks the Senate to recede from their amendments.
10. Typically, the Senate does not recede, and a conference committee is appointed.
11. The Conference Committee works out a compromise version of the budget.
12. The House and Senate approve the Conference Committee Substitute and send it to the Governor.
13. The Governor reviews the bill and may exercise his line-item veto power.
14. The bill becomes law and is effective with the beginning of the fiscal year on July 1.

Cost recovery from certain fleet sectors, including the pollock fishery, is also in operation. Section 304(d) of the MSA authorizes and requires the collection of cost recovery fees for limited access privilege programs (e.g., the AFA program in the BSAI pollock fishery) and the CDQ Program. Cost recovery fees recover the actual costs directly related to the management, data collection, and enforcement of the programs. Section 304(d) of the MSA mandates that cost recovery fees do not exceed 3% of the annual ex-vessel value of fish harvested by a program subject to a cost recovery fee, and that the fee be collected either at the time of landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested.

Current Status/Appropriateness/Effectiveness:
The following is adapted from "American Fisheries Act Program Cost Recovery for Fishing Year 2021":

The AFA allocates the BS directed pollock fishery TAC to three sectors – inshore, processor/P, and mothership. Each sector has established cooperatives to harvest the sector's pollock allocation. These cooperatives are responsible for paying the fee for Bering Sea pollock landed under the AFA, due on December 31 of the year in which the landings were made. Cost recovery requirements for the AFA sectors are at 50 CFR 679.66(c)(2). The total dollar amount of the fee due is determined by multiplying the NMFS published fee percentage by the ex-vessel value of all landings under the program made during the fishing year. NMFS determines the fee percentage that applies to landings made during the year by dividing the direct program costs by the fishery value.

The current groundfish observer program is a further example of management being financially supported through cost recovery. A fee equal to 1.25% of the retained value of groundfish and halibut in fisheries subject to partial observer coverage. Processors and registered buyers are billed in January for observer fees based on the landings and value in the previous calendar year. The fee is split evenly between the vessel owner/operator and processor or registered buyer.

It should be noted that, cost recovery fees do not increase agency budgets or expenditures, they simply offset funds that would otherwise have been appropriated, the only exception is when ADFG are subject to expenditures for which there is no direct appropriation.

Evidence Basis:
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 (Section 6.2.1). Owing to the multifunctional role that many of the management organizations have, obtaining a precise figure for the expenditure on specific fisheries in the BSAI and GOA is not possible, however, estimates are provided for the cost of fishery management by the government agencies, e.g.

	$ million			
Agency	Overall Alaska region expenditure	Groundfish Fisheries	BSAI	GOA
North Pacific Fisheries Management Council (NPFMC)	3.0	2.4	0.8	1.6
National Marine Fisheries Service (NMFS):				
Sustainable Fisheries Division	3.6	2.9	0.9	2.0
Protected Resources Division	2.2	0.8		
Habitat conservation Division	1.6	0.4	0.2	0.2
Restricted Access Management	1.9	0.4	0.3	0.1
Other NMFS Regional Alaska units	6.2	3.5	1.0	2.5
Alaska Fisheries Science Centre	40.9	28.2	11.9	16.3
NOAA Office of General Council	2.0			
NOAA Office of Law Enforcement	5.0	2.4	1.8	0.6
US Coast Guard – 17th District		<40.2	<13.9	<26.3
Alaska Department of fish & Game (ADFG)		>2.5		

The American Fisheries Act Program Cost Recovery for Fishing Year 2021 details direct program costs of $481,120 (i.e., costs that would not have been incurred but for the three identified pollock sectors – inshore, C/P, mothership). As a result, cost recovery fees are charged to the cooperatives representing each sector at 0.10%, 0.10%, and 0.17%, respectively, of their reported landings. If an account is unpaid for 30 days after the due date, administrative fees, interest, and penalties start to accrue. NMFS may take action against the cooperative's AFA pollock allocation and assess additional monetary charges, fines, or permit sanctions. If after 120 days the fee remains unpaid, the unpaid balance is forwarded to the U.S. Department of the Treasury for collection.

The budget for observer deployment in 2021 in the partial coverage category was $4,448,612 for a total of 3,193 observer days. The budget for 2021 was made up of $3,169,843 in fees (from 2020 landings) and a further $3,040,184 was made available in federal funds to support the observer and EM deployment and review grant.

Despite the minimal ADFG management costs directly related to the pollock fishery, the BSAI and GOA pollock fishery participants pay a 3% resource landings tax based on unprocessed value of the fish caught, directly to the State of Alaska general tax fund in addition to a 0.5% seafood marketing tax that pays for a budget provided to the Alaska Seafood Marketing Institute.

References:

ADFG annual budgets and performance http://www.adfg.alaska.gov/index.cfm?adfg=about.budgets
ADFG Operating Budget https://omb.alaska.gov/ombfiles/20_budget/Fish/Enacted/20depttotals_fish.pdf
Alaska Department of Revenue – Tax Division. http://www.tax.alaska.gov/programs/programs/index.aspx?60620
Alaska State Budget Cycle http://akleg.gov/docs/pdf/budgproc.pdf
American Fisheries Act Program Cost Recovery Report – Fishing year 2021 https://media.fisheries.noaa.gov/2022-01/afa-pollock-cost-recovery-fee-report-2021-akro.pdf
MSA 2007 Section 304(d) – Community Development Quota (CDQ) Program https://alaskafisheries.noaa.gov/sites/default/files/reports/afacr_fee_rpt2016.pdf
NOAA Cost Recovery Fee Program – Alaska region https://www.fisheries.noaa.gov/alaska/commercial-fishing/cost-recovery-programs-fee-collection-and-fee-payment-alaska
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

1.6.1 Without prejudice to relevant international agreements, States or fishery management organizations 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.

FAO CCRF (1995) 7.8.1

Evaluation Parameters

Note: *The fishery for the stock under consideration occurs outside the exclusive economic zone (EEZ), there is evidence of flags of convenience, and evidence of illegal, unreported, and unregulated (IUU) fishing. Not applicable otherwise.*

Process: *There is a system that encourages banks to require vessels to be flagged within the jurisdiction of interest.*

Current Status/Appropriateness/Effectiveness: *There is regulation that directs for vessels to be flagged outside the State's jurisdiction. The fishery for the stock under consideration occurs outside EEZ, and there are flags of convenience operations present, or evidence of IUU fishing.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the State or fishery management organizations encourages 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. Examples may include data showing fishery operation by vessels flying a flag different from that of the State where fishing geographically occurs.*

Evaluation (per parameter)

The Alaska pollock fishery does not operate outside of the EEZ, and all vessels operating in the fishery must be U.S. owned and licensed. This supporting clause is therefore not applicable.

References:

The American Fisheries Act (AFA) 1998 https://alaskafisheries.noaa.gov/fisheries/AFA-pollock

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	NA
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**		**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐		Major ☐	Minor ☐	None ☐
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.6.8

Evaluation Parameters

Process: *There is a procedure to review management measures. The procedure includes the use of outcome indicators against which the success of management measures in achieving specific management objectives is measured. The procedure covers all management measures, including those relating to the sustainable exploitation of the target stock; the mitigation of negative impacts on non-target species through bycatch, discarding, and indirect effects; and the protection of Endangered, Threatened, Protected (ETP) species and the physical environment. Please note that both the management processes of the North Pacific Fishery Management Council (NPFMC) for federal waters, and the Alaska Board of Fisheries (BOF) for state waters, allow for the continuous review of conservation and management measures. Such processes shall be clearly documented as relevant to key management measures for the fishery under assessment.*

Current Status/Appropriateness/Effectiveness: *If, as a result of the review process, it is determined that management measures are not achieving the specific management objectives they are designed to achieve, they are revised and updated as appropriate.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that within the fishery management system, procedures are in place to keep the efficacy of current conservation and management measures and their possible interactions under continuous review, and to revise or abolish them in the light of new information. Examples may include data showing recent regulation or management plan revisions.*

Evaluation (per parameter)

Process:
There are procedures at multiple levels to review management measures. The principle legislative instrument – the MSA – that established the management framework, is reviewed by Congress every five years and is periodically revised and reauthorized.

The adaptive management approach taken in the Alaska pollock 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 in order 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.

At an international level, Parties to the Convention on the Conservation and Management of Pollock Resources in the central BS ('The Donut Hole') meet regularly to share and review scientific data, agree status of the pollock resource and consider whether it has attained the pre-determined levels that would support consideration for opening a fishery. To date, the stock has shown limited recovery and remains in a rebuilding state. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

Current Status/Appropriateness/Effectiveness:
As a result of the adaptive management approach, if it is determined that management measures are not working or are not as effective as they might be, the management system facilitates their revision. As a result, Amendments to the FMPs and changes in state regulations are introduced.

The Donut Hole Convention allows the coastal states (i.e., the U.S. and Russia) to establish the pollock AHL based on the best available scientific data. If the coastal states have insufficient data to establish the biomass, an annex to the Convention contains a default mechanism that deems the pollock biomass of the "Specific Area" (a subset of the Bogoslof Island pollock spawning grounds in the U.S. zone) to represent 60% of the Aleutian Basin pollock biomass. If the extrapolated estimate of the total Aleutian Basin pollock biomass is less than 1.67 million tonnes, the AHL is set at zero and there is no directed fishing for pollock in the central BS for the succeeding year. To date, the stock has shown limited recovery and remains well below 1.67 million tonnes. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

Evidence Basis:
Section 3.10 of the FMPs details the Council review of the FMPs, including, the procedure for evaluation and the schedule for review. The FMP states that the Council will maintain a continuing review of the fisheries managed under the FMPs through the following methods:

1. Maintain close liaison with the management agencies involved, usually the ADFG and NMFS, to monitor the development of the fisheries and the activity in the fisheries.
2. Promote research to increase their knowledge of the fishery and the resource, either through Council funding or by recommending research projects to other agencies.
3. Conduct public hearings at appropriate times and in appropriate locations to hear testimony on the effectiveness of the management plans and requests for changes.
4. Consider all information gained from the above activities and develop, if necessary, amendments to the FMP. The Council will also hold public hearings on proposed amendments prior to forwarding them to the Secretary for possible adoption.

With respect to the schedule for review, the Council commits to maintaining a continuing review of the fisheries managed under the FMPs, and periodic reviews of all critical components of the FMP. This includes annually reviewing the objectives in the management policy statement and, once every five years, reviewing and amending, as appropriate, the EFH components of the FMPs. Council meetings are open, and public testimony – both written and oral – is taken on every issue prior to deliberations and final decisions. Public comments are also taken at all AP and SSC meetings. Written comments can be submitted. Any letters that are submitted are put in the Council notebooks. New issues to the Council, are usually addressed at the end of the meeting under an agenda item called "Staff Tasking." The public are given a chance to comment on these items during an open forum (NPFMC

2022b). The BOF also provides opportunity for input through public notification and their website of upcoming meetings and opportunities to input into the management process (ADFG 2022c).

Stock status is reviewed annually. Scientists at the AFSC conduct research and stock assessments on pollock in Alaska each year, producing annual SAFE reports for the federally managed EBS, GOA, AI, and Bogoslof pollock stocks. ADFG also conducts scientific research and surveys on its state-managed pollock fisheries. These SAFE reports summarize the best-available science, including the fishery dependent and independent data, 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 annual stock assessments are peer reviewed by experts and recommendations are made annually to improve the assessments. An additional level of peer review by external experts is conducted periodically. The MSA requires the Council to minimize bycatch while also allowing for OY in the fisheries. The Council has implemented and continues to refine measures to reduce bycatch of prohibited species, such as Chinook and chum salmon, Pacific halibut, and some species of crab in the Federal fisheries.

Several management measures have been introduced by the Council to address salmon bycatch in the BSAI (e.g., Amendment 91 and 110 to the FMP) (NPFMC 2022c). These include limits on the number of Chinook and chum salmon that can be caught and incentives to ensure numbers remain low. Amendment 110 also mandates the use of salmon excluder devices in the trawls and reduces fishing for pollock in months with higher bycatch encounters. Substantial research has been conducted on improving the excluder devices (NPFMC 2022d), as well as ongoing projects studying the genetics of salmon taken as bycatch to determine their rivers of origin (NPFMC 2022e).

In 2012, Amendment 93 was implemented in the GOA to limit the amount of Chinook salmon caught in the pollock fishery. Amendment 93 establishes separate PSC limits in the Central and Western GOA for Chinook salmon, which would cause NMFS to close the directed pollock fishery in the central or western regulatory areas of the GOA, if the applicable limit is reached.

Pollock is considered essential prey for Steller sea lions and management measures, such as fishery time and area closures around critical Steller sea lion habitat, as well as reductions in seasonal proportions of pollock TAC that can be taken from critical habitat, have been implemented to mitigate possible negative impacts of pollock fisheries on Steller sea lions (NPFMC 2022f).

NEPA requires agencies to prepare an EIS on proposals for legislation and other major federal actions that may significantly affect the quality of the human environment (40 CFR 1502.3). EISs are also prepared: (1) when the proposed action is novel, (2) when there is controversy in the underlying science used to understand the impacts of the alternatives, or (3) when the potential impacts are unknown. All the Council proposed regulations and the FMPs include NEPA considerations. These serve as a review of the consequence of any significant management action or measure (NEPA 2005).

The BSAI and GOA FMPs were implemented in 1979 and 1981, respectively. Since that time, the BSAI FMP has been amended over 70 times, and the GOA FMP has been amended over 60 times. Each FMP amendment was supported by the required level of analysis under NEPA. In 2004, an Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) was undertaken. This was a major review and analysis of the effect of the groundfish fisheries on the North Pacific Ecosystem and provided the Council, NMFS, ADFG and stakeholders with information to further inform decision-making as to the consequences of the FMPs. In 2015, the Council produced a PSEIS Supplemental Information Report which updated the 2004 PSEIS (PSEIS 2015).

With respect to the Donut Hole, to date, the pollock stock has shown limited recovery and remains well below 1.67 million tonnes. Therefore, there continues to be a moratorium to pollock fishing in the Donut Hole.

References:

ADFG 2022c. “Submit written comments” http://www.adfg.alaska.gov/index.cfm?adfg=process.comments
Final Report of the 25th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, December 2020.
NEPA 2005. Fishery Management Guidance for NEPA Reviews https://www.epa.gov/nepa/fishery-management-guidance-national-environmental-policy-act-reviews
NPFMC 2022b “How do I get involved” https://www.npfmc.org/how-do-i-get-involved/
NPFMC 2022c Chinook salmon bycatch management in Alaska https://www.fisheries.noaa.gov/alaska/bycatch/chinook-salmon-bycatch-management-alaska

NPFMC 2022d Salmon excluder devices https://www.npfmc.org/salmon-excluder-efp/
NPFMC 2022e Salmon Reports https://www.npfmc.org/salmon-reports/
NPFMC 2022f Steller sea lion https://www.npfmc.org/protected-species/steller-sea-lions/
PSEIS 2015, Programmatic Supplemental Environmental Impact Statement Information Report 2015. https://www.fisheries.noaa.gov/resource/document/alaska-groundfish-fisheries-programmatic-supplemental-environmental-impact

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.1.9

Evaluation Parameters

Current Status: *There is transparency in management arrangements. Please note that both the management processes of the NPFMC for federal waters, and the BOF for state waters, shall be clearly documented to provide evidence for the transparency of these arrangements and decision-making processes.*

Effectiveness: *There is transparency in decision-making processes.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the management arrangements and decision-making processes for the fishery are organized in a transparent manner. Examples may include records of the management arrangements and decision-making processes.*

Evaluation (per parameter)

Current Status:
Management arrangements for the Alaska pollock fisheries are easily accessible on the, NOAA/NMFS, the Council, and ADFG websites and from NMFS and ADFG offices as well as local offices of the OLE and AWT.

Minutes of meetings of Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea ('The Donut Hole') are available and include the minutes of the Scientific and Technical Committee meeting.

Effectiveness:
The Council imposes transparency so that all Council discussions are open to the public. No more than a predetermined number of Council members can meet unless the meeting is an open public meeting. Each Council decision is made by recorded vote in a public forum after public comment. Final decisions then go to the Secretary of Commerce for a second review, public comment, and final approval. Decisions must conform with the MSA, the NEPA, Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA),

and other applicable law including several executive orders. The BOF also holds multiple public meetings each year at various locations throughout Alaska and establishes similar decision-making processes, with each BOF decision being recorded in a public forum after public comments.

The Donut Hole Convention meeting minutes provide details of the decision-making process.

Evidence Basis:
The Council (and NMFS) as well as the BOF (and ADFG) provide a great deal of information on their websites, including agenda of meetings, discussion papers, and records of decisions. The Council and the BOF actively encourages stakeholder participation, and all Council and BOF deliberations are conducted in open, public session. Anyone may submit regulatory proposals, and all such proposals are given due consideration by both the Council and the BOF. The process used by the Council for decision-making is described in the Council guide for navigating the Council process (NPFMC 2017) and the Council Operating Procedures (NPFMC 2020c).

The Donut Hole Convention meeting minutes are available through the Council website, although it is noted the 2020 minutes are not yet available on the site.

References:

Final Report of the 24th Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, November 2019. https://meetings.npfmc.org/CommentReview/DownloadFile?p=fb2edb41-7f19-4cfc-967d-36f39f78e68c.pdf&fileName=B2%20Report%20of%20the%20Bering%20Sea%20Convention%20Annual%20Conference.pdf.

NPFMC 2017a. Navigating North Pacific Fishery Management Council Meetings: A Guide for the Young Fishermen's Summit. https://www.npfmc.org/wp-content/PDFdocuments/help/Navigating_NPFMC.pdf

NPFMC 2020c Statement of Organization, Practices and Procedures for the North Pacific Fishery Management Council https://www.npfmc.org/wp-content/uploads/NPFMC_SOPP_June2020.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

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.

FAO CCRF (1995) 8.2.6

Evaluation Parameters

Note: *Not applicable if the fishery does not occur in high seas.*

Process: *Regulation to implement the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas has been adopted. Assessors shall consult the following document http://www.fao.org/docrep/meeting/003/x3130m/X3130E00.htm for reference to the Agreement.*

Current Status/Appropriateness/Effectiveness: *There are laws regulating high seas fishing activity. Describe how they accomplish this.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization is party to the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas or has adopted laws and regulations consistent with the provisions of the Agreement. Examples may include reports on the management of high seas fishing activities.*

Evaluation (per parameter)

This clause is not applicable. The United States ratified the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas ("Compliance Agreement") on the 19 December 1995. High Sea fishing for Alaska pollock may only occur in the Donut hole but international agreement between member countries has banned fishing in this central area of the BS (see Clauses 1.2. and 1.3 for details).

References:

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	NA
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

2 Management organizations shall participate in coastal area management, decision making processes and activities related to the fishery and its users, supporting sustainable and integrated resource use, and conflict avoidance.

FAO CCRF (1995) 10.1.1, 10.1.2, 10.1.4, 10.2.1, 10.2.2, 10.2.4

2.1 Within the fisheries management organization's jurisdiction, an appropriate policy, legal, and institutional framework shall be adopted in order to achieve sustainable and integrated use of living marine resources, (1) taking into account the fragility of coastal ecosystems and finite nature of their natural resources, (2) allowing for determination of the possible uses of coastal resources and governing access to them, and (3) recognizing 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, States shall take due account of the risks and uncertainties involved.

FAO CCRF (1995) 10.1.1, 10.1.3, 10.2.3

Evaluation Parameters

Process: *A mechanism exists by which the integrated management of multiple coastal area uses is conducted, the possible uses of coastal resources are assessed, and access to them is governed. Accordingly, policies for the management of the coastal area are set. Assessment teams shall document how existing authorities and/or processes cooperate and interact together to manage coastal resources (living and non-living) in a transparent, organized, and sustainable way that minimizes environmental issues while taking into account the socio-economic aspects, needs, and interests of the various stakeholders of the coastal zone.*

Current Status/Appropriateness/Effectiveness: *The coastal management framework includes explicit consideration of the fragility of coastal ecosystems, the finite nature of coastal resources, and the needs of coastal communities, and accounts for the rights and customary practices of coastal communities. These policies take due account of risks and uncertainties.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that within the fisheries management organization's jurisdiction, an appropriate policy within the legal and institutional framework has been adopted in order to achieve sustainable and integrated use of living marine resources. Examples may include coastal management plans or other policy documents, and frameworks for resource/coastal management.*

Evaluation (per parameter)

Process:
The Coastal Zone Management Act 1972 (16 U.S.C. 1451 et seq.; https://www.gpo.gov/fdsys/pkg/STATUTE-86/pdf/STATUTE-86-Pg1280.pdf) was designed to encourage and assist states in developing coastal management programs, to coordinate state activities, and to safeguard regional and national interests in the coastal zone. The Alaska Coastal Management Program was approved by NOAA in 1979 as a voluntary state partner in the National Coastal Management Program. However, in 2011 Alaska withdrew from the program. As a result, coastal zone management matters are addressed at a federal level in accordance with the policies set forth in NEPA.

To implement NEPA's policies, Congress prescribed a procedure, commonly referred to as "the NEPA process" or "the environmental impact assessment process." The NEPA process provides public information and opportunity for public involvement at both the state and federal levels. When a company applies for a permit (e.g., a building application that will impact coastal) the agency that is being asked to issue the permit must evaluate the environmental effects of the permit decision under NEPA.

The NMFS, the Council, and ADFG have processes, committees and groups that allow potential coastal zone developments and issues to be brought to formal review as well as the Council and BOF meetings, the Council has established a Community Engagement Committee (CEC) to identify and recommend strategies for the Council to provide effective community engagement with rural and Alaska Native communities. The Alaska Fisheries Science Centre have recently produced a report – the Annual Community Engagement and Participation Overview, which will be updated annually and provides social and economic information at the community level for those fishing communities which as substantially dependent on, or engaged in, the North Pacific Groundfish and Crab fisheries. Furthermore, Advisory Committees are local "grass roots" citizen groups intended to provide a local voice for the collection and expression of public opinions and recommendations on matters relating to the management of fish and wildlife resources in Alaska. ADFG staff regularly attends the Advisory Committee meetings in their respective geographic areas to provide information to the public and hear local opinions on fisheries related activities.

The coastal zone is monitored as part of the coastal management process using physical, chemical, biological, economic, and social parameters. Involvement include federal and state agencies and programs, including the U.S. Forest Service, USFWS, NMFS Pacific Marine Environmental Lab, the Alaska Department of Environmental Conservation Division of Water, ADFG Habitat Division, the AFSC's "Ecosystem Monitoring and Assessment Program", NMFS's Habitat Conservation Division and their EFH monitoring and protection program, the USCG, the NMFS Alaska Regional Office's Restricted Access Management Program, the Alaska National Interest Lands Conservation Act federal agencies cooperation directive, and the Department of Natural Resources Office of Project Management and Permitting coordinating the review of large scale projects in the State of Alaska.

Current Status/Appropriateness/Effectiveness:
In managing the Alaska pollock fishery, NMFS, in conjunction with the Council and ADFG, participate in coastal area management-related issues through processes established by the NEPA. NEPA 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 was 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. Initiatives, such as CEC and Annual Community Engagement and Participation Overview, enhance community engagement.

ADFG participates in land use review process that include land use planning, permit, and lease reviews for activities on State land and waters and reviewing land disposal that may affect fish and wildlife and public use of these resources. ADFG staff also review proposed land development activities on federal lands under the Alaska National Interest Lands Conservation Act on Actions under the Alaska Native Claims Settlement Act. ADFG also participate Advisory Committee meetings where information can be shared and local opinions on fisheries related matters can be sought.

Evidence Basis:
NOAA has set up their policy and procedures for compliance with NEPA which explicitly sets out NEPA procedures in relations to fisheries (NEPA 2005). The NMFS Alaska region websites also includes all the on-going EFH consultations in relation to coastal development proposals.

As well as the Council and BOF meeting process allowing for coastal zone management and any community concerns or needs to be formally aired within a public forum. The ADFG website also provides information on their input into planning processes (ADFG 2022e).

References:

ADFG 2022e Planning process http://www.adfg.alaska.gov/index.cfm?adfg=habitatoversight.planrevisions
ADFG. 2022g. Advisory Committees https://www.adfg.alaska.gov/index.cfm?adfg=process.advisory
NEPA 2005. NEPA Fishery Management Guidance for NEPA Reviews https://www.epa.gov/nepa/fishery-management-guidance-national-environmental-policy-act-reviews
NOAA. 2021. Annual Community Engagement and Participation Overview (ACEPO) https://meetings.npfmc.org/CommentReview/DownloadFile?p=b26ba0fd-2447-41b2-8de5-6a1a4c488471.pdf&fileName=D8%20ACEPO%20ESSR.pdf.
NPFMC. 2018c. Community Engagement Committee, Terms of Reference https://www.npfmc.org/wp-content/PDFdocuments/membership/CEC/CEC_TOR_1218.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 10.4.1

Evaluation Parameters

Process: *There is a mechanism to allow cooperation between neighboring States to improve coastal resource management.*

Current Status/Appropriateness/Effectiveness: *There are records of cooperation. Examples may include fishery, fishery enhancement, or other agreements or records from international forums.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the States establish mechanisms for cooperation and coordination in planning, development, conservation, and management of coastal areas. Examples may include reports or data on the international cooperation/information exchange in these events.*

Evaluation (per parameter)

Process/Current Status/Appropriateness/Effectiveness/Evidence Basis:
The only other coastal state in the BS is Russia. Given the distance between the more populated regions of each country is vast, the need for a mechanism to allow for cooperation between neighboring countries to improve coastal resource management is not applicable in this instance.

The only other coastal state in the GOA is Canada to the south. In this instance, the pollock stock is not considered to be a shared stock. The U.S. 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 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 practices (e.g., International Pacific Halibut Commission, Pacific Salmon Treaty, Agreement between the US and Canada on enforcement).

References:

Pacific Salmon Treaty http://www.psc.org/about-us/history-purpose/pacific-salmon-treaty/
NOAA 2022b. Agreement between the US and Canada on enforcement. https://www.fisheries.noaa.gov/topic/international-affairs

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 10.4.2

Evaluation Parameters

Process: *There are appropriate technical capacities and financial resources.*

Current Status/Appropriateness/Effectiveness: *It can be determined with confidence that there are appropriate technical capacities and financial resources.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fisheries management organization ensures that the authority or authorities representing the fisheries sector and fishing communities in the coastal management process have the appropriate technical capacities and financial resources. Examples may include reports or data, overall operating staff, and financial resources/budgets available.*

Evaluation (per parameter)

Process:
The technical capacities of the federal and state agencies involved in the management of Alaska pollock are significant, among others they can boast, internationally recognized scientists, seasoned fishery managers and policy makers and highly professional and trained enforcement officers.

Current Status/Appropriateness/Effectiveness:
During the site visit, no indication was given regarding a lack of resources or technical capacity within the agencies responsible for managing the fisheries. Given the positive state of the fishery resource and the science and management system in place through NMFS, the Council, and ADFG the assessment team is confident that there are appropriate technical and financial resources in place.

Evidence Basis:
The federal and state financial resources are outlined in Section 1.6 of this report. NMFS and AFDG staffing complement are available on their respective websites (ADFG 2022f).

References:

ADFG 2022f. Our Structure & Staff http://www.adfg.alaska.gov/index.cfm?adfg=about.structure

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

2.2 Representatives of the fisheries sector and fishing communities shall be consulted in the decision-making processes involving activities related to coastal area management planning and development. The public, as well as others affected, shall also be kept aware of the need for protection and management of coastal resources, and shall participate in the coastal management process.

FAO CCRF (1995) 10.1.2, 10.2.1

Evaluation Parameters

Process: *Describe how fishery-related information is disseminated and how a process is in place to consult with the fishery sector and fishing communities.*

Current Status/Appropriateness/Effectiveness: *There are records of consultations with the fisheries sector and fishing communities. Attempts have been made to create public awareness on the need for protection and management of coastal resources, and those affected by the management process have been made aware of its provision.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that representatives of the fisheries sector and fishing communities are consulted in the decision-making processes and involved in other activities related to coastal area management planning and development. The public, and others affected, are also kept aware of the need for the protection and management of coastal resources and are participants in the management process. Examples may include public records of consultation activities and other available documentation published on the internet or distributed at public meetings.*

Evaluation (per parameter)

Process:
The NMFS and the Council participate in coastal area management-related institutional frameworks through the federal NEPA processes. These include consultation and decision-making processes and activities relevant to fishery resources and users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. To implement NEPA's policies, Congress prescribed a procedure, commonly referred to as "the NEPA process" or "the environmental impact assessment process." The NEPA processes provide public information and opportunity for stakeholder involvement at both the state and federal levels. In this way, any application for a permit to undertake an activity or development in the coastal region, requires the agency that is being asked to issue the permit to evaluate the environmental effects of the permit and follow the NEPA process.

As a result, representatives of the fisheries sector and fishing communities are consulted in the decision-making processes and in other activities related to coastal area management planning and development and kept aware of the need for protection and management of coastal resources.

Current Status/Appropriateness/Effectiveness:
All the fishery agencies have processes, committees and groups that allow coastal zone resource management issues to be brought to formal review and engagement. As well as the Council and BOF public meetings being key forums for consulting and creating awareness of issues to do with coastal resource management and their potential impact on fish stocks and socioeconomic interests, the Council has established a rural outreach committee to better inform coastal residents heavily reliant on subsistence fisheries and other marine resources, on the work of the Council, current and future issues and how they may get involved and contribute to the decision-making process. At the State level, land use and access planning are considered to be a collaborative and adaptive process by which land managers, biologists, members of the public, and local stakeholder groups work together produce State Area and Management Plans that guide and inform the day-to-day decisions that impact the use and development of Alaska's land and water resources.

Evidence Basis:
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. Furthermore, the Council and ADFG are statutorily obliged to establish or participate in more regional or local fora to engage stakeholders and encourage their contribution to the decision-making process.

References:

ADFG 2022d. "Submit written comments" http://www.adfg.alaska.gov/index.cfm?adfg=process.comments
ADFG 2022h, Alaska Board of Fisheries http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.main NEPA 2005. NEPA Fishery Management Guidance for NEPA Reviews https://www.epa.gov/nepa/fishery-management-guidance-national-environmental-policy-act-reviews
NPFMC 2017a, Navigating North Pacific Fishery Management Council Meetings: A Guide for the Young Fishermen's Summit. https://www.npfmc.org/wp-content/PDFdocuments/help/Navigating_NPFMC.pdf
NPFMC 2022b "How do I get involved" https://www.npfmc.org/how-do-i-get-involved/
NPFMC Council Meeting Schedule https://www.npfmc.org/upcoming-council-meetings/

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

2.3 Fisheries practices that avoid conflict among fishers and other users of the coastal area (e.g., fisheries enhancement facilities, 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 that arise within the fisheries sector and between fisheries resource users and other coastal users.

FAO CCRF (1995) 7.6.5, 10.1.4, 10.15

Evaluation Parameters

Process: *These practices have been adopted, and there is a process to regulate fishing gear, methods, and vessels so as to avoid risk of conflict. If conflicts arise, there is a process in place to settle conflicts between fishery users and other users.*

Current Status/Appropriateness/Effectiveness: *Describe these practices and their effectiveness within the fishery sector, and between fishers and other coastal users.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that fisheries practices that avoid conflict among fishers and other users of the coastal area (e.g., fisheries enhancement facilities, tourism, energy) are adopted and fishing is regulated in such a way as to avoid risk of conflict among fishers using different vessels, gear, and fishing methods. Procedures and mechanisms are established at the appropriate administrative level to settle conflicts that arise within the fisheries sector, and between fisheries resource users and other coastal users. Examples may include laws and regulations or other documents.*

Evaluation (per parameter)

Process:
Specified gear and designated fishing areas and seasons help to reduce interaction between different fishing gear. The Council and the BOF offer a public forum for stakeholder involvement and conflict avoidance/resolution. Potential conflict between fishermen and other coastal users at the federal level are usually discussed and resolved at the NEPA Process level.

Current Status/Appropriateness/Effectiveness:
A suite of management measures is in place for the pollock fisheries that may contribute to minimizing conflict with other sectors or coastal users. For example, the pollock fishery uses pelagic trawls, which helps to reduce interaction with the seabed and other sectors that fish on the sea bed; area restrictions are in place (e.g., around Steller sea lion rookeries); and coordinated season timing is used to spread out fishing effort over the year thereby helping to minimize gear conflicts and allow participation by all elements of the groundfish fleet. Also, the pollock fishery is subject to PSC limits and uses excluder devices to minimize salmon bycatch.

Evidence Basis:
The FMPs highlight the different management approaches taken in the groundfish fisheries and, in some instances, recognize they may reduce gear conflicts (e.g., coordinated season timing).

In response to questions about gear conflict in the pollock fishery during the site visit, stakeholders said that these issues were usually resolved between the industry so disputes rarely came to public attention.

References:

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

2.4 States' fisheries management organizations 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.

FAO CCRF (1995) 7.1.10

Evaluation Parameters

Process: *There is a process that allows for fishery-related information to be disseminated.*

Current Status/Appropriateness/Effectiveness: *There is a record of the disseminated information, and is it disseminated effectively, and the basis and purposes of such regulation explained to users.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that States' fisheries management organizations and sub-regional or regional fisheries management organizations and arrangements 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 are explained to users of the resource in order to facilitate their application and thus gain increased support in the implementation of such measures. Examples may include records of such management measures published in the internet or distributed at public meetings.*

Evaluation (per parameter)

Process:
The Council and BOF provide considerable fishery related information on their websites, including draft regulations related to the fisheries. The Council and BOF public meetings and process ensure awareness and input into the decisions for conservation and management measures and the outcomes. The OLE and AWT put an emphasis on educating and informing stakeholders of new regulatory changes and other important fishery related matters. Regular contact with fishers helps to ensure dissemination of information.

Current Status/Appropriateness/Effectiveness:
The Council and BOF processes and participatory approach allows fishery-related information to be explained and discussed. Meetings of the Council and BOF are publicized, supporting information and topics are disseminated and outcomes are posted on through their respective websites. Transcripts and recordings of meetings are also available.

Evidence Basis:
The Council and ADFG websites ensure access is readily available to stakeholders prior to or after meetings and, as such conservation and management measures are effectively disseminated. The OLE and AWT websites publicize the conservation and management measures.

References:

OLE 2021b, Office of Law Enforcement Alaska Enforcement Division December Report to the North Pacific Fisheries Management Council. October 2020 to September 2021 https://meetings.npfmc.org/CommentReview/DownloadFile?p=188b9834-6bd4-4281-b950-37581d7f6580.pdf&fileName=B4%202021%20December%20OLE%20Report.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

2.5 The economic, social, and cultural value of coastal resources shall be assessed by the appropriate fisheries management organization in order to assist decision making on their allocation and use.

FAO CCRF (1995) 10.2.2

Evaluation Parameters

Process: *There is a system that allows for socio-economic value assessments and cultural value assessments to be carried out.*

Current Status/Appropriateness/Effectiveness: *There are socio-economic value assessments and cultural value assessments, both of which are effectively assisting decision making on resource allocation and use.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the economic, social, and cultural value of coastal resources is assessed in order to assist decision decision-making on their allocation and use. Examples may include reports on social, cultural, and economic value of the resource.*

Evaluation (per parameter)

Process:
The 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 purpose of the CDQ Program is: (i) to provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the BSAI Management Area; (ii) to support economic development in western Alaska; (iii) to alleviate poverty and provide economic and social benefits for residents of western Alaska; and (iv) to achieve sustainable and diversified local economies in western Alaska. 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 BS coastline who participate in the program. The CDQ program allocates a percentage of the BSAI quotas to CDQ groups, including pollock, halibut, Pacific cod, crab, and bycatch species.

Current Status/Appropriateness/Effectiveness:
The last review of the CDQ program was 2012. The program is reviewed every ten years. Analysis by the State of Alaska in 2013 determined that each CDQ entity had maintained or improved performance against its objectives.

Evidence Basis:
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.

References:

Community Development Quota (CDQ) Program https://alaskafisheries.noaa.gov/fisheries/cdq

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

2.6 States shall cooperate to support and improve coastal area management, and in accordance with capacities, measures shall be taken to establish or promote (1) systems for research and monitoring of the coastal environment, and (2) multidisciplinary research of the coastal area using physical, chemical, biological, economic, social, legal, and institutional capabilities.

FAO CCRF (1995) 10.2.4, 10.2.5, 10.3.3
FAO CCRF (1995) 8.11.3

Evaluation Parameters

Process: *There is a system that allows research and monitoring of the coastal environment, and multidisciplinary research in support of coastal area management is promoted.*

Current Status/Appropriateness/Effectiveness: *Systems of monitoring and research have taken into account physical, chemical, biological, economic, social, legal, and institutional capabilities to support coastal area management.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there is cooperation to support and improve coastal area management, and in accordance with capacities, measures are taken to establish or promote (1) systems for research and monitoring of the coastal environment, and (2) multidisciplinary research of the coastal area using physical, chemical, biological, economic, social, legal, and institutional capabilities. Examples may include reports on the status of the coastal area using the various aspects listed above.*

Evaluation (per parameter)

Process:

A considerable amount of monitoring of the coastal environment in Alaska is performed and supported by multiple federal and state agencies (e.g., NMFS, AFSC, ADFG), institutions of higher learning (e.g., the University of Alaska Fairbanks Institute of Marine Science), and organizations that support and facilitate marine research (e.g., NPRB).

Current Status/Appropriateness/Effectiveness:
The NOAA Fisheries Strategic Plan calls for predictive models of the consequences of climate change on ecosystems through monitoring changes in coastal and marine ecosystems, conducting research on climate-ecosystem linkages, and incorporating climate information into physical-biological models. As a result, 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. These fish and oceanographic observations are used to connect climate change and variability in large marine ecosystems to early marine survival of commercially important fish species in the GOA, BS, and Arctic. The goal for this assessment is to develop models relating these fisheries-oceanographic indices to productivity of commercially important fish species (e.g., pollock, cod, herring, western Alaska salmon) in the southeastern Bering Sea. The program is supported through partnerships in regional research programs, such as the NPBR, North Pacific Anadromous Fish Commission's Bering Aleutian Salmon International Survey, the Bering Sea Fisherman's Association, the Alaska Sustainable Salmon Fund, and the Arctic Yukon Kuskokwim Sustainable Salmon Fund.

NMFS Alaska Region and the Fisheries' Habitat Conservation Division works in coordination with industries, stakeholder groups, government agencies, and private citizens to avoid, minimize, or offset the adverse effects of human activities on EFH and living marine resources in Alaska. This work includes conducting and/or reviewing environmental analyses for a large variety of activities ranging from commercial fishing to coastal development to large transportation and energy projects. The Habitat Conservation Division identifies technically and economically feasible alternatives and offers realistic recommendations for the conservation of valuable living marine resources. The Habitat Conservation Division focuses on activities in habitats used by federally managed fish species located offshore, nearshore, in estuaries, and in freshwater areas important to anadromous salmon.

NOAA's Pacific Marine Environmental Laboratory undertakes marine ecosystem research focusing on measuring, understanding, and predicting impacts of natural physical, chemical, biological, geological, and anthropogenic processes on the oceanic web of life. A sub-set of their work known as "Oceans and Coastal Processes Research" includes an understanding of ocean physics and interactions between the ocean, the seafloor and atmosphere.

NPRB was established in 2001. The Board is authorized to recommend marine research to the Secretary of Commerce to be funded through a competitive grant program using part of the interest earned from the Environmental Improvement and Restoration Fund, which was part of a large settlement by the U.S. Supreme Court pertaining to a land dispute in the Arctic known as Dinkum Sands. The enabling legislation requires the funds to be used to conduct research on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, BS, and Arctic Ocean.

As a result, the NPRB have helped fund two major projects in the Alaska region:

- The Bering Sea Project is a partnership between the NPRB and the National Science Foundation, which seeks to understand the impacts of climate change and dynamic sea ice cover on the eastern Bering Sea ecosystem. More than 50 scientists from 11 institutions are taking part in the $17.6 million.
- The Gulf of Alaska Project examines the physical and biological mechanisms that determine the survival of juvenile groundfish in the Gulf of Alaska producing products that apply the results to fisheries management.

The University of Alaska Fairbanks Institute of Marine Science conducts research within the Alaska region through a range of fisheries and ocean science disciplines, including marine, estuarine and freshwater ecosystems, and their related human dimensions.

Evidence Basis:
The results or progress of on-going research identified for each of the government bodies or research and academic institutes above can be found at their websites.

References:

Alaska Region, Fisheries' Habitat Conservation Division – Essential Fish Habitat Plan
https://www.fisheries.noaa.gov/resource/document/alaska-essential-fish-habitat-research-plan-research-plan-national-marine
NOAA Fisheries Strategic Plan https://www.fisheries.noaa.gov/resource/document/noaa-fisheries-strategic-plans

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

2.7 In the case of a States' activities that may have an adverse environmental effect on coastal areas of other States, States shall provide timely information and if possible, prior notification to potentially affected States, and consult with those States as early as possible.

FAO CCRF (1995) 10.3.2

Evaluation Parameters

Process: *There is a system to allow early information sharing (i.e., within appropriate timeframes to avoid negative consequences) between States in case of adverse environmental effects from one State.*

Current Status/Appropriateness/Effectiveness: *There are current agreements for or past records of such occurrences. Examples may include oil spills, and aquaculture farm escapes among others.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that in the case of a States' activities that may have an adverse environmental effect on coastal areas of other States, the State provides timely information and if possible, prior notification to potentially affected States. Examples may include reports or data on the international cooperation in these events.*

Evaluation (per parameter)

Process:
The risk of oil pollution and polluted water from coastal mining tailings are examples of potential transboundary environmental effects on the coastal area. Coordination and development of memoranda of cooperation and a Pacific States / British Columbia Oil Spill Task Force to deal with oil and other pollution incidents are examples of facilitating pollution preparedness, prevention, and response.

Current Status/Appropriateness/Effectiveness:
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. Given their experience with the Exxon Valdez oil tanker disaster in 1989, Alaskans have made significant progress in the safe handling, storage, and transportation of oil and chemicals and the cleanup of historical contamination.

Evidence Basis:
Pacific States / British Columbia Oil Spill Task Force produce annual reports, which include prevention, preparedness, response, and communication updates as well as jurisdictional reviews of the U.S. member states and British Columbia.

References:

NOAA, Alaska - Analyzing risk to improve oil spill planning and response https://www.fisheries.noaa.gov/alaska/habitat-conservation/analyzing-risk-improve-oil-spill-planning-and-response
NOAA – Non-fishing impacts to essential fish habitats https://www.fisheries.noaa.gov/resource/document/impacts-essential-fish-habitat-non-fishing-activities-alaska
Pacific States – British Columbia Oil Spill Task Force https://oilspilltaskforce.org
State of Alaska, Department of Environmental Conservation, Division of Spill Prevention and Response (SPAR) https://dec.alaska.gov/spar/

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.3.3/7.2.2
FAO Eco (2009) 28.1, 28.2
FAO Eco (2011) 35.1, 35.2

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.

FAO CCRF (1995) 7.3.3
FAO Eco (2009) 28.1
FAO Eco (2011) 35.1

Evaluation Parameters

Process: *Management objectives based on the best scientific evidence available (which can include traditional/local knowledge, if verifiable) have been translated into a fishery management plan, are in regulation, or are in another document.*

Current Status/Appropriateness/Effectiveness: *The objectives described by the management plan are consistent with the sustainable use of the resource and are subscribed to by all relevant fishery stakeholders.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that scientifically based long-term management objectives consistent with the sustainable use of the resource are translated into a plan or other management document which is subscribed to by all interested parties. Examples may include fishery management plan/framework or legal rules.*

Evaluation (per parameter)

Process:
Under the MSA, the Council is required to prepare and submit an FMP to the secretary of Commerce for approval for each fishery under its authority that is considered to require conservation and management. In so doing, the FMPs must be consistent with ten national standards for fishery conservation and management (16 USC § 1851).

Current Status/Appropriateness/Effectiveness:
The Council has in place groundfish FMPs in the BSAI and GOA that include the pollock fisheries. Within these FMPs, there are nine management and policy objectives that are reviewed annually. These objectives are:

1. Prevent Overfishing:
   - Adopt conservative harvest levels for multi-species and single species fisheries and specify OY.
   - Continue to use the 2 million t OY cap for the BSAI groundfish fisheries.
   - Provide for adaptive management by continuing to specify OY as a range.
   - Provide for periodic reviews of the adequacy of $F_{40\%}$ and adopt improvements, as appropriate.
   - Continue to improve the management of species through species categories.

2. Promote Sustainable Fisheries and Communities:
   - Promote conservation while providing for OY in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities.
   - Promote management measures that, while meeting conservation objectives are also designed to avoid significant disruption of existing social and economic structures.
   - Promote fair and equitable allocation of identified available resources in a manner such that no particular sector, group, or entity acquires an excessive share of the privileges.
   - Promote increased safety at sea.

3. Preserve Food Web:
   - Develop indices of ecosystem health as targets for management.

- Improve the procedure to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors.
- Continue to protect the integrity of the food web through limits on harvest of forage species.
- Incorporate ecosystem-based considerations into fishery management decisions, as appropriate.

4. Manage Incidental Catch and Reduce Bycatch and Waste:
   - Continue and improve current incidental catch and bycatch management program.
   - Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.
   - Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.
   - Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.
   - Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.
   - Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target, prohibited species catch, and non-commercial species.
   - Control the bycatch of prohibited species through prohibited species catch limits or other appropriate measures.
   - Reduce waste to biologically and socially acceptable levels.

5. Avoid Impacts to Seabirds and Marine Mammals:
   - Continue to cooperate with USFWS to protect ESA-listed species, and if appropriate and practicable, other seabird species.
   - Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions.
   - Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
   - Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

6. Reduce and Avoid Impacts to Habitat:
   - Review and evaluate efficacy of existing habitat protection measures for managed species.
   - Identify and designate essential fish habitat and habitat areas of particular concern pursuant to MSA rules, and mitigate fishery impacts as necessary and practicable to continue the sustainability of managed species.
   - Develop a Marine Protected Area (MPA) policy in coordination with national and state policies.
   - Encourage development of a research program to identify regional baseline habitat information and mapping, subject to funding and staff availability.
   - Develop goals, objectives, and criteria to evaluate the efficacy and suitable design of MPAs and no-take marine reserves as tools to maintain abundance, diversity, and productivity.
   - Implement MPAs if and where appropriate.

7. Promote Equitable and Efficient Use of Fishery Resources:
   - Provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources.
   - Maintain the license limitation program, modified as necessary, and further decrease excess fishing capacity and overcapitalization by eliminating latent licenses and extending programs such as community or rights-based management to some or all groundfish fisheries.
   - Provide for adaptive management by periodically evaluating the effectiveness of rationalization programs and the allocation of access rights based on performance.
   - Develop management measures that, when practicable, consider the efficient use of fishery resources taking into account the interest of harvesters, processors, and communities.

8. Increase Alaska Native Consultation:
   - Continue to incorporate local and traditional knowledge in fishery management.
   - Consider ways to enhance collection of local and traditional knowledge from communities and incorporate such knowledge in fishery management where appropriate.
   - Increase Alaska Native participation and consultation in fishery management.

9. Improve Data Quality, Monitoring and Enforcement:
   - Increase the utility of groundfish fishery observer data for the conservation and management of living marine resources.
   - Develop funding mechanisms that achieve equitable costs to the industry for implementation of the Observer Program.
   - Improve community and regional economic impact costs and benefits through increased data reporting requirements.
   - Increase the quality of monitoring and enforcement data through improved technology. Encourage a coordinated, long-term ecosystem monitoring program to collect baseline information and compile existing information from a variety of ongoing research initiatives, subject to funding and staff availability.
   - Cooperate with research institutions such as the NPRB in identifying research needs to address pressing fishery issues.
   - Promote enhanced enforceability.
   - Continue to cooperate and coordinate management and enforcement programs with the BOF, ADFG, and Alaska Fish and Wildlife Protection, the USCG, NMFS Enforcement, International Pacific Halibut Commission, federal agencies, and other organizations to meet conservation requirements; promote economically healthy and sustainable fisheries and fishing communities; and maximize efficiencies in management and enforcement programs through continued consultation, coordination, and cooperation.

The BOF, when developing their initial groundfish management plans (BOF 1996), identified guiding principles for the development of such plans:
   - Minimize bycatch to the maximum extent possible
   - Consider protection of habitat from fishing practices
   - Slow harvest rates to ensure adequate reporting and analysis for necessary season closures
   - Utilize such gear restrictions as necessary to create a year-round harvest for maximum benefit to local communities within the state
   - Harvest the resource to maximize quality and value of product
   - Harvest the resource with consideration of ecosystem interactions
   - Harvest to be based on the total catch of the stock that is consistent with the principles of sustained yield
   - Prevent localized depletion of stocks to avoid sport, subsistence, and personal use conflicts
   - Management based upon the best available information presented to the board
   - Management consistent with conservation and sustained yield of healthy groundfish resources and of other associated fish and shellfish species
   - State fishery management plans adopted by the Board should not substantially and adversely affect federal fishery management plans adopted by the Council

However, at the 4th surveillance audit of the fishery (conducted in March 2022), it came to light that these guiding principles had been repealed in March 2013, and no other document with long-term management objectives have been adopted within any ADFG plan or other management document with regard to the state managed pollock fishery.

As a result, a minor non-conformance was raised at the 4th audit and is carried over into this re-assessment.

Evidence Basis:
Given the combination of the requirement for the Council FMPs to be consistent with the national standards and the adoption of their management and policy objectives, the federally managed pollock fishery clearly has long-term management objectives that are consistent with the sustainable use of the resource and are subscribed to by all relevant fishery stakeholders.

The PWS Pollock Management Plan was apparently developed and implemented on the basis of guiding principles (5 ACC 28.089 [Guiding principles for groundfish fishery regulations, 1996]) developed for BOF groundfish management plans in 1996; however, these were repealed in March 2013. In so doing, this removed the only piece of ADFG documentation that meets Clause 3.1 (i.e., "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") in relation to the state-managed pollock fisheries. As a result, a minor non-conformance is raised.

References:

BOF 1996, Meeting record- "Findings from State Waters Pacific Cod Management Plan" Oct 1996, Wasilla. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/findings/ff97169x.pdf
BOF March 20, 2013 5 ACC 28.089 repealed https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs//2012-2013/statewide/rcs/rc094_adfg_regulatory_language_board_generated_proposal.pdf
MSA section (16 USC § 1851) http://www.touchngo.com/lglcntr/akstats/aac/title05/chapter028/section263.htm

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
Prince William Sound Pollock Management Plan (5 AAC 28.263). http://www.touchngo.com/lglcntr/akstats/aac/title05/chapter028/section263.htm

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	1	x 3) =	7
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☒			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☒		None ☐
Non-Conformance Number (if applicable):					1

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

FAO Eco (2011) 41

Evaluation Parameters

Process: *There is a process that allows for setting specific management objectives in fishery management plans or other relevant regulation (or other appropriate frameworks) for the protection of ETP species.*

Current Status/Appropriateness/Effectiveness: *There are clear objectives in management plans or other relevant regulations (or other appropriate frameworks) seeking to ensure that ETP species are protected from adverse impacts resulting from interactions with the unit of certification and fishery enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible. Such objectives may be outlined in overarching fisheries legislation, regulations, or management plans.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are management objectives seeking 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. Examples may include fishery management plans/framework or legal rules.*

Evaluation (per parameter)

Process:
The processes in place address designation of species and development of objectives and measures under the ESA and MMPA for species of note – particularly Steller sea lions and northern fur seals; short-tailed albatross and a number of salmon stocks. Clause 4.2 sets out the basis of the observer program and the levels of precision available. This forms the basis of data collection directly relevant to the groundfish fisheries under assessment. This program provides comprehensive and high-quality data commensurate to the scale and intensity of the fleet component (noting that observer coverage varies between catcher processor and catcher

vessels, gear type and federal and state fisheries). The observer program is ongoing and provides ongoing updated data on all major aspects of the fisheries, including interactions with endangered and prohibited species.

In addition, specific monitoring of endangered species is carried out throughout the EBS, AI, and GOA, as appropriate. Marine mammals, and notably Steller sea lions and northern fur seal are monitored according to requirements within the MMPA. Interactions between marine mammals and commercial fisheries are addressed through stock assessments, with regional scientific review groups to advise and report on the status of marine mammal stocks within Alaska waters. These assessments include descriptions of the stock's geographic range, minimum population estimates, current population trends, current and maximum net productivity rates, optimum sustainable population levels and allowable removal levels, and estimates of annual human-caused mortality and serious injury through interactions with commercial fisheries (and subsistence hunters). These data are used to evaluate the progress of each fishery towards achieving the MMPA's goal of zero fishery-related mortality and serious injury of marine mammals. Surveys include aerial counts of adults and pups, together with satellite tagging studies.

The USFWS compiles data collected for seabirds at breeding colonies throughout Alaska (which may also feed into ecosystem monitoring used in the SAFE process).

Salmon are monitored through assessments carried out by relevant departments of Fish and Game (notably the ADFG). Within the ground fish fisheries, coded-wire tag recoveries are used to determine sources of fish taken in bycatches: observer sampling protocols implemented in 2011 improved estimates of the stock of origin (from both coded-wire tag and genetic stock assignment) of the Chinook bycatch from the pollock fishery.

Current Status/Appropriateness/Effectiveness:
The effectiveness of management objectives and accompanying measures in the groundfish fisheries is considered appropriate and effective in ensuring that endangered species are protected from adverse impacts resulting from interactions with the unit of certification.

Objectives set out in the BSAI and GOA FMPs are:

- Continue to cooperate with USFWS to protect ESA-listed species, and if appropriate and practicable, other seabird species.
- Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions.
- Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
- Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

BSAI pollock fishery: Marine mammals are rarely taken incidentally in the BSAI pollock fisheries; comparison of species-specific bycatch estimates with the potential biological removals (PBRs) for, in particular, Steller sea lions and northern fur seal indicates that interaction with the pollock fishery is below national limits (objectives). Objectives and management responses have also been implemented in relation to the potential effects of the fishery on food availability. Marine mammals whose foraging and prey preferences overlap with the fisheries, fishery removals could potentially adversely affect the amount or distribution of prey. Accordingly, habitat essential to endangered species is identified according to regulatory requirements (ESA and MMPA).

NMFS has designated 100,286 square kilometers as critical habitat for Steller sea lions in the AI. For pollock, this means closing 65% of critical habitat in the Aleutian Islands to pollock fishing, including 0-20 nm from rookeries and haul outs. Effects on mammals are specifically considered when setting pollock TACs and seasonal allowances.

The USFWS compiles data collected for seabirds at breeding colonies throughout Alaska to monitor the condition of the marine ecosystem and to evaluate the conservation status of species. The AFSC also produces annual estimates of total seabird bycatch from the groundfish fisheries. Trawl fisheries for pollock and other species account for a small fraction of seabird bycatch. AFSC (S. Fitzgerald pers. comm.) report very low bycatch of seabirds, with no observed takes of short-tailed albatross. AFSC have been researching potential "cryptic" mortality, in which bird bycatch can happen on trawl vessels where the birds are not available to standard sampling. Overall, however, there are considered to be no marine bird conservation issue for pelagic trawl vessels, especially in the pollock fleet.

The estimates of endangered salmon in the pollock fishery come from coded-wire tag recoveries from salmon bycatch. These data indicate that between 1984 and 2012 few wild Chinook from the lower Columbia or upper Willamette rivers were taken by the pollock fishery (Ford 2011). Most (97%) of the CWT recoveries are from hatchery salmon. Given the small number of Chinook estimated to

have been taken in the pollock fishery, the BSAI pollock fishery is highly unlikely to pose a threat to ESA-listed salmon populations in the Pacific Northwest.

GOA pollock fishery: As with the BSAI fishery, direct interactions of pollock gear with marine mammals is very rare. Of particular concern has been the decline in the western stock of Steller sea lions. Reasons for this have been considered in the current Steller sea lion biological opinion. A number of management actions were implemented by the Council to promote the recovery of Steller sea lions, including the restriction of pollock trawling within areas of critical habitat - included 3 nm no-entry zones around rookeries, prohibition of groundfish trawling within 10-20 nm of certain rookeries, and three special aquatic foraging areas in the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area. Recent surveys indicate that in the GOA pups and non-pups have increased at average rates of from 2-4% and 2-5% per year, giving a sustained increase in population size.

As with the BSAI, there are considered to be no marine bird conservation issues for pelagic trawl vessels, especially in the pollock fleet. Also, as with the BSAI fishery, a recent supplementary biological opinion concluded that groundfish fisheries in the GOA were not likely to jeopardize the continued existence of endangered Chinook stock.

Observer Program data provide annual estimates of takes of ETP fish (salmon), seabirds, and marine mammals in the BSAI and GOA pollock fisheries.

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

References:

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
Marine Mammal Protection: Conservation and Management https://www.fisheries.noaa.gov/topic/marine-mammal-protection/conservation-&-management
Northern fur seal: Conservation and Management https://www.fisheries.noaa.gov/species/northern-fur-seal#conservation-management
Steller sea lion: Conservation and Management https://www.fisheries.noaa.gov/species/steller-sea-lion#conservation-management

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

3.1.2 There shall be management objectives seeking to avoid, minimize, or mitigate impacts of the unit of certification on the *stock* under consideration's essential habitats, and on habitats that are highly vulnerable to damage by the unit of certification's fishing gear.

FAO Eco (2011) 41.3

Evaluation Parameters

Process: *There is a mechanism in place by which the essential habitat of the stock under consideration and the potential impacts of the fishery (i.e., employing bottom contact gear) upon them are identified. This or a similar mechanism shall also be in place to identify habitats, which are highly vulnerable to fishery activities by the unit of certification. The information provided by these mechanisms shall be used to produce specific management objectives seeking to avoid significant negative impacts on habitats. When identifying highly vulnerable habitats, their value to ETP species shall be also considered, with habitats essential to ETP species being categorized accordingly.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the objectives described above are in place, and that effective management measures relative to those have been implemented.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are management objectives seeking to avoid, minimize, or mitigate impacts of the unit of certification on the stock under consideration's essential habitats and on habitats that are highly vulnerable to damage by the unit of certification's fishing gear. Examples may include various regulations, fishery management plans, data, and reports.*

Evaluation (per parameter)

Process:
This issue is considered more fully under Clauses 12.2.7 and 12.2.8. The MSA requires Councils to identify EFHs for all fisheries and to 'prevent, mitigate or minimize, to the extent practicable' any adverse effects of fishing on EFH that are 'more than minimal and not temporary'. Councils are also required to give special attention to HAPCs (i.e., specific sites within EFH that are of particular ecological importance to the long-term sustainability of managed species) are of a rare type or are especially susceptible to degradation or development. HAPCs are meant to provide for greater focus of conservation and management efforts and may require additional protection from adverse effects.

There is also a requirement for a five-yearly review of methods to evaluate effects on EFH. The most recent EFH assessment began in 2020 and is ongoing. The latest review of EFH issues has developed a hierarchical impact assessment methodology to operationalize the 'more than minimal and not temporary' criterion. This is based on the model of EFH impact and recovery outlined earlier. Stock assessment authors are required to determine whether the population under assessment is above or below the minimum stock size threshold (MSST; defined as 0.5 x MSY). For stocks at this level, mitigation measures would be required if the stock assessment author determines that there is a plausible connection to reductions in EFH. The next question is whether the 'core EFH area' (CEA; defined as the 50% quantile of EFH) is disturbed by fishing. If so, then stock assessment authors must determine whether critical life-history characteristics of the stock are correlated with the proportion of CEA affected. If correlations suggest a plausible stock effect, plan teams and SSC will consider appropriate mitigation measures to recommend to Council. As part of the last EFH assessment in 2015, it was reported that the groundfish and crab plan teams concurred with the stock assessment authors conclusions that habitat reduction within the core EFH areas was not affecting their stocks in ways that were more than minimal or not temporary.

HAPCs are designated following a nomination process according to the Council's priorities. HAPC nominations are generally on a five-year cycle but may be initiated at any time. The Council may designate specific sites as HAPCs and may develop management measures to protect habitat features within HAPCs.

50 CFR 600.815(a)(8) provides guidance to the Councils in identifying HAPCs. FMPs should identify specific types or areas of habitat within EFH as habitat areas of particular concern based on one or more of the following considerations:

1. The importance of the ecological function provided by the habitat.
2. The extent to which the habitat is sensitive to human-induced environmental degradation.
3. Whether, and to what extent, development activities are, or will be, stressing the habitat type.
4. The rarity of the habitat type.

Proposed HAPCs, identified on a map, must meet at least two of the four considerations above and rarity of the habitat is a mandatory criterion. HAPCs may be developed to address identified problems for FMP species, and they must meet clear, specific, adaptive management objectives.

In order to protect HAPCs, certain habitat protection areas and habitat conservation zones have been designated. Their objectives being to minimize adverse effects of fishing on EFH, resulting in the area closure to bottom contacting gear. The following areas have been designated in the BSAI management area:

- Bowers Ridge Habitat Conservation Zone (Bowers Ridge and Ulm Plateau)
- Alaska Seamount Habitat Protection Area (Bowers Seamount)

Current Status/Appropriateness/Effectiveness:
The mechanisms developed to identify significant effects on EFH and for identifying HAPC have been developed and 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. Monitoring of fishing activity in relation to HAPCs is undertaken through VM, aerial surveillance and at-sea patrols.

Evidence Basis:
Reports on the EFH evaluation methodology, calls for identification of HAPCs and identification of designated areas, and SAFE assessments are all publicly available on NMFS and Council websites.

References:

Essential Fish Habitat (EFH) in Alaska https://www.fisheries.noaa.gov/alaska/habitat-conservation/essential-fish-habitat-efh-alaska
Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) Provisions in Alaska Fisheries – Federal Register Rules and Notices https://www.fisheries.noaa.gov/action/essential-fish-habitat-efh-and-habitat-areas-particular-concern-hapc-provisions-alaska
NPFMC 2017b, Public Review Draft, EFH Omnibus Amendments. April 2017 https://meetings.npfmc.org/CommentReview/DownloadFile?p=8547b7bb-396d-4288-8bf0-32eaa5f0ee96.pdf&fileName=C6%20EFH%20Omnibus%20Ams%202017%20Final%20EA.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

3.1.3 There shall be management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery enhancement) on the structure, and function of the ecosystems that are likely to be irreversible or very slowly reversible.

FAO Eco (2011) 36.9

Evaluation Parameters

Process: *There is a process in place by which adverse impacts of the fishery (including any fishery enhancement) on the structure, and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible are identified. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored. This process results in setting relative management objectives. Management priority shall be focused primarily towards minimizing and avoiding identified impacts.*

Current Status/Appropriateness/Effectiveness: *There are management measures in place to achieve the objectives described in the process parameter. Such objectives may be outlines in overarching fisheries legislation, regulations, or management plans.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are management objectives seeking to minimize adverse impacts of the fishery (including any enhancement activities) on the structure, processes, and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible. Examples may include fishery management plans, other regulatory documents, or laws.*

Evaluation (per parameter)

Process:
Effects on ecosystem aspects are considered more fully under Clauses 12.1-12.4. Essentially, there are several processes in place which demonstrably 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. Following scientific assessment by the assessment authors, NMFS plan teams, information and recommendations are made to the SSC and Council. The Council, following reviews of relevant information, will recommend TACs for each target species. It is noted that this council review includes consideration of inputs on effects on habitats, protected species and the wider ecosystem, all of which may affect decision making. The process of managing the groundfish fishery in relation to these considerations is set out in the FMP. The FMP is also subject to review through the PSEIS to determine the impacts of management options and so selection of the preferred (least damaging) options.

There are specific processes through NMFS and USFWS to review potential impacts (generally indirect effects through changes in prey availability) on endangered species (through the ESA) and marine mammals (MMPA). Assessments of the effects of the Alaska groundfish fisheries on many Endangered species are also provided in the Alaska Groundfish Harvest Specifications Environmental Impact Statement. There are also requirements for the relevant agency (NMFS or USFWS) to evaluate (provide a biological opinion) on the effects of the FMP for the GOA and BSAI groundfish fisheries and the State of Alaska parallel groundfish fisheries on endangered species. The biological opinion process has been followed, as required for short-tailed albatross, Steller sea lion, and Chinook salmon in relation to the groundfish fisheries.

There is evidence from each aspect of the fishery management for the implementation of management responses (or the further analysis where impacts may be indirect and uncertain). In particular:

1. Conservative harvest levels are set for single and multi-species fisheries – these are demonstrable for each target species and group affected.
2. ABC levels are adjusted to account for uncertainty and wider effects on the ecosystem – for example pollock TACs in the EBS were adjusted partially to take account of potential indirect effects on northern fur seal.
3. Measures are in place to minimize bycatch and discarding (see Clause 12.2.1), including specific requirements and management/operational responses relating to prohibited species (notably Chinook salmon and halibut).
4. Measures have been implemented to minimize direct effects on endangered species and prohibited species (such as salmon escapement devices on pollock trawls) and to minimize indirect effects (such as closure of essential habitat surrounding Steller sea lion rookeries.
5. Measures are in place to protect EFHs (where relevant) and HAPCs. Several HAPCs are designated in the GOA, EBS, and AI – see Clause 12.2.6 below.

Current Status/Appropriateness/Effectiveness:
Wherever impacts are identified (and again this is far more precautionary than addressing only effects with serious consequences), there is evidence available to support the use of an immediate management response, as set out above. In some cases, further information may be required, and if so, studies are implemented generally with an accompanying precautionary management measure. For example, the northern fur seal is listed as depleted under the MMPA, with the Eastern Stock population at about 1/3 of its historical peak. This has already been considered in a precautionary way in TAC-setting through the Council consideration of ecosystem indicators, one of which is fur seal pup success.

Evidence Basis:
There is an extensive evidence base setting out the evaluation of effects and implementation of management response; this includes SAFE reports, FMPs, Endangered species Conservation Plans, supporting EIS, and biological opinions. These are all publicly available through NMFS and Council websites.

References:

NOAA 2022c Biological opinions issued in the Alaska region https://www.fisheries.noaa.gov/alaska/consultations/section-7-biological-opinions-issued-alaska-region
Northern fur seal: Conservation and Management https://www.fisheries.noaa.gov/species/northern-fur-seal#conservation-management
PSEIS 2015. Programmatic Supplemental Environmental Impact Statement (PSEIS) https://www.fisheries.noaa.gov/action/alaska-groundfish-programmatic-supplemental-environmental-impact-statement-pseis
Steller sea lion: Conservation and Management https://www.fisheries.noaa.gov/species/steller-sea-lion#conservation-management

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

3.2 Management measures shall provide, *inter alia,* that:

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

Evaluation Parameters

Process: *There are management measures in place to limit and/or reduce the total fishing capacity of the unit of certification. These measures shall include specific fishing capacity objective(s), which themselves are based on the best scientific evidence available to understand the level of fishing pressure appropriate to ensure the long-term sustainability of the fishery. Please note that assessors should ensure that catches are within limits, and that data from enforcement show an adequate level of compliance with fisheries laws and regulation.*

Current Status/Appropriateness/Effectiveness: *The fishing capacity of the unit of certification is at or below the level of the specific fishing capacity objective(s).*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that excess fishing capacity is avoided and exploitation of the stocks remains economically viable. Examples may include fishery reports on harvest recommendation or fleet reports.*

Evaluation (per parameter)

Process:

Excess fishing capacity in the BSAI is avoided by the AFA (1998; https://www.law.cornell.edu/topn/american_fisheries_act). AFA limits participation and allocates percentages of the BSAI pollock fishery TAC among the fishery sectors (Section 206 of the Act). After deducting 10% of the TAC for the CDQ program and an incidental catch allowance, 50% of the remaining TAC is allocated to the inshore vessel sector; 40% to the C/P sector; and 10% to the mothership sector.

In 2000, the Council adopted the Alaska LLP. The intent of the program has been to use fishing track record to rationalize the Alaska groundfish and crab fleet by limiting the number, size, and specific operation of vessels as well as eliminating latent licenses.

Current Status/Appropriateness/Effectiveness:
The capacity of the pollock fleets is not capped, rather the proportion of the quota available has, in effect, capped capacity. There have been relatively few new builds in the fishery, the tendency has been to re-fit existing vessels, and there is no incentive to invest in spare catching. Rather, the investment has been in improving CPUE (pers. comm. Austin Estabrooks, APA).

In the state PWS pollock fishery, the GHL was 4,927,322 pounds in 2021 and 5,080,222 pounds in 2020. Between 16-22 vessels have operated in this fishery between 2018-2021. These are rigorously managed to spread the catch across the harvest area so as not to cause localized depletions which might impact endangered Steller sea lions. The vessels that participate in this small fishery are normally selected and agreed to by the Kodiak trawl fleet. Daily catches and landings are reported to ADFG.

Evidence Basis:
The number and size of vessel in the AFA fleets have not increased owing to the lack of incentive to increase capacity.

References:

ADFG 2022i Pollock - Directed Pelagic Trawl Fishery, Prince William Sound Management Area
https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareapws.pws_groundfish_pelagic_trawl_harvest
Alaska License Limitation Program https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/license-limitation-program-alaska

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

Evaluation Parameters

Process: *Where best scientific evidence available determines that it is necessary, there are management measures in place to ensure the economic conditions under which the fishery operates promote responsible fisheries.*

Current Status/Appropriateness/Effectiveness: *There is evidence for the general economic value of the resource and its benefit to fishermen. There is enforcement data that supports the occurrence of responsible fishing practices.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the economic conditions under which fishing industries operate promote responsible fisheries. Examples may include economic reports or enforcement data.*

Evaluation (per parameter)

Process:
As a result, and in combination with good management practices and generally favorable environmental conditions, the Alaska pollock fishery has largely remained economically stable since the 1990s and fostered responsible fishing. The longer-term economic future of the fishery is also under consideration with respect to adaptation to climate change.

Current Status/Appropriateness/Effectiveness:
Estimates of ex-vessel value by area, gear, type of vessel, and species are included in the annual Economic Status appendix to the SAFE report. Enforcement reports indicate very high compliance in the pollock fisheries (see Clause 10).

Evidence Basis:
Estimates of ex-vessel value by area, gear, type of vessel, and species are included in the annual Economic Status appendix to the SAFE report. Retained catch of pollock in the BSAI was 1,357,850 t in 2020 with an ex-vessel value of $390 million. In the GOA, the retained catch of pollock was 106,290 t with an ex-vessel value of $27.7 million.

References:

Economic value of Alaska's seafood industry – ASMI Report: https://www.alaskaseafood.org/wp-content/uploads/MRG_ASMI-Economic-Impacts-Report_final.pdf

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, K. Sparks. 2020. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

NOAA - The role of economics in the Bering Sea pollock fishery's adaptation to climate change https://apps-afsc.fisheries.noaa.gov/Quarterly/jas2012/divrptsREFM5.htm

NOAA 2020. Change in distribution of Alaska pollock due to changing ocean conditions https://www.fisheries.noaa.gov/feature-story/study-shows-pollock-stocks-are-mixing-more-due-changing-ocean-conditions-and-weather

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

Evaluation Parameters

Process: *There is a system or process in place that identifies the interests of small-scale fishers, either through stakeholder engagement or social research, in a way, which permits the utilization of the information during the management measure development process.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the interests of small-scale fishers are effectively taken into account during the development of management measures, and there is no evidence that small-scale fisheries are adversely impacted by any management measures currently in place.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the interests of fishers, including those engaged in subsistence, small-scale, and artisanal fisheries are taken into account. Examples may include dedicated quotas, public meeting records, laws, and regulations.*

Evaluation (per parameter)

Process:
The interest of subsistence, small-scale and artisanal fisheries are explicitly taken into account within the FMPs and, with respect to the BSAI and GOA pollock fisheries, action has been taken to minimize the bycatch of chum and Chinook salmon, as a direct consequence of its importance for subsistence and artisanal fisheries (see Section 2.3 above).

Current Status/Appropriateness/Effectiveness:
The GOA and BSAI FMPs describe management measures designed to take into account the interests of subsistence, small-scale, and artisanal fisheries. Specific FMP management objectives and sub-objectives include: the promotion of sustainable fisheries and communities, the promotion of equitable and efficient use of fishery resources and increase Alaska native consultation.

The fishery dependence of coastal and western Alaska communities was addressed through the creation of the pollock, sablefish, and halibut CDQ programs for the BSAI in the early to mid-1990s and the expansion of those programs into the multispecies CDQ Program with the addition of all other groundfish species by 1999. The CDQ Program has provided the following for the CDQ communities: 1) additional employment in the harvesting and processing sectors of the groundfish fisheries; 2) training; and 3) income generated by fishing the CDQ allocations. In many cases, CDQ royalties have been used to increase the ability of the residents of the CDQ communities to participate in the regional commercial fisheries, or the CDQ has been fished by residents themselves.

In addition to this, the Council takes into account the interests of fishers, including those engaged in subsistence, small-scale, and artisanal fisheries, during management of the pollock fisheries in the BSAI and the GOA (e.g., by using PSC limits and the Council and the industry have and continue to take measures to reduce Chinook and chum salmon bycatch).

While one of the key responsibilities of the ADFG is subsistence fisheries, the state pollock fishery is not considered to be a subsistence fishery.

Evidence Basis:
The FMPs provide information on subsistence fisheries in the BSAI and GOA and how they are taken into account within the management process.

References:

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
Community Development Program http://www.npfmc.org/community-development-program/

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10

Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐	None ☒
Non-Conformance Number (if applicable):				

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

FAO CCRF (1995) 7.2.2
FAO Eco (2009) 28.2
FAO Eco (2011) 35.2

Evaluation Parameters

Process: *There are management measures in place specifically designed to ensure that the biodiversity of aquatic ecosystems is conserved and ETP species are protected. This shall reflect the existence of specific management objectives and measures, which are based on the best scientific evidence available.*

Current Status/Appropriateness/Effectiveness: *The management measures currently in place have been successful in meeting the management objectives. Such objectives may be outlines in overarching fisheries legislation, regulations, or management plans. There is no evidence that the fishery is currently having a significant adverse impact on aquatic ecosystems, and it is not putting any ETP species at risk of extinction.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that biodiversity of aquatic ecosystems is conserved and ETP species are protected. Where relevant, there are management objectives, and as necessary, management measures. Examples may include laws and regulations, fisheries management plans, and species status reports.*

Evaluation (per parameter)

Process:
The process in place for the development of management objectives to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification are set out in Clause 12.2.5 below. Measures to preserve the biodiversity of ecosystems (notably HAPCs) are considered under Clauses 3.1.2 and 12.2.6-12.2.8.

The processes in place address designation of species and development of objectives and measures under the ESA and MMPA for species of note – particularly Steller sea lions and northern fur seals; short-tailed albatross, and several salmon stocks. Clause 4.2 sets out the basis of the observer program and the levels of precision available. This forms the basis of data collection directly relevant to the groundfish fisheries under assessment. This program provides comprehensive and high-quality data commensurate to the scale and intensity of the fleet component (noting that observer coverage varies between catcher processor and catcher vessels, gear type and federal and state fisheries). The Observer Program is ongoing and provides ongoing updated data on all major aspects of the fisheries, including interactions with endangered and prohibited species.

In addition, specific monitoring of endangered species is carried out throughout the EBS, AI, and GOA, as appropriate. Marine mammals, and notably Steller sea lions and northern fur seal are monitored according to requirements within the MMPA. Interactions between marine mammals and commercial fisheries are addressed through stock assessments, with regional scientific review groups to advise and report on the status of marine mammal stocks within Alaska waters. These assessments include descriptions of the stock's geographic range, minimum population estimates, current population trends, current and maximum net productivity rates, optimum sustainable population levels and allowable removal levels, and estimates of annual human-caused mortality and serious injury through interactions with commercial fisheries (and subsistence hunters). These data are used to evaluate the

progress of each fishery towards achieving the MMPA's goal of zero fishery-related mortality and serious injury of marine mammals. Surveys include aerial counts of adults and pups, together with satellite tagging studies.

The USFWS compiles data collected for seabirds at breeding colonies throughout Alaska (which may also feed into ecosystem monitoring used in the SAFE process).

Salmon are monitored through assessments carried out by ADFG. Within the ground fish fisheries, coded-wire tag recoveries are used to determine sources of fish taken in bycatches, and observer sampling protocols have improved estimates of the stock of origin (from both coded-wire tag and genetic stock assignment) of the Chinook bycatch from the pollock fishery.

Current Status/Appropriateness/Effectiveness:
The effectiveness of management objectives and accompanying measures in the groundfish fisheries is considered appropriate and effective in ensuring that endangered species are protected from adverse impacts resulting from interactions with the unit of certification.

Objectives set out in the BSAI and GOA FMPs are:

- Continue to cooperate with USFWS to protect ESA-listed species, and if appropriate and practicable, other seabird species.
- Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions.
- Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
- Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

<u>BSAI pollock fishery:</u>
Marine mammals are rarely taken incidentally in the BSAI pollock fisheries; comparison of species-specific bycatch estimates with the PBRs for, in particular, Steller sea lions and northern fur seal indicates that interaction with the pollock fishery is below national limits (objectives). Objectives and management responses have also been implemented in relation to the potential effects of the fishery on food availability. Marine mammals whose foraging and prey preferences overlap with the fisheries, fishery removals could potentially adversely affect the amount or distribution of prey. Accordingly, habitat essential to endangered species is identified according to regulatory requirements (ESA and MMPA). NMFS has designated 100,286 km^2 as critical habitat for Steller sea lions in the AI. For pollock, this means closing 65% of critical habitat in the AI to pollock fishing, including 0-20 nm from rookeries and haul outs. Effects on mammals are specifically considered when setting pollock TACs and seasonal allowances.

The USFWS compiles data collected for seabirds at breeding colonies throughout Alaska to monitor the condition of the marine ecosystem and to evaluate the conservation status of species. The AFSC also produces annual estimates of total seabird bycatch from the groundfish fisheries. Trawl fisheries for pollock and other species account for a small fraction of seabird bycatch. AFSC report very low bycatch of seabirds. There are considered to be no marine bird conservation issue for pelagic trawl vessels, especially in the pollock fleet.

The estimates of endangered salmon in the pollock fishery come from coded-wire tag recoveries from salmon bycatch. Data indicate that most (97%) of the CWT recoveries are from hatchery salmon. Given the small number of Chinook estimated to have been taken in the pollock fishery, the BSAI pollock fishery is highly unlikely to pose a threat to ESA-listed salmon populations in the Pacific Northwest.

<u>GOA pollock fishery:</u>
As with the BSAI fishery, direct interactions of pollock gear with marine mammals is very rare. Of particular concern has been the decline in the western stock of Steller sea lions. Reasons for this have been considered in the current Steller sea lion biological opinion. Several management actions were implemented by the Council to promote the recovery of Steller sea lions, including the restriction of pollock trawling within areas of critical habitat (i.e., 3 nm no-entry zones around rookeries, prohibition of groundfish trawling within 10-20 nm of certain rookeries, and three special aquatic foraging areas in the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area).

As with the BSAI, there are considered to be no marine bird conservation issues for pelagic trawl vessels, especially in the pollock fleet. Also, as with the BSAI fishery, a supplementary biological opinion concluded that groundfish fisheries in the GOA were not likely to jeopardize the continued existence of the endangered Chinook stock.

Observer Program data provide annual estimates of takes of ETP fish (salmon), seabirds and marine mammals in the BSAI and GOA pollock fisheries.

Evidence Basis:
FMPs, protected species management plans, and biological opinion reviews are all supported by well-designed data-gathering programs and analyses; these are 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.

References:

Alaska Groundfish Programmatic Supplemental Environmental Impact Statement (PSEIS) https://www.fisheries.noaa.gov/action/alaska-groundfish-programmatic-supplemental-environmental-impact-statement-pseis
Krieger, J.R. and Eich, A.M. 2021. Seabird Bycatch Estimates for Alaska Groundfish Fisheries: 2020. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/AKR-25, 40 p. 10.25923/a0fb-nt02.
Marine Mammal Protection: Conservation and Management https://www.fisheries.noaa.gov/topic/marine-mammal-protection/conservation-&-management
NOAA 2022c Biological opinions issued in the Alaska region https://www.fisheries.noaa.gov/alaska/consultations/section-7-biological-opinions-issued-alaska-region
Northern fur seal: Conservation and Management https://www.fisheries.noaa.gov/species/northern-fur-seal#conservation-management
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
NPFMC 2022b Chinook salmon bycatch management in Alaska https://www.fisheries.noaa.gov/alaska/bycatch/chinook-salmon-bycatch-management-alaska
Stellar Sea lion biological opinion. https://www.fisheries.noaa.gov/resource/document/biological-opinion-authorization-bering-sea-aleutian-islands-groundfish-1
Steller sea lion: Conservation and Management https://www.fisheries.noaa.gov/species/steller-sea-lion#conservation-management

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

B. Science and Stock Assessment Activities, and the Precautionary Approach

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

FAO CCRF (1995) 7.1.9, 7.4.4, 7.4.5, 7.4.6, 8.4.3, 12.4
FAO Eco (2009) 29.1–29.3
FAO Eco (2011) 36.1, 36.3–36.5, 37.4

4.1 All significant fishery removals and mortality of the target species (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 be objectively 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 regional, and international fisheries organizations.

FAO CCRF (1995) 7.3.1, 7.4.6, 7.4.7, 12.4
FAO Eco (2009) 29.1–29.3
FAO Eco (2011) 36.1, 36.3, 36.4

Evaluation Parameters

Note: *Provision of data to relevant States and, regional, and international fisheries organizations is dependent on the nature of the stock (i.e., transboundary, shared, straddling, highly migratory and high seas stock) and the type or arrangement in place for co-management (i.e., commission, arrangement, etc.). This part of the clause does not apply in cases where stocks occur entirely in one State's EEZ or jurisdiction, and co-management with another country is not required.*

Process: *There is a process or system that allows for effective data collection (including data on retained catch, bycatch, discards, and waste) on the status of fisheries and ecosystems for management purposes. In the case of stocks fished by more than one State, this includes a system or agreement with other States to ensure mortality and removals data are available for the entirety of the biological stock. Some fisheries and/or fish stock are hard to monitor for various reasons, including remoteness of operation/distribution and complexity of fishing operations—posing particular challenges with the collection and maintenance of adequate, reliable, and current data and/or other information. Assessors shall acknowledge and explain these challenges, data collection, and maintenance to cover all stages of fishery development in accordance with applicable international standards and practices. For salmon, the assessors shall describe and present the enumeration methods (i.e., peak aerial survey, feet survey, weir count, tower, mark-recapture, sonar, etc.) utilized for all the major stocks managed by formal escapement goal in Alaska. Such summary data can be found in the annually released ADF&G document Summary of Pacific salmon escapement goals in Alaska with a review of escapements from [year] to [year]. The document generally reviews the latest 9-10 years of salmon escapements, enumeration, goal development methods, and the relative escapement goal performance.*

Current Status/Appropriateness/Effectiveness: *There are appropriate and reliable data collection and estimation methods. Reliable and accurate data are collected on retained catch, bycatch, discards, and waste (for targeted and non-targeted fisheries), and the direct and indirect impacts of the fishery on the ecosystem. Such information is disseminated to all relevant fishery management authorities. Overall, the data collection system is considered effective for the purposes of this clause if fishery scientists believe there is a high probability that the total estimated mortality is an accurate reflection of the actual total mortality across the entire biological stock. Fishery data are collected with a frequency and level of aggregation, which allows the effective and informed management of the stock. The appropriate level of aggregation will often be the stock level, but could also reflect specific habitats, gear types, sub-populations, etc. The requirements for data collection are focused on the need to assess the effects of the unit of certification on non-target stocks. Non-target catches and discards refer to species/stocks that are taken by the unit of certification other than the stock for which certification is being sought. The adequacy of data relates primarily to the quantity and type of data collected (including sampling coverage) and depends crucially on the nature of the systems being monitored and purposes to which the data are being put. Some analysis of the precision resulting from sampling coverage would normally be part of an assessment of adequacy and reliability. The currency of data is important, inter alia, because its capacity for supporting reliable assessment of current status and trends declines as it gets older.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that all significant fishery removals and mortality of the target species are considered by the fishery management organizations. Specifically, reliable and*

accurate data required for assessing the status of fishery/ies and ecosystems—including data on retained catch, bycatch, discards, and waste—are collected. Data can include relevant traditional, fisher, or community knowledge, provided their validity can objectively be verified (i.e., the knowledge has been collected and analyzed though a systematic, objective, and well-designed process, and is not just hearsay). Examples may include stock assessment reports, catch data, and observer data.

Evaluation (per parameter)

Process:
There is a satisfactory process to account for fishery removals and mortality of pollock, and all removals are considered in the assessment and management of the stocks. Reliable and accurate data are provided annually to assess the status of fisheries and ecosystems. These data including information on retained catch in the directed fisheries by all gears, by-catch in trawl fisheries, and catches in the Alaskan state-managed fisheries (inside 3 n. mi.), including subsistence fisheries. Several data reporting systems are in place to ensure timely and accurate collection and reporting of catch data. Reporting of commercial catch from both state and federally managed fisheries is done through the Catch Accounting System (CAS), a multi-agency (NMFS, International Pacific Halibut Commission, and ADFG) system that centrally collates landings data from shore-based processing and landings operations as well as retained catch observations from individual vessels. The CAS system also provides a centralized data platform for the collation of catch (landings and discards) data from the extensive observer program. Catch and effort are recorded through the e-landing (electronic fish tickets) system and also collected by vessel captains in logbooks.

The CAS combines observer and industry information such as e-landings to create estimates of total catch. The CAS procedures complement the sampling procedures established under the restructured observer program. Bycatches in the directed pollock fisheries are recorded by observers, reported through the CAS, and presented in the annual stock assessments. Recreational removals are not reported to CAS but are estimated and are relatively minor for pollock in any case.

Current Status/Appropriateness/Effectiveness:
The data collection and catch estimation methods for Alaskan pollock are appropriate, reliable, and well documented. Accurate data are collected on retained catch, bycatch, discards and waste (for directed and non-directed fisheries), non-target species, and the direct and indirect impacts of the pollock fishery on the ecosystem. Such information is available to all relevant fishery management authorities, such as NMFS and ADFG. Fishery data are collected with a frequency and level of aggregation which allows the stock assessments to be conducted annually on four units, as outlined previously, and contributes to effective and informed management of the stock components. The total estimated mortality is an accurate reflection of the actual total mortality across the entire biological stock, based on these stock assessments.

When fish are landed, a representative of the processor submits the landing report into eLandings and a paper “fish ticket” is printed for both the processor and the vessel representative to sign. Landing reports are mandatory for all processors required to have a federal processing permit. Landing reports include the fishing start date, the delivery date, gear type, area fished, a breakdown of the weight and condition of each species delivered, and weights of any species that were discarded at the plant before processing. Landings are verified by shore-based observers and estimates of discards in the pollock fisheries are compiled from fishing logbooks and at-sea observer data.

Evidence Basis:
Additional details on the catch reporting and estimation processes can be found in Cahalan et al. (2014), and more information on commercial pollock catches is found in the 2021 SAFE documents and in Fissel et al. (2021), such as the one for the 2021 EBS pollock assessment (Ianelli et al. 2021a). Catch reports for pollock in the BSAI and GOA regions for 2020 and previous years can be found on the NMFS Alaska fisheries website. ADFG also produces documents on the PWS pollock fishery. Other catch-related data from the fishery such as CPUE, location of catches, etc. are routinely collected and presented in the stock assessment SAFE reports (Barbeaux et al. 2021; Iannelli et al. 2021a; Monnahan et al. 2021). During the site visit, the stakeholders stressed that COVID-19 did not affect the science and stock assessment activities, as well as the data collection programs.

References:

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, K. Sparks. 2016. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones; D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Cahalan, J., J. Gasper, and J. Mondragon. 2014. Catch sampling and estimation in the federal groundfish fisheries off Alaska, 2015 edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 46 p. Document available: http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-286.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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 setting 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.

FAO CCRF (1995) 7.4.4, 12.3, 12.13
FAO Eco (2009) 29.1, 29.3
FAO Eco (2011) 36.3, 36.5

Evaluation Parameters

Process: *There is a process or system that allows for the production, maintenance, update, and verification of statistical data to international standards. Such standards include the FAO Coordinating Working Party on Fishery Statistics Handbook of Fishery Statistical Standards. Also, there is a process for the use and distribution of research results as a basis for setting 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). Please note that stock assessment for salmon is intended as the processes that leads to enumeration, escapement goal development, and fishery management activities to meet escapement goals.*

Current Status/Appropriateness/Effectiveness: *There is evidence for the production, maintenance, updating, and review of statistical data on catch and fishing effort in the fishery under assessment. There is evidence that the best scientific evidence available is used to inform the fisheries management process. Where there is a legal requirement for the advice of scientific authorities to be adopted, this shall be viewed as conformance with this evaluation parameter.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that timely, complete, and reliable statistics are 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 are updated regularly and verified through an appropriate system. The use of research results as a basis for setting 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) is promoted. Analysis results are distributed accordingly as a contribution to fisheries conservation, management, and development. Examples may include stock assessment reports and other data.*

Evaluation (per parameter)

Process:
For all Alaska pollock fisheries, there is a well-established system that allows for the production, maintenance, regular update, and verification of statistical data. This system includes the CAS described in the previous section, as well as websites and detailed publications maintained by NMFS and other agencies. These processes are fully compliant with international standards such as the FAO Handbook of Fishery Statistical Standards, in that key information such as landings, areas, fleets, gear, number of fishers, etc. is collected and maintained in accessible databases.

The use and distribution of research results as a basis for the setting of management objectives, reference points and performance criteria is driven by the Council (see http://www.npfmc.org/fishery-management-plans/) management process. Results of stock assessments and management decisions are well documented and available in timely fashion (Barbeaux et al. 2021; Ianelli et al. 2021a; Monnahan et al. 2021).

Current Status/Appropriateness/Effectiveness:
There is ample evidence for the effective production, maintenance, updating and review of statistical data on catch and fishing effort in the pollock fisheries in Alaska. Long time series of catch and effort data exist for pollock and are regularly updated and used in the stock assessments, which are conducted on all stocks on an annual basis. Data on the fisheries is kept, maintained, and updated on various NMFS, ADFG, and Council websites. The stock assessments involve rigorous peer review and include scientists from NMFS, ADFG, universities, as well as other organizations. The best and most recent scientific information is reviewed and is used to conduct the assessments and thusly inform the fisheries management process. Results of various research projects, applied studies, research surveys, etc. are reviewed and feed into the stock assessment process and management of the Alaska pollock fisheries (see https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/index). Management is clearly based on the scientific advice, without exception.

Evidence Basis:
Data on catches of Alaska pollock are maintained and updated by NMFS and are available on their website (see https://alaskafisheries.noaa.gov/fisheries-catch-landings). The 2021 SAFE documents for the four federal waters pollock stock components contain extensive details on the catch and other data time series used in the stock assessments, including the catches from the PWS pollock fishery. The Alaska Fisheries Information Network was established in 1997 and maintains an analytic database of both state and federal commercial fisheries data in Alaska (see AKFIN http://www.akfin.org/about-akfin) relevant to the needs of fisheries scientists and other users and provides that data in usable formats. During the site visit, the stakeholders stressed that COVID-19 did not affect the science and stock assessment activities, as well as the data collection programs.

References:

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO Eco (2009) 30.4
FAO Eco (2011) 37.4

Evaluation Parameters

Note: *If the fishery for the stock under consideration is managed fully using stock-specific information then this clause can be scored with full conformance.*

Process: *There is a process that allows for the use of generic evidence based on similar stocks for fisheries with low risk. The greater the risk, the more specific evidence is necessary to assess sustainability. In principle, "generic evidence based on similar stocks" should not suffice, but it may be adequate where there is low risk to the stock under consideration. In general, "low risk to that stock under consideration" would suggest that there is very little chance of the stock becoming overfished (e.g., where the exploitation rate is very low and the resilience of the stock is high). However, the evidence for low risk and the justification for using surrogate data shall come from the stock assessment itself.*

Current Status/Appropriateness/Effectiveness: *Information has been utilized from generic evidence based on similar fishery situations. Based on the risk of overfishing, the information utilized is of higher precision to account for higher risks (i.e., intensive fisheries).*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that 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. Examples may include stock assessment reports and other data.*

Evaluation (per parameter)

As per Note in the Evaluation Parameters section in this clause, this clause is scored with Full Conformance, as the Alaska pollock assessments are conducted on a stock-specific basis.

References:

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/Alpollock.pdf.
Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.
Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.
Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones; D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 8.4.3
FAO Eco (2009) 29.2bis

Evaluation Parameters

Process: *An observer program is present. There may be cases where collection of accurate data for research and support compliance could be established without the use of observers or a formal observer scheme (i.e., inspection scheme, enforcement, port sampling, at shore inspection, voluntary or compulsory logbooks, e-logbooks or other harvester collected data, electronic monitoring [video], or bycatch surveys). The reliability and accurateness of that system(s) would need to be verified accordingly. Note also that some fisheries observer programs are designed to collect biological data and others serve mainly as a compliance or enforcement tool. This shall be considered accordingly in the overall evaluation of this clause. Assessors shall question primarily whether the required data for fisheries management are collected or if there are important data gaps (e.g., because of the absence of an observer program).*

Current Status/Appropriateness/Effectiveness: *The data collected by the observer program is considered accurate and useful.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that an observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures is established. Examples may include stock assessment, survey, observer, or other reports.*

Evaluation (per parameter)

Process:
Beginning in 2013, Amendment 86 to the FMP of the BSAI and Amendment 76 to the FMP of the GOA established the Observer Program (https://alaskafisheries.noaa.gov/sites/default/files/analyses/finalea_restructuring0915.pdf). This extensive observer program exists for fisheries in Alaska waters, and observers collect the required data for fisheries management.

Current Status/Appropriateness/Effectiveness:
All vessels fishing for groundfish in federal 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. Observers were also assigned to monitor deliveries of pollock to obtain a count of the number of salmon caught as bycatch and to obtain genetic samples from these fish.

As well as providing data for stock assessment and other scientific purposes, the observer program is also used extensively for in- and post-season management. Daily reports are electronically transmitted via the CAS system and can be used as the basis to trigger closures (e.g., if maximum catch allocations of target or prohibited species are caught). Annual reports from the Observer Program contain detailed information on fees and budgets, deployment performance, enforcement, and outreach. NMFS has already noted progress on incorporating variances associated with catch estimates and will continue to report as work progresses. Stakeholders confirmed that also during COVID-19 pandemic in 2020, the Observer Program was conducted without major issues.

Evidence Basis:
Detailed annual reports from the Observer Program can be found on NMFS website. Data collected by the observer program feed directly into various datasets and studies used in the pollock stock assessments (e.g., SAFE documents). As outlined in the 2020 Observer Sampling Manual, over 400 certified groundfish observers are deployed each year on a variety of commercial fishing vessels for numerous Alaskan fisheries, including pollock, providing the Observer Program with over 40,000 data collection days annually (194 https://www.afsc.noaa.gov/FMA/Manual_pages/MANUAL_pdfs/manual2020.pdf). Observer coverage in the EBS pollock fishery has been at or near 100% (often classified as 200% with two observers per vessel) for the past several years, while in the GOA, lower coverage rates exist. In the 2020 fishery in GOA, about 40% of pollock caught was observed, with the fishery being about 90% by catcher vessels using pelagic trawls. NMFS and the Council have developed an EM Strategic Plan to integrate video monitoring into the Observer Program to improve data collection (http://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/Observer/EM/2020EMpre-impPlanFinal0116.pdf). During the site visit, the stakeholders stressed that COVID-19 did not affect the science and stock assessment activities, as well as the data collection programs.

References:

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones; D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.2.1 Where necessary, fisheries management organizations and regional fisheries management organizations and other such arrangements should strive to achieve a level and scope of observer programs sufficient to provide quantitative estimates of total catch, discards, and incidental takes of living aquatic resources.

FAO IGBD (2011) 5.1.3

Evaluation Parameters

Process: *There is a clear system that allows the observer program, or any other appropriate data gathering system as appropriate, to provide sufficient quantitative estimates of total catch, discards, and incidental takes of living aquatic resources.*

Current Status/Appropriateness/Effectiveness: *The data collected by the observer program is considered accurate and useful, especially for providing quantitative estimates of total catch, discards, and incidental takes of living aquatic resources.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the observer program is established and able to provide quantitative estimates of total catch, discards, and incidental takes of living aquatic resources. Examples may include stock assessment, observer, survey, or other reports.*

Evaluation (per parameter)

Process:
As mentioned in Clause 4.2, observer programs are used in Alaska fisheries. Moreover, port sampling is used extensively to collect biological samples of catches. The legal authority for this activity is spelled out in state regulations as noted above. The scope of the port sampling program varies greatly by species and region depending on need.

Current Status/Appropriateness/Effectiveness:
The Observer Program plays a vital role in the conservation and management of the BS, AI, and GOA groundfish and halibut fisheries. The program trains, briefs, debriefs, and oversees more than 450 observers annually who collect catch data onboard fishing vessels and at onshore processing plants that are used for in-season management and scientific purposes, such as stock assessments and ecosystem studies. The program ensures that the data collected by observers are of the highest quality possible by implementing rigorous quality control and quality assurance processes for the data collected by observers.

The Observer Program provides the regulatory framework for NOAA Fisheries certified observers (see https://www.fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-program-permitted-providers) to collect data on groundfish and halibut fisheries. The information collected by observers provides the best scientific information to manage the fisheries and to develop measures to minimize bycatch. Observers collect biological samples and fishery-dependent information on total catch and interactions with protected species. Managers use data collected by observers to monitor quotas, manage groundfish and prohibited species catch, and document and reduce fishery interactions with protected resources. Division staff process data and make them available to the Sustainable Fisheries Division of the Alaska Regional Office for quota monitoring, to scientists at the AFSC for stock assessment, for ecosystem investigations, and to an array of research investigations, as well as the fishing industry itself which relies on observer data to monitor quotas and PSC.

Evidence Basis:
Raw or summarized biological data, as well as total catch, discards, and incidental takes of pollock collected in sampling programs, are routinely reported in the stock assessment forms and annual reports available(https://www.fisheries.noaa.gov/tags/north-pacific-observer-program?title=annual%20report&field_species_vocab_target_id=&sort_by=created). During the site visit, the stakeholders stressed that COVID-19 did not affect the science and stock assessment activities, as well as the data collection programs.

References:

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones; D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.3 A fisheries management organization, 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.

FAO CCRF (1995) 7.4.6, *7.4.7*

Evaluation Parameters

Note: *Not applicable if no regional or sub-regional body is involved in fishery management between one or more countries.*

Process: *There is a system within the regional body structure that allows for data distribution in line with confidentiality requirements.*

Current Status/Appropriateness/Effectiveness: *There is evidence proving that confidentiality requirements are satisfied when data is distributed to the various parties.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that a fisheries management organization, regional fisheries management organizations or arrangements 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. Examples may include reports where confidentiality requirements have been affected.*

Evaluation (per parameter)

Process:
There are systems within NMFS, Council, and ADFG management structures that allow for complete data distribution in line with confidentiality requirements.

Current Status/Appropriateness/Effectiveness:
NMFS and ADFG have extensive scientific databases which include pollock, and the Council has substantial information on management of pollock 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 CPUE data, depending on the number of individuals or entities involved.

Evidence Basis:
Council management plans and SAFE documents contained detailed data, which are widely disseminated, and confidentiality is maintained as necessary. The Commercial Fisheries Entry Commission (see https://www.cfec.state.ak.us/) is the designated records manager for ADFG fish ticket records. Fish ticket records are retained by the Commission for 45 years and are confidential as defined by AS 16.05.815 and 16.40.155.

References:

Barbeaux, S. Ianelli, J. and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E and Allen-Akselrud C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones; D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., Zador S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.

NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF 12.7

Evaluation Parameters

Process: *There is research to support policies related to fish as food.*

Current Status/Appropriateness/Effectiveness: *There is evidence of this research.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the State stimulates the research required to support policies related to fish as food.*

Evaluation (per parameter)

Process:
State and national policies regarding seafood are guided by the Alaska Seafood Marketing Institute, U.S. Food and Drug Administration, U.S. Department of Agriculture, and the U.S. National Institute of Health.

Current Status/Appropriateness/Effectiveness:
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.

Evidence Basis:
The Alaska Seafood Marketing Institute is the state agency primarily responsible for increasing the economic value of Alaska seafood through marketing programs, quality assurance, industry training and sustainability certification. The Institute's role includes conducting or contracting for scientific research to develop and discover health, dietetic, or other uses of seafood harvested and processed in the state. Through the University of Alaska Fairbanks, the State of Alaska also operates the Kodiak Seafood and Marine Science Center (see https://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/), which directs efforts in several fields, including seafood processing technology, and seafood quality and safety. The staff work closely with the fishing industry to convey research results and provide educational opportunities that help seafood workers improve efficiency and the quality of their products.

References:

Kodiak Seafood and Marine Science Center. 2018. Annual report FY2018 (July 1, 2017–June 30, 2018). 2018. Kodiak Seafood and Marine Science Center, University of Alaska Fairbanks, College of Fisheries and Ocean, Kodiak. https://www.uaf.edu/files/cfos/Locations/kodiak/annual-report-FY18-KSMSC.pdf.

Nettleton, J. 2009. Are fish and plant omega-3s the same? ASMI. Juneau, AK. https://www.ncbi.nlm.nih.gov/pubmed/1825498.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.5 There shall be sufficient knowledge of the economic, social, marketing, and institutional aspects of fisheries collected through data gathering, analysis, and research, as well as comparable data generated for ongoing monitoring, analysis, and policy formulation.

FAO CCRF (1995) 7.4.5, 12.9

Evaluation Parameters

Process: *There is a system in place for collecting economic, social, marketing, and institutional knowledge of the fisheries.*

Current Status/Appropriateness/Effectiveness: *These data are used for ongoing monitoring, analysis, and policy formulation.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there is sufficient knowledge of the economic, social, marketing, and institutional aspects of fisheries, that they are adequately researched, and that comparable data are generated for ongoing monitoring, analysis, and policy formulation. Examples may include reports on social/cultural/economic value of the resource.*

Evaluation (per parameter)

Process:
Socio-economic data collection and economic analyses are required to varying degrees under the Regulatory Flexibility Act, the MSA, the NEPA, the ESA, and other applicable laws. AFSC/NMFS Economic and Social Sciences Research Program produces an annual Economic Status Report of the groundfish fisheries in Alaska.

Current Status/Appropriateness/Effectiveness:
The economic and socioeconomic data collected for the pollock fisheries are extensive, and data are used for ongoing analysis. These analyses include estimates of total pollock and groundfish catch, discards and discard rates, PSC and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the fisheries off Alaska, and employment on at-sea processors. Annual reports contain a wide range of analyses and information on the performance of numerous indices for different sectors of the North Pacific fisheries, including pollock, and relate changes in value, price, and quantity, across species, product, and gear types, to changes in the market.

Evidence Basis:
Annual economic SAFE reports (e.g., Fissel et al. 2021) on social/cultural/economic value of the Alaskan fisheries resources are produced, which include extensive information on the Alaskan pollock fisheries. A report prepared by the McDowell Group in 2015 for the Alaska Seafood Marketing Institute quantifies the regional, state-wide, and national economic impacts of Alaska's seafood industry. This report summarizes overall industry impacts, participation, value, and exports. Individual pollock SAFE reports have extensive sections on the economic performance of the pollock fisheries.

References:

Fissel, B., Abelman, A., Dalton, M., B. Garber-Yonts, A. Haynie, S. Kasperski, J. Lee, D. Lew, C. Seung, K. Sparks, M. Szymkowiak, S. Wise. 2021. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2020. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://media.fisheries.noaa.gov/2022-04/Groundfish%20SAFE%202020.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.6 The fisheries management organization 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.

FAO CCRF (1995) 12.12

Evaluation Parameters ***Process:*** *Traditional fisher knowledge has been investigated. Note that for highly developed fisheries that knowledge may already have been integrated into fisheries management.* ***Current Status/Appropriateness/Effectiveness:*** *Traditional fisher knowledge has been investigated. Note that for highly developed fisheries that knowledge may already have been integrated into fisheries management.* ***Evidence Basis:*** *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fisheries management organization investigates and documents 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. Examples may include various fisheries reports.*
Evaluation (per parameter) **Process:** Highly developed fisheries such as those for pollock incorporate broad knowledge sources into fisheries management. **Current Status/Appropriateness/Effectiveness:** Most pollock fisheries are large-scale operations such as catcher /processors or large catcher vessels. Smaller fisheries, such as state-managed one in PWS, are effectively regulated and take into account any issues related to smaller-scale localized fisheries. **Evidence Basis:** Smaller scale fisheries managed by ADFG and BOF are controlled with specified catch levels and other regulations, such as closed areas around Steller sea lion rookeries. As noted in Clause 3.1, an explicit objective in the Council FMP is to increase Alaska Native consultation as follows: • Continue to incorporate local and traditional knowledge in fishery management. • Consider ways to enhance collection of local and traditional knowledge from communities and incorporate such knowledge in fishery management where appropriate. • Increase Alaska Native participation and consultation in fishery management.
References: ADFG. 2021. Fishery Update 2021 Central Region Groundfish Fisheries Outlook. Alaska Department of Fish and Game P.O. Box 115526; 1255 W. 8th Street Juneau, AK 99811-5526. https://www.adfg.alaska.gov/static/applications/dcfnewsrelease/634206707.pdf. NMFS. 2021. Fisheries Catch Reports National Marine Fisheries Service, 709 West 9th Street. Juneau, Alaska 99802. https://alaskafisheries.noaa.gov/fisheries-catch-landings.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.7 If a fisheries management organization is conducting scientific research activities in waters of another State, it shall ensure that their vessels comply with the laws and regulations of that State and international law.

FAO CCRF (1995) 12.14

Evaluation Parameters

Note: *If the stock is fully managed by one State and there is no need for shared stock research (between two or more States), then this clause is not applicable.*

Process: *There is a system in place to manage the conduct of research vessels operating in waters of other States.*

Current Status/Appropriateness/Effectiveness: *If a fisheries management organization is conducting scientific research activities in waters of another State, there is record of such shared research activities and they comply with required regulations.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that if a fisheries management organization is conducting scientific research activities in waters of another State, it ensures that their vessels comply with the laws and regulations of that State and international law. Examples may include survey reports.*

Evaluation (per parameter)

Process:
The fishery for pollock in Alaska is conducted by U.S. vessels only. In adjacent waters of the BS cooperation on pollock research and management between Russia and US occurs as part of the science and management process.

Current Status/Appropriateness/Effectiveness:
The United States and Russian Federation maintain the bilateral ICC fisheries forum pursuant to the U.S.-Soviet Comprehensive Fisheries Agreement, signed on May 31, 1988. This has resulted in cooperative research on pollock in the BS.

Evidence Basis:
Evidence, including meeting reports on the Russia-USA cooperation, and participation in ICC and Convention meetings are available in the North Pacific Marine Science Organization framework (see https://meetings.pices.int/publications/annual-reports/2021). US vessels have conducted research in Russian waters, in cooperation with Russian scientists, and in compliance with Russian and international rules.

References:

North Pacific Marine Science Organization 2021. https://meetings.pices.int/publications/annual-reports/2021.

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.8 Adoption of uniform guidelines governing fisheries research conducted on the high seas shall be promoted and, where appropriate, support the establishment of policies that include, *inter alia*, facilitating research at the international and sharing the research results with affected States.

FAO CCRF (1995) 12.15, 12.16

Evaluation Parameters

Note: *If the stock is fully managed by one State and there is no need for shared stock research (between two or more States), then this clause is not applicable.*

Process: *There is a mechanism in place to allow the development and review of guidelines governing fisheries research conducted on the high seas.*

Current Status/Appropriateness/Effectiveness: *There is a record of uniform high seas research guidelines or a mechanism to create them.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that adoption of uniform guidelines governing fisheries research conducted on the high seas is promoted and, where appropriate, supports the establishment of mechanisms, including, inter alia, adopting uniform guidelines to facilitate research at the international level, and encouraging such research results be shared with affected States. Examples may include survey reports, or high seas guidelines.*

Evaluation (per parameter)

Process:
The Convention on the Conservation and Management of Pollock Resources in the central BS (Donut Hole) is responsible for the conservation, management, and optimum utilization of pollock resources in the high seas area of the BS. Member states (China, Japan, Korea, Poland, Russia, and the United States) cooperate on fisheries research and present results of this work at various meetings.

Current Status/Appropriateness/Effectiveness:
The objectives of this Convention include cooperation in the gathering and examining of factual information concerning pollock and other living marine resources in the BS. Annual meetings and conferences are held. The U.S. is also a member of the North Pacific Marine Science Organization, an intergovernmental scientific organization established in 1992 to promote and coordinate marine research in the northern North Pacific and adjacent seas.

Evidence Basis:
From the 2015 Convention meeting report are available, U.S. surveys which included work in Russian waters were discussed. The PICES scientific program named FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems) is designed to understand how marine ecosystems in the North Pacific respond to climate change and human activities.

References:

https://meetings.pices.int/publications/scientific-reports

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

4.9 If appropriate, the fisheries management organization 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.

FAO CCRF (1995) 12.18

Evaluation Parameters

Note: *This clause is only applicable when the unit of certification includes a transboundary, shared, straddling, highly migratory or high seas stock, which is fished by one or more developing States.*

Process: *There is a mechanism in place by which the research capacities of developing countries can be developed and enhanced. This could include, but is not limited to, the provision of personnel, equipment, funding, or cooperation on data collection and stock assessment.*

Current Status/Appropriateness/Effectiveness: *There are recognizable examples of instances in the history of the fishery under assessment where actions by the managers of the unit of certification have promoted or enhanced the research capacity of one or more developing nations in the ways described above.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that if appropriate, the fisheries management organization and relevant international organizations promote and enhance the research capacities of developing States, 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. Examples may include various data or reports.*

Evaluation (per parameter)

Not applicable as there are no developing countries fishing this stock.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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.

FAO CCRF (1995) 12.19

Evaluation Parameters

Note: *This criterion does not apply to fully developed fisheries, as defined by the FAO. The FAO definition of a developed fishery is "a fishery which, following a period of rapid and steady increase of fishing pressure and catches, has reached its level of maximum average yearly production. It is usually understood that such a fishery is yielding close to its maximum sustainable yield."*

Process: *There is a mechanism to allow a national organization to render technical and financial support to the State.*

Current Status/Appropriateness/Effectiveness: *There is a record of the provided technical and financial support.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that competent national organizations, 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. Examples may include various data or reports.*

Evaluation (per parameter)

Not applicable as these stocks are not considered to be unfished or very lightly fished.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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 developing island countries.

FAO CCRF (1995) 12.20

Evaluation Parameters

Note: *This clause is relevant where the fishery is within a developing region/small island region and management of the resource is performed through an international organization.*

Process: *The international management component of the fishery is engaged in processes that support the fishery based in developing countries.*

Current Status/Appropriateness/Effectiveness: *There is a record of the provided technical and financial support.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that relevant technical and financial international organizations are, upon request, supporting States in their research efforts, and are devoting special attention of developing countries—in particular the least developed among them and small island developing countries. Examples may include various data or reports.*

Evaluation (per parameter)

Not applicable as the fisheries are not within a developing region or small island region.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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.

FAO CCRF (1995) 7.2.1, 12.2, 12.3, 12.5, 12.6, 12.7, 12.17
FAO Eco (2009) 29–29.3, 31
FAO Eco (2011) 42

5.1 An appropriate institutional framework shall be established to determine the applied research required and its proper use (i.e., assess/evaluate stock assessment model/practices) for fishery management purposes. FAO CCRF 12.2, 12.6

Evaluation Parameters

Process: *There is an established institutional framework for fishery management purposes that determines applied research needs and use.*

Current Status/Appropriateness/Effectiveness: *There is evidence to substantiate that essential research for fishery management purposes is determined and carried out. This research generally includes routine stock(s) and ecosystem assessment reports. Assessors shall evaluate the specific stock assessment model/practices for each of the species under assessment and verify the technical appropriateness for use. For salmon, the assessors shall present and evaluate the methods for escapement goal development utilized to develop the annual escapement goals in Alaska (about 300). Statewide summary data for Alaska can be found in the annually released ADF&G document Summary of Pacific salmon escapement goals in Alaska with a review of escapements from [year] to [year]. The document generally presents the latest 9–10 years of salmon escapement performance in review.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that an appropriate institutional framework is established to determine the applied research required and its proper use (i.e., assess and evaluate stock assessment models or practices) for fishery management purposes. Examples may include description of the overall process of research assessment and peer review, as well as stock and ecosystem assessment reports.*

Evaluation (per parameter)

Process:
Guided by MSA standards, and other legal requirements, the NMFS has a well-established institutional framework for research developed within the AFSC in Seattle, which operates several laboratories and divisions. The Auke Bay Laboratories in Alaska conduct scientific research on fish stocks, fish habitats, and the chemistry of marine environments. The Fisheries Monitoring and Analysis Division monitors groundfish fishing activities in the U.S. EEZ off Alaska and conducts research associated with sampling commercial fishery catches, estimation of catch and bycatch mortality, and analysis of fishery-dependent data. The Resource Assessment and Conservation Engineering Division conducts fishery surveys to measure the distribution and abundance of approximately 40 commercially important fish and crab stocks. The Resource Ecology and Fisheries Management Division collects data to support management of Northeast Pacific and EBS fish and crab resources, including pollock, and produces an annual Economic Status Report. ADFG has a well-developed research capacity and conducts surveys and stock assessments in State waters to help determine safe harvest levels. The Council actively encourages stakeholder participation, and all Council deliberations are conducted in open, public sessions.

Current Status/Appropriateness/Effectiveness:
Peer reviewed stock assessments are done annually and used as the scientific basis to set catch quotas for the four pollock stock components. The assessments take into account uncertainty and evaluate stock status relative to reference points in a probabilistic way. The SAFE reports provide information on the historical catch trend, estimates of the MSY 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, including consideration of rebuilding depressed stocks; and alternative harvest strategies and related effects on the component species groups. Various biological studies and surveys which feed data into the stock assessments are reviewed as well. The SAFE reports are scientifically based, consider all available research on pollock and provide information to the Council for determining annual harvest specifications, documenting significant trends or changes in the stocks, marine ecosystem, and fisheries. The SAFE reports are comprehensive and publicly available. The AFSC periodically requests a more comprehensive review of groundfish stock assessments by the CIE, and any recommendations are addressed in subsequent stock assessments.

The Pollock Conservation Cooperative Research Center at the School of Fisheries and Ocean Sciences in University of Alaska Fairbanks was established in 2000 to improve knowledge about the North Pacific Ocean and BS through research and education, focusing on the commercial fisheries of the BSAI. The Pollock Conservation Cooperative Research Center receives extensive funding from the pollock fishing industry in Alaska and provides grants and other funding for research on pollock and other species.

Evidence Basis:
The NMFS/AFSC website has detailed information on Alaskan pollock research and stock assessment. The SAFE reports (see Section 3.3) are compiled annually by the BSAI and GOA Groundfish Plan Teams, which are appointed by the Council. As outlined in the current Council groundfish FMPs, for BSAI and GOA, scientists from the AFSC, ADFG, other agencies, and universities prepare a SAFE report annually. The SAFE report consists of three volumes: a volume containing stock assessments, one containing economic analysis, and one describing ecosystem considerations. Chapters of the assessment volume deal with each stock assessment (e.g., for each pollock stock assessment). This document is reviewed first by the Council Groundfish Plan Team, then by the SSC and AP, and finally by the full Council. The review by the SSC constitutes the official scientific review for purposes of the Information Quality Act. 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 MSA. The EBS pollock assessment was reviewed by three external reviewers from the CIE in 2016, and their reports are available on the NMFS website (https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2016). One of the priorities of the Pollock Conservation Cooperative Research Center is improving fish stock assessment models, and the Center produces an annual report (https://alaskafisheries.noaa.gov/sites/default/files/reports/pcchscc15.pdf) for presentation to the Council.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

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Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

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Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

5.1.1 Less elaborate stock assessment methods are frequently used for small-scale or low-value capture fisheries resulting in greater uncertainty about the status of the *stock under consideration*., A more precautionary approach to managing fisheries on such resources shall be required, including, where appropriate, a lower level of resource utilization. A record of good management performance may be considered as supporting evidence of the adequacy of the management system.

FAO Eco (2011) 42

Evaluation Parameters

Note: *If the fishery for the stock under consideration has sufficient data collected through regular stock assessment activities for its management, then this clause can be scored with full conformance.*

Process*: There is a process that allows more precautionary approaches to managing fisheries (e.g., lower exploitation rates) on resources assessed through stock assessment methods that result in greater uncertainty about the state of the stock under consideration.*

Current Status/Appropriateness/Effectiveness: *There is evidence that precautionary approaches are applied to managing fisheries (e.g., lower exploitation rates) on resources assessed through stock assessment methods that result in greater uncertainty about the state of the stock under consideration.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that with less elaborate stock assessment methods frequently used for small-scale or low-value capture fisheries, more precautionary approaches to managing fisheries on such resources are required, including where appropriate, lower level of resource utilization. Examples may include stock assessment reports and other data.*

Evaluation (per parameter)

Based on the Note in this section, the fisheries under consideration have sufficient data, as described in previous clauses, and thus this clause can be scored with full conformance.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, and K. Sparks. 2016. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

5.1.2 The fisheries management organization shall ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, and fishery enhancement. Analysis results shall be distributed in a timely and readily understandable fashion in order that the best scientific evidence available contributes to fisheries conservation, management, and development. The fisheries management organization shall also ensure the availability of research facilities and provide appropriate training, staffing, and institution building to conduct the research.

FAO CCRF (1995) 12.1, 7.4.2

Evaluation Parameters

Process: *There are organizations and processes in place to permit research into the aspects of fisheries listed in the clause.*

Current Status/Appropriateness/Effectiveness: *Research is conducted into the following aspects of the fisheries: biology, ecology, technology, environmental science, economics, and aquaculture. The described types of research carried out shall result in the fishery being deemed compliant with this evaluation parameter.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that States are conducting appropriate research into the following aspects of the fisheries: biology, ecology, technology, environmental science, economics, and aquaculture. The research is disseminated accordingly. States also ensure the availability of research facilities and provide appropriate training, staffing, and institution building to conduct the research. Examples may include stock assessment, economic value, fleet reports, and other reports.*

Evaluation (per parameter)

Process:
Appropriate research is conducted into all aspects of pollock fisheries by NMFS, ADFG, and researchers from universities and other agencies, including collaborative efforts with the fishing industry. A research plan and/or list of priorities is published in the annual SAFE document, and biology, ecology, stock assessment, and environmental science are all covered by these Plans. Several broad ecosystem-wide projects provide extensive data on Alaskan stocks and environmental conditions. Economic analyses and social science are conducted by NMFS/AFSC, and ADFG.

Current Status/Appropriateness/Effectiveness:
Comprehensive research into pollock biology, ecology, and environmental science is conducted by NMFS and ADFG staff, along with several other institutions. Several surveys are conducted annually or biennially in the EBS and GOA regions which are used to derive indices of pollock abundance. NMFS research plans and priorities are listed in the annual pollock SAFE documents. Regarding socioeconomic data collection, AFSC Economic and Social Sciences Research Program produces an annual Economic

Status Report of the groundfish fisheries in Alaska. All results of research are available to the public in readily understandable fashion. Thus, the best scientific evidence is made readily available as a contribution to fisheries conservation and management. Research facilities and appropriate training are provided at several locations in Alaska.

Evidence Basis:
Extensive research, survey, and stock assessment results are described in the four pollock SAFE documents from 2021 (referenced in Clause 4.1.1 above). Numerous other documents are published in a variety of sources each year, containing biological and ecological studies on pollock, details of stock assessment, and survey methodology and results (e.g., Thorson 2018). The comprehensive Economic Status Report (Fissel et al. 2021) provides estimates of total groundfish catch, groundfish discards and discard rates, PSC and PSC rates, values of catch and resulting food products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, and employment on at-sea processors. The report contains a wide range of analyses and comments on the performance of a range of indices for different sectors of the North Pacific fisheries, and relates changes in value, price, and quantity, across species, product, and gear types, to changes in the market. This report includes a considerable amount of economic data for the commercial pollock fishery.

The Bering Sea Project, a partnership between the NPRB and the National Science Foundation, is studying 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 several agencies and universities are involved. Ecosystem modelling, sound data management, and education and outreach activities are included in the program (http://www.nprb.org/assets/images/uploads/01.10_bsag_web.pdf). An integrated GOA ecosystem project, also funded by the NPRB, is examining recruitment processes of major groundfish species.

The University of Alaska (https://www.uaf.edu/sfos/research/fisheries) provides bachelor, masters and doctoral programs in fisheries science, associate degrees and certificates in fisheries technology. University faculty supervise graduate student research on a broad array of biological topics including quantitative stock assessment, biology and ecology of marine and freshwater species, molecular genetics, and behavioral ecology. Facilities are in Juneau, Seward, Kodiak, and Fairbanks. The University of Alaska Fairbanks Kodiak Seafood and Marine Science Center (http://www.uaf.edu/sfos/about-us/locations/kodiak/about-ksmsc/) promotes the sustainable use of Alaska fisheries through collaborative research, application, education, and information transfer. The areas of focus include seafood safety and quality, product markets and development.

Formed in 1998, the North Pacific Fisheries Research Foundation was established by participants of the BS groundfish trawl fishery to fund, direct, and otherwise oversee applied scientific research regarding the fisheries and fishery resources of the North Pacific, in the interest of the commercial fishing industry. As detailed in Clause 5.1, the Pollock Conservation Cooperative Research Center at the School of Fisheries and Ocean Sciences in University of Alaska Fairbanks provides grants and other funding for research on pollock and other species. As well, the North Pacific Fisheries Research Foundation has funded several projects on salmon excluder devices for the pollock trawl fisheries.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/Alpollock.pdf.

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Thorson, J.T., 2018. Three problems with the conventional delta-model for biomass sampling data, and a computationally efficient alternative. Can. J. Fish. Aquat. Sci. 75, 1369–1382. https://doi.org/10.1139/cjfas-2017-0266.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 12.5
FAO Eco (2009) 31

Evaluation Parameters

Process: *There is a system that establishes the required research capacity needed to assess and monitor (1) the effects of climate or other environmental change on stocks and aquatic ecosystems; (2) the status of the stock under State jurisdiction; and (3) the impacts of ecosystem changes resulting from fishing activity, pollution, or habitat alteration. Please note that climate science is complex and evolving, and the system shall recognize the ability to assess and monitor these parameters over time.*

Current Status/Appropriateness/Effectiveness: *There is evidence to demonstrate that there is sufficient research capacity in place to assess and monitor (1) the effects of climate or other environmental change on stocks and aquatic ecosystems, (2) the status of the stock under consideration, and (2) the impacts of fishing activity, pollution, or habitat alteration.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there is established research capacity necessary to assess and monitor (1) the effects of climate or other environmental change on stocks and aquatic ecosystems, (2) the status of the stock under State jurisdiction, and (3) the impacts of ecosystem changes resulting from fishing activity, pollution, or habitat alteration. Examples may include stock, ecosystem, and habitat assessment reports.*

Evaluation (per parameter)

Process:
The NMFS, ADFG, and the University of Alaska maintain established research programs to monitor the state of the pollock stocks and effects of fishing, pollution, habitat alteration, and climate change. The Oil Spill Recovery Institute located in PWS is set up to conduct research into oil spills and their effects on the Alaska environment, particularly the natural resources in PWS.

Current Status/Appropriateness/Effectiveness:
The Council receives comprehensive presentations on the status of Alaska's marine ecosystems (GOA and BS) at its SSC and AP meetings, as part of its annual management process for Alaska groundfish including pollock. 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, including pollock. The Oil Spill Recovery Institute was established by U.S. Congress in

response to the 1989 Exxon Valdez oil spill. The Oil Spill Recovery Institute is administered through and housed at the PWS Science Center, a non-profit research and education organization located in Cordova, AK. The PWS Science Center facilitates and encourages ecosystem studies in the greater PWS region. The Congressional mandate given Oil Spill Recovery Institute is:

1. To identify and develop the best available techniques, equipment, and materials for dealing with oil spills in the Arctic and sub-Arctic marine environment; and,
2. To complement federal and state damage assessment efforts and determine, document, assess, and understand the long-range effects of Arctic and sub-Arctic oil spills on the natural resources of PWS, and the environment, the economy and the lifestyle and well-being of the people who are dependent on those resources.

Evidence Basis:
Alaska's pollock stock assessment programs (NMFS, ADFG) are extensive and comprehensive, and documented in the annual SAFE process (see references in Clause 4.1.1. above). They contain regular updates of stock status, including how each stock is positioned relative to precautionary approach reference points. Extensive ecosystem documentation is presented in each SAFE assessment report. Effects of temperature and other environmental factors on key stock assessment results such as recruitment are considered.

Research is also conducted into climatic variables and mechanisms that affect pollock recruitment. In addition, ecosystem modelling is conducted, including the Bering Sea Regional Oceanographic Model and the Forage Euphausiid Abundance in Space and Time (FEAST) model, concentrated on climate/forage fish/zooplankton interactions with specific applications for cod and pollock and also fur seals, Chinook salmon, and birds. Food web modelling has been carried out for EBS, AI, and GOA which provides analyses of cumulative and ecosystem level indicators. The CEATTLE model combines predation between cod, pollock and arrowtooth flounder inter and intraspecies predation with climatic effects, aiming to develop reference points in relation to prevailing climatic conditions, and multi-species ABCs. The use of such ecosystem monitoring and modelling information is specifically required or requested by the Council – notably the use of ecosystem indicators in the SAFE process, multispecies models, and the FEAST spatial model (although these are used more in EBS than in the AI or GOA).

NPRB has developed two special projects that seek to understand the integrated ecosystems of the BSAI and GOA. For example, in the Gulf of Alaska Integrated Ecosystem Research Program, more than 40 scientists from 11 institutions are taking part in the $17.6 million GOA ecosystem study that looks at the physical and biological mechanisms that determine the survival of juvenile groundfish in the eastern and western GOA (http://www.nprb.org/gulf-of-alaska-project).

NMFS identifies habitats essential for managed species and conserves habitats from adverse effects on those habitats. EFHs are defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". 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 (216 NPFMC EFH; http://www.npfmc.org/habitat-protections/essential-fish-habitat-efh/). Moreover, cooperation between the United States and Russia has occurred to better understand independent datasets that span different spatiotemporal footprints to monitor transboundary stocks as pollock (see O'Leary et al. 2021).

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, and K. Sparks. 2016. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

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NMFS. 2018. Final Environmental Assessment for: Amendment 115 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area Amendment 105 to the Fishery Management Plan for Groundfish of the Gulf of Alaska Amendment 49 to the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs Amendment 13 to the Fishery Management Plan for the Salmon Fisheries in the Exclusive Economic Zone off Alaska Amendment 2 to the Fishery Management Plan for Fish Resources of the Arctic Management Area Essential Fish Habitat (EFH) Omnibus Amendments. https://www.fisheries.noaa.gov/resource/document/environmental-assessment-essential-fish-habitat-efh-omnibus-amendments.

O'Leary, C.A., Kotwicki, S., Hoff, G.R., Thorson, J.T., Kulik, V.V., Ianelli, J.N., Lauth, R.R., Nichol, D.G., Conner, J., and Punt, A.E. 2021. Estimating spatiotemporal availability of transboundary fishes to fishery-independent surveys. J Appl Ecol. 58:2146-2157. https://doi.org/10.1111/1365-2664.13914.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.

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Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 12.7

Evaluation Parameters

Process: *There is cooperation or interaction between international organizations to ensure optimum utilization of resource.*

Current Status/Appropriateness/Effectiveness: *There is evidence available to substantiate that such cooperation or interaction has taken place. There is data available that substantiates cooperation activities.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that management organizations cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources. Examples may include outputs resulting from meetings or other research.*

Evaluation (per parameter)

Process:
The Convention on the Conservation and Management of Pollock Resources in the central BS (Donut Hole) is responsible for the conservation, management, and optimum utilization of pollock resources in the high seas area of the BS. Member states (China, Japan,

Korea, Poland, Russia, and the United States) have maintained a moratorium on commercial pollock fishing in the Convention Area since 1993 in an effort to allow the stock to rebuild.

Current Status/Appropriateness/Effectiveness:
The objectives of this Convention are:

1. To establish an international regime for conservation, management, and optimum utilization of pollock resources in the Convention area;
2. To restore and maintain the pollock resources in the BS at levels which will permit their MSY;
3. To cooperate in the gathering and examining of factual information concerning pollock and other living marine resources in the BS; and
4. To provide, if the Parties agree, a forum in which to consider the establishment of necessary conservation and management measures for living marine resources other than pollock in the Convention Area.

Annual meetings and conferences are held.

Evidence Basis:
The Convention description can be found at the following link: https://www.afsc.noaa.gov/REFM/CBS/Docs/Convention%20on%20Conservation%20of%20Pollock%20in%20Central%20Bering%20Sea.pdf. The objectives are at https://www.afsc.noaa.gov/REFM/CBS/convention_description.htm. Annual meeting proceedings are available at https://www.afsc.noaa.gov/REFM/CBS/Default.htm.

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

References:

https://meetings.pices.int/publications/scientific-reports
https://www.ecolex.org/details/treaty/convention-on-the-conservation-and-management-of-pollock-in-the-central-bering-sea-tre-001217/

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**		**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐		Major ☐	Minor ☐	None ☒
Non-Conformance Number (if applicable):					

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, shared, straddling, highly migratory and high seas stocks.

FAO CCRF (1995) 12.7, 12.17

Evaluation Parameters ***Note:*** *Not applicable if stock in not transboundary, shared, straddling, highly migratory or high seas in nature.* ***Process:*** *The collaborative technical and research programs to improve understanding of the biology, environment, and status of transboundary aquatic stocks have been developed.* ***Current Status/Appropriateness/Effectiveness:*** *There is evidence available to substantiate that such cooperation or interaction has taken place. There are data on collaborative programs to improve understanding of transboundary, shared, straddling, highly migratory or high seas stocks.* ***Evidence Basis:*** *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organizations directly, or in conjunction with other States, have developed collaborative technical and research programs to improve understanding of the biology, environment, and status, of transboundary, shared, straddling, highly migratory or high-seas stocks. Examples may include outputs resulting from meetings or other research.*
Evaluation (per parameter) **Process:** Although stock management and fisheries are not transboundary in nature, there is a potential overlap of the stocks between U.S. and Russian waters. The United States and Russian Federation maintain the bilateral ICC fisheries forum pursuant to the U.S.-Soviet Comprehensive Fisheries Agreement, signed on May 31, 1988. The previous Clause outlines the Convention on the Conservation and Management of Pollock Resources in the central BS, of which U.S. and Russia are members. **Current Status/Appropriateness/Effectiveness:** Cooperation between U.S. and Russian authorities has occurred as a result of the bilateral ICC. These meetings have resulted in U.S. vessels doing acoustic surveys with Russian Federation scientists in the Federation's zone of the BS (near Cape Navarin), where a small portion of U.S. pollock moves. **Evidence Basis:** Results of the U.S. acoustic surveys for pollock in Russian waters are considered as part of the annual stock assessment process as appropriate. The biennial acoustic-trawl survey is conducted between June and August by NOAA fisheries scientists aboard a U.S. government research vessel (currently NOAA ship Oscar Dyson) to monitor pollock on the EBS shelf and slope. Results from this acoustic-trawl survey provide midwater pollock abundance and spatial distribution information by length and age from Bristol Bay in the United States to Cape Navarin, Russia, over bottom depths of approximately 50-1,000 m. Temperature, salinity, and other water column properties are measured. Midwater and bottom trawl catches associated with the acoustic backscatter are enumerated by species or species group. Preliminary spatial distributions of euphausiid backscatter are also estimated.
References: Honkalehto, T., A. McCarthy, P. Ressler, and D. Jones. 2013. Results of the acoustic-trawl survey of walleye pollock (Theragra chalcogramma) on the U.S. and Russian Bering Sea Shelf in June - August 2012 (DY1207). AFSC Processed Rep. 2013-02, 60 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 12.3

Evaluation Parameters

Process: *There is a process that allows analysis of research data, ensuring, where appropriate, their confidentiality.*

Current Status/Appropriateness/Effectiveness: *There is evidence data was properly analyzed. Data was published respecting, where appropriate, confidentiality agreements. The rules of confidentiality are effectively respected.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that data generated by research is analyzed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate. Examples may include various data or reports.*

Evaluation (per parameter)

Process:
There is a well-defined public process, coordinated by the Council, NMFS, and ADFG that allows extensive analysis of research and relevant commercial fisheries data, ensuring their confidentiality when necessary.

Current Status/Appropriateness/Effectiveness:
As documented in some previous sections, extensive scientific data from various sources are analyzed and presented in peer reviewed meetings and/or in primary literature, following scientific protocols. Results of these analyses are disseminated in a timely fashion through numerous methods, including scientific publications, and as information on websites of various agencies, in order to contribute to pollock fisheries conservation and management. Confidentially is required by Alaska statute and data is redacted in reports when necessary.

Evidence Basis:
The pollock assessments as documented in the SAFE reports contain the necessary stock assessment data and analyses, as well as various research projects. 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 (e.g., https://www.adfg.alaska.gov/index.cfm?adfg=walleyepollock.management), in order to contribute to fisheries conservation and management. Confidentiality of individuals or individual vessels (e.g., in the analysis of fishery CPUE data) is fully respected where necessary. By Alaska Statute (16.05.815 Confidential Nature of Certain Reports and Records), except for certain circumstances, all

records obtained by the state concerning the landing of fish, shellfish, or fishery products and annual statistical reports of fishermen, buyers, and processors may not be released. To ensure confidentiality, fishery data are routinely redacted from reports if data for a particular time or area were obtained from a small number of participants. In addition, NMFS also has an obligation to protect confidential info (e.g., NOAA Administrative Order 216-100).

References:

NMFS. 2021. Fisheries Catch Reports National Marine Fisheries Service, 709 West 9th Street. Juneau, Alaska 99802.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.5.3, 7.6.1
FAO Eco (2009) 29.2–29.2bis, 29.6, 30–30.2
FAO Eco (2011) 36.2, 36.3, 37, 37.1, 37.2

6.1 The fishery management organization shall establish safe target reference point(s) for management. Management targets are consistent with achieving maximum sustainable yield (MSY), a suitable proxy, or a lesser fishing mortality—if that is optimal in the circumstances of the fishery (e.g., multispecies fisheries) or is needed to avoid adverse impacts on dependent predators.

FAO Eco (2009) 29.2
FAO Eco (2011) 36.3

Evaluation Parameters

Process: *A target reference point(s) or proxy has been officially established. Managers shall be able to apply technical measures to reduce fishing pressure in the event that reference points are approached or exceeded.*

Current Status/Appropriateness/Effectiveness: *The official target reference point or proxy is consistent with achieving maximum sustainable yield (MSY), a suitable proxy, or a lesser fishing mortality—if that is optimal in the circumstances of the fishery (e.g., multispecies fisheries) or is needed to avoid severe adverse impacts on dependent predators (e.g., recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible). Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored. Furthermore, there is evidence that the target reference point/management target has been used as an objective by the management process. If there are historical instances of the reference point being approached or exceeded, managers have taken remedial action as appropriate. In the context of reference points, when data are insufficient to estimate reference points directly, other measures of productive capacity can serve as reasonable substitutes or proxies. Suitable proxies may include, for example, standardized Catch per Unit of Effort (CPUE) as a proxy for biomass; or specific levels of fishing mortality and biomass, which have proven useful in other fisheries, can be used with a reasonable degree of confidence in the absence of better defined levels. It is important to note that the use of a proxy may involve additional uncertainty, and if so, should trigger extra precaution in setting biological reference points. For salmon, escapement goals are the equivalent of a target reference point proxy.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that target reference points have been established and are consistent with achieving MSY, a suitable proxy, or a lesser fishing mortality—if that is optimal in the circumstances of the fishery (e.g., multispecies fisheries) or is needed to avoid severe adverse impacts on dependent predators. Examples may include stock assessment reports or fishery management plans.*

Evaluation (per parameter)

Process:
National Standard of the MSA requires that conservation and fisheries management measures prevent overfishing while achieving optimal yield for each fishery on a continuing basis. Target reference points for biomass and F (harvest rate) have been developed for pollock within the Council precautionary approach management system based on sound scientific analyses. In addition, an OY reference point has also been established for each sum of all yields in the GOA and BSAI. Managers can apply technical measures to reduce F if reference points are approached or exceeded.

Current Status/Appropriateness/Effectiveness:
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 F) exceeds the F_{OFL}, 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 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 pollock stocks are made annually by the Council and include the OFL, ABC, and TAC. The Council 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 F relative to MSY considerations. The Tier system specifies the maximum permissible ABC and the OFL for

each stock in the complex (usually individual species but sometimes species groups). The BSAI and GOA groundfish FMPs have predefined HCRs that define a series of reference points for pollock and other 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.

In Tiers 1-3, sufficient information is available to determine a target biomass level, which would be obtained at equilibrium when fishing according to the control rule with recruitment at the average historical level. Most of the larger and commercially important stocks under Council management, including GOA and AI pollock, are in Tier 3, which has sufficient information to determine surrogates for MSY-based reference points. EBS pollock is technically in tier 1, but advice is also provided using the Tier 3 rules. The term "$F_{X\%}$" refers to F associated with an equilibrium level of spawning per recruit equal to X% of the equilibrium level of spawning per recruit in the absence of any fishing. For Tier 3, the term $B_{40\%}$ refers to the long-term average biomass that would be expected under average recruitment and $F=F_{40\%}$. These two metrics can thus be considered as targets. For Tier 3 stocks, the spawner-recruit relationship is uncertain so although MSY cannot be estimated with confidence, the MSY proxy level is defined as B35% and the MSST level is one-half of B35%. This proxy level is established in the Council FMPs and has been examined in analyses such as Punt et al. (2014). Note that Tier 3 is split into three components, based on biomass level, and that the HCR specifies a decline in F when the stock biomass drops below the target level of $B_{40\%}$ rather than at $B_{35\%}$.

The state pollock fishery in PWS is managed by ADFG and BOF using an annual GHL set as a percentage of the federal ABC for GOA pollock, and regulations are spelled out by BOF.

Tier 1 Information available: reliable point estimates of B and B_{MSY} and reliable pdf of F_{MSY}.
- 1a) Stock status: $B/B_{MSY} > 1$
  $F_{OFL} = mA$, the arithmetic mean of the pdf
- 1b) Stock status: $\alpha < B/B_{MSY} \leq 1$
  $F_{OFL} = mA \times (B/B_{MSY} - \alpha)/(1 - \alpha)$
- 1c) Stock status: $B/B_{MSY} \leq \alpha$
  $F_{OFL} = 0$

Tier 2 Information available: reliable point estimates of B, B_{MSY}, F_{MSY}, $F_{35\%}$, and $F_{40\%}$.
- 2a) Stock status: $B/B_{MSY} > 1$
  $F_{OFL} = F_{MSY}$
- 2b) Stock status: $\alpha < B/B_{MSY} \leq 1$
  $F_{OFL} = F_{MSY} \times (B/B_{MSY} - \alpha)/(1 - \alpha)$
- 2c) Stock status: $B/B_{MSY} \leq \alpha$
  $F_{OFL} = 0$

Tier 3 Information available: reliable point estimates of B, $B_{40\%}$, $F_{35\%}$, and $F_{40\%}$.
- 3a) Stock status: $B/B_{40\%} > 1$
  $F_{OFL} = F_{35\%}$
- 3b) Stock status: $\alpha < B/B_{40\%} \leq 1$
  $F_{OFL} = F_{35\%} \times (B/B_{40\%} - \alpha)/(1 - \alpha)$
- 3c) Stock status: $B/B_{40\%} \leq \alpha$
  $F_{OFL} = 0$

Tier 4 Information available: reliable point estimates of B, $F_{35\%}$, and $F_{40\%}$.
  $F_{OFL} = F_{35\%}$

Tier 5 Information available: reliable point estimates of B and natural mortality rate M.
  $F_{OFL} = M$

Tier 6 Information available: reliable catch history from 1978 through 1995.
  OFL = the average catch from 1978 through 1995, unless an alternative value is established by the SSC on the basis of the best available scientific information

The above text, taken from the Council FMP for BSAI groundfish, shows the tier system and HCRs used to determine F_{OFL}. A similar table exists for F_{ABC} calculation.

Evidence Basis:
The BSAI and GOA groundfish FMPs contain the details on the Council precautionary approach, including the tier system, the HCR, and the 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 2021 SAFE documents, none of the four pollock stocks had overfishing occurring, as per the standard definitions apply to each stock.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/Alpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf

NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Punt, A. E., Smith, A. D. M., Smith, D. C., Tuck, G. N., and Klaer, N. L. 2014. Selecting relative abundance proxies for BMSY and BMEY. – ICES Journal of Marine Science, 71: 469–483.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

6.2 The fishery management organization shall establish appropriate 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; RFM v2.1 Guidance Appendix 1, Part 1[5]). 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.

Evaluation Parameters

Process: *A scientifically based limit reference point or proxy has been officially established, and together with the measure to be taken, ensures the reference point(s) will not be exceeded.*

Current Status/Appropriateness/Effectiveness: *The stock under assessment shall not currently be overfished (see glossary) according to the best scientific evidence available. The stock is currently estimated to be on the sustainable side of this reference point (e.g., spawning stock biomass is above the limit reference point, F is below F_{lim}, etc.). F_{lim} shall not exceed Fmsy. The limit reference point or proxy is consistent with avoiding recruitment overfishing and other severe negative impacts on the stock. There are mechanisms in place (e.g., harvest control rule or mechanism) to ensure that the level of fishing pressure is reduced if the limit reference point is approached or reached, and these mechanisms are consistent with ensuring to a high degree of certainty that the*

[5] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

limit reference point will not be exceeded, and that actions are taken to decrease the fishing mortality (or its proxy) below that limit reference point. The level of B_{lim} should be set on the basis of historical information, applying an appropriate level of precaution according to the reliability of that information. In addition, an upper limit should be set on fishing mortality, F_{lim}, which is the fishing mortality rate that, if sustained, would drive biomass down to the B_{lim} level. It is important to clarify that for salmon, spawning escapement goals are a suitable proxy for the intent of this clause. Escapement goal performance over a 4- to 5-year period shall be considered a suitable minimum reference point for salmon management. Specific to this point, underperforming salmon stocks that do not meet their escapement goals for a sustained period (over 4–5 years) shall be appropriately managed within the stock of concern framework by the State of Alaska to ensure stocks are managed with the objective of returning them to safe biological targets.

***Evidence Basis:** The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are established 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 are 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 are taken to decrease the fishing mortality (or its proxy) below that limit reference point. Examples may include stock assessment reports or fishery management plans.*

Evaluation (per parameter)

Process:
National Standard 1 of the MSA requires that conservation and fisheries management measures prevent overfishing while achieving OY for each fishery on a continuing basis. Limit reference points for biomass and F (harvest rate) have been developed for pollock within the Council precautionary approach management system based on sound scientific analyses. Also, an OY reference point has also been established for each sum of all yields in the GOA and BSAI. Managers can apply technical measures to reduce F if reference points are approached or exceeded.

Current Status/Appropriateness/Effectiveness:
In the Council tier system, the pollock stocks in EBS, GOA, and AI are currently managed under Tier 3, while Bogoslof pollock is in Tier 5, and EBS pollock qualifies as in Tier 1 stock. Stocks in Tier 3 are further categorized as (a), (b), or (c) based on the relationship between biomass, B40%, and a lower biomass threshold, as indicated in the table in Clause 6.1. The category assigned to a stock determines the method used to calculate ABC and OFL. The HCR is biomass-based, for which F is constant when biomass is above the B40% target and declines linearly down to the threshold value when biomass drops below the target, consistent with the precautionary approach. In Tier 3c, the fishing mortality rate (FOFL) used to set the OFL is set to zero. The rule used to determine the ABC is applied in exactly the same manner (i.e., based on an HCR triggered by targets and limits), and below the Tier 3c limit, maxFABC (F) is set to zero. Note that the MSST threshold used to determine if a stock is overfished is a different reference point than those used in the Council tier system. For pollock and other key species preyed on by Steller sea lions, there is an additional limit reference point consideration in the Council groundfish FMPs, which states that directed fishing is prohibited in the event that the SSB is projected in the stock assessment to fall below B20% in the coming year. This applies to pollock stocks in both BSAI and GOA regions.

Evidence Basis:
The BSAI and GOA groundfish FMPs referenced above contain the details on the Council precautionary approach, including the tier system, the HCR, and the limit and target reference points. Extensive analysis is conducted in each stock assessment to determine the current and projected biomass level relative to the limit reference points. Based on the information in the 2021 SAFE documents (i.e., position of the current and projected stock size relative to reference points), none of the Tier 1 or 3 pollock stocks are in overfishing (F above FMSY). For GOA, EBS, and AI pollock stocks, it is also possible to determine that these stocks are not overfished or approaching an overfished condition. The state pollock fishery in PWS is managed using a GHL set as a percentage of the GOA federal ABC. Pollock catches used in the GOA assessment include those taken in the state fishery in PWS.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

6.3 Data and assessment procedures that measure the position of the fishery in relation to the reference points shall be established. 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, and taking into account that long-term changes in productivity can occur due to natural variability and/or impacts other than fishing (RFM v2.1 Guidance Appendix 1, Part 1[6]).

FAO CCRF (1995) 7.5.3, 7.6.1
FAO Eco (2009) 29.2–29.2bis, 29.6, 30–30.2FAO Eco (2011) 36.2, 36.3, 37, 37.1, 37.2

Evaluation Parameters

Process: *Data and assessment procedures (i.e., stock assessment process) are in place to measure the position of the fishery in relation to the target and limit reference points.*

Current Status/Appropriateness/Effectiveness: *The current stock status in relation to reference points is used to determine the level of fishing permitted. The latter is commensurate with the current state of the fishery resources (i.e., close to or above target reference point and most importantly, not overfished or at or below its limit reference point or proxy) and takes into account that long-term changes in productivity can occur due to natural variability and/or impacts other than fishing. The stock is positioned at or above the target reference point. As a minimum, the stock is located above the midway point between the target and the limit reference point. It is important to clarify that, for salmon, spawning escapement goals are a suitable proxy for the intent of this clause. Escapement goal performance over a 4- to 5-year period shall be considered as a suitable minimum reference point for salmon management. Underperforming salmon stocks that do not meet their escapement goals for a sustained period (over 4– 5 years) shall be appropriately managed within the stock of concern framework by the State of Alaska to return them to safe biological targets. Assessors shall present evidence and evaluate escapement goals and escapement goal performance (i.e., met, not met) for all the wild salmon stock with a formal escapement goal in force in Alaska (about 300 annually). Overall, statewide summary data for Alaska can be found in the annually released ADF&G document Summary of Pacific salmon escapement goals in Alaska with a*

[6] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

review of escapements from [year] to [year]. The document generally presents the latest 9–10 years of salmon escapement performance in review.

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that data and assessment procedures are installed measuring the position of the fishery in relation to the reference points. Accordingly, the stock under consideration is not overfished (i.e., it is above limit reference point or proxy) and the level of fishing permitted is commensurate with the current state of the fishery resources—maintaining its future availability and taking into account that long-term changes in productivity can occur due to natural variability and/or impacts other than fishing. Examples may include stock assessment reports or fishery management plans.*

Evaluation (per parameter)

Process:
NMFS/Council has an extensive peer reviewed stock assessment program, which is necessary to monitor and measure the status of the pollock stocks relative to target and limit levels of exploitation and biomass. Extensive oceanographic monitoring and ecosystem modelling is done on stocks in Alaska waters as part of several projects, in order to monitor and predict changes of stock productivity.

Current Status/Appropriateness/Effectiveness:
Each 2021 SAFE report for pollock describes the current F rate, and stock biomass relative to the target and limit reference points. Council FMPs specify the OFL and the F rate (FOFL) used to set OFL, ABC, and the F rate (FABC) used to set ABC, the determination of each being dependent on the knowledge base for each stock. The GOA, EBS and AI stocks are well above the MSST limit reference point for biomass, and above the B35% (MSY proxy) reference point. None of these three stocks is overfished, has overfishing occurring, or is approaching an overfished condition. Bogoslof pollock catches are substantially below the OFL (no directed fishery), and like the other three stocks, the stock does not have overfishing occurring.

Extensive oceanographic monitoring is carried out in conjunction with the various surveys in Alaska waters, as described in Clause 4. Monitoring of the Pacific Decadal Oscillation regimes, a standard indicator of productivity in the north Pacific, is conducted, along with analyses of its potential impacts on productivity of North Pacific stocks, including pollock. In addition, comprehensive Ecosystem Reports for EBS, AI, and GOA are presented to Council annually, which look at numerous elements of the Alaska ecosystems.

Evidence Basis:
The SAFE documents provide full analyses of the status of pollock stocks relative to all available reference points. The tables in Section 3.3 above, taken directly from the 2021 SAFE reports for each pollock assessment (e.g., Ianelli et al. 2021a), shows the stock status in tabular form for the EBS stock, and similar tables are produced in the other three SAFE reports. Comprehensive annual Ecosystem Reports for BSAI and GOA are presented to the Council that look at numerous elements of the Alaska ecosystems. In 2021, a three-species stock assessment for pollock, Pacific cod, and arrowtooth flounder was presented for the EBS region (Holsman et al. 2021). Results were presented from models estimated and projected with and without trophic interactions and were compared with those from the single species pollock assessment for EBS. The state pollock fishery in PWS is managed using a GHL set as a percentage of the GOA federal ABC. Pollock catches used in the GOA assessment include those taken in the state fishery in PWS.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Holsman, K., Jim Ianelli, Kerim Aydin, Grant Adams, Kelly Kearney, Kalei Shotwell, Grant Thompson, and Ingrid Spies 2021 Climate-enhanced multi-species Stock Assessment for walleye pollock, Pacific cod, and arrowtooth flounder in the South Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 7600 Sand Point Way N.E., Seattle, Washington 9811 https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSmultispp.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.
Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

6.4 Management actions shall be agreed to in the eventuality that data sources and analyses indicate that these reference points have been exceeded. Accordingly, contingency plans shall be agreed in advance to allow an appropriate management response to serious threats to the resource as a result of overfishing, adverse environmental changes, or other phenomena that may have adverse impacts on the fishery resource (RFM v2.1 Guidance Appendix 1, Part 2[7]). Such measures may be temporary and shall be based on best scientific evidence available.

FAO CCRF (1995) 7.5.3, 7.5.5
FAO Eco (2009) 29.6, 30.2
FAO Eco (2011) 36.3

Evaluation Parameters

Process: *There is an agreed process, system, or contingency plan in the eventuality that the data sources and analyses indicate that these reference points have been exceeded—detailing the appropriate management response to serious threats to the resource because of overfishing, adverse environmental changes, or other phenomena that may have adverse impacts on the fishery resource. Accordingly, the contingency plan/harvest control rule shall be agreed in advance to allow an appropriate management response to serious threats to the resource because of overfishing, adverse environmental changes, or other phenomena that may have adverse impacts on the fishery resource.*

Current Status/Appropriateness/Effectiveness: *In the eventuality that the current level of the stock has exceeded target or limit reference points, the agreed and corresponding management action (as directed by the harvest control rule or framework) shall be immediately implemented and fishing reduced or halted as necessary. The harvest control rule is effective at keeping or bringing back the stock to acceptable and safe biological levels (i.e., to avoid overfishing/ed status). Underperforming salmon stocks that do not meet their escapement goals shall be appropriately managed within the stock of concern framework by the State of Alaska.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that management actions are agreed should data sources and analyses indicate that these reference points have been exceeded. Accordingly, contingency plans are agreed in advance for the appropriate management response to serious threats to the resource as a result of overfishing, adverse environmental changes, or other phenomena that may have adverse impacts on the fishery resource. Such measures may*

[7] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

be temporary and are based on best scientific evidence available. Examples may include stock assessment reports or fishery management plans.
Evaluation (per parameter) **Process:** The Council has developed an HCR, which calls for specific management actions when reference points have been exceeded. **Current Status/Appropriateness/Effectiveness:** The Council management of pollock stocks includes HCR based on the reference points described in the previous two clauses. This HCR triggers actions by managers to reduce catches when the stock is below B40% (i.e., in Tier 3b between B40% and the lower limit specified in Tier 3c) or to set FOFL to 0 when the biomass is below the limit specified in Tier 3c. If the stock is determined to be below the MSST (defined as ½ of B35%), a rebuilding plan must be established to bring the biomass back to the BMSY level within a specified timeframe. In addition, there is a rule for pollock and other key prey species for Steller sea lions that triggers when biomass is below B20%. Catch limits for the pollock stocks are based on the stock assessments and HCRs, and the HCRs have been successful in avoiding overfishing. **Evidence Basis:** The BSAI and GOA groundfish FMPs referenced above contain the details on the Council precautionary approach, including the tier system, the HCR, and the limit and target 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. At present, the stocks are all above the MSST values (not overfished), and the current ABCs for GOA, EBS, and AI pollock were set based on the stocks being in Tier 3b for AI, and Tier 3a for the other two. See Tier 1 and 5 definitions in Clause 6.2. The following section on stock rebuilding is directly from the Council FMP for BSAI groundfish: Within two years of such time as a stock or stock complex is determined to be overfished, an FMP amendment or regulations will be designed and implemented to rebuild the stock or stock complex to the MSY level within a time period specified at Section 304(e)(4) of the MSA. If a stock is determined to be in an overfished condition, a rebuilding plan would be developed and implemented for the stock, including the determination of an FOFL and FMSY that will rebuild the stock within an appropriate time frame.
References: Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf. Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf. Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

6.5 Measures shall be introduced to identify and protect depleted stocks and those stocks 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 stocks, which have received adverse impacts by fishing or other human activities, are restored.

FAO CCRF (1995) 7.6.10 FAO Eco (2009) 30

Evaluation Parameters

Process: *There is a process that identifies depleted stocks, resources, and habitats. A depleted stock is usually a stock, which has been overfished, the stock status is below limit reference point, and the ability of the stock to recover has been impaired.*

Current Status/Appropriateness/Effectiveness: *There is evidence that where depleted or adversely impacted stocks, resources, and habitats have been identified, efforts have been made to ensure they are restored or allowed to recover (i.e., ideally within a two generations timescale). Underperforming salmon stocks that do not meet their escapement goals shall be appropriately managed within the stock of concern framework by the State of Alaska.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that measures are introduced to identify and protect depleted stocks and those stocks threatened with depletion, and to facilitate the sustained recovery/restoration of such stocks. Also, efforts are made to ensure that resources and essential habitats critical to the wellbeing of the stocks, which have been adversely impacted by fishing or other human activities, are restored. Examples may include laws and regulations, fishery management plans, and stock assessment reports.*

Evaluation (per parameter)

Process:
Past management responses have been effective as indicated in Section 3.3. Historically the fishing intensity has been low, and the biomass has been high.

Current Status/Appropriateness/Effectiveness:
As evidenced in previous Clause 6.4, Council management of pollock stocks includes HCR based on the reference points. This HCR triggers actions by managers to reduce catches when the stock is below a certain level of biomass. In addition, the FMPs implement gear restrictions and area closures to help reduce bycatch and impacts on habitat, which are essential areas critical to the safety of the stock.

Evidence Basis:

Safe report and FMPs are evidence that specific measures were introduced for pollock stocks to facilitate the sustained recovery of such stocks. In addition, area closures ensure that resources and habitats critical to the well-being of such stocks are protected (see https://www.fisheries.noaa.gov/resource/map/pollock-fisheries-closed-areas-steller-sea-lion-protection-measures).

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

7. Management actions and measures for the conservation of stock and the ecosystem shall be based on the precautionary approach. Where information is deficient a suitable method using risk management shall be adopted to consider uncertainty.

FAO CCRF (1995) 7.5.1, 7.5.4, 7.5.5, 12.3
FAO Eco (2009) 29.6/32
FAO Eco (2011) 36.7

7.1 The precautionary approach shall be applied widely to conservation, management, and exploitation of ecosystems to protect them and preserve the ecosystem. This should take due account of fishery 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 management, including those associated with the use of introduced or translocated species.[8]

FAO Eco (2009) 29.6
FAO Eco (2011) 36.7

Evaluation Parameters

Process: *There are management measures, regulations, and laws that command or direct the use of the precautionary approach (PA) for conservation, management, and exploitation of the aquatic resources under assessment. This could either take the form of an explicit commitment to the application of the PA or be evidenced by an overarching approach applied throughout the management literature.*

Current Status/Appropriateness/Effectiveness: *The FAO Guidelines for the PA for fisheries management (FAO CCRF 1995) advocate a comprehensive management process that includes data collection, monitoring, research, enforcement, and review. More specifically, prior identification of desirable (target) and undesirable (limit) reference points must be carried out, and measures are required that will avoid undesirable outcomes with high probability and correct them promptly should they occur. The guidelines suggest that this be achieved through rules that specify in advance what action should be taken when specified deviations from operational targets are observed (i.e., harvest control rules). Furthermore, the guidelines suggest that a management plan should not be accepted until it has been shown to perform effectively in terms of its ability to avoid undesirable outcomes (for example through simulation trials). Lastly, the absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent predator, or non-target species and their environment (https://www.sciencebase.gov/catalog/item/50538887e4b097cd4fce2446). There is evidence for the practical application of the PA for resource management and conservation. Note that the PA may be integrated into stock assessment practices, specific management measures enacted for everyday fisheries operations, or other measures. Application of the PA considers enhanced fisheries (e.g., at the policy level) where appropriate, and relevant uncertainties are considered using a suitable method of risk management (e.g., evaluation of potential impacts of increased hatchery releases on wild salmon), including that associated with the use of introduced or translocated species.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the PA is applied to conservation, management, and exploitation of an ecosystem to protect them and preserve the ecosystem. Examples may include stock assessment reports, fishery management plans and other documents.*

Evaluation (per parameter)

Process:
Precautionary approach-based reference points are used in the management of Alaska pollock stocks and are stated in the Council FMPs for the GOA and BSAI regions. Scientific information and stock assessments available are at a consistently high level, and clearly provide the necessary basis for conservation and management decisions. Uncertainties are taken into account in the stock assessment process, in the establishment of reference points, and risk assessment is used in providing harvest options.

Current Status/Appropriateness/Effectiveness:
Precautionary approach-based reference points are used in the management of the pollock stocks, as described extensively in Clause 6. The scientific information and stock assessments available (as described in Clauses 4 and 5) are at a consistently high

[8] FAO Technical Guidelines for Responsible Fisheries No. 2 – Precautionary approach to capture fisheries and species introductions. http://www.fao.org/docrep/003/w3592e/w3592e00.htm

level and provide the necessary basis for conservation and management decisions. Scientific advice for management of the stocks is presented for different harvest levels which explains the risk of biomass levels being below the adopted reference points. State-managed pollock have some stock assessment-based reference points, and/or make use of adjacent federal-based reference points and precautionary approaches where possible.

Evidence Basis:
The precautionary approach reference points are established by the Council precautionary approach 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 no concerns for Alaska pollock with stock enhancement, introduced species, or translocated species.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf

NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

7.1.1 In implementing the PA, the fishery management organization shall take into account, *inter alia*, 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, the impact of fishing activities (including discards) on non-target and associated or dependent predators, and environmental and socioeconomic conditions.

FAO CCRF (1995) 7.5.2

Evaluation Parameters

Process: *There is a system in place under which the potential uncertainties listed above can be examined and taken into account during the decision-making process.*

Current Status/Appropriateness/Effectiveness: *There is evidence to demonstrate that in the fishery under assessment, uncertainties considered include those associated with 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 predators, as well as environmental and socio-economic conditions.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that in implementing the PA, the fishery management organization takes into account, inter alia, 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. Examples may include stock assessment reports, fishery management plans and other documents.*

Evaluation (per parameter)

Process:
Potential uncertainties in the stock size, reference points, productivity, etc. are taken into account in the assessment process. Uncertainties in the management process re reference points, classification of stocks into precautionary approach tiers, setting of catch levels, etc. are explicit in the Council FMPs.

Current Status/Appropriateness/Effectiveness:
Scientists evaluate how fish stocks and user groups might be affected by fishery management actions. The assessments take into account uncertainty in such parameters as survey index data, mean weights at age, and stock-recruit relationship. Analyses evaluate stock status relative to reference points in a probabilistic way, and risks of exceeding reference points at current and projected stock sizes are explicitly presented in the catch option tables in each SAFE report. Extensive research on impacts of fishing, environmental factors, and socioeconomics is presented annually.

The overall objectives of the Council FMPs 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 management plan classifies each stock based on a tier system (Tiers 1-6) with Tier 1 having the greatest level of information on stock status and F relative to MSY considerations. The HCRs associated with these tiers consider the uncertainty associated with each level of information. ABC is a level of a stock or stock complex's annual catch that accounts for the scientific uncertainty in the estimate of OFL and any other scientific uncertainty, and the ABC is set below the OFL. TAC is the annual catch target for a stock or stock complex, derived from the ABC by considering social and economic factors and management uncertainty. In the Council approach, TAC <= ABC < OFL.

Regarding the distribution of F, the pollock fishery is divided into multiple seasons, as noted previously. Additionally, since 1992, the GOA pollock TAC has been apportioned between management areas based on the distribution of biomass in groundfish surveys. Steller sea lion protection measures that were implemented in 2001 require apportionment of pollock TAC based on the seasonal distribution of biomass. Apportioning the TAC spatially distributes the effects of fishing on other pollock predators, such as Steller sea lions, and also ensures that no smaller component of the stock experiences higher mortality than any other.

Evidence Basis:
There are numerous references and examples of how uncertainty is dealt with in the stock assessment of pollock in the annual SAFE reports. Also, the Council 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, as outlined in previous clauses.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.5.1, 12.3
FAO Eco (2009) 29.6, 32

Evaluation Parameters

Process: *There is a process that identifies weaknesses in the scientific information available to fishery management organizations and initiates additional research as necessary. The primary focus of this requirement is the status of the stocks under consideration.*

Current Status/Appropriateness/Effectiveness: *There is evidence that such a process has been applied in the case of the fishery under assessment, including examples of initiated research. Depending on the situation, appropriate research or further analysis of the identified risk is initiated in a timely fashion.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that in the absence of adequate scientific information, appropriate research is initiated in a timely fashion. Examples may include various data or scientific reports.*

Evaluation (per parameter)

Process:
Stock assessments are reviewed on several levels, including externally. Where data gaps have been identified, the NMFS/AFSC has ongoing research programs capable of addressing these needs. Organizations, such as NPRB, allow scientists from several disciplines and agencies to work collaboratively on a variety of fishery related studies in Alaska waters, including some on pollock. Research is also conducted by ADFG on the state-managed pollock.

Current Status/Appropriateness/Effectiveness:
The scientific information available for the pollock resources is of a very high standard and include long time series of catch and fishery data, as well as fishery independent data. The annual NMFS/Council stock assessments are of excellent quality, and are

subjected to multiple levels of peer review, The AFSC periodically requests a more comprehensive review of groundfish stock assessments by the CIE. These reviews are intended to lay a broader groundwork for improving the stock assessments outside the annual assessment cycle. The EBS pollock assessment was reviewed by three external reviewers from the CIE in 2016, and several recommendations from this review were incorporated into the 2016 EBS pollock assessment. Similarly, the GOA pollock assessment was reviewed by CIE in 2017, and subsequent assessments of the GOA stock have addressed many of the recommendations contained in that review.

Evidence Basis:
The CIE reviews are available on the NMFS website and are discussed further in Clause 5.1 above. The SAFE documents on pollock assessment have detailed descriptions on how the CIE recommendations are to be dealt with in the assessment process. In addition, the Council also plays a role in identifying and setting research priorities for Alaska pollock.

References:

https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2017/2017_07_Chen_GOA_Walleye_Pollock_Assessment_Review_Report.pdf
https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2017/2017_07_Trzcinski_GOA_Walleye_Pollock_Assessment_Review_Report.pdf
https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2017/2017_07_Jones_GOA_Walleye_Pollock_Assessment_Review_Report.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

7.2 In the case of new or exploratory fisheries, the fishery management organization 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. Management measures should, if appropriate, allow for the gradual development of the fisheries.

FAO CCRF (1995) 7.5.4

Evaluation Parameters

Note: *This clause is only applicable for new or exploratory fisheries.*

Process: *For new or exploratory fisheries, there is a process that allows immediate application of the PA, including catch and effort limits, and the possible adverse impact of such fisheries on the long-term sustainability of the stocks.*

Current Status/Appropriateness/Effectiveness: *There is evidence that catch and effort limits have been implemented, and other management measures, including the assessment of possible adverse impacts, have been performed for these fisheries.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that in the case of new or exploratory fisheries, the fishery management organization adopts, as soon as possible, cautious conservation and management measures, including, inter alia, catch and effort limits. Such measures 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 are implemented. Management measures should, if appropriate, allow for the gradual development of the fisheries. Examples may include various data or scientific reports.*

Evaluation (per parameter)

This clause is not applicable since pollock fisheries are well established.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

C. Management Measures, Implementation, Monitoring, and Control

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 based upon verifiable evidence and advice from available objective scientific and traditional sources.

FAO CCRF (1995) 7.1.1, 7.1.2, 7.1.6, 7.4.1, 7.6.1, 7.6.9, 12.3
FAO Eco (2009) 29.2, 29.4, 30
FAO Eco (2011) 36.2, 36.3

8.1 Conservation and management measures shall be designed to ensure the long-term sustainability of fishery resources at levels which promote optimum utilization and are based on verifiable and objective scientific and/or traditional, fisher, or community sources.

FAO CCRF (1995) 7.1.1; Others 7.4.1, 7.6.7
FAO Eco (2009) 29.2, 29.4
FAO Eco (2011)36.2

Evaluation Parameters

Process: *The process by which management measures are developed for the fishery utilizes the best scientific evidence available, including traditional sources where these are verifiable, and also considers the cost-effectiveness and social impact of potential new measures. The assessment team shall provide evidence for the main type of management measures present in the fishery. Some of the main examples may include (but are not limited to) legal gear specifications, permit requirements, observer requirements, reporting requirements, limited access, vessel license limitations, size limits, sex restrictions, total allowable catch, in season adjustments, fishing seasons, geographical registrations areas, bycatch reduction devices, gear modification, minimizing waste and ghost fishing, closed waters, catch limits for other fisheries, and bycatch management.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the overall framework of management measures in place is effective at achieving the long-term optimum yield, which is defined by the FAO as "the harvest levels for a species that achieves the greatest overall benefits, including economic, social and biological considerations." If the stock has been maintained above the limit reference point, this shall be taken as evidence that management measures are effective in avoiding overfishing.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that conservation and management measures are designed to ensure the long-term sustainability of fishery resources at levels which promote optimum utilization and are based on verifiable and objective scientific and/or traditional, fisher, or community sources. Examples may include reports, fishery management plans, regulations, or other management measures.*

Evaluation (per parameter)

Process:
Conservation and management measures in place ensure the long-term sustainability of the resources. FMPs which are based on the MSA have objectives to prevent overfishing and promote sustainable and equitable use of the pollock resource. The Council has established a science-based precautionary approach and HCR and based on the scientific assessment of the stock, uses this approach to determine appropriate harvest levels. The process utilizes the best available scientific evidence and considers the cost-effectiveness and social impact of any potential new measures.

Current Status/Appropriateness/Effectiveness:
National Standard 1 of the MSA requires that conservation and fisheries management measures prevent overfishing while achieving optimal yield on a continuing basis. As noted in previous sections, the NMFS and the Council follow a multi-faceted precautionary approach (OFL, ABC, TAC, OY) to manage the federal pollock fisheries, based on targets, limits, and predefined HCRs, as well as overall ecosystem considerations (e.g., the OY limits). The objectives are spelled out clearly in modern FMPs for BSAI and GOA regions, and both FMPs contain long-term management objectives for the Alaska pollock fishery. The biomass of pollock stocks has been maintained well above the limit reference points, and thus management measures are effective in avoiding overfishing.

The state pollock fishery in PWS is managed by ADFG and BOF using an annual GHL set as a percentage of the federal ABC for GOA pollock, and regulations are spelled out by BOF. The BOF formed a GOA pollock working group

(https://www.adfg.alaska.gov/index.cfm?adfg=cgoapollockworkgroup.meetinginfo) in 2014, whose goal was to provide BOF with discussion on a state GHL pollock fishery and an explanation of whether and how a state-GHL pollock fishery would protect and maintain Alaska's marine resources and maximize benefits of the state's GOA pollock resource. Cooperation exists between federal and state authorities in assessing and managing the pollock stocks.

Evidence Basis:
The MSA sets out the standards (e.g., optimal use and avoiding overfishing) which are followed in managing the pollock fisheries in Alaska. FMPs for the GOA and BSAI regions spell out the precautionary approach used by the Council in its management. The 2021 SAFE reports document the latest scientific information and assessment of pollock stocks, including current and projected biomass and F, and their position relative to the reference points. Economic considerations are also contained in a chapter in the 2020 SAFE reports.

Guiding principles for the BOF state-managed groundfish fisheries (5 AAC 28.263) includes provisions such as "conservation of the groundfish resource to ensure sustained yield, which requires that the allowable catch in any fishery be based upon the biological abundance of the stock". Further details pertaining to the state pollock fishery are published on the ADFG website.

References:

ADFG 2022i. Pollock – Directed Pelagic Trawl Fishery. https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareapws.pws_groundfish_pelagic_trawl_harvest

Alaska Statute 5 AAC 28.263 Guiding principles for groundfish fishery regulations http://www.touchngo.com/lglcntr/akstats/aac/title05/chapter028/section089.htm

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, K. Sparks. 2020. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Magnusson Stevens Act (MSA) 2007 (as amended) http://www.nmfs.noaa.gov/sfa/laws_policies/msa/documents/msa_amended_2007.pdf

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf

NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

8.1.1 When evaluating alternative conservation and management measures, the fishery management organization shall consider their cost-effectiveness and social impact.

FAO CCRF (1995) 7.6.7

Evaluation Parameters

Process: *The process by which management measures are developed for the fishery allows for consideration of the cost effectiveness and social impact of potential new or modified management measures.*

Current Status/Appropriateness/Effectiveness: *There is evidence for the consideration of the cost-effectiveness and social impact of potential new or modified management measures.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that in the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact are considered. Examples may include reports, fishery management plans, regulations or other management measures.*

Evaluation (per parameter)

Process:
The Council FMPs for Alaska groundfish recognize the need to balance many competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the resource and the optimization of yield. Since its introduction in 1998, the AFA has governed the operation of the Alaska pollock fisheries in the BSAI region. The CDQ program exists to allocate a portion of allowable catches to coastal communities in Alaska.

Current Status/Appropriateness/Effectiveness:
The Council 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 Alaska fisheries. 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.

The AFA affected the pollock industry through capacity reduction, increased efficiency, regulatory bycatch reduction, a higher portion of utilized fish, and higher valued products. The Pollock Conservation Cooperative (https://www.npfmc.org/wp-content/PDFdocuments/catch_shares/CoopRpts2021/PCC_HSCC_AFA.pdf) was formed in December 1998 in order to promote the rational and orderly harvest of pollock by the CP sector of the BSAI pollock trawl fishery. Furthermore, the western Alaska CDQ Program (https://alaskafisheries.noaa.gov/fisheries/cdq) 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 CDQ Program allocates a percentage of all BSAI quotas for groundfish, prohibited species, halibut, and crab to eligible communities and the current allocation is 10% of the pollock TAC. The effects of such measures on communities are regularly reviewed within the Council.

In 2000, the Council adopted the Alaska LLP (https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/license-limitation-program-alaska). The intent of the program has been to use fishing track record to rationalize the Alaska groundfish and crab fleet by limiting the number, size, and specific operation of vessels as well as eliminating latent licenses.

Evidence Basis:
More information on AFA, CDQ, and LLP was presented in earlier clauses (see Clause 3.2.1 and 3.2.3). NMFS has numerous reports on the performance of the pollock vessels operating under AFA, including economic analysis sections in the annual SAFE documents noted previously. The Pollock Conservation Cooperative makes an annual report to the Council.

References:

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, K. Sparks. 2020. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

8.1.2 Responsible fisheries management organizations shall adopt and implement measures necessary to ensure the management of bycatch and reduction of discards as part of fisheries management (1) in accordance with the PA, as reflected in Article 6 of the UN Fish Stocks Agreement, and as set out in Article 6.5 and 7.5 of the Code; (2) in accordance with the responsible use of fish as set out in the Code; and (3) based on the best scientific evidence available, taking into account fishers' knowledge.

FAO IGBD (2011) 3.2.2

Evaluation Parameters

Process: *The responsible fisheries management organizations has adopted and implemented effective measures necessary to ensure the management of bycatch and reduction of discards as part of fisheries management.*

Current Status/Appropriateness/Effectiveness: *There is evidence of adoption and implementation of effective measures to ensure the management of bycatch and reduction of discards as part of fisheries management (1) in accordance with the PA, as reflected in Article 6 of the UN Fish Stocks Agreement, and as set out in Article 6.5 and 7.5 of the Code; (2) in accordance with the*

responsible use of fish as set out in the Code; and (3) based on the best scientific evidence available, taking into account fishers' knowledge. Please note that traditional knowledge should be verifiable. The strategy to ensure the management of bycatch and reduction of discards as part of fisheries management is being implemented successfully (e.g., there is a well-known track record of consistently setting conservative bycatch limits based on quality information and advice about bycatch); or bycatch is minimized to the greatest extent possible, especially for vulnerable species such as sharks, seabirds, turtles, and marine mammals, through mitigation measures that have been shown to be highly effective (e.g., observer coverage and procedures, bycatch caps, utilization measures, full catch accounting, on-deck techniques, avoidance mechanisms and gear technology, etc.). Also, the fishery is not a leading cause of a high level of mortality for any species of concern (e.g., not a Category I fishery for marine mammal bycatch as designated by the National Marine Fisheries Service).

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the responsible fisheries management organizations have adopted and implemented effective measures necessary to ensure the management of bycatch and reduction of discards as part of fisheries management. Examples may include stock assessment, bycatch or other ecosystem assessment reports.*

Evaluation (per parameter)

Process:
The setting of retention requirements and prohibited species catches (objectives) through the FMP process provides a mechanism by which the catch, waste, and discarding of non-target species is minimized.

Current Status/Appropriateness/Effectiveness:
There are a comprehensive set of measures in place to minimize catch, waste, and discards of non-target species, as described above. These, combined with operational measures employed by industry to meet the specific targets, are considered effective at achieving the specified management objectives.

The principal mechanism for directing measures to minimize catch, waste, and discards of non-target species (both fish and non-fish species) and impacts on associated, dependent or endangered species is the FMP (for the BSAI and for the GOA). The plans specify:

1. Minimum retention requirements – all vessels in the groundfish fisheries are required to retain all catch of pollock, cod, and (in GOA) shallow water flatfish when directed fishing for those species is open.
2. When directed fishing for pollock, cod, and (in GOA) shallow water flatfish is prohibited, retention of those species is required up to a maximum retainable amount.
3. No discarding of whole fish of these species is allowed, either prior to or subsequent to that species being brought on board the vessel.
4. At-sea discarding of any processed product from pollock, cod and shallow water flatfish is also prohibited. (It is noted that pollock, cod, and shallow water flatfish comprise by far the bulk of catches in groundfish fisheries.)
5. All pollock, Pacific cod, and (in GOA) shallow water flatfish caught must be either processed at sea or delivered in their entirety to onshore processing plants.
6. In the BSAI, quota allocations are made to sectors with management cooperatives operating in virtually all of these. Together with in-season management of quotas and PSCs, this allows for effective uptake of quotas.

In addition, specific allocations are made to each sector of the groundfish fishery for PSCs. This relates to halibut; salmon (principally Chinook); and (although much less relevant to the pollock fisheries) red king crab, tanner crab, and herring in the BSAI. As an example, the final rule for Amendment 110 to the FMP for groundfish of the BSAI management area was published in June 2016. The rule will improve the management of Chinook and chum salmon bycatch in the BSAI pollock fishery by creating a comprehensive salmon bycatch avoidance program. In addition to revising seasonal allocations of pollock, the Chinook salmon performance standard and PSC limit will be reduced in years of low Chinook salmon abundance in western Alaska. As hard bycatch limits (as implemented for Chinook salmon and halibut) can cause closure of a fishery, industry is proactive in seeking means of limiting catches. The approaches taken in the BSAI include in-season monitoring and reporting of catches and closures of areas of high bycatch (the SEASTATE monitoring program), permanent closure of areas of high salmon bycatch, rolling hot-spot closures of areas of highest bycatch rates and gear modifications to limit catches (such as trawl gear modification in the AFA fleet to allow escapement of salmon without loss of groundfish). These mechanisms are seen as being adaptive and effective.

Evidence Basis:
Evidence includes FMPs, in-season catch reporting, and endangered species conservation plans. These are all publicly available through NMFS and Council websites.

References:

NOAA 2016. Amendment 110 - Final Rule https://www.federalregister.gov/documents/2016/06/10/2016-13697/fisheries-of-the-exclusive-economic-zone-off-alaska-bycatch-management-in-the-bering-sea-pollock
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
NPFMC 2022c Chinook salmon bycatch management in Alaska https://www.fisheries.noaa.gov/alaska/bycatch/chinook-salmon-bycatch-management-alaska

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.2 The fishery management organization shall prohibit dynamiting, poisoning, and other similar destructive fishing practices.

FAO CCRF (1995) 8.4.2

Evaluation Parameters

Process: *There are management measures, or regulations, or laws that prohibit destructive fishing practices.*

Current Status/Appropriateness/Effectiveness: *The regulations or laws effectively prohibit dynamiting, poisoning, and other similar destructive fishing practices.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization prohibits dynamiting, poisoning, and other similar destructive fishing practices. Examples may include laws, fishery management plans, regulations, and enforcement data.*

Evaluation (per parameter)

Process:
Management regulations prohibit destructive fishing practices.

Current Status/Appropriateness/Effectiveness:
The regulations or laws effectively prohibit dynamiting, poisoning, and other comparable destructive fishing practices, as there is no evidence that these practices are being used.

Evidence Basis:

As listed in the Council FMPs and NMFS regulations, the only legal gears for taking pollock in the Alaska fisheries are pelagic trawl, bottom trawl, jig, longline, and pot. No destructive gears such as dynamite or poison are permitted, nor is there any evidence that such gears are being used illegally.

References:

Alaska Fisheries Regulations https://www.fisheries.noaa.gov/alaska/rules-and-regulations/regulations-acts-treaties-and-agreements-federal-fisheries-alaska

NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf

NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.3 The fishery management organization 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.

FAO CCRF (1995) 7.1.2, 7.1.6, 7.6.6

Evaluation Parameters

Process: *There is a process that allows for identifying and consulting with domestic parties (giving due recognition 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) having a legitimate interest in the use and management of the fisheries resource.*

Current Status/Appropriateness/Effectiveness: *In accordance with national laws and regulations, there is evidence that domestic parties having a legitimate interest in the use and management of the fishery (as described above) have been identified and encouraged to collaborate in the fisheries management process.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization seeks 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 is 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 are made to consult all the interested parties and gain their*

collaboration in achieving responsible fisheries. Examples may include laws, fishery management plans, regulations, and meeting records.

Evaluation (per parameter)

Process:
The Council and BOF have processes in place to allow for identifying and consulting with domestic parties having interest in the Alaskan pollock fisheries.

Current Status/Appropriateness/Effectiveness:
The Council is responsible for allocation of the pollock resource among user groups in Alaska waters. In addition, the BOF public meeting process provides regularly scheduled public fora for all interested individuals, fishermen, fishing organizations, environmental organizations, Alaska Native organizations, and other governmental and non-governmental entities that catch pollock off Alaska to participate in the development of legal regulations for fisheries. Organizations and individuals involved in the fishery and management process have been identified. The Alaska pollock management process has many stakeholders, including Alaska pollock license holders; processors; fishermen's organizations; the States of Alaska, Washington, and Oregon; CDQ groups; and environmental groups. Roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. The Council process is the primary means for soliciting stakeholder information important to the Alaska pollock fisheries, and this is fully transparent and open to the public. Proposals for management measures may come from the public, state and federal agencies, advisory groups, or Council members. Fishing industry stakeholders work extensively with fishery scientists, managers, and other industry members on various initiatives to ensure sustainability of the pollock fisheries.

The Council established a CEC in June 2018 to identify and recommend strategies for the Council to provide effective community engagement with rural and Alaska Native communities. AFSC produced a report – the Annual Community Engagement and Participation Overview – which will be updated annually and provides social and economic information at the community level for those fishing communities that are substantially dependent on, or engaged in, the North Pacific groundfish and crab fisheries.

The western Alaska 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 CDQ Program allocates a percentage of all BSAI quotas for groundfish, prohibited species, halibut, and crab to eligible communities. The purpose of the CDQ Program is to (i) provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the BSAI Management Area; (ii) support economic development in western Alaska; (iii) alleviate poverty and provide economic and social benefits for residents of western Alaska; and (iv) achieve sustainable and diversified local economies in western Alaska. There are approximately 65 communities within a fifty-mile radius of the BS coastline who participate in the program.

Advisory committees (https://www.adfg.alaska.gov/index.cfm?adfg=process.advisory) are local "grass roots" citizen groups intended to provide a local voice for the collection and expression of public opinions and recommendations on matters relating to the management of fish and wildlife resources in Alaska. ADFG staff regularly attends the advisory committee meetings in their respective geographic areas to provide information to the public and hear local opinions on fisheries related activities. Currently, there are 84 advisory committees in the state. Of these, approximately 80% to 85% are "active", meaning they regularly meet, write proposals, comment, and attend BOF meetings.

Evidence Basis:
Details on the Advisory Committees CEC, the CDQ program, the enabling statute for the ADFG Advisory Committees, and information on BOF and ADFG advisory process are publicly available.

References:

Alaska Statutes, Title 16, Chapter 5, Section 261. (AS 16.05.260. Advisory Committees). http://www.touchngo.com/lglcntr/akstats/statutes/title16/chapter05/section260.htm

NOAA. 2021. Annual Community Engagement and Participation Overview (ACEPO). https://meetings.npfmc.org/CommentReview/DownloadFile?p=b26ba0fd-2447-41b2-8de5-6a1a4c488471.pdf&fileName=D8%20ACEPO%20ESSR.pdf

NPFMC. 2018c. Community Engagement Committee, Terms of Reference https://www.npfmc.org/wp-content/PDFdocuments/membership/CEC/CEC_TOR_1218.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.4 Where excess capacity exists, mechanisms shall be established to reduce capacity to levels commensurate with sustainable use of the resource. Fleet capacity operating in the fishery shall be measured and monitored. The fishery management organization 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.

FAO CCRF (1995) 7.1.8, 7.6.3, 8.1.2, 8.1.3

Evaluation Parameters

Process: *There is a system to measure fleet capacity and maintain regularly updated data on all fishing operations. Research has been conducted to determine or estimate the fishing capacity commensurate with the sustainable use of the resource. There are mechanisms in place to measure the total fishing capacity within the unit of certification, and to reduce this capacity if it is determined to exceed the sustainable level.*

Current Status/Appropriateness/Effectiveness: *There is evidence of the size of fleet capacity, and of data describing fishing operation, and that the mechanisms described above are successful at maintaining the effective fishing capacity of the unit of certification at a level commensurate with the sustainable use of the resource. Management mechanisms, which restrict the application of fishing capacity, such as quotas, shall be considered valid mechanisms in relation to this parameter. The core emphasis of this requirement is to ensure that exploitation is sustainable. Assessment teams should ensure that fisheries are within catch limit recommendations to determine whether excess capacity is having an effect on resource overexploitation.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that fleet capacity operating in the fishery is monitored and measured, and statistical data on all fishing operations allowed is updated and maintained. Where excess capacity exists, mechanisms are established to reduce capacity to levels commensurate with sustainable use of the resource. Examples may include fleet reports or other documents or reports.*

Evaluation (per parameter)

Process:
There is a system to measure fleet capacity and maintain regularly updated data on all fishing operations. There are mechanisms in place to measure the total fishing capacity and to reduce it if it is determined to exceed the sustainable level. The pollock fishery in the BSAI region is governed by the provisions of the AFA. There are substantial effort controls and records of all fishing operations in the Alaska fisheries through mechanisms, such as the Council LLP (https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/license-limitation-program-alaska) and the Restricted Access Management Program (https://www.fisheries.noaa.gov/contact/alaska-restricted-access-management-program) administered by NMFS Alaska Regional Office.

Current Status/Appropriateness/Effectiveness:
There is clear evidence from implementation of the AFA that regulating the size of Alaska fleet capacity has been effective in the BS pollock fishery. The Council and NMFS have determined the fishing capacity commensurate with the sustainable use of the pollock resource, and stocks are above biomass reference points and not overfished in any way. Management mechanisms such as TACs and quota allocations regulate the catch and amount of fishing effort applied to the pollock stocks, and there is an overall OY cap in both GOA and BSAI regions which restricts the total amount of fish of all species that can be removed from these ecosystems.

Fleet capacity and regularly updated data on all pollock fishing operations are presented in the annual SAFE documents. For example, in the economic chapter of the 2020 SAFE report, it states and presents information on measures of fishing capacity and effort in federally managed Alaska groundfish fisheries, including fleet size, duration of fishing, and levels of harvesting and processing employment. These are sourced from the federal CAS, ADFG groundfish fish tickets, North Pacific groundfish observer data, and at-sea groundfish production reports.

Evidence Basis:
The SAFE documents (assessments and economic reports), the AFA, and Council groundfish FMPs for GOA and BSAI provide the necessary evidence.

References:

American Fisheries Act (AFA) 1998 – Pollock Fisheries Management in Alaska https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/american-fisheries-act-pollock-fisheries-management-alaska

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, K. Sparks. 2020. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.4.3

Evaluation Parameters

Process: *There is a need and a process that allows, as appropriate, for studies to understand the costs, benefits, and effects of alternative management options designed to rationalize fishing.*

Current Status/Appropriateness/Effectiveness: *There is evidence for studies conducted on alternative management options designed to rationalize fishing.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that studies are promoted that provide an understanding of the costs, benefits, and effects of alternative management options designed to rationalize fishing, especially options relating to excess fishing capacity and excessive levels of fishing effort. Examples may include various evaluation or reports on fishing rationalization.*

Evaluation (per parameter)

Process:
The AFA has governed the operation of the Alaska pollock fisheries in the BSAI region since 1998. Formation of cooperatives, such as Pollock Conservation Cooperative and High Seas Catchers' Cooperative, have occurred since then.

Current Status/Appropriateness/Effectiveness:
The AFA affected the pollock industry in the BSAI region through capacity reduction, increased efficiency, regulatory bycatch reduction, a higher portion of utilized fish, and higher valued products. Industry cooperatives have been formed to accomplish these objectives. NMFS has numerous analyses on the performance of the pollock vessels operating under AFA, including sections in the annual SAFE reports. The AFA does not apply to GOA pollock, where other measures are in place.

Evidence Basis:
The Pollock Conservation Cooperative was formed in December 1998 in order to promote the rational and orderly harvest of pollock by the C/P sector of the BSAI pollock trawl fishery. The Pollock Conservation Cooperative is the C/P cooperative, and the High Seas Catchers' Cooperative is a CV cooperative, containing all catcher vessels eligible to deliver pollock to CPs (https://www.npfmc.org/wp-content/PDFdocuments/catch_shares/CoopRpts2021/PCC_HSCC_AFA.pdf). In 1999, the Pollock Conservation Cooperative and High Seas Catchers' Cooperative completed an inter-cooperative agreement to facilitate efficient

management and accurate accounting between the two cooperatives. The organizations make a joint annual report to the Council, as noted in Clause 5.1.1. In addition to these, there are six shoreside catcher vessel cooperatives (Northern Victor Fleet, Peter Pan Fleet, Unalaska Fleet, UniSea Fleet, Westward Fleet, and Akutan Catcher Vessel Association). There is a mothership cooperative as well called the Mothership Fleet Cooperative.

An extensive report from the Council to the U.S. Congress on the impacts of the AFA was presented in 2002 and concluded that the program had been largely successful in meeting its goals. In the annual economic SAFE reports, an extensive analysis is presented on the Alaska pollock fisheries. A report on the AFA was produced by Northern Economics Inc. for the Council in July 2017. The purpose of the review was to describe the socioeconomic impacts of the BS pollock fishery under the AFA Program.

References:

American Fisheries Act (AFA) 1998 – Pollock Fisheries Management in Alaska https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/american-fisheries-act-pollock-fisheries-management-alaska
American Fisheries Act Program Review (Northern Economics 2017. https://www.npfmc.org/wp-content/PDFdocuments/catch_shares/AFA/AFAprogramReviewFinal_0717.pdf
NPFMC 2002. Impacts of the American Fisheries Act: NPFMC report to the US Congress https://www.npfmc.org/wp-content/PDFdocuments/resources/AFACongress202.pdf

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

Evaluation Parameters

Process: *The management system has taken into account technical measures, where and as appropriate (i.e., some fisheries do not have the requirement for a minimum fish size), to the fishery and stock under assessment, in relation to fish size, mesh size, gear, closed seasons, closed areas, areas reserved for particular (e.g., artisanal) fisheries, and protection of juveniles or spawners.*

Current Status/Appropriateness/Effectiveness: *Technical measures are related to sustainability objectives, ensuring sustainable exploitation of the target species, and minimizing the potential negative impacts of fishery activities on non-target species, ETP species, and the physical environment.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that technical measures regarding the stock under consideration are taken into account, where appropriate, in relation to fish size, mesh size, gear, closed seasons, closed areas, areas reserved for particular (e.g., artisanal) fisheries, and protection of juveniles or spawners. Examples may include fishery management plans, regulations, or various other reports.*

Evaluation (per parameter)

Process:
The management system has taken into account various technical measures, where and as appropriate to the fishery and stock under assessment, in relation to fish size, fishing gear, closed seasons, closed areas, areas reserved for particular (e.g., artisanal) fisheries, and protection of juveniles or spawners.

Current Status/Appropriateness/Effectiveness:
There have been numerous regulations, as well as technological developments, aimed at reducing waste and discards in the pollock 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 the split of the BS pollock TAC into A and B seasons, both SE and NW of 170 degrees longitude, to allow harvest of roe-bearing pollock at appropriate times and thereby reduce wastage, the development of Chinook and chum salmon excluder devices for trawl gear to reduce these bycatches, and closures of large areas to protect numerous ETP species. Since 1998, full retention of pollock is required in all Alaska fisheries under the Improved Retention/Improved Utilization Program. Since implementation of the AFA, vessel operators often pursue optimal sizes of pollock for market since the quota is allocated to vessels via cooperative arrangements. In addition, several vessels have made various gear modifications to avoid retention of smaller pollock.

Regarding the endangered Steller sea lions, the Council acted in a precautionary manner to place protections around rookeries and haulouts and close areas where fishing may impact Steller sea lion prey, such as pollock. Over 210,000 km^2 (54%) of critical sea lion habitat is closed to the pollock fishery in BSAI, with further restrictions on the proportion of annual pollock TAC, which can be removed from the BSAI Steller sea lion conservation area. In the central and western GOA, the Steller sea lion protection measures implemented in 2001 established four seasons beginning January 20, March 10, August 25, and October 1, with 25% of the total TAC allocated to each season. ADFG has also implemented areas closed to fishing in PWS around Steller sea lion rookeries.

Salmon are caught incidentally in the BSAI offshore trawl fisheries, especially in the pollock pelagic trawl fishery. Salmon are considered a PSC in groundfish fisheries and cannot be retained for sale. Nearly all salmon taken as bycatch are Chinook salmon and chum salmon.

The 100% observer coverage provides very precise count of salmon bycatch, as the observers count every salmon caught. A total of 32,294 Chinook salmon and 320,478 non-Chinook salmon (i.e., chum salmon) were taken as bycatch in the BS groundfish fisheries in 2020.

Since the mid-1990s, the Council and NMFS have developed and implemented a series of measures to minimize the incidental catch of Chinook and chum salmon in the groundfish trawl fisheries. These measures have primarily focused on closure areas and catch limits. Experience over time showed that the industry, working cooperatively, can more effectively avoid salmon bycatch by sharing data and using a system of short-term closure areas in areas where higher rates of salmon bycatch occur and by using salmon bycatch excluder in pollock trawls.

In 2011, Amendment 91 established two Chinook salmon PSC limits for the pollock fishery – 60,000 (total) and 47,591 (performance standard) Chinook salmon. Under Amendment 91, the PSC limit is 60,000 Chinook salmon for the entire pollock fishery fleet participating in an industry-developed contractual arrangement, called an incentive plan agreement, which establishes a program to minimize bycatch at all levels of Chinook salmon abundance. The incentive plan agreement provides annual reports to the Council that evaluate whether the plan was effective at providing incentives for vessels to avoid Chinook salmon at all times while fishing for pollock. The sector-level performance standard ensures that the incentive plan agreement is effective and that sectors cannot fully harvest the Chinook salmon PSC allocations under the 60,000 Chinook salmon PSC limit in most years. Each year, each sector is issued an annual threshold amount that represents that sector's portion of 47,591 Chinook salmon. For a sector to continue to receive Chinook salmon PSC allocations under the 60,000 Chinook salmon PSC limit, that sector can only exceed its annual threshold amount two times within any seven consecutive years. Under the current program, if a sector fails this performance standard, it will be allocated a portion of the 47,591 Chinook salmon PSC limit each subsequent year. This program provides the pollock fishery participants with incentives to limit Chinook salmon bycatch to the performance standard in every year but provides the fleet with some flexibility should it encounter unanticipated changes in the fishery due to weather, operating conditions, or the status of target or bycatch species stocks.

In 2016, Amendment 110 was implemented to improve the management of Chinook and chum salmon bycatch in the BS pollock fishery by creating a comprehensive salmon bycatch avoidance program. While Chinook salmon bycatch impact rates had been low

under Amendment 91 and had not exceeded the performance standard, the Council wanted to further minimize Chinook salmon bycatch at low levels of salmon abundance.

The amendment added two provisions to provide incentives to the pollock fleet to minimize Chinook salmon and chum salmon bycatch to the extent practicable. The first provision requires cooperatives to include 13 specific requirements in the incentive plan agreements to describe the measures and incentives the cooperative used to manage Chinook salmon and chum salmon bycatch. Some of these plan requirements include incentives for the operator of each vessel to avoid Chinook salmon and chum salmon bycatch under any condition of pollock and Chinook salmon abundance in all years; rewards for avoiding Chinook salmon, penalties for failure to avoid Chinook salmon at the vessel level or both; and an explanation of how the incentive measures in the incentive plan agreement are expected to promote reductions in a vessel's Chinook salmon and chum salmon bycatch rates relative to what might have occurred in the absence of the incentive program rewards and penalties. The second provision added a new lower Chinook salmon performance standard and PSC limit for the pollock fishery in years of low Chinook salmon abundance in western Alaska.

In a low Chinook salmon abundance year, NMFS will set the performance standard at 33,318 Chinook salmon and the PSC limit at 45,000 Chinook salmon for the following fishing year. In 2019, there was a determination of low Chinook abundance, and NMFS applied the lower PSC limit and performance standard for the 2019 fishing year. In years with no determination of a low Chinook salmon abundance, NMFS will manage under the 47,591 Chinook salmon performance standard and 60,000 Chinook salmon PSC limit.

Only pelagic trawls can be used in pollock fisheries in the BSAI region, and the doors used in the pelagic trawls used in the pollock fisheries in Alaska have negligible bottom impacts. Although the net does contact the seabed, benthic or bottom species bycatch is quite low, as are discard rates. The Pollock Conservation Cooperative continues to work on reducing the incidental catch of non-pollock species. The PCC contracts with a private sector firm, Sea State, Inc. to monitor incidental catch, and is permitted to download proprietary catch data submitted to NOAA Fisheries on a real time basis. Sea State reviews this data and advises vessel operators of bycatch "hotspots" to avoid. Harvest cooperative members cease fishing in an area if bycatch is encountered and move to other fishing grounds.

Evidence Basis:
Substantial detail on the management measures is contained in the BSAI and GOA FMPs. Information on Chinook salmon bycatch management in Alaska pollock fisheries in BSAI are available on the Council website, including links to Amendments 91 and 110. Information on the industries initiatives to exclude salmon from their catch is also available on industry websites.

References:

NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
NPFMC. 2022g. Salmon Bycatch https://www.npfmc.org/fisheries-issues/bycatch/salmon-bycatch/

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.5.1 Appropriate measures shall be applied to minimize catch, waste, and discards of non-target species (both fish and non-fish species), and impacts on associated, dependent, or endangered species.

FAO CCRF (1995) 7.6.9
FAO Eco (2009) 31.1

Evaluation Parameters

Process: *There is a mechanism by which management measures are developed to minimize the catch, waste and discarding of non-target species and the impact of the fishery on associated, dependent, and ETP species. This system shall include the development of specific management objectives.*

Current Status/Appropriateness/Effectiveness: *There are measures in place to minimize catch, waste, and discards of nontarget species (both fish and non-fish species). These measures are considered effective at achieving the specific management objectives described in the process parameter. There are measures in place to minimize impacts on associated, dependent, or endangered species. These measures are considered effective at achieving the specific management objectives described in the process parameter.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that appropriate measures are applied to minimize catch, waste and discards of non-target species (both fish and non-fish species), and impacts on associated, dependent, or endangered species. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
The principal mechanism for directing measures to minimize catch, waste, and discards of non-target species (both fish and non-fish species) and impacts on associated, dependent or endangered species is the FMP (for the BSAI and for the GOA). The plans specify:

1. Minimum retention requirements – all vessels in the groundfish fisheries are required to retain all catch of pollock, cod, and (in GOA) shallow water flatfish when directed fishing for those species is open.
2. When directed fishing for pollock, cod, and (in GOA) shallow water flatfish is prohibited; retention of those species is required up to a maximum retainable amount.
3. No discarding of whole fish of these species is allowed, either prior to or subsequent to that species being brought on board the vessel.
4. At-sea discarding of any processed product from pollock, cod, (in GOA) and shallow water flatfish is also prohibited. (It is noted that pollock, cod and shallow water flatfish comprise by far the bulk of catches in groundfish fisheries.)

5. All pollock, Pacific cod, and (in GOA) shallow water flatfish caught must be either processed at sea or delivered in their entirety to onshore processing plants.
6. In the BSAI, quota allocations are made to sectors with management cooperatives operating in virtually all of these. Together with in-season management of quotas and PSCs, this allows for effective uptake of quotas.

In addition, specific allocations are made to each sector of the groundfish fishery for PSCs. This relates to halibut, salmon (principally Chinook) and also (although much less relevant to the pollock fisheries) red king crab, tanner crab and herring in the BSAI. As an example, the final rule for Amendment 110 to the FMP for groundfish of the BSAI management area was published in June 2016. The rule improves the management of Chinook and chum salmon bycatch in the BSAI pollock fishery by creating a comprehensive salmon bycatch avoidance program. In addition to revising seasonal allocations of pollock, the Chinook salmon performance standard and PSC limit will be reduced in years of low Chinook salmon abundance in western Alaska. As hard bycatch limits (as implemented for Chinook salmon and halibut) can cause closure of a fishery, industry is proactive in seeking means of limiting catches. The approaches taken in the BSAI include in-season monitoring and reporting of catches and closures of areas of high bycatch (the SEASTATE monitoring program), permanent closure of areas of high salmon bycatch, rolling hot-spot closures of areas of highest bycatch rates and gear modifications to limit catches (such as trawl gear modification in the AFA fleet to allow escapement of salmon without loss of groundfish). These mechanisms are seen as being adaptive and effective.

The setting of retention requirements and PSCs (objectives) through the FMP process provides a mechanism by the catch, waste and discarding of non-target species is minimized. The extent and efficacy of these measures will concomitantly limit any impact of the fishery on associated, dependent and ETP species.

In 2021, Governor Dunleavy, created the Alaska Bycatch Review Task Force to help better understand unintended bycatch of high value fishery resources in State and federal waters. The ongoing work of the Task Force includes studying the impacts of bycatch on fisheries, evaluation and recommendation on policies.

Current Status/Appropriateness/Effectiveness:
There are a comprehensive set of measures in place to minimize catch, waste, and discards of non-target species, as described above. These, combined with operational measures employed by industry to meet the specific targets, are considered effective at achieving the specified management objectives. As described elsewhere, specific measures are in place to minimize impacts on associated, dependent, or endangered species; notably the prohibited species requirements will also directly affect Chinook salmon (which may be from endangered stocks), while measures are in place to deter seabirds from gear, to avoid critical habitat of endangered species and to maintain ecosystem function through monitoring of a range of indicators of the state of the ecosystem which are specifically considered by the plan teams and the Council.

Evidence Basis:
There is extensive evidence, including FMPs, in-season catch reporting, and endangered species conservation plans. These are all publicly available through NMFS and Council websites.

References:

ADFG. 2022j. Alaska Bycatch Review Task Force (ABRT) Overview. https://www.adfg.alaska.gov/index.cfm?adfg=bycatchtaskforce.main
ADFG. 2022k. Bycatch Overview in State Managed fisheries presentation https://www.adfg.alaska.gov/static/fishing/PDFs/bycatchtaskforce/bycatch_overview_state_fisheries.pdf
NOAA. 2016. Amendment 110 -Final Rule https://www.federalregister.gov/documents/2016/06/10/2016-13697/fisheries-of-the-exclusive-economic-zone-off-alaska-bycatch-management-in-the-bering-sea-pollock
NOAA. 2022d. Alaska bycatch review task force presentation https://www.adfg.alaska.gov/static/fishing/PDFs/bycatchtaskforce/bycatch_review_merrill.pdf
Northern fur seal: Conservation and Management https://www.fisheries.noaa.gov/species/northern-fur-seal#conservation-management
NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf
Steller sea lion: Conservation and Management https://www.fisheries.noaa.gov/species/steller-sea-lion#conservation-management

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.6 Fishing gear shall be marked in accordance with the State's 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.

FAO CCRF (1995) 8.2.4

Evaluation Parameters

Process: *There is regulation for gear marking.*

Current Status/Appropriateness/Effectiveness: *Fixed gear is marked according to national legislation, and lost fixed gear can be identified back to owner.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that fishing gear is marked in accordance with State's legislation in order that the owner of the gear can be identified. Gear marking requirements take into account uniform and internationally recognizable gear marking systems. Examples may include various fleet reports and regulations.*

Evaluation (per parameter)

Process:
There are NMFS regulations for gear marking in the Alaska fisheries in GOA and BSAI. Only pelagic trawl gear is allowed in the BSAI pollock fisheries.

Current Status/Appropriateness/Effectiveness:
Fixed gear is marked according to regulations, which state:
(1) All hook-and-line, longline pot, and pot-and line marker buoys carried on board or used by any vessel regulated under this part shall be marked with the vessel's federal fisheries permit number or ADFG vessel registration number.
(2) Markings shall be in characters at least 4 inches (10.16 cm) in height and 0.5 inch (1.27 cm) in width in a contrasting color visible above the water line and shall be maintained so the markings are clearly visible.

Evidence Basis:
Regulations pertaining to vessel and gear markings in the pollock fishery are established in NMFS and ADFG regulations (e.g., as prescribed in the annual management measures published in the Federal Register). There was no evidence raised/available that indicated the marking of gear is not being followed or is not effective.

References:

ADFG. 2022c. 2020-2021 Statewide General Commercial Fishing Regulations https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2020_2021_cf_groundfish_regs.pdf
Alaska Fisheries Regulations https://www.fisheries.noaa.gov/alaska/rules-and-regulations/regulations-acts-treaties-and-agreements-federal-fisheries-alaska

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.7 The fishery management organization 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 are sufficiently selective as to minimize catch, waste, discards of non-target species (both fish and non-fish species) and impacts on associated or dependent predators. The use of fishing gear and practices that lead to discarding the 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.

FAO CCRF (1995) 7.2.2, 7.6.4, 7.6.9, 8.4.5, 8.5.2

Evaluation Parameters

Process: *The management system and relevant groups from the fishing industry have encouraged the development of technologies and operational methods to reduce waste and discard of the target species. Relevant groups include fishers, processers, distributers, and marketers. There are mechanisms in place by which the selectivity, environmental impact, and cost-effectiveness of gears included in the unit of certification are measured.*

Current Status/Appropriateness/Effectiveness: *Such technologies and operational methods have been implemented. The methods in use are effective in reducing waste and discards of the non-target species. There is evidence that the gears used in the fishery are appropriate, in terms of selectivity, environmental impact, and cost-effectiveness, as assessed by the responsible scientific authority of the fishery. Methods shall be considered successful if there is evidence that the fishery under assessment is not causing significant risk of overfishing to non-target species.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization and relevant groups from the fishing industry measure performance and encourage the development, implementation, and use of selective, environmentally safe, and cost effective gear, technologies and techniques, that are sufficiently selective as to minimize catch, waste, discards of non-target species (both fish and non-fish species), and impacts on associated or dependent species. Examples may include various reports, regulations, or other data.*

Evaluation (per parameter)

Process:

The Council/NMFS/ADFG management system and relevant groups from the fishing industry have encouraged the development of technologies and operational methods to improve gear selectivity, and to reduce waste and discard of the target species, such as the Improved Retention/Improved Utilization Program, and utilization of distinct annual time periods (seasons) to manage the fisheries. The selectivity, environmental impact and cost-effectiveness of fishing gears is measured, analyzed, and monitored in several ways, including extensive analysis and reporting of data in the SAFE documents, the EFH work, and at-sea enforcement of regulations.

Current Status/Appropriateness/Effectiveness:
Numerous technologies and operational methods have been implemented in the pollock fisheries to reduce waste and discards of the target species. For the Alaska pollock fisheries, discarding is extremely low. The pelagic trawl fisheries for pollock account for very low bycatches of most species, including marine mammals and seabirds. The Council measures for Chinook and chum salmon bycatch reduction require, among other actions, the use of salmon excluder devices. Several studies have been carried out, and/or are ongoing on trawl-mounted devices to exclude chum and Chinook salmon in the pollock fisheries in GOA and BSAI.

Evidence Basis:
Although the Alaska pollock fisheries are conducted with pelagic trawl (100% in BSAI and PWS; about 90% in GOA), parts of the trawl gear do come into contact with the seabed and consequently there are catches of groundfish and other demersal species. However, the pelagic trawl fisheries for pollock account for very low bycatches of most species, including marine mammals and seabirds.

The pollock fisheries have 100% observer coverage. Discarding is low, verified by observer data. For example, in the 2019 North Pacific Observer Program Annual Report, Table 4.4 shows that for the 1,379,550 million tons of pollock monitored in the BSAI, 5,241 t of total discards was recorded, which is < 0.4% of total catch. This is a similar level to previous years.

PCC continues to conduct research on pollock vessels in BSAI with regard to efficiency of excluder devices, examining factors such as light attraction, “flapper panels”, and escape ports. Information is included on the At-sea Producers Association website.

Amendment 103 to the GOA FMP 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 32,500 Chinook salmon that applies to central and western GOA trawl sectors and promotes more flexible management of GOA trawl-caught Chinook salmon PSC.

References:

Delean, B. J., V. T. Helker, M. M. Muto, K. Savage, S. Teerlink, L. A. Jemison, K. Wilkinson, J. Jannot, and N. C. Young. 2020. Human-caused mortality and injury of NMFS-managed Alaska marine mammal stocks, 2013-2017. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-401, 86 p https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjLn-7q3a35AhUrkYkEHXyyCZsQFnoECAsQAQ&url=https%3A%2F%2Frepository.library.noaa.gov%2Fview%2Fnoaa%2F22920%2Fnoaa_22920_DS1.pdf&usg=AOvVaw3K_JM261qqgOhwq-_nXgk

NOAA 2022e. Seabird bycatch in Alaska https://www.fisheries.noaa.gov/alaska/bycatch/seabird-bycatch-alaska

NOAA 2022f. Amendment 103 to the GOA FMP https://www.fisheries.noaa.gov/action/amendment-103-fmp-groundfish-gulf-alaska-management-area

North Pacific Observer Program 2019 Annual Report https://repository.library.noaa.gov/view/noaa/33281

NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.

NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

8.8 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.

FAO CCRF (1995) 7.2.2, 8.4.6, 8.4.1

Evaluation Parameters

Process: *There has been development of technologies, materials, and operational methods that minimize the loss of fishing gear, the ghost fishing effects of lost or abandoned fishing gear, and a system to minimize pollution and waste.*

Current Status/Appropriateness/Effectiveness: *Technologies, materials, and operational methods that minimize the loss of fishing gear and ghost fishing by lost or abandoned gear are applied whenever appropriate. Also, these measures are effective in minimizing, to the extent practicable, pollution and waste.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that 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—are applied to minimize the loss of fishing gear, the ghost fishing effects of lost or abandoned fishing gear, pollution, and waste. Examples may include various regulations, data, and reports.*

Evaluation (per parameter)

Process:
Operational methods and gears regulated in the Alaska pollock fisheries minimize the loss of fishing gear, and the ghost fishing effects of lost or abandoned fishing gear are minimal.

Current Status/Appropriateness/Effectiveness:
No fixed gears such as gillnets or traps are permitted, by regulation, in the federal and state pollock fisheries in Alaska. Thus, there is no ghost fishing from these forms of fishing gear in the pollock fisheries. As well, there is minimal gear loss in the main gear used in Alaska pollock fisheries (pelagic trawl), given that the reduced bottom contact from trawl doors greatly reduces snagging and subsequent loss of trawls on the seabed.

Evidence Basis:
Council FMPs outline the allowable fishing gears allowed in the Alaska pollock fisheries. Evidence provided by fishing fleets indicates that lost fishing gear is minimal. A NOAA 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 is known of the effects of derelict trawls and longlines.

References:

ADFG. 2022c. 2020-2021 Statewide General Commercial Fishing Regulations https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2020_2021_cf_groundfish_regs.pdf
Alaska Fisheries Regulations https://www.fisheries.noaa.gov/alaska/rules-and-regulations/regulations-acts-treaties-and-agreements-federal-fisheries-alaska
NOAA. 2015. Impact of "ghost fishing" via derelict gear https://marinedebris.noaa.gov/sites/default/files/publications-files/Ghostfishing_DFG.pdf.
NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 8.5.1

Evaluation Parameters

Process: *There is a system that makes available information on new developments and requirements to all fishers to avoid circumvention of fishing regulations.*

Current Status/Appropriateness/Effectiveness: *The adopted methods are successful and effective and fishing regulations are made known to the participants. Enforcement data are highlighting significant violations.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the intent of fishing selectivity and fishing impacts-related regulations is not circumvented by technical devices. Information on new developments and requirements is made available to all fishers. Examples may include various data and reports.*

Evaluation (per parameter)

Process:
Information on gear regulations, including any and all amendments or modifications, as well as on gear technology is readily available to fishers and the general public through the websites of the Council, NOAA/NMFS, and ADFG, and through various

meetings, mailouts, etc. Fishing gear is regulated and monitored through these agencies, and data on compliance is recorded and published.

Current Status/Appropriateness/Effectiveness:
There is no evidence that regulations involving gear selectivity in the pollock fisheries are being circumvented either by omission, or through the illegal use of gear technology. Advancements or developments in gear are made widely available to fishers through websites and public meetings and other forms of communication. As noted in earlier clauses, there is minimal bycatch and discarding in the pollock fisheries. Use of salmon excluder devices is generally thought not to negatively impact the selectivity of the trawls toward pollock and are designed not to impede escaping pollock or salmon.

Evidence Basis:
As reported by Gauvin (2016) in work conducted under the North Pacific Fisheries Research Foundation, salmon excluder designs have evolved considerably since experimental trials in the BS pollock fishery started in the fall of 2003. Design changes have been influenced by a suite of EFP tests and by feedback from fishermen using the various designs over the years since the EFPs started. Developmental work is ongoing on these salmon excluder devices for both chum and Chinook under PCC funding.

References:

Gauvin, J. 2016. Bering Sea Salmon Excluder (EFP-01) Final Report
https://meetings.npfmc.org/CommentReview/DownloadFile?p=a94e693a-f95d-4e32-9c42-2dc2cb63efab.pdf&fileName=D3%20Salmon%20Excluder%20EFP.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☐
Non-Conformance Number (if applicable):					

8.10 Assessment and scientific evaluation shall be carried out on the impacts of habitat disturbance on the fisheries and ecosystems prior to the commercial-scale introduction of new fishing gear, methods, and operations. Accordingly, the impacts of such introductions shall be monitored.

FAO CCRF (1995) 8.4.7, 12.11

Evaluation Parameters

Note: *This clause is not applicable if new gear has not been introduced in the past 3 years.*

Process: *New gear has been recently introduced on a commercial scale within the last 3 years, or there is a plan to introduce new gear in the foreseeable future.*

Current Status/Appropriateness/Effectiveness: *An appropriate assessment of potential impacts has been carried out. There is evidence to suggest that the assessment is adequate to support habitat conservation and fishery management purposes. Additionally, there is a monitoring regime in place.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that assessment and scientific evaluation is carried out on the implications of habitat disturbance impact on the fisheries and ecosystems prior to the commercial-scale introduction of new fishing gear, methods, and operations. Accordingly, the effects of such introductions are monitored. Examples may include various regulations, data, and reports.*

Evaluation (per parameter)

This clause is not applicable as no new gears have been introduced on a commercial scale in the last three years.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

8.11 International cooperation shall be encouraged for research programs involving fishing gear selectivity, fishing methods and strategies, dissemination of the results of such research programs, and the transfer of technology.

FAO CCRF (1995) 8.5.4

Evaluation Parameters

Process: *There is a system of international information exchange to allow knowledge to be shared.*

Current Status/Appropriateness/Effectiveness: *There is evidence for international information exchange, such as meeting records or other information.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that international cooperation is encouraged for research programs involving fishing gear selectivity, fishing methods and strategies, dissemination of the results of such research programs, and the transfer of technology. Examples may include various data and reports.*

Evaluation (per parameter)

Process:
There is considerable collaborative research into fishing gear selectivity, fishing methods and strategies in the pollock fisheries in Alaska. Organizations involved include various fishing industry groups, NMFS, ADFG, University of Alaska, and NPRB. Information on and the results from this research are available through publications and organizational websites. Therefore, it is freely and widely available.

Current Status/Appropriateness/Effectiveness:
An example of international information exchange in relation to fishing gear selectivity, fishing methods and strategies is the participation of scientists from the Alaska region in the ICES Working Group on Fisheries, Acoustics, Science, and Technology, although the group did not meet physically in 2020-2021 there was an on-line meeting in 2021.

Evidence Basis:
ICES Working Group on Fisheries, Acoustics, Science, and Technology publish research findings and reports on the ICES website. Also, NMFS and ADFG scientists often publish their research results in international journals and make presentations at international conferences

References:

ICES Working Group on Fisheries, Acoustics, Science and Technology (WGFAST)
https://www.ices.dk/community/groups/Pages/WGFAST.aspx

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

8.12 The fishery management organization 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 regarding such fishing gear—as an aid for management decisions and with a view to minimizing non-utilized catches.

FAO CCRF (1995) 8.5.3, 12.10

Evaluation Parameters

Process: *There is collaborative research into fishing gear selectivity, fishing methods, and strategies.*

Current Status/Appropriateness/Effectiveness: *There is evidence of such research, and the results have been applied accordingly in fisheries management.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization and relevant institutions involved in the fishery 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. Examples may include various data and reports.*

Evaluation (per parameter)

Process:
There is considerable collaborative research into fishing gear selectivity, fishing methods and strategies in the pollock fisheries in Alaska. Organizations involved include various fishing industry groups, NMFS, ADFG, University of Alaska, and NPRB.

Current Status/Appropriateness/Effectiveness:
There are numerous measures implemented in Alaskan fisheries to minimize non-utilized catches, such use prohibition of discarding (the 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.

Evidence Basis:
As reported by Gauvin (2016) in work conducted under the North Pacific Fisheries Research Foundation, salmon excluder designs have evolved considerably since experimental trials in the BS pollock fishery started in the fall of 2003. Design changes have been influenced by a suite of EFP tests and by feedback from fishermen using the various designs over the years since the EFPs started. Developmental work is ongoing on these salmon excluder devices for both chum and Chinook.

References:

Gauvin, J. 2016. Bering Sea Salmon Excluder (EFP-01) Final Report
https://meetings.npfmc.org/CommentReview/DownloadFile?p=a94e693a-f95d-4e32-9c42-2dc2cb63efab.pdf&fileName=D3%20Salmon%20Excluder%20EFP.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**		**Minor NC Lacking in one parameter Score = 7**	**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐		Minor ☐	None ☒
Non-Conformance Number (if applicable):					

8.13 Where appropriate, policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. The fishery management organization 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.

FAO CCRF (1995) 8.11.1, 8.11.2

Evaluation Parameters

Note: *The use of artificial structures may be appropriate for some stocks but not necessary for all. This clause may therefore not be applicable if such structures are not practical or appropriate for stocks. The use of artificial structures should be considered appropriate if one or more of the stocks under consideration has benefitted from the use of artificial structures in other fisheries, or if species with similar biological characteristics have benefitted from the use of artificial structures in other fisheries.*

Process: *There is a mechanism in place for identifying potential for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. This mechanism ensures that where artificial structures are deemed appropriate, environmental protection, safety, and navigation are considered in their application.*

Current Status/Appropriateness/Effectiveness: *This mechanism has been applied to the stocks under consideration, resulting in the conclusion to either use artificial structures, or that artificial structures are inappropriate. Care has been taken in the selection of materials to use in constructing artificial reefs, the selection of sites for their deployment, and to ensure that relevant conventions concerning the environment and the safety of navigation have been observed.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that where appropriate, policies are developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. The fishery management organization shall also 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. Examples may include various laws, data, and reports.*

Evaluation (per parameter)

This is not applicable in this fishery.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 8.1.7, 8.1.10, 8.2.4, 8.4.5

9.1 States shall advance, 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.

FAO CCRF (1995) 8.1.7, 8.4.1

Evaluation Parameters

Process: *There are implemented education programs for fishers (e.g., health and safety, fisheries management framework, rule and regulation, etc.).*

Current Status/Appropriateness/Effectiveness: *These programs are effective in training fishers, in line with international standards and guidelines.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that States enhance, through education and training programs, the education and skills of fishers and, where appropriate, their professional qualifications. Such programs take into account agreed international standards and guidelines. Examples may include various data, websites.*

Evaluation (per parameter)

Process:
There are several available education programs for fishers.

Current Status/Appropriateness/Effectiveness:
The North Pacific Fishing Vessel Owners Association (https://npfvoa.org) provides a large and diverse training program that many of the professional crew members must pass. Training ranges from firefighting on a vessel, damage control, man-overboard, MARPOL, etc., and the Sitka-based Alaska Marine Safety Education Association alone has trained more than 200,000 people in marine safety and survival through a Coast Guard-required class on emergency drills. Captains and some officers on the larger pollock vessels require certain levels of navigational certification. The State of Alaska, Department of Labor and Workforce Development includes the Alaska Vocational Training and Education Center (now called Alaska's Vocational Technical Center [https://avtec.edu]). One of Center's main divisions is the Alaska Maritime Training Center, which promotes safe marine operations by effectively preparing captains and crew members for employment in the Alaska maritime industry.

Also, the University of Alaska Sea Grant Marine Advisory Program provides education and training in several sectors, including fisheries management, in the forms of seminars and workshops. The Marine Advisory Program also conducts sessions of their Alaska Young Fishermen's Summit and provides training and technical assistance to fishermen and seafood processors in western Alaska. Several training courses and workshops were developed in cooperation with local communities and CDQ groups.

Evidence Basis:
Details of the various courses are available and accessible online (e.g., https://marinershq.com/directory/school/229/) and include firefighting, fishing vessel stability, medical emergencies at sea, safety equipment, and survival procedures.

References:

Alaska Marine Safety Education Association (AMSEA) https://www.nationalfisherman.com/suppliers/alaska-marine-safety-education-assn
Alaska Young Fishermen's Summit https://alaskaseagrant.org/events/alaska-young-fishermens-summit/

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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.

FAO CCRF (1995) 8.1.10

Evaluation Parameters

Process: *There are relevant measures of the FAO CCFR and other applicable environmental and other standards being exposed to fishers for their training.*

Current Status/Appropriateness/Effectiveness: *These programs are effective in training fishers, in line with international standards, guidelines, and key CCRF principles. The presence of general training programs for fishermen (e.g., health and safety, fisheries management framework, rule and regulation, etc.) shall be evidence that the key principles of the CCRF have been filtered down from management to fishermen. Furthermore, the existence of laws and regulation with which fishermen are compliant demonstrate further compliance to this clause.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that States, with the assistance of relevant international organizations, 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, as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations. Examples may include various data, websites.*

Evaluation (per parameter)

Process:
All regulations governing the pollock fisheries are available on the Council and NMFS websites, and the results of any changes are widely discussed and communicated. Staff at the NOAA and ADFG regional offices engage in outreach to fishers and industry personnel, providing current regulatory information and guidance to promote compliance and responsible fisheries.

Current Status/Appropriateness/Effectiveness:
All rules and regulations governing Alaskan pollock fisheries, including those dealing with responsible fishing methods, are readily available on NMFS, the Council, and ADFG websites. To increase communications and understanding between the regulated users and enforcement personnel, NOAAs Alaska Enforcement Division, OLE, and AWT aim to maintain a positive and productive relationship with all harvesters and industry personnel. In addition to daily personal interactions on the water, docks, and in

processing facilities, contacts thousands of harvesters and industry personnel at organized events, including trade shows, and respond to email and telephone inquiries, providing current regulatory information and guidance to promote compliance and responsible fisheries.

Evidence Basis:
A summary of the Council management measures that govern the GOA and BSAI groundfish fisheries are contained in the FMPs. These also cover legal definitions such as quota shares, IFQ's, etc. The full suite of NMFS and ADFG fishery regulations for Alaskan waters can be found on their respective websites. These regulations cover all aspects of fishing, including seasons, gear limitations, and numerous area closures.

References:

ADFG. 2022c. 2020-2021 Statewide General Commercial Fishing Regulations https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2020_2021_cf_groundfish_regs.pdf
Alaska Fisheries Regulations https://www.fisheries.noaa.gov/alaska/rules-and-regulations/regulations-acts-treaties-and-agreements-federal-fisheries-alaska
NPFMC 2020a, Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf
NPFMC 2020b, Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

9.3 The fishery management organization 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 State's laws.

FAO CCRF (1995) 8.1.8

Evaluation Parameters

Process: *There is a system to collect and maintain fisher records.*

Current Status/Appropriateness/Effectiveness: *These records are considered accurate and effective for management purposes.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization maintains, as appropriate, records of fishers which, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws. Examples may include various data or reports.*

Evaluation (per parameter)

Process:
There is a comprehensive system in place to collect and maintain fishermen records.

Current Status/Appropriateness/Effectiveness:
Detailed data on the number and location of Alaska fishers, vessels, permits issued, etc. can be found in the annual SAFE documentation on economics of the fishery. Certain information on Alaskan fisheries has been compiled through the Alaska Fisheries Information Network, although selected studies may not be publicly available as some information is confidential. Data on fishing in Alaskan state-managed fisheries can be found in the State of Alaska's Commercial Fisheries Entry Commission 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.

Evidence Basis:
Data on the number and location of Alaska fishers, permits issued, etc. can be found in the Economics chapter of the SAFE reports. Information on Alaska sport fish and crew license holders has been compiled through the Alaska Fisheries Information Network (https://www.psmfc.org/program/alaska-fisheries-information-network-akfin). Data on fishing in Alaska state-managed fisheries can be found in the State of Alaska's Commercial Fisheries Entry Commission (https://www.cfec.state.ak.us) website. The USCG also maintains records and issues credentials on licenses for crew members, including engineers, captains, mates, deckhands, etc. The State of Alaska issues commercial fishing licenses for all crew.

References:

Barbeaux, S. Ianelli, J., and Palsson W. 2021. Chapter 1A: Assessment of the pollock stock in the Aleutian Islands. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/AIpollock.pdf.

Fissel, B., M. Dalton, R. Felthoven, B. Garber-Yonts, A. Haynie, A. Himes-Cornell, S. Kasperski, J. Lee, D. Lew, A. Santos, C. Seung, K. Sparks. 2020. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2015. NMFS, NOAA, 7600 Sand Point Way N.E. Seattle, Washington 98115-6349. xxiv + 284 p. This report will be available at: https://www.sheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-beringsea-aleutian-islands.

Ianelli, J., Fissel, B., Stienessen, S., Honkalehto, T., Siddon, E., and Allen-Akselrud, C. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. Alaska Fisheries Science Center, National Marine Fisheries Service National Oceanic and Atmospheric Administration 7600 Sand Point Way NE., Seattle, WA 98115-6349 November 23, 2021. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Monnahan, C.C., Dorn, M., Deary, A.L., Ferriss, B.E., Fissel, B.E., Honkalehto, T., Jones, D.T., Levine, M., Rogers, Shotwell, S.K, Tyrell, G., and Zador, S. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/GOApollock.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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.

FAO CCRF (1995) 7.1.7, 7.7.3, 7.6.2, 8.1.1, 8.1.4, 8.2.1
FAO Eco (2009) 29.5
FAO Eco (2011) 36.6

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.

FAO CCRF (1995) 7.1.7; Others 7.7.3, 8.1.1
FAO Eco (2009) 29.5
FAO Eco (2011) 36.6

Evaluation Parameters

Process: *There are clear mechanisms established for fisheries monitoring, surveillance, control, and enforcement.*

Current Status/Appropriateness/Effectiveness: *These mechanisms are effective, and include effective observer programs, inspection schemes, and vessel monitoring systems where appropriate for the type of fishery under assessment. Monitoring, surveillance, control, and enforcement mechanisms can be considered effective if they are sufficiently broad to cover the entirety of the unit of certification, there is evidence that rules and regulations are consistently enforced, and there is no evidence of frequent or widespread violation of fishery regulations. This could include relevant traditional, fisher, or community approaches, provided their performance could be objectively verified. With respect to fisheries on the high seas, the legal obligations of UNCLOS and UNFSA have particular relevance. Evidence of the performance of the legal framework can be derived from assessing conformance with requirements covering compliance and enforcement. Specifically, the assessment team shall document the general level/type of fisheries controls (e.g., number of boarding's, reprimands) and the respective level of fisheries violations (e.g., %) on a yearly basis.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that effective mechanisms are 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. Examples may include rules and regulations, enforcement reports.*

Evaluation (per parameter)

Process:
The USCG, NMFS OLE, and AWT (a Division of the Alaska Department of Public Safety) conduct at-sea and shore-based inspections. At-sea, dockside monitoring, aerial surveillance, and satellite vessel monitoring systems are in operation within the fisheries and developmental work is on-going with respect to additional EM technologies.

COVID-19 impacted the Alaska fishing industry with reduced effort at-sea and shore-side through 2020 and 2021. As a direct result of COVID-19 and the reduced fishing activity, enforcement was also affected, with fewer inspections where the potential for close person to person interaction was deemed likely (e.g., vessel, port, and processing facility inspections). However, with the development and implementation of safe working practices for the fishing and ancillary industries and protocols for inspections, MCS of the Alaskan fisheries returned to near normal during 2021.

Current Status/Appropriateness/Effectiveness:
MCS is carried out at-sea and shore-side for the federal fisheries by the OLE and the USCG (17th District USCG). The AWT fulfils the MCS function for the state water fisheries. The AWT also liaise with the OLE and may also request the assistance of the USCG vessels and aircraft to help in their surveillance and enforcement activities.

OLE protects marine wildlife and habitat by enforcing domestic laws (e.g., Federal Fisheries Regulations for Fisheries of the EEZ of Alaska [50 CFR 679]) and international agreements (e.g., combating IUU fishing through the Joint Statement on Enhanced Fisheries Cooperation between the United States and Russia).

The OLE in Alaska focuses on outreach and education programs to help the fishing industry understand the rationale for regulations and prevent or minimize infractions. The NMFS Alaska Region OLE regularly provides reports and updates to the Council and has consistently reported few major compliance issues with the pollock fishery.

OLE agents and officers have the option to provide a written warning for minor offences however, these are taken into account for repeat offenders. More serious offences can be dealt with by a summary settlement (i.e., a violation which is not contested and results in a ticket which may include a discounted fine), thus allowing the violator to quickly resolve the case without incurring legal expenses. Thereafter, an offence is referred to NOAA's Office of General Counsel for Enforcement and Litigation which can impose a sanction on the vessels permit or further refer the case to the U.S. Attorney's Office for criminal proceedings. Penalties may range from severe monetary fines, boat seizure and/or imprisonment. The MSA has an enforcement policy section (50 CFR 600.740) that details these "remedies for violations".

The USCG is the primary agency for at-sea fisheries enforcement. The USCG objectives are to prevent encroachment into the US EEZ, ensure compliance with domestic fisheries regulations, ensure compliance with international agreements and high seas fishing regulations. The 17th USCG District (https://www.pacificarea.uscg.mil/Our-Organization/District-17/) covers the Alaska EEZ and is responsible for the largest amount of coastline and one of the largest areas of responsibility within the USCG.

If the USCG detect a fisheries infringement, they gather evidence and hand over the investigation to the OLE. The pollock fishery is considered to be a lower risk fishery with the potential for salmon bycatch at certain times of the year being the main issue; however, voluntary compliance (i.e., recognizing a problem, reporting it and making appropriate changes to the fishing practice) helps to minimize the issue. The USCG use a software package (FishTactic) to assess risk of infringements and is used to assist the deployment of vessels and aircraft and target enforcement effort.

The "Donut Hole" agreement is the only area in the central BS outside the Alaska EEZ where the pollock resource can be found. This area is subject to an international agreement with other member countries (e.g., Russia, Japan, Korea) and has been under a fishing moratorium since the mid-1990s. The Central Bering Sea Fisheries Enforcement Act prohibits vessels and nationals of the U.S. from conducting fishing operations in the central BS, except where such fishing operations are conducted in accordance with an international fishery agreement to which the is a signatory. The USCG undertakes aerial surveillance patrols and, if necessary, vessel patrols within this area.

The Observer Program is an important component of the monitoring of the pollock fishery. The program is the main data gathering program for all biological and fishery data that feed into pollock stock assessment and management. As a result, the vast majority of BSAI pollock fishing trips are observed, and approximately 20-25% of pollock trips in the GOA have been observed in recent years.

While observers are not directly part of the federal MCS program they are required to report infringements. OLE and USCG officers conduct de-briefing interviews with observers, checking on vessels fishing practices and the conduct of the crew. Observers will often report potential infringements to the vessel captains, thereby contributing to self-regulation and corrective action.

The Alaska Department of Public Safety, through its Division of AWT, is primarily responsibility for enforcing fish and wildlife-related statutes and regulations in Alaska. Some ADFG biologists and other staff have undertaken enforcement training and may participate in enforcement activities and assist the AWT as needed. The AWT attend the BOF and have an important input in the development of state regulations and legislation.

Evidence Basis:
The OLE publishes a national annual report, and the Alaska region submits six monthly reports to the Council. The USCG publishes an annual report to the Council on resources applied to fishery enforcement in the previous year, the number of boardings/inspections, the number of violations, lives lost at sea, safety issues, and any changes in regulations. The low occurrence of serious offences indicates that the pollock fishery is generally very compliant with regulations and the sanctions are considered to be an effective deterrent.

The Council have an Enforcement Committee charged with reviewing proposed FMP amendments, regulatory changes, and other management actions on matters related to enforcement and safety at sea. The Committee is made up of governmental agencies (including OLE, USCG, ADFG, AWT) and organizations having expertise relating to the enforcement and monitoring of North Pacific groundfish and crab fisheries. Meetings are held on a regular basis, typically in conjunction with regular Council meetings and, are open to the public.

References:

Federal Regulations for Fisheries of the EEZ of Alaska [50 CFR Part 679] https://www.law.cornell.edu/cfr/text/50/part-679
MSA section (50 CFR 600.740) "remedies for violations". https://www.law.cornell.edu/cfr/text/50/600.740
NOAA 2022g Electronic Monitoring in Alaska https://www.fisheries.noaa.gov/alaska/resources-fishing/electronic-monitoring-alaska
NOAA 2022h Office of General Counsel (OGC) for Enforcement and Litigation https://www.gc.noaa.gov/enforce-office.html
NOAA 2022i. Alaska Fisheries Impacts from Covid-19 https://media.fisheries.noaa.gov/2021-02/Alaska-COVID-19-Impact-Snapshot-webready.pdf.
NPFMC 2022a Enforcement Committee Terms of Reference https://www.npfmc.org/wp-content/PDFdocuments/membership/Enforcement/Enforcement_TermsReference_0616.pdf
NPFMC 2022h Enforcement Committee, meeting minutes and agendas https://meetings.npfmc.org/Search/Search?ObjectType=&SearchText=Enforcement+Committee&SearchFields=Name&SelectedMeetingGroups=21&MeetingDate=&MeetingStart=&MeetingEnd=
OLE 2021b Office of Law Enforcement Alaska Enforcement Division December Report To North Pacific Fisheries Management Council. October 2020 to September 2021 https://meetings.npfmc.org/CommentReview/DownloadFile?p=188b9834-6bd4-4281-b950-37581d7f6580.pdf&fileName=B4%202021%20December%20OLE%20Report.pdf
USCG 2021. 17th Coast Guard District Enforcement report to NPFMC: October – November 2021 https://meetings.npfmc.org/CommentReview/DownloadFile?p=43d5d53b-a720-4d32-a660-3ecbe06b19db.pdf&fileName=B6%20USGC%20Report.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.6.2; Others 8.1.2, 8.2.1

Evaluation Parameters

Process: *There is a mechanism or system established to maintain a record of fishing authorizations.*

Current Status/Appropriateness/Effectiveness: *This mechanism is effective for maintaining updated records of fishing authorizations and ensuring fishing vessels operate with appropriate authorization.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that fishing vessels are not allowed to operate on the stock under consideration in question without specific authorization. Examples may include various data.*

Evaluation (per parameter)

Process:

Every fishing vessel targeting pollock in Alaska is required to have a federal or state permit. The Restricted Access Management Program (https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/restricted-access-management-program) is responsible for managing NOAAs Alaska Region license and permit programs and is responsible for providing program information to the public, determining eligibility and issuing permits, processing transfers, collecting landing fees, and other related activities.

The Alaska Commercial Fisheries Entry Commission (https://www.cfec.state.ak.us) helps to conserve and maintain the economic health of Alaska's commercial fisheries by limiting the number of participating fishers and issues permits and vessel licenses and provides due process hearings and appeals as and when needed.

Current Status/Appropriateness/Effectiveness:
OLE, USCG, and AWT staff have on-line access to information related to permits and licenses and are therefore able to confirm whether a vessel or individual has the correct credential to be operating in a fishery.

Evidence Basis:
Details of license and permits for the federal and state fisheries are maintained and are accessible online.

References:

Alaska state commercial fishing license and permits https://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.main
American Fisheries Act (AFA) 1998 – Pollock Fisheries Management in Alaska https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/american-fisheries-act-pollock-fisheries-management-alaska
Federal fishing permits and licenses issued in Alaska https://www.fisheries.noaa.gov/alaska/commercial-fishing/permits-and-licenses-issued-alaska

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

10.3 States involved in the fishery shall, in accordance with international law, and within the framework of 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 the States jurisdiction.

FAO CCRF (1995) 8.1.4

Evaluation Parameters

Note: *Not applicable if the fishery does not occur outside the State's EEZ.*

Process: *There is a mechanism or system established to conduct enforcement operations outside the State's jurisdiction.*

Current Status/Appropriateness/Effectiveness: *This mechanism is enforcing operations in internationally occurring fisheries. If the stock under consideration is not transboundary, shared, straddling, highly migratory or high seas, then the Standard need only be concerned with the effectiveness and suitability of the monitoring, surveillance, control, and enforcement activities at the States level for the fishery of which the unit of certification is a part. If the unit of certification is part of a States fleet fishing on a transboundary, shared, straddling, highly migratory or high seas stock, then it is still likely to be the effectiveness and suitability of the monitoring, surveillance, control, and enforcement activities at the States level that shall be assessed. If the unit of certification covers all the fishing on the stock under consideration, then the monitoring, surveillance, control, and enforcement of all of the States fleets is of concern and shall be assessed (to ensure full consideration of total fishing mortality on the stock under consideration).*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that States involved in the fishery do, in accordance with international law, and within the framework of 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 State's jurisdiction. Examples may include enforcement reports.*

Evaluation (per parameter)

Not applicable for the Alaska pollock fishery. The "Donut Hole" agreement (see Section 1.2 for details) is the only area in the central BS outside the Alaska EEZ where the pollock resource can be found (with exception of small quantities of pollock migrating in Cape Navarin. This area is subject to international agreement with other member countries.

The U.S. and Russian Federation maintain the ICC fisheries forum (see Section 1.2). The ICC is responsible for furthering the objectives of the Comprehensive Fisheries Agreement. The objectives of the Agreement include cooperation to address illegal fishing on the high seas of the North Pacific and the BS.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

10.3.1 Fishery management organizations which are members of or participants in 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 engaging in activities that 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.

FAO CCRF (1995) 7.7.5, 8.3.1

Evaluation Parameters

Note: *Not applicable if the fishery does not occur outside the State's Exclusive Economic Zone.*

Process: *There are regulations established against vessels flying the flag of non-member or non-participant States, which may engage in activities that undermine the effectiveness of conservation and management measures established by fisheries management organizations.*

Current Status/Appropriateness/Effectiveness: *These measures are effective in deterring such practices.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organizations which are members of or participants in fisheries management organizations or arrangements 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 engaging in activities which undermine the effectiveness of conservation and management measures established by such organizations or arrangements. In that respect, port States also proceed, as necessary, to achieve and to assist other States in achieving the objectives of the FAO CCRF and 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. Examples may include enforcement or other reports.*

Evaluation (per parameter)

Not applicable for the Alaska pollock fishery.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

10.4 Flag States shall ensure that no fishing vessels are 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.

FAO CCRF (1995) 8.2.2

Evaluation Parameters

Note: *Not applicable if no foreign vessels fish in the State's EEZ, or if its vessels do not fish in high seas or in another State's EEZ.*

Process: *There are foreign vessels fishing in State's EEZ. State's EEZ vessels do not fish in high seas or in another State's EEZ.*

Current Status/Appropriateness/Effectiveness: *These vessels have been issued with a Certificate of Registry, and they are required to carry it on board.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the flag State ensures that no fishing vessels are 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. Examples may include various laws, regulations, and other data or reports.*

Evaluation (per parameter)

Not Applicable. The AFA ensures that vessel owners must demonstrate citizenship and relevant vessel registration documents.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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.

FAO CCRF (1995) 8.2.3

Evaluation Parameters

Note: *Not applicable if no foreign vessels fish in the State's EEZ or if its vessels do not fish in high seas or in another State's EEZ.*

Process: *There are foreign vessels fishing in State's EEZ. State's EEZ vessels do not fish in high seas or in another State's EEZ.*

Current Status/Appropriateness/Effectiveness: *Foreign vessels authorized to fish in the State's EEZ or its vessels fishing in another State's EEZ have been marked accordingly to international guidelines.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that fishing vessels authorized to fish on the high seas or in waters under the jurisdiction of a State other than the flag State, are 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. Examples may include various laws, regulations, and other data or reports.*

Evaluation (per parameter)

Not applicable for the Alaska pollock fishery.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	NA
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

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

FAO CCRF (1995) 7.7.2, 8.2.7

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

Evaluation Parameters

Process: *The system of States laws is of adequate severity to provide for effective sanctions.*

Current Status/Appropriateness/Effectiveness: *There is evidence to substantiate that States laws are of adequate severity to provide for effective sanctions. The evidence here includes largely (a) whether laws set out effective penalty provisions and the courts respond in a manner that deters further or repeat offenses, (b) the views of the industry, other stakeholders, and the general public, and (c) the outcomes and associated trends of the enforcement efforts when measured against appropriate performance indicators.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that States' laws of adequate severity are in place that provide for effective sanctions. Examples may include various laws, regulations, and other data or reports.*

Evaluation (per parameter)

Process/Current Status/Appropriateness/Effectiveness:
The MSA provides four options for penalizing violations (50 CFR 600.740 Enforcement policy). In ascending order of severity:

1) Issuance of a citation (a type of warning), usually at the scene of the offence (see 15 CFR part 904, subpart E).
2) Assessment by the Administrator of a civil money penalty.
3) For certain violations, judicial forfeiture action against the vessel and its catch.
4) Criminal prosecution of the owner or operator for some offences. It shall be the policy of NMFS to enforce vigorously and equitably the provisions of the MSA by utilizing that form or combination of authorized remedies best suited in a particular case to this end.

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.

Alaska state law, universal citation 16.05.723, describes the penalties for violating a BOF regulation. Fines, up to a maximum of $15,000 or imprisonment for not more than one year are stipulated, along with forfeiture of any fish, its market value, forfeiture of vessel and any fishing gear. A third misdemeanor conviction within a 10-year period will result in a fine three times the value of any fish in possession or a fine of $10,000, whichever is greater. The option of pursuing criminal action is also available to the state. No recent sanctions have been applied in the PWS pollock fishery and ADFG staff consider that sanctions are effective deterrents (pers. comm Forrest Bowers, ADFG).

Evidence Basis:
As reported in the 17th Coast Guard District Enforcement report to the Council, the low proportion of violations encountered during at-sea patrols of the Alaska fisheries demonstrates effective deterrence:

	2017	2018	2019	2020	2021
At-sea boardings	775	931	837	546	594
Fisheries violations	10	25	16	14	30
Violation rate*	1%	3%	2%	3%	4%

*Proportion of violations per inspection, including shore-based inspections and safety inspections

References:

Alaska Statute 16.05.723 – Misdemeanor commercial fishing penalties https://law.justia.com/codes/alaska/2015/title-16/chapter-16.05/article-04/section-16.05.723
MSA 2007, 15 CFR PART 904 Subpart E https://www.law.cornell.edu/cfr/text/15/part-904/subpart-E
MSA 2007, 50 CFR 600.740 Enforcement policy https://www.law.cornell.edu/cfr/text/50/600.740

USCG 2021. 17th Coast Guard District Enforcement report to NPFMC: October – November 2021
https://meetings.npfmc.org/CommentReview/DownloadFile?p=43d5d53b-a720-4d32-a660-3ecbe06b19db.pdf&fileName=B6%20USGC%20Report.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

11.2 Sanctions applicable to 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 to affect authorization to fish and/or to serve as masters or officers of a fishing vessel in the event of noncompliance with conservation and management measures.

FAO CCRF (1995) 7.7.2, 8.1.9, 8.2.7

Evaluation Parameters

Process: *The system of sanctions in place is sufficiently severe to deter violations and illegal activities. The system shall be considered adequate in severity if the potential sanctions include fines, suspension or withdrawal of permission to fish, and confiscation of catch or equipment.*

Current Status/Appropriateness/Effectiveness: *There is evidence to substantiate that sanctions for violations of regulations (e.g., suspension, withdrawal, or refusals of fishing permit or of the right to fish) are adequate in severity to secure compliance and discourage violations.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that sanctions applicable in respect of violations and illegal activities are adequate in severity to be effective in securing compliance and discouraging violations wherever they occur. Sanctions are 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. Examples may include various laws, regulations, and other data or reports.*

Evaluation (per parameter)

Process:
The NOAA Alaska region has available a “Summary Settlement and Fix-it Schedule” which describes the violation and penalties associated with them. It also includes a sliding scale of penalty for repeat offences (i.e., increasing penalties for, ‘first’, ‘second’ and ‘third’ violations).

Alaska state law, universal citation 16.05.723, describes the penalties for violating a BOF regulation. Fines, up to a maximum of $15,000 or imprisonment for not more than one year are stipulated, along with forfeiture of any fish, its market value, forfeiture of vessel and any fishing gear. A third misdemeanor conviction within a 10-year period will result in a fine three times the value of any fish in possession or a fine of $10,000, whichever is greater. The option of pursuing criminal action is also available to the state.

Current Status/Appropriateness/Effectiveness:
The parameters in Clause 11.1 show that, with the limited violations the sanctions imposed for violations acts a deterrent.

Evidence Basis:
The "Summary Settlement and Fix-it Schedule" and Alaska state law, universal citation 16.05.723 are available online. The Council and BOF provide fora through which enforcement is discussed, reported, and where necessary decisions are made for improvement.

References:

Alaska Statute 16.05.723 – Misdemeanor commercial fishing penalties https://law.justia.com/codes/alaska/2015/title-16/chapter-16.05/article-04/section-16.05.723
NOAA Alaska region, Summary Settlement and Fix-it Schedule, https://www.gc.noaa.gov/summary-fixit_docs.html
NOAA Office of General Counsel – Penalty Policy and Schedule https://www.gc.noaa.gov/enforce-office3.html

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

11.3 Fisheries management organizations shall ensure that sanctions for IUU fishing by vessels and, to the greatest extent possible, nationals under its jurisdiction are of sufficient severity to effectively prevent, deter, and eliminate IUU fishing and to deprive offenders of the benefits accruing from such fishing. This may include the adoption of a civil sanction regime based on an administrative penalty scheme. Fisheries management organizations shall ensure the consistent and transparent application of sanctions.

FAO IUU (2001) 21

Evaluation Parameters

Process: *The system of sanctions in place are of sufficient severity to effectively prevent, deter, and eliminate IUU fishing and to deprive offenders of the benefits accruing from such fishing. This may include the adoption of a civil sanction regime based on an administrative penalty scheme. The fisheries management organization also ensures the consistent and transparent application of sanctions.*

Current Status/Appropriateness/Effectiveness: *There is evidence to substantiate that sanctions for violations of regulations are of sufficient severity to effectively prevent, deter, and eliminate IUU fishing and to deprive offenders of the benefits accruing from such fishing. Sanctions are applied transparently and consistently across the board.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fisheries management organization ensures that sanctions for IUU fishing by vessels and, to the greatest extent possible, nationals under its jurisdiction are of sufficient severity to effectively prevent, deter, and eliminate IUU fishing and to deprive offenders of the benefits*

accruing from such fishing. This may include the adoption of a civil sanction regime based on an administrative penalty scheme. The fisheries management organization also ensures the consistent and transparent application of sanctions. Examples may include various laws, regulations, and other data or reports.

Evaluation (per parameter)

Process:
As highlighted in Clause 11.4 above, there is a sanctioning system in place for penalizing fisheries violations. These include IUU fishing. The U.S. has made a concerted effort to combat IUU at a global level and takes action against those countries from which vessels may operate. If a vessel is detected fishing in U.S. waters under suspicion of IUU the USCG will arrest the vessel and the OLE will undertake the investigation. If found guilty of IUU activities the owners / operators are potentially subject to forfeiture of the vessel, catch and imprisonment in accordance with MSA 2007, 50 CFR 600.740 (Enforcement Policy).

Current Status/Appropriateness/Effectiveness:
IUU activity within the Unit of Certification is extremely rare owing to the effort and resources used, particularly by the USCG and OLE. The USCG 17th Coast Guard District Enforcement report to the Council includes a section on IUU fishing. It has reported on "Operation North Pacific Guard (NPG)", an annual U.S. fisheries law enforcement initiative designed to detect and deter all types of IUU fishing activity in accordance with multilateral and bilateral international agreements to which the United States is party, with the intent of eliminating IUU fishing activity from the North Pacific. The lack of reported incidents of IUU fishing in the U.S. EEZ in recent years serves to demonstrate an effective deterrent.

Evidence Basis:
The MSA (2007) and Maritime Security and Fisheries Enforcement (SAFE) Act provide examples of the legislative framework that is used to combat IUU fishing. The regular reports by the OLE and USCG 17th Coast Guard District enforcement reports to the Council confirm the work undertaken to combat IUU and the lack of reported incidents within the unit of certification provide evidence of deterring the activity.

References:

Maritime (SAFE) Act 2019 https://media.fisheries.noaa.gov/dam-migration/maritime_safe_act-508compliant.pdf
MSA 2007, 50 CFR 600.740 Enforcement policy https://www.law.cornell.edu/cfr/text/50/600.740
NOAA 2022i Report to Congress of the Maritime Security and Fisheries Enforcement Act interagency Working Group on IUU Fishing Regarding Efforts to Investigate, Enforce and Prosecute IUU in 2020. https://media.fisheries.noaa.gov/2021-08/SAFEACTReport_Enforcement.pdf
NOAA 2022j Enforcement Efforts to Combat illegal, Unreported and Unregulated Fishing https://www.fisheries.noaa.gov/enforcement-efforts-combat-illegal-unreported-and-unregulated-fishing
OLE 2021b Office of Law Enforcement Alaska Enforcement Division December Report To North Pacific Fisheries Management Council. October 2020 to September 2021 https://meetings.npfmc.org/CommentReview/DownloadFile?p=188b9834-6bd4-4281-b950-37581d7f6580.pdf&fileName=B4%202021%20December%20OLE%20Report.pdf
USCG 2021. 17th Coast Guard District Enforcement report to NPFMC: October – November 2021 https://meetings.npfmc.org/CommentReview/DownloadFile?p=43d5d53b-a720-4d32-a660-3ecbe06b19db.pdf&fileName=B6%20USGC%20Report.pdf
USCG 2022. Illegal, Unreported and Unregulated Fishing https://www.uscg.mil/iuufishing/

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

11.4 Flag States shall take enforcement measures towards fishing vessels entitled to fly their flag, which have been found by the State to have contravened applicable conservation and management measures. The State shall, where appropriate, make the contravention of such measures an offense under national legislation.

FAO CCRF (1995) 8.2.7

Evaluation Parameters

Note: *Not applicable if no foreign vessels fish in the State's EEZ or if its vessels do not fish in high seas or in another State's EEZ.*

Process: *If applicable, the system of enforcement measures is effective for foreign vessels fishing in the State's EEZ or for its vessels fishing in high seas or in another State's EEZ.*

Current Status/Appropriateness/Effectiveness: *There is evidence to substantiate enforcement action in these cases (i.e., boarding, violations).*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that flag States take enforcement measures with fishing vessels entitled to fly their flag if the vessels have been found by the State to have contravened applicable conservation and management measures. These enforcement measures will include, where appropriate, making the contravention of such measures an offense under national legislation. Examples may include various laws, regulations, and other data or enforcements reports.*

Evaluation (per parameter)

This clause is not applicable as no foreign vessels fish in the U.S. EEZ.

References:

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (		x 3) =	
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☐
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☐
Non-Conformance Number (if applicable):					

D. Serious Impacts of the Fishery on the Ecosystem

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

FAO CCRF (1995) 7.2.3, 8.4.7, 8.4.8, 12.11
FAO Eco (2009) 29.3, 31
FAO Eco (2011) 41-41.4

12.1 The fishery management organization shall assess the impacts of environmental factors on target stocks and associated or dependent species in the same ecosystem, and the relationship among the populations in the ecosystem.

FAO CCRF (1995) 7.2.3

Evaluation Parameters

Process: *There is a process that allows assessment and monitoring of environmental factors (e.g., climatic, oceanographic) on target and associated species in the same ecosystem, and that assess the relationships between species in the ecosystem.*

Current Status/Appropriateness/Effectiveness: *There is evidence that assessments have been conducted to determine the impacts of environmental factors on the target and associated or dependent species (to the stock) in the same ecosystems, and on the relationships among these species. The results of these studies are in sufficient detail to allow informed management of the fishery. This requirement is intended to provide information about the current understanding of the overall marine ecosystem structure and relationships among the various species, coupled with environmental monitoring. More information about the effects of the fishery on specific ecosystem components (e.g., associated bycatch and ETPs species interactions, gear-habitat disturbance, ecosystem and food-webs impacts, etc.) are assessed in the following clauses of this section.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization assesses the impacts of environmental factors on target and other species belonging to the same ecosystem or associated with or dependent upon the target species, and the relationship among the populations in the ecosystem. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
NOAA, of which NMFS (NOAA Fisheries) is a part, has a series of programs monitoring and modelling oceanographic processes in Alaska and adjoining waters. The data, together with a range of other environmental monitoring information such as plankton, low trophic level fish species, fish populations, and population dynamics of higher predators are all assembled through NMFS. The relationship between environmental factors (biotic and abiotic) and BSAI and GOA pollock are evaluated annually in the SAFE process (Ianelli et al. 2021a, b; Barbeaux et al. 2021; Monnahan et al. 2021). All significant and commercial species are assessed individually according to the SAFE Tier system. Most of the species' SAFE reports contain details on ecosystem effects on the species (e.g., prey availability) and fishery effects on the ecosystem. The SAFE evaluations provide a process by which a wide range of relevant environmental information is assembled and evaluated in relation to its potential effects. Ecosystem Status Reports are done annually for EBS, AI, and GOA, updating the climate, biological, and fishing effects in each region (Siddon 2021, Ortiz and Zador 2021, Ferriss and Zador 2021). In addition, the relationship between different populations in the ecosystem is evaluated through ongoing ecosystem and multi-species modelling programs within NMFS. These information sources are presented and considered annually at Council meetings.

TAC-setting within the Council demonstrably follows the precautionary principle. This is also informed by the range of ecosystem indicators reported to the plan teams as part of the SAFE process. These indicators include mammalian predators of groundfish (e.g., Northern fur seals, Seller sea lions), which are considered by the stock assessment plan teams, SSC, and the Council in setting TACs. For mammalian predators of groundfish (e.g., pollock), outcome indicators of direct mortality are required by the MMPA and ESA in terms of allowable mortalities.

Current Status/Appropriateness/Effectiveness:

There is clear evidence that relatively in-depth studies (especially considering the extent of the area under consideration) have been conducted on the impacts of environmental factors on the target stock and on associated or dependent species (to the stock) in the same ecosystems and on the relationships among these species. Not only are a wide range of parameters monitored, but these are then synthesized into a readily understood form, from systems ecologists to stock assessment scientists and from the SAFE process to managers at the Council. Council managers also require information from ecosystem modelling as part of the management process.

The relationships among populations in the ecosystem has been extensively examined through a variety of ecosystem and multi-species models. This modelling is relatively well developed, including the Forage Euphausiid Abundance in Space and Time (FEAST) model, which is concentrated on climate/forage fish/zooplankton interactions with specific applications for Pacific cod, pollock, and arrowtooth flounder. Food-web modelling using Ecopath/Ecosim has been carried out for EBS, AI, and GOA, which provides predominantly guild level analyses of cumulative and ecosystem-level indicators. The CEATTLE model is an example of an "environmentally enhanced" stock assessment model that utilizes abundance, catch and diet data (e.g., catch-at-age data, predator diet information) to estimate F, recruitment, stock size, and predation mortality (https://www.integratedecosystemassessment.noaa.gov/regions/alaska/alaska-eastern-bering-sea-integrated-ecosystem-assessment-modeling).

As noted in Section 3.9, recent conditions have been unusually warm with sea surface temperatures as much as 3° C (about 5.4° F) higher than average. Additionally, in recent years, the annual ice cover in the BS has decreased dramatically, which has likely affected several species' survivability and reproductive success. These changes have been and continue to be investigated. The Council's SSC and the Groundfish Plan Teams are considering these factors on an ongoing basis as they assess the groundfish stocks (e.g., Ianelli et al. 2021a, Monnahan et al. 2021).

Evidence Basis:
There is a significant evidence base including annual stock assessment reports, ecosystem status reports, results of modelling output (the majority of which are published in peer-reviewed scientific journals), and reports of Council meetings, all of which are publicly available through NMFS and Council websites.

References:

Barbeaux, S., J. Ianelli, and W. Palsson. 2021. Chapter 1A: Assessment of the Pollock Stock in the Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIpollock.pdf.

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.

Ianelli, J., B. Fissel, S. Stienessen, T. Honkalehto, E. Siddon, and C. Allen-Akselrud. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Monnahan, C.C., M.W. Dorn, A.L. Deary, B.E. Ferriss, B.E. Fissel, T. Honkalehto, D.T. Jones, M. Levine, L. Rogers, S.K. Shotwell, A. Tyrell, and S. Zador. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOApollock.pdf.

NOAA Fisheries. 2012. Resource Ecology and Ecosystem Modeling Program: Forage Euphausiids Abundance in Space and Time (FEAST). https://www.afsc.noaa.gov/Quarterly/amj2012/divrptsREFM3.htm.

NOAA Fisheries. 2022a. Alaska Groundfish Harvest Specifications. https://www.fisheries.noaa.gov/alaska/sustainable-fisheries/alaska-groundfish-harvest-specifications.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.

Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2 The most probable adverse impacts from human activities, including fishery effects on the ecosystem/environment, shall be assessed and, where appropriate, addressed and or/corrected, taking into account available scientific information and local knowledge. This may take the form of an immediate management response or a further analysis of the identified risk. In this context, full consideration should be given to the special circumstances and requirements in developing fisheries, including financial and technical assistance, technology transfer, training, and scientific cooperation. In the absence of specific information on the ecosystem impacts of fishing on 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.

FAO CCRF (1995) 7.2.2
FAO Eco (2009) 29.3, 29.4, 30.4, 31, 31.4
FAO Eco (2011) 41, 41.4

Note: Clause 12.2 is a summary clause and as such does not need to be scored. The 12.2 sub-clauses will instead provide the specific elements that need to be scored.
The most probable adverse impacts from human activities, including fishery effects on the ecosystem/environment shall be assessed and, where appropriate, addressed and or/corrected, taking into account available scientific information and local knowledge. This may take the form of an immediate management response or a further analysis of the identified risk. In this context, full consideration should be given to the special circumstances and requirements in developing fisheries, including financial and technical assistance, technology transfer, training, and scientific cooperation. In the absence of specific information on the ecosystem impacts of fishing on 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.

Clause 12.2 is a non-scoring clause so there are no Evaluation Parameters associated with it.

12.2.1 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on main associated species (RFM v2.1 Guidance Appendix 1, Parts 3 and 7[9]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) shall be monitored and shall not threaten these non-target species 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.

[9] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

Evaluation Parameters

Process: *There is a process that accounts for the most probable adverse impacts of the unit of certification on main associated species. This may take the form of an immediate management response or a further analysis of the identified risk. In the absence of specific information on such 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. If information has been utilized from generic evidence based on similar fishery situations, then, based on the risk of severe adverse impact, the information shall be of higher precision for higher risk. For example, any of the following elements can be considered high risk for a fishery: keystone species, species with relative low growth rates or high catchability, fisheries with significant ETP or bycatch of nontarget fishery resources (or non-target stocks, species, harvests, or discards), or fisheries with important concerns for gear– habitat interactions. If information specific to the unit of certification area is available, generic evidence based on similar fishery situations may not be necessary.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the fishery management organization considers the most probable adverse impacts of the fishery under assessment on main associated species (e.g. recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) are monitored and do not threaten these non-target species 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 is taken. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization considers the most probable adverse impacts of the unit of certification on main associated species, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) are monitored and do not threaten these nontarget species 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 is taken. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
The principal mechanism for directing measures to minimize catch, waste, and discards of non-target species (both fish and non-fish species) and impacts on associated species is the FMPs (for the BSAI and GOA). To manage incidental catch and to reduce bycatch and waste, the FMPs specify the following objectives:

1. Continue and improve current incidental catch and bycatch management program.
2. Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.
3. Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.
4. Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.
5. Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.
6. Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target and non-commercial species.
7. Reduce waste to biologically and socially acceptable levels.
8. Continue to improve the retention of groundfish where practicable, through establishment of minimum groundfish retention standards.

The setting of retention requirements in the FMP process provides a mechanism by which the catch, waste, and discarding of non-target species is minimized. The extent and efficacy of these measures also limits impact of the fishery on associated species.

Current Status/Appropriateness/Effectiveness:
There is a comprehensive set of measures in place to minimize catch, waste, and discards of non-target species, as described above. Each of the BSAI and GOA pollock fisheries have limited non-target catches with pollock making up more than 95% in both regions so there are no main associated (i.e., bycatch) species (Table 15 and Table 16).

<u>BSAI fishery</u>

For the BSAI fishery, there are some main associated species with almost all making up less than 2% of the total average catch. The main associated species include:

- Flathead sole – RFM and MSC certified; not overfished
- Pacific cod – RFM and MSC certified; not overfished
- Pacific ocean perch – RFM and MSC certified; not overfished
- Rock sole –MSC certified; not overfished
- Sablefish – RFM and MSC certified; not overfished
- Scypho jellies – Grouping makes up 0.26% of total catch and 12.72% of total bycatch; however, this is a complex that is made up of several scypho jelly species so it is unlikely that the fishery under assessment is negatively impacting the species.
- Squid – Grouping makes up 0.05% of total catch and 2.5% of total bycatch; however, this is a complex that is made up of several squid species so it is unlikely that the fishery under assessment is negatively impacting the species.
- Squid (unidentified) – Grouping makes up 0.23% of total catch and 11.14% of total bycatch; however, this is a complex that is made up of several squid species so it is unlikely that the fishery under assessment is negatively impacting the species.
- Yellowfin sole – RFM and MSC certified; not overfished

Therefore, these combined with operational measures employed by industry to meet the specific targets are effective at achieving the specified management objectives.

GOA fishery

For the GOA fishery, there are several minor associated species with all making up <0.03% of the total average catch. (Given the large number of minor associated species but the low catch rate, the assessment team has determined that it is unnecessary to list each one of them here. Refer to Table 16 for more details.) Overall, none of the minor associated species are overfished so none are likely to be negatively impacted by the fishery under assessment. Therefore, these details combined with operational measures employed by industry to meet the specific targets are effective at achieving the specified management objectives.

Evidence Basis:

Verified observer data show that each of the BSAI and GOA pollock fisheries have limited non-target catches with pollock making up more than 95% in both regions so there are no main associated species. Also, there is extensive evidence, including FMPs and in-season catch reporting, which are all publicly available through NMFS and Council websites.

References:

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.

NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.

NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

NPFMC. 2022i. BSAI Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/bsai-groundfish-fisheries/.

NPFMC. 2022j. GOA Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/goa-groundfish-fisheries/.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.

Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐		Medium (score = 4 or 7) ☐		High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.2 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on minor associated species (RFM v2.1 Guidance Appendix 1, Parts 3 and 7[10]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) shall be monitored and shall not threaten these non-target species 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.

Evaluation Parameters

Process: *There is a process that accounts for the most probable adverse impacts of the unit of certification on minor associated species. This may take the form of an immediate management response or a further analysis of the identified risk. In the absence of specific information on such 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. If information has been utilized from generic evidence based on similar fishery situations (proxies), then, based on the risk of severe adverse impact, the information shall be of higher precision for higher risk. For example, any of the following elements can be considered high risk for a fishery: keystone species, species with relative low growth rates or high catchability, fisheries with significant ETP or bycatch of non-target fishery resources (or non-target stocks, species, harvests, or discards), or fisheries with important concerns for gear–habitat interactions. If information specific to the unit of certification area is available, generic evidence based on similar fishery situations may not be necessary.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the fishery management organization considers the most probable adverse impacts of the fishery under assessment on minor associated species, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) are monitored and do not threaten these non-target species 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 is taken. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization considers the most probable adverse impacts of the unit of certification on minor associated species, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) are monitored and do 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 is taken. Examples may include various stock and ecosystems assessment reports.*

[10] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

Evaluation (per parameter)

Process:
The principal mechanism for directing measures to minimize catch, waste, and discards of non-target species (both fish and non-fish species) and impacts on associated species is the FMPs (for the BSAI and GOA). To manage incidental catch and to reduce bycatch and waste, the FMPs specify the following objectives:

1. Continue and improve current incidental catch and bycatch management program.
2. Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.
3. Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.
4. Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.
5. Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.
6. Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target and non-commercial species.
7. Reduce waste to biologically and socially acceptable levels.
8. Continue to improve the retention of groundfish where practicable, through establishment of minimum groundfish retention standards.

The setting of retention requirements in the FMP process provides a mechanism by which the catch, waste, and discarding of non-target species is minimized. The extent and efficacy of these measures also limits impact of the fishery on associated species.

Current Status/Appropriateness/Effectiveness:
There is a comprehensive set of measures in place to minimize catch, waste, and discards of non-target species, as described above. Each of the BSAI and GOA pollock fisheries have limited non-target catches with pollock making up more than 95% in both regions (Table 15 and Table 16).

BSAI fishery
For the BSAI fishery, there are several minor associated species with all of them making up <0.03% of the total average catch. Given the large number of minor associated species but the low catch rate, the assessment team has determined that it is unnecessary to list each one of them here. Refer to Table 15 for more details. Overall, none of the minor associated species are overfished so none are likely to be negatively impacted by the fishery under assessment. Therefore, these details combined with operational measures employed by industry to meet the specific targets are effective at achieving the specified management objectives.

GOA fishery
For the GOA fishery, there are several minor associated species with all making up ⩽0.06% of the total average catch. Given the large number of minor associated species but the low catch rate, the assessment team has determined that it is unnecessary to list each one of them here. Refer to Table 16 for more details. Overall, none of the minor associated species are overfished so none are likely to be negatively impacted by the fishery under assessment. Therefore, these details combined with operational measures employed by industry to meet the specific targets are effective at achieving the specified management objectives.

Evidence Basis:
Verified observer data show that each of the BSAI and GOA pollock fisheries have limited non-target catches with pollock making up more than 95% in both regions so there are no minor associated species. Also, there is extensive evidence, including FMPs and in-season catch reporting, which are all publicly available through NMFS and Council websites.

References:

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.
NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.
NPFMC. 2022i. BSAI Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/bsai-groundfish-fisheries/.
NPFMC. 2022j. GOA Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/goa-groundfish-fisheries/.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.
Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO Eco (2011) 41.1

Evaluation Parameters

Process: *There is a process to set outcome indicator(s) consistent with achieving management objectives for non-target species (i.e., avoiding overfishing and other impacts that are likely to be irreversible or very slowly reversible).*

Current Status/Appropriateness/Effectiveness: *There is evidence that outcome indicator(s) consistent with achieving management objectives for non-target species (i.e., avoiding overfishing and other impacts that are likely to be irreversible or very slowly reversible) have been achieved. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are effective outcome indicator(s) consistent with achieving management objectives for non-target species (i.e., avoiding overfishing and other impacts that are likely to be irreversible or very slowly reversible). Examples may include fishery management reports, and stock or ecosystems assessment reports.*

Evaluation (per parameter)

Process:
Assessments are carried out (at some level of the NMFS Tier 1-5 assessment process) on all significant non-target fish and invertebrate stocks. Estimated overfishing levels and ABC levels for these stocks are reviewed annually. Management plans have been developed for each species or species complex. The process of setting overfishing levels and ABCs is as described in Section 3.3. This involves assessments through the Plan Team meetings, SAFE assessments, and SSC and Council reviews.

Current Status/Appropriateness/Effectiveness:
Overfishing levels and ABCs are set for each species and species complex. Currently, no species or complex is being fished beyond the overfishing level. It is also noted that environmental monitoring and modelling allows the effects of wider environmental influences to be considered in the setting of indicator levels.

Evidence Basis:
SAFE reports, FMPs, minutes from SSC and Council meetings, and Plan Team responses are all publicly available through NMFS and Council websites.

References:

NOAA Fisheries. 2022a. 2021 North Pacific Groundfish Stock Assessments. https://www.fisheries.noaa.gov/alaska/population-assessments/2021-north-pacific-groundfish-stock-assessments.
NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.
NPFMC. 2022i. BSAI Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/bsai-groundfish-fisheries/.
NPFMC. 2022j. GOA Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/goa-groundfish-fisheries/.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.4 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on ETP species (RFM v2.1 Guidance Appendix 1, Parts 4 and 7[11]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge.

Evaluation Parameters

Process: *There is a process that accounts for the most probable adverse impacts of the unit of certification on ETP species. This may take the form of an immediate management response or a further analysis of the identified risk. In the absence of specific information on such impacts of fishing for the unit of certification, generic evidence based on similar fishery situations (proxies) 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. If information has been utilized from generic evidence based on similar fishery situations, based on the risk of severe adverse impact, the information shall be of higher precision for higher risk. For example, any of the following elements can be considered high risk for a fishery: keystone species, species with relative low growth rates or high catchability, fisheries with significant ETP or bycatch of non-target fishery resources (or non-target stocks, species, harvests, or discards), or fisheries with important concerns for gear–habitat interactions. If information specific to the unit of certification area is available, generic evidence based on similar fishery situations may not be necessary.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the fishery management organization considers the most probable adverse impacts of the fishery under assessment on ETP species (e.g. negatively impacting rebuilding efforts), by*

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assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these impacts are monitored and do not impede, slow, or reduce likelihood of recovery of the species to target levels (or other planned outcomes). If such impacts arise, effective remedial actions are taken.

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization considers the most probable adverse impacts of the fishery under assessment on ETP species, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) are monitored and do 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 are taken. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
There is a process in place for the development of management objectives to ensure that endangered species are protected from adverse impacts from interactions with the unit of certification. The basis of protection of endangered species is Appendix I of the CITES, the ESA, and the MMPA. CITES is a multilateral treaty established to protect endangered plants and animals. It was drafted at a meeting of members of the IUCN and became effective in 1975. It aims to ensure that the international trade of wild animals and plants does not threaten the survival of these species, and it extends varying degrees of protection to more than 35,000 animal and plant species. Each CITES-protected species is assigned an appendix, which specifics the extent of the threat and the trade controls applied to that species. CITES Appendix I, the highest level, includes the species that are threatened with extinction and are, or may be, affected by trade. The endangered species inhabiting the BSAI and GOA are primarily under the responsibility of the USFWS for seabird species and NOAA Fisheries for other protected species. For these fisheries, this is primarily marine mammals.

The processes in place address the designation of species and the development of objectives and measures under the ESA and MMPA for various species (e.g., salmon, Steller sea lions). Section 3.6.5 sets out the basis of the observer program and the levels of precision available. This program forms the basis of data collection directly relevant to these fisheries under assessment and provides comprehensive and high-quality data commensurate to the scale and intensity of the fleet component (noting that observer coverage varies between catcher processor and catcher vessels, gear type, and federal and state fisheries). The observer program is ongoing and provides ongoing updated data on all major aspects of the fisheries, including interactions with endangered and prohibited species.

The ESA was established in 1973 and carries out the provisions in CITES. The ESA aims to conserve endangered and threatened fish, wildlife, and plant species and is administered by USFWS and NOAA Fisheries. With regard to fishing activities, the USFWS allows a certain level of "incidental take" (IT) of a listed species in cases where "an action may adversely affect a species but not jeopardize its continued existence" (USFWS 2017).

The MMPA was enacted in 1972 in response to increasing concerns that human activity was causing significant declines in some marine mammal populations. All marine mammals in U.S. waters are protected by the MMPA, which is implemented by NMFS, USFWS, and the Marine Mammal Commission. NMFS performs various conservation and management actions, including:

- Development and implementation of conservation plans for depleted species
- Development and implementation of take-reduction plans to minimize commercial fishing bycatch
- Coordination of the Marine Mammal Health and Stranding Response Program and investigation of unusual mortality events
- Collaboration with other nations to ensure that international trade does not threaten marine mammals
- Investigation and prosecution of MMPA violations

Specific monitoring of endangered species is carried out throughout the EBS, AI, and GOA as appropriate. Marine mammals are monitored according to requirements within the MMPA. Interactions between marine mammals and commercial fisheries are addressed in stock assessments with regional scientific review groups to advise and report on the status of marine mammal stocks within Alaska waters. These assessments include descriptions of the stock's geographic range, minimum population estimates, current population trends, current and maximum net productivity rates, optimum sustainable population levels, allowable removal levels, and estimates of annual human-caused mortality and serious injury through interactions with commercial fisheries (and subsistence hunters). These data are used to evaluate the progress of each fishery toward achieving the MMPA's goal of zero fishery-related mortality and serious injury of marine mammals. Surveys including aerial counts of adults and pups and satellite tagging studies are done regularly.

Additionally, the USFWS compiles data collected for seabirds at breeding colonies throughout Alaska (which may also feed into ecosystem monitoring used in the SAFE process). Salmon are monitored through assessments carried out by relevant departments of Fish and Game (notably the ADFG).

Current Status/Appropriateness/Effectiveness:
The effectiveness of management objectives and accompanying measures in the groundfish fisheries is considered appropriate and effective in ensuring that endangered species are protected from adverse impacts resulting from interactions with the unit of certification.

Objectives set out in the BSAI and GOA FMPs are:

- Continue to cooperate with USFWS to protect ESA-listed species, and if appropriate and practicable, other seabird species.
- Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions (*Eumetopias jubatus*).
- Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
- Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

NMFS annually categorizes all U.S. commercial fisheries under the MMPA List of Fisheries according to the levels of marine mammal mortality and serious injury(https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables). Category III fisheries interact with marine mammal stocks with annual mortality and serious injury <1% of the marine mammal's PBR level and total fishery-related mortality <10% of PBR. Any fishery in Category III is considered to have achieved the target level of mortality and serious injury. Category II fisheries have a level of mortality and serious injury that is >1% but is <50% of the stock's PBR level, if total fishery related mortality is >10% of the PBR. Category I fisheries have frequent mortality and serious injury of marine mammal resulting in annual mortality >50% of PRB. The BSAI pollock trawl fishery is a Category II (occasional interactions), and the GOA pollock trawl is Category III (remote likelihood or no known interaction). (As of 2021, the other gears were no longer classified due to the lack of any interactions in the last three year.) Observer program data provide annual estimates of takes of endangered species – fish, seabirds, and marine mammals in the BSAI and GOA pollock fisheries.

BSAI pollock trawl fishery
The following species are listed on the List of Fisheries as relevant to this fishery:

- Harbor seal (Bristol Bay)
- Humpback whale (Central North Pacific)
- Humpback whale (Western North Pacific)
- Ribbon seal
- Ringed seal (Arctic)
- Steller sea lion (western US)

Marine mammals are rarely taken incidentally in the BSAI pollock trawl fishery. Of these species, three are also ESA-listed species: ringed seal is threatened, and humpback whale (Western North Pacific) and Steller sea lion are both endangered. The humpback whale is also listed in CITES Appendix I. According to available observer data for the most recent five-year period (2013-2017), the fishery has had 2 harbor seal, 1 ribbon seal, and 27 Steller sea lion mortalities (Delean et al. 2020). Overall, all of these catch numbers are significantly less than the species' PBRs (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). Considering the cumulative impacts of all certified BSAI fisheries, the catch numbers are also below PBRs.

Regarding Steller sea lions, there has been a sustained increase in the population size in the BS with some decreasing in the AI. Work is ongoing to determine which life history traits (age-specific reproductive or survival rates) are implicated in the regional dynamics of Steller sea lions and to better understand the links between foraging behavior, diet, and population dynamics. Once completed these studies may provide new insight into the factors underlying recent population trends. Additionally, mitigation measures are in place to limit interactions (e.g., closed areas for Steller sea lion breeding; NOAA Fisheries 2022c, d).

Objectives and management responses have also been implemented in relation to the potential effects of the fishery on food availability. For marine mammals whose foraging and prey preferences overlap with the fishery, fishery removals could potentially adversely affect the amount or distribution of prey. Accordingly, habitat essential to endangered species is identified according to regulatory requirements (ESA and MMPA). NOAA Fisheries has designated critical habitat for Steller sea lions in AI and GOA, including 3 nm no-entry zones around rookeries and haulouts, prohibition of groundfish trawling within 10-20 nm of certain rookeries,

and three special aquatic foraging areas in Alaska: the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area. These management measures are relevant to all BSAI and GOA fisheries, ensuring that cumulative impacts on Steller sea lions are limited.

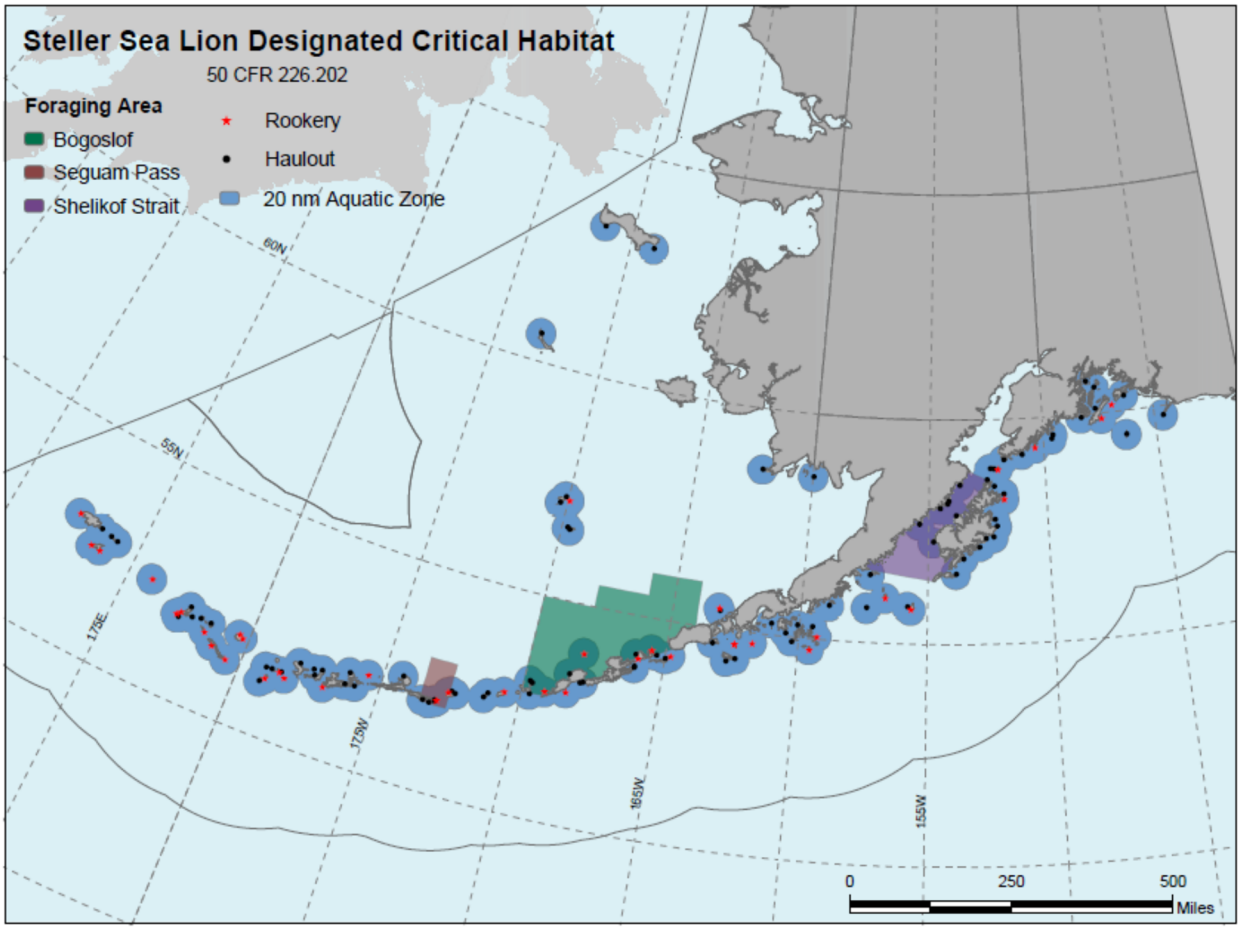

Figure 22. Designated critical habitats areas in the AI and GOA for the Steller sea lion. Source: NOAA Fisheries 2022d

Seabird interactions with fishing gear are recorded through the NMFS Observer Program (summarized in Krieger and Eich 2021), and population trends are monitored by the USFWS (summarized in Dragoo et al. 2019). The catch numbers of seabird species in this fishery are minimal, and data show no significant changes to the amount of bycatch. The only recent seabird bycatch are northern fulmar, shearwaters, kittiwakes, and Laysan albatross; none of these is an ESA-listed species. Short-tailed albatross remain the main endangered bird species of concern in the Alaska fisheries, and this fishery has not caught any in recent years.

Three ESA-threatened salmon stocks that migrate to Alaskan waters include Lower Columbia River Chinook salmon, upper Willamette River Chinook salmon, and Lower Columbia River Chinook, spring. The bycatch of ESA-listed Chinook salmon by the BSAI pollock fishery increased in 2019 and 2020. However, the 2021 catch decreased again, and all recent catch totals remain within the 45,000 PSC limit. Data continue to be collected, and the bycatch numbers are analyzed annually (NOAA Fisheries 2021, 2022b). Cumulatively, the catch numbers are also below limits.

GOA pollock trawl fishery

The following species are listed on the List of Fisheries as relevant to this fishery:

- Steller sea lion (western US)

Marine mammals are rarely taken incidentally in the GOA pollock trawl fishery. The Steller sea lion is the only List of Fisheries species caught by the fishery. According to available observer data for the most recent five-year period (2013-2017), the fishery has had 6 Steller sea lion mortalities (Delean et al. 2020). The Steller sea lion is not listed in CITES Appendix 1. These catch numbers

are significantly less than the species' PBRs. Cumulatively, the catch numbers are also below the PBR. A number of management actions were implemented by NMFS and NPFMC to promote the recovery of Steller sea lions, including the restriction of trawling within areas of critical habitat (Figure 22). Recent surveys indicate that in the GOA pup and non-pup numbers have increased, showing positive population trends.

According to observer data, this fishery catches no seabirds. Also, as with the BSAI pollock fishery, the GOA pollock fishery is not likely to jeopardize the continued existence of endangered Chinook stock. Nevertheless, Chinook prohibited species limits have been imposed. The limits appear unlikely to be exceeded, but measures such as closed areas of high bycatch are in place to minimize this bycatch. Cumulatively, the catch numbers are also below limits.

Evidence Basis:
FMPs and protected species management plans are all 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.

References:

Delean, B.J., V.T. Helker, M.M. Muto, K. Savage, S. Teerlink, L.A. Jemison, K. Wilkinson, J. Jannot, and N.C. Young. 2020. Human-Caused Mortality and Injury of NMFS-Managed Alaska Marine Mammal Stocks 2013-2017. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-401 86 p.

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NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

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

FAO Eco (2011) 41

Evaluation Parameters

Process: *There is a process in place that allowing creation of effective outcome indicators seeking to ensure that ETP species are protected from adverse impacts resulting from interactions with the unit of certification and any associated enhanced fishery activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.*

Current Status/Appropriateness/Effectiveness: *There is evidence for established outcome indicators (e.g., in a fishery management plan or other regulation) seeking to ensure that ETP species are protected (through States or international regulations) from adverse impacts resulting from interactions with the unit of certification and any associated enhanced fishery activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored. Overall, fishing activity does not impede, slow, or reduce likelihood of recovery of the species to target levels or other planned outcomes. Management objectives shall be achieved accordingly. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are effective outcome indicators seeking to ensure that ETP species are protected from adverse impacts resulting from interactions with the unit of certification and any associated enhanced fishery activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible. Examples may include fishery management plans, or stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
The basis of protection of endangered species is the ESA, CITES Appendix I, and the MMPA. The endangered species inhabiting the BSAI and GOA are primarily under the responsibility of the USFWS for seabird species and NOAA Fisheries for other protected species. For these fisheries, this is primarily marine mammals.

The FMPs specifically address endangered species. FMPs go through the development and review processes described elsewhere. The groundfish FMP management policy specifically includes cooperation with USFWS to protect ESA-listed species, and if appropriate and practicable, other seabird species; to maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions; to encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate; to cooperate with NOAA Fisheries and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species; to continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target, prohibited species catch, and non-commercial species; and to control the bycatch of prohibited species through prohibited species catch limits or other appropriate measures. Assessments of the effects of the Alaska groundfish fisheries on many endangered species are also provided in the Alaska Groundfish Harvest Specifications Environmental Impact Statement.

The ESA requires the relevant agency (NOAA Fisheries or USFWS) to evaluate (provide a biological opinion) on the effects of the FMPs for the GOA and groundfish fisheries and the State of Alaska parallel groundfish fisheries on endangered species. Specifically, federal agencies must ensure that their activities are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat. The biological opinion process has been followed, as required for Steller sea lion and Chinook salmon in relation to these fisheries under assessment.

The MMPA allows for NOAA Fisheries to issue permits for the taking of marine mammals designated as depleted because of their listing under the ESA after the agency has determined that:

- Incidental mortality and serious injury from commercial fisheries will have a negligible impact on the affected species or stock
- A recovery plan has been developed or is being developed for such species or stock under the ESA

- Where required under section 118 of the MMPA, a monitoring program has been established, vessels engaged in such fisheries are registered, and a take reduction plan has been developed or is being developed for the species or stock

Annually, NOAA Fisheries categorizes all U.S. commercial fisheries under the MMPA List of Fisheries according to the levels of marine mammal mortality and serious injury. Category III fisheries interact with marine mammal stocks with annual mortality and serious injury <1% of the marine mammal's PBR level and total fishery-related mortality <10% of PBR. Any fishery in Category III is considered to have achieved the target level of mortality and serious injury. Category II fisheries have a level of mortality and serious injury that is >1% but is <50% of the stock's PBR level, if total fishery related mortality is >10% of the PBR. Category I fisheries have frequent mortality and serious injury of marine mammal resulting in annual mortality >50% of PRB. The BSAI pollock trawl fishery is a Category II (occasional interactions), and the GOA pollock trawl is Category III (remote likelihood or no known interaction). (As of 2021, the other gears were no longer classified due to the lack of any interactions in the last three year.)

The designation and protection of endangered species is an integral component of the management of groundfish fisheries in BSAI and GOA. Specific outcome indicators are developed in terms of acceptable levels of impacts such that fishing is not likely to jeopardize the continued existence of protected species or destroy or adversely modify designated critical habitat under the ESA or to approach PBR levels for marine mammals under the MMPA.

Current Status/Appropriateness/Effectiveness:

Based on catch data, the ETP species that have interacted with the fisheries are as follows:

BSAI pollock trawl

- Bearded seal (Alaska)
- Beluga whale (Eastern Chukchi Sea, Eastern Bering Sea, Bristol Bay)
- Harbor seal (Bristol Bay)
- Ribbon seal (Alaska)
- Salmon (some species)
- Steller sea lion (western US)

Of these species, one is an ESA-listed species: Steller sea lion is endangered. According to available observer data for the most recent five-year period (2013-2017), the fishery has had 2 harbor seal, 1 ribbon seal, and 27 Steller sea lion mortalities (Delean et al. 2020). Overall, all of these catch numbers are significantly less than the species' PBRs (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). Considering the cumulative impacts of all certified BSAI fisheries, the catch numbers are also below PBRs.

Seabird interactions with fishing gear are recorded through the NMFS Observer Program (summarized in Krieger and Eich 2021), and population trends are monitored by the USFWS (summarized in Dragoo et al. 2019). The catch numbers of seabird species in this fishery are minimal, and data show no significant changes to the amount of bycatch. The only recent seabird bycatch are northern fulmar, shearwaters, kittiwakes, and Laysan albatross; none of these is an ESA-listed species. Short-tailed albatross remain the main endangered bird species of concern in the Alaska fisheries, and this fishery has not caught any in recent years.

Three ESA-threatened salmon stocks that migrate to Alaskan waters include Lower Columbia River Chinook salmon, upper Willamette River Chinook salmon, and Lower Columbia River Chinook, spring. The bycatch of ESA-listed Chinook salmon by the BSAI pollock fishery increased in 2019 and 2020. However, the 2021 catch decreased again, and all recent catch totals remain within the 45,000 PSC limit. Data continue to be collected, and the bycatch numbers are analyzed annually (NOAA Fisheries 2021, 2022b). Cumulatively, the catch numbers are also below limits.

GOA pollock trawl

- Salmon (some species)
- Steller sea lion (western US)

Marine mammals are rarely taken incidentally in the GOA pollock trawl fishery. The northern elephant seal is the only List of Fisheries species caught by the fishery, and according to catch data, none have been caught in 2013-2017. The Steller sea lion is not listed on the List of Fisheries for the GOA but is an ESA-listed species, and according to catch data, the fishery did have six Steller sea lion mortalities over that time period (Delean et al. 2020). None of these species is listed in CITES Appendix 1. These catch numbers are significantly less than the species' PBRs. Cumulatively, the catch numbers are also below the PBR.

According to observer data, this fishery catches no seabirds. Also, as with the BSAI pollock fishery, the GOA pollock fishery is not likely to jeopardize the continued existence of endangered Chinook stock. Nevertheless, Chinook prohibited species limits have been imposed. The limits appear unlikely to be exceeded, but measures such as closed areas of high bycatch are in place to minimize this bycatch. Cumulatively, the catch numbers are also below limits.

Evidence Basis:
FMPs, protected species management plans, and biological opinion reviews are all 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.

References:

Delean, B.J., V.T. Helker, M.M. Muto, K. Savage, S. Teerlink, L.A. Jemison, K. Wilkinson, J. Jannot, and N.C. Young. 2020. Human-Caused Mortality and Injury of NMFS-Managed Alaska Marine Mammal Stocks 2013-2017. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-401 86 p.

Dragoo, D.E., H.M. Renner, and R.S.A. Kaler. 2019. Breeding status and population trends of seabirds in Alaska, 2018. U.S. Fish and Wildlife Service Report AMNWR 2019/03. Homer, Alaska.

Krieger, J.R. and Eich, A.M. 2021. Seabird Bycatch Estimates for Alaska Groundfish Fisheries: 2020. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/AKR-25, 40 p. https://repository.library.noaa.gov/view/noaa/32076.

NMFS. 2016. Final Marine Mammal Protection Act Section 101(a)(5)(E) – Negligible Impact Determination. https://www.fisheries.noaa.gov/resource/document/final-marine-mammal-protection-act-section-101a5e-negligible-impact-0.

NOAA Fisheries. 2021. 2020 Annual Report for the Alaska Groundfish Fisheries Chinook Salmon Coded Wire Tag and Recovery Data for Endangered Species Act Consultation. https://media.fisheries.noaa.gov/2021-10/ak-groundfish-fishery-salmon-bycatch-2020-annual-rpt.pdf.

NOAA Fisheries. 2022b. 2021 Annual Report for the Alaska Groundfish Fisheries Chinook Salmon Incidental Catch and Endangered Species Act Consultation. https://media.fisheries.noaa.gov/2022-02/2021-chinook-incidental-catch-esa-annual-rpt.pdf.

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NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.6 The fishery management organization shall consider the most probable adverse impacts of the unit of certification on habitats (RFM v2.1 Guidance Appendix 1, Parts 5 and 7[12]), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge.

[12] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

Evaluation Parameters

Process: *There is a process that accounts for the most probable adverse impacts of the unit of certification on habitats. This may take the form of an immediate management response or a further analysis of the identified risk. In the absence of specific information on such 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. If information has been utilized from generic evidence based on similar fishery situations, based on the risk of severe adverse impact, the information shall be of higher precision for higher risk. For example, any of the following elements can be considered high risk for a fishery: keystone species, species with relative low growth rates or high catchability, fisheries with significant ETP species or bycatch of non-target fishery resources (or non-target stocks, species, harvests, or discards), or fisheries with important concerns for gear–habitat interactions. If information specific to the unit of certification area is available, generic evidence based on similar fishery situations may not be necessary.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the fishery management organization considers the most probable adverse impacts of the unit of certification on habitats, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, if these impacts are likely to be irreversible or very slowly reversible, effective remedial action is taken (please see RFM v2.1 Guidance Appendix 1, Part 5, noting specifically the 3 habitat assessment elements, and Part 7 for cumulative effects evaluation[13]). Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization considers the most probable adverse impacts of the unit of certification on habitats, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these catches (including discards) are monitored and do not threaten these non-target species 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 is taken. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
The MSA requires Councils to identify EFHs for all fisheries and to "prevent, mitigate or minimize, to the extent practicable" any adverse effects of fishing on EFH that are "more than minimal and not temporary". Councils are also required to give special attention to HAPCs. Each Council FMP contains provisions for a review of EFH issues every five years. The latest review was carried out in 2015, and a new review was announced in April 2022. EFH information is also reviewed annually in the "Ecosystems Considerations" section of SAFE reports.

The assessment of impacts first considers whether the stock is above its limit reference point. Mitigation measures would be recommended for any stock below its limit reference point if reductions in EFH are identified as a cause of stock depletion. The next criterion is whether CEA is reduced for each species and life stage. (CEA is generally taken as the 50% quantile threshold of suitable habitat.) If >10% of the CEA is impacted, further analyses are required by stock assessment authors to determine whether there is a significant correlation with life history parameters for the stock to determine any plausible stock effects. Any plausible effects would be investigated by Plan Teams and SSC; if more than minimal and not temporary, these would result in mitigation measures being recommended to the Council. This would result in the Council following its FMP amendment process to mitigate adverse effects. HAPCs are sub-sites with important ecological functions or are especially vulnerable to human impacts. HAPCs are identified to or by the Council according to set priorities (e.g., coral beds, seamounts, skate habitat).

Habitat essential to endangered species is identified according to regulatory requirements (ESA and MMPA). NOAA Fisheries has designated critical habitat for Steller sea lions in the Aleutian Islands (see Clause 12.2.4). All fisheries operating in BSAI and GOA must abide by these closed areas, ensuring that cumulative impacts are minimal.

Current Status/Appropriateness/Effectiveness:

Several HAPCs are identified throughout the EBS, AI, and GOA – Alaska Seamounts, Bowers Ridge, GOA Coral Habitat, GOA Slope Habitat (bottom contact gear prohibited or restricted), and skate nursery areas (monitoring priority areas). Figure 23 shows HAPCs and other habitat closures in Alaska waters. All BSAI and GOA certified fisheries must abide by the same area closures, gear limitations, etc., which ensures that cumulative impacts on HAPCs and EFHs are minimal.

[13] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

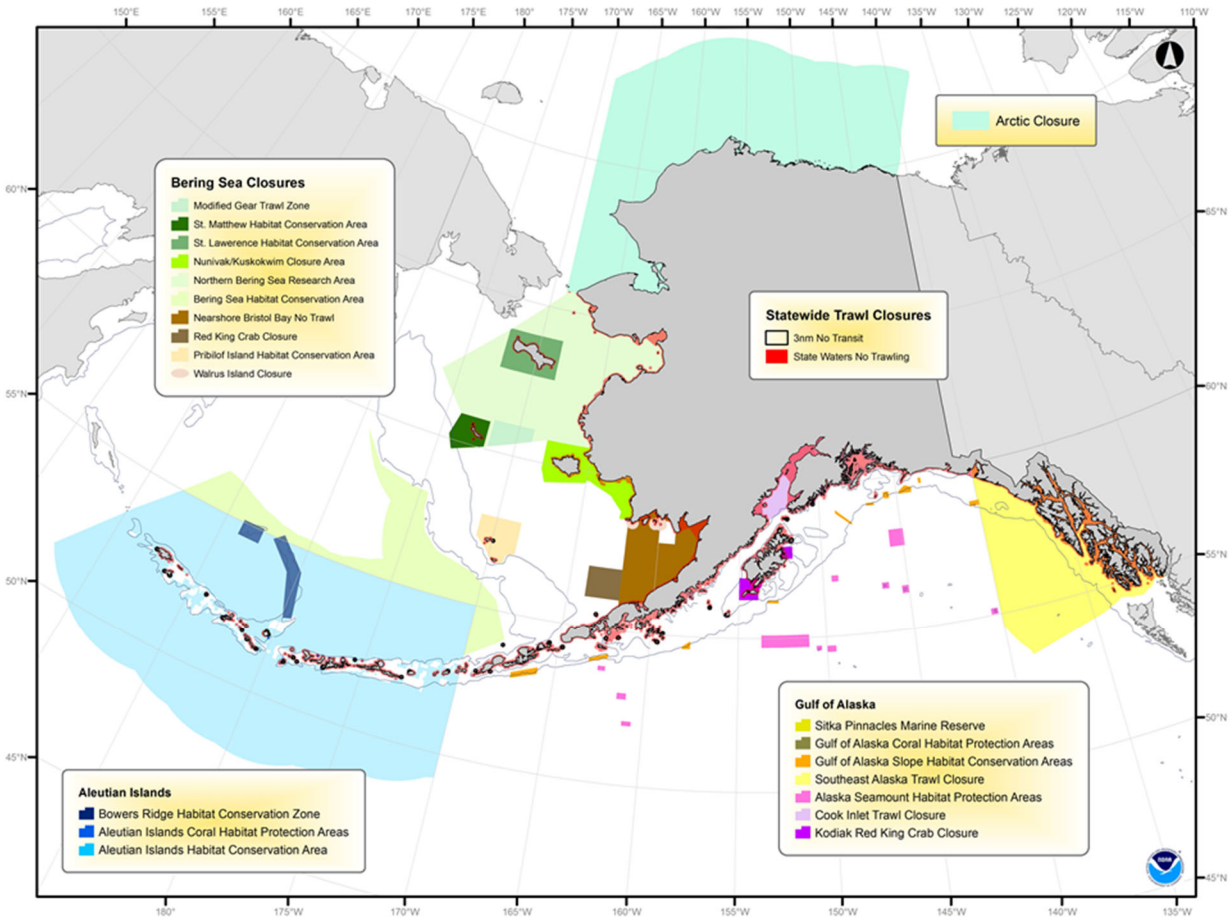

Figure 23. Closures within BSAI and GOA. Source: NOAA Fisheries

Evidence Basis:
FMPs and calls for nominations of HAPC and EFH reviews and methodologies provide fully adequate information on knowledge of the essential habitats for the "stock under consideration" and potential fishery impacts on them and on habitats that are highly vulnerable to damage by the fishing gear. Information and reports are all publicly available on the NOAA Fisheries and Council websites.

References:

Barbeaux, S., J. Ianelli, and W. Palsson. 2021. Chapter 1A: Assessment of the Pollock Stock in the Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIpollock.pdf.

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Ianelli, J., B. Fissel, S. Stienessen, T. Honkalehto, E. Siddon, and C. Allen-Akselrud. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSPollock.pdf.

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Monnahan, C.C., M.W. Dorn, A.L. Deary, B.E. Ferriss, B.E. Fissel, T. Honkalehto, D.T. Jones, M. Levine, L. Rogers, S.K. Shotwell, A. Tyrell, and S. Zador. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOApollock.pdf.

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Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.
Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.7 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 the part of the spatial range that is potentially affected by fishing.

FAO Eco (2009) 31.3
FAO Eco (2011) 41.3

Evaluation Parameters

Process: *There is a mechanism in place by which the potential impacts of the fishery upon habitats essential to the stock under consideration and on habitats that are highly vulnerable to damage are identified. This or a similar mechanism shall also be in place to identify habitats that are highly vulnerable to fishery activities by the unit of certification. The information provided by these mechanisms shall be used to produce specific management objectives related to avoiding significant adverse impacts on habitats. The knowledge of the habitats in question can therefore include relevant traditional, fisher, or community knowledge, provided its validity can be objectively verified (i.e., the knowledge has been collected and analyzed though a systematic, objective, and well-designed process, and is not just hearsay). When identifying highly vulnerable habitats, their value to ETP species shall be considered, with habitats essential to ETP species being categorized accordingly.*

Current Status/Appropriateness/Effectiveness: *Successful management measures have been developed and are in place to achieve the objectives described in the process parameter.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there is 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 are avoided, minimized, or mitigated. In assessing fishery impacts, the full spatial range of the relevant habitat is considered, not just the part of the spatial range that is potentially affected by fishing. Examples may include various regulations, data, and reports.*

Evaluation (per parameter)

Process:
The MSA requires Councils to identify EFHs for all fisheries and to "prevent, mitigate or minimize, to the extent practicable" any adverse effects of fishing on EFH that are "more than minimal and not temporary". Councils are also required to give special attention to HAPCs. Each Council FMP contains provisions for a review of EFH issues every five years. The latest review was carried out in 2015, and a new review was announced in April 2022. EFH information is also reviewed annually in the "Ecosystems Considerations" section of SAFE reports.

As part of the 2015 review, EFHs throughout the EBS, AI, and GOA (i.e., the full spatial range) have been modelled for all major species of groundfish and invertebrates based on available information on distributions of eggs, larvae, juveniles, and adults. This information is principally derived from bottom trawl surveys and commercial catch data. This allows the model to predict distributions of EFHs based on percentile distributions of the species abundance. Fishing effects were then added to the model based on existing literature of effects on sediment types and recovery times. This allows prediction on a monthly basis of the extent of impact and recovery on a 5x5m grid. The model specifically includes long-lived species on deep and rocky habitats.

The assessment of impacts first considers whether the stock is above its limit reference point. Mitigation measures would be recommended for any stock below its limit reference point if reductions in EFH are identified as a cause of stock depletion. The next criterion is whether CEA is reduced for each species and life stage. (CEA is generally taken as the 50% quantile threshold of suitable habitat.) If >10% of the CEA is impacted, further analyses are required by stock assessment authors to determine whether there is a significant correlation with life history parameters for the stock to determine any plausible stock effects. Any plausible effects would be investigated by Plan Teams and SSC; if more than minimal and not temporary, these would result in mitigation measures being recommended to the Council. This would result in the Council following its FMP amendment process to mitigate adverse effects. HAPCs are sub-sites with important ecological functions or are especially vulnerable to human impacts. HAPCs are identified to or by the Council according to set priorities (e.g., coral beds, seamounts, skate habitat).

There is a well-defined process in place to model the extent of EFH for each major species and to evaluate, according to set criteria, the effects of fishing. Where such effects may be appreciable, a process to evaluate and mitigate is in place within the Council. An alternative process is in place to identify priority HAPC and to evaluate and protect them. These processes specifically include the effects of trawl fisheries. The information provided by the EFH model may be used to produce and test management measures designed to avoid significant adverse effects. Both scientific trawl survey and commercial catch data are used to inform the model.

Habitat essential to endangered species is identified according to regulatory requirements (ESA and MMPA). NOAA Fisheries has designated critical habitat for Steller sea lions in the Aleutian Islands (see Clause 12.2.4).

Current Status/Appropriateness/Effectiveness:
For the pollock fisheries, all stocks are above their limit reference points. None of the species SAFE reports or the FMPs conclude habitat modification or loss as a concern. The BSAI and GOA are extremely large areas, making comprehensive habitat mapping difficult. Habitat has been mapped at a level of 5 km^2 grids, and while this level is likely under sampling habitat, the data provide an idea of what is occurring on the seafloor (Figure 17). Figure 18, Figure 19, and Figure 20 show the percentage of area within each grid cell that has been disturbed (2003-2017) for BS, AI, and GOA, respectively. Figure 17 shows a high occurrence of mud and sand and lesser amounts of gravel, cobble, and boulders. (Refer to Section 3.8.2 for more details on the habitats impacted by the fishery under assessment.) Therefore, it can be concluded that the relevant habitats are not affected substantively by these commercial fisheries.

Several HAPCs are identified throughout the EBS, AI, and GOA – Alaska Seamounts, Bowers Ridge, GOA Coral Habitat, GOA Slope Habitat (bottom contact gear prohibited or restricted), and skate nursery areas (monitoring priority areas). Refer to Clause 12.2.6 and Figure 23.

Evidence Basis:
FMPs and calls for nominations of HAPC and EFH reviews and methodologies provide fully adequate information on knowledge of the essential habitats for the "stock under consideration" and potential fishery impacts on them and on habitats that are highly vulnerable to damage by the fishing gear. Information and reports are all publicly available on the NOAA Fisheries and Council websites.

References:

Barbeaux, S., J. Ianelli, and W. Palsson. 2021. Chapter 1A: Assessment of the Pollock Stock in the Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIpollock.pdf.
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NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.
NPFMC. 2022k. Habitat Protections. https://www.npfmc.org/fisheries-issues/issues/habitat-protections/.
Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.
Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.8 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.

FAO Eco (2011) 41.3

Evaluation Parameters

Process: *There is a mechanism in place that allows the establishment of outcome indicator(s) consistent with achieving management objectives for avoiding, minimizing, or mitigating 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.*

Current Status/Appropriateness/Effectiveness: *Successful outcome indicators and management measures have been developed and are in place to achieve the objectives described in the process parameter.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are effective outcome indicator(s) consistent with achieving management objectives for avoiding, minimizing, or mitigating 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. Examples may include various regulations, data, and reports.*

Evaluation (per parameter)

Process:
The MSA requires Councils to identify EFHs for all fisheries and to "prevent, mitigate or minimize, to the extent practicable" any adverse effects of fishing on EFH that are "more than minimal and not temporary". Councils are also required to give special attention to HAPCs. Each Council FMP contains provisions for a review of EFH issues every five years. The latest review was carried out in 2015. EFH information is also reviewed annually in the "Ecosystems Considerations" section of SAFE reports.

The latest EFH review developed a hierarchical impact assessment methodology to operationalize the "more than minimal and not temporary" criterion. This is based on the model of EFH impact and recovery outlined earlier. Stock assessment authors are required to determine whether the population under assessment is above or below its limit reference point. For stocks at this level, mitigation measures would be required if the stock assessment author determines that there is a plausible connection to reductions in EFH. The next question is whether the CEA (defined as the 50% quantile of EFH) is disturbed by fishing. If so, then stock assessment authors must determine whether critical life-history characteristics of the stock are correlated with the proportion of CEA affected. If correlations suggest a plausible stock effect, plan teams and SSC will consider appropriate mitigation measures to recommend to the Council.

HAPCs are designated following a nomination process according to the Council priorities. HAPC nominations are generally on a five-year cycle but may be initiated at any time. Previous priorities have been seamounts and undisturbed coral areas; the last process was carried out according to a priority of identifying skate nursery areas. The SAFE reports also include specific indicators of vulnerable habitat (e.g., corals, sponges, sea whips) for which trends are monitored and appropriate mitigation may be implemented as necessary.

The mechanisms developed to identify significant effects on EFHs and for identifying HAPCs 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.

Current Status/Appropriateness/Effectiveness:
A comprehensive inventory of bottom habitat data in the BSAI and GOA has been done. The types, distributions, and vulnerability of habitats in the BSAI and GOA are known (NOAA Fisheries 2022e, f; NPFMC 2020a, b). Habitats in the AI are less well understood, but there is a basic understanding of the main types and general distributions and their vulnerabilities.

The processes for identifying effects on EFHs and for designating HAPCs have been developed to achieve the objectives described in the process parameter and have been successful in doing so. Several HAPCs have been identified throughout the EBS, AI, and GOA – Alaska Seamounts, Bowers Ridge, GOA Coral Habitat, GOA Slope Habitat (bottom contact gear prohibited or restricted), and skate nursery areas (monitoring priority areas). Figure 23 shows HAPC and other habitat closures in Alaska waters. The FMPs, EFH report, five-year review of EFH, and NOAA data provide information that is adequate to allow for identification of the main impacts of

the fisheries' gear used in the BSAI and GOA. Model estimates of long-term bottom habitat impacts of trawl gear used in the fisheries provide sufficient data to allow the nature of impact and their spatial extent to be generally determined.

The Council has implemented a combination of mitigation measures focused on limiting impact. As noted above, several closed and protected areas have been established with the intent to protect EFHs, HAPCs, and other sensitive areas. Gear modifications have also been implemented to limit trawl gear impact. Figure 18, Figure 19, and Figure 20 show the percentage of area within each grid cell that has been disturbed (2003-2017) for BS, AI, and GOA, respectively.

Evidence Basis:
Reports on the EFH evaluation methodology, calls for identification of HAPC and identification of designated areas, and SAFE reports are all publicly available on NMFS and Council websites.

References:

Barbeaux, S., J. Ianelli, and W. Palsson. 2021. Chapter 1A: Assessment of the Pollock Stock in the Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIpollock.pdf.

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.

Ianelli, J., B. Fissel, S. Stienessen, T. Honkalehto, E. Siddon, and C. Allen-Akselrud. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Monnahan, C.C., M.W. Dorn, A.L. Deary, B.E. Ferriss, B.E. Fissel, T. Honkalehto, D.T. Jones, M. Levine, L. Rogers, S.K. Shotwell, A. Tyrell, and S. Zador. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOApollock.pdf.

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NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.

NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

NPFMC. 2022i. BSAI Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/bsai-groundfish-fisheries/.

NPFMC. 2022j. GOA Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/goa-groundfish-fisheries/.

NPFMC. 2022k. Habitat Protections. https://www.npfmc.org/fisheries-issues/issues/habitat-protections/.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.

Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.9 The fishery management organization shall consider the most probable adverse impacts of the fishery under assessment on the ecosystem (RFM v2.1 Guidance Appendix 1, Part 6[14]), by assessing and, where appropriate, addressing and or/correcting them, taking into account available scientific information and local knowledge.

Evaluation Parameters

Process: *There is a process that accounts for the most probable adverse impacts of the unit of certification on the ecosystem. This may take the form of an immediate management response or a further analysis of the identified risk. In the absence of specific information on the ecosystem impacts of fishing for the unit of certification, generic evidence based on similar fishery situations (proxies) 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. If information has been utilized from generic evidence based on similar fishery situations, then, based on the risk of severe adverse impact, the information shall be of higher precision for higher risk. For example, any of the following elements can be considered high risk for a fishery: keystone species, species with relative low growth rates or high catchability, fisheries with significant ETP species or bycatch of non-target fishery resources (or non-target stocks, species, harvests, or discards), or fisheries with important concerns for gear–habitat interactions. If information specific to the unit of certification area is available, generic evidence based on similar fishery situations may not be necessary.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the fishery management organization considers the most probable adverse impacts of the fishery under assessment on the ecosystem (e.g., food-webs effects), by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge. Accordingly, these impacts are likely to be irreversible or very slowly reversible; or effective remedial action shall be taken. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored. There are policies in place (e.g., harvest control rules) that are effective at protecting ecosystem functioning and accounting for species' ecological role, and precautionary and effective spatial management is used (e.g., to protect spawning areas, prevent localized depletion, and protect important foraging areas for predators of fished species) if applicable.*

Current Status/Appropriateness/Effectiveness: *The bait used to capture the stock under consideration shall not be formally classified as ETP species (by a State or other international designations), and the fishery under consideration does not hinder recovery or rebuilding of overfished species that are not formally classified as ETP species and used as bait.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization considers the most probable adverse impacts of the unit of certification on the ecosystem, by assessing and, where appropriate, addressing and or/correcting them, taking into account the best scientific evidence available and local knowledge.*

[14] Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1)

Accordingly, these catches (including discards) are monitored and do 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 is taken. Examples may include various stock and ecosystems assessment reports.

Evaluation (per parameter)

Process:
Through scientific investigations of NMFS, the PSEIS provides a comprehensive evaluation of the FMPs. The SAFE process evaluates the stock status of the target species on an annual basis, considering major bycatches, effects on prohibited species (i.e., species which cannot be landed and have limits in place on total catches in a fishery sector; these are notably halibut and salmon), habitat, and a wide-ranging consideration of ecosystem indicators. These evaluations are supported by extensive monitoring programs with specific investigations on issues of concern (such as EFH impacts, reductions in fur seal populations, Stellar sea lion feeding resources, and impacts on seabirds). The Council and Alaska (BOF both have wide-ranging representation from the stakeholder community. In addition, Groundfish Plan Team, Ecosystem Committee, the Council, and BOF meetings are all open to public attendance. Available scientific information is therefore fundamental to the impact evaluation process and is reinforced by information and issues raised by stakeholders throughout the management process.

Significant specific information is collected on all appreciable adverse effects of the fishery on the ecosystem, using both specific scientific studies as well as views and information provided by the wider stakeholder community. These are assessed through PSEIS and routinely through the SAFE, the Council, and BOF processes. Management objectives have been developed in response to these processes: the PSEIS process led to the Council adoption of nine policy goal statements with 45 accompanying objectives. Each major stock is subject to a SAFE assessment, and specific management objectives are developed in response to any new issues arising. In 2014, the Council adopted an Ecosystem Policy, which is considered in all long-term planning initiatives, fishery management actions, and science planning to support ecosystem‐based fishery management. The intent is that management explicitly takes “into account environmental variability and uncertainty, changes and trends in climate and oceanographic conditions, fluctuations in productivity for managed species and associated ecosystem components, such as habitats and non-managed species, and relationships between marine species” and incorporates “the best available science, including local and traditional knowledge, and engage scientists, managers, and the public” (NPFMC 2019b).

Current Status/Appropriateness/Effectiveness:
Management measures are in place, based on a sound and fishery-related evidence platforms and extensive evaluations, designed to achieve the stated objectives for relevant ecosystem components. These specifically include marine mammals, seabirds, prohibited species, target and bycatch species, essential fish habitat, HAPCs, and food-web effects. As such, information and objectives are specific to the fishery and/or fishery management system, and use of more generic information is not considered necessary.

Current Status/Appropriateness/Effectiveness:
Bait used within the longline fishery is primary squid that is likely caught as bycatch in other fisheries and delivered to shoreside plants (Austin Estabrooks, APA, pers. comm.). This squid is not an ETP species.

Evidence Basis:
There is an extensive evidence base setting out the evaluation of potential adverse effects of the fishery, the management objectives related to these, the measures in place to achieve the objectives, and ongoing monitoring of the effectiveness of these measures. These are all publicly available through NMFS and Council websites.

References:

Barbeaux, S., J. Ianelli, and W. Palsson. 2021. Chapter 1A: Assessment of the Pollock Stock in the Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIpollock.pdf.

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NPFMC. 2022j. GOA Groundfish Fisheries. https://www.npfmc.org/fisheries-issues/fisheries/goa-groundfish-fisheries/.
NPFMC. 2022k. Habitat Protections. https://www.npfmc.org/fisheries-issues/issues/habitat-protections/.
NPFMC. 2022l. Management Policies. https://www.npfmc.org/how-we-work/management-policies/.
NPFMC. 2022g. Salmon Bycatch. https://www.npfmc.org/fisheries-issues/bycatch/salmon-bycatch/.
NPFMC. 2022m. Crab Bycatch. https://www.npfmc.org/fisheries-issues/bycatch/crab-bycatch/.
NPFMC. 2022n. Halibut Bycatch. https://www.npfmc.org/fisheries-issues/bycatch/halibut-bycatch/.
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Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.10 There shall be outcome indicator(s) consistent with achieving management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery enhanced 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.

FAO Eco (2011) 36.9, 41

Evaluation Parameters

Process: *There is a process to allow for drafting effective outcome indicator(s) consistent with achieving management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery enhancement activities) on the structure, processes, and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible. There is also a process that states modifications to the habitat for enhancing the stock under consideration are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure, processes, and function.*

Current Status/Appropriateness/Effectiveness: *There is evidence for outcome indicator(s) consistent with achieving management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery 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 are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure, processes, and function. Reversibility refers to the effects of a process or condition capable of being reversed so that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are effective outcome indicator(s) consistent with achieving management objectives seeking to minimize adverse impacts of the unit of certification (including any fishery 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 are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure, processes, and function. Examples may include various regulations, data, and reports.*

Evaluation (per parameter)

Process:
The preceding clauses have described the ecosystem management applied in BSAI and GOA. This has included setting precautionary TACs for all target species, including groundfish, based on ABC and overfishing levels but also considering trends in ecosystem indicators. In the past, TACs have been adjusted in relation to such trends. This is considered the most significant and effective outcome indicator.

Endangered species, prohibited species, seabirds, and marine mammals are all subject to indicators of status and accompanying limits on mortalities within the groundfish fishery. Habitats are also subject to ongoing monitoring and evaluation by stock assessment authors, Plan Teams, SSC, and the Council. EFHs and HAPCs are subject to separate evaluation, designation, mitigation, and monitoring. There are no enhancement activities associated with the groundfish fisheries, including no modifications to the habitat for enhancing the stock under consideration.

Ecosystem modelling is relatively well developed, including the Forage Euphausiid Abundance in Space and Time (FEAST) model, which is concentrated on climate/forage fish/zooplankton interactions with specific applications for cod, pollock, and arrowtooth flounder. Food-web modelling using Ecopath/Ecosim has been carried out for EBS, AI and GOA, providing predominantly guild-level analyses of cumulative and ecosystem level indicators. The CEATTLE model combines predation between cod, pollock, and arrowtooth flounder inter- and intraspecies predation with climatic effects, aiming to develop reference points in relation to prevailing climatic conditions and multi-species ABCs.

The Council approach to groundfish fisheries explicitly includes for ecosystem-based management principles that protect managed species from overfishing, and where appropriate and practicable, increase habitat protection and bycatch constraints. This includes the setting of outcome indicators relating to preserving the food web, managing incidental catch, avoidance of impacts on seabirds and mammals and reduce and avoid impacts to habitats.

Current Status/Appropriateness/Effectiveness:
As outlined previously, objectives, indicators, management measures and ongoing monitoring and ecosystem modelling are all in place to meet the overarching objective of effective ecosystem-based management.

Evidence Basis:
SAFE assessments (including ecosystem indicators and essential fish habitat evaluations) for each species are published annually, together with endangered species management plans, marine mammal monitoring, and management measures. Developments in

ecosystem modelling are published in the scientific press and NOAA Fisheries website. All information is readily available through NOAA Fisheries and Council websites.

References:

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NMFS. 2010. Endangered Species Act Section 7 Consultation Biological Opinion: Authorization of Groundfish Fisheries under the Fishery Management Plan for Groundfish of the Bering Sea And Aleutian Islands Management Area, Authorization of Groundfish Fisheries under the Fishery Management Plan for Groundfish of the Gulf of Alaska, State of Alaska Parallel Groundfish Fisheries. https://www.fisheries.noaa.gov/resource/document/endangered-species-act-section-7-consultation-biological-opinion-alaska.

NOAA Fisheries. 2012. Resource Ecology and Ecosystem Modeling Program: Forage Euphausiids Abundance in Space and Time (FEAST). https://www.afsc.noaa.gov/Quarterly/amj2012/divrptsREFM3.htm.

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NPFMC. 2007. Aleutian Islands Fishery Ecosystem Plan. https://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/AIFEP/AIFEP12_07.pdf.

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NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.

NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.

Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.

Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.2.11 The fishery management organization shall consider the most probable adverse human impacts on the stock/ecosystem under consideration, by assessing and, where appropriate, addressing and or/correcting them, taking into account available scientific information and local knowledge.

Evaluation Parameters

Process: *There is a process that accounts for the most probable adverse impacts of the unit of certification on the ecosystem. This may take the form of an immediate management response or a further analysis of the identified risk. In the absence of specific information on the ecosystem impacts of fishing for the unit of certification, generic evidence based on similar fishery situations (proxies" 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.*

Current Status/Appropriateness/Effectiveness: *There is evidence that the fishery management organization considers the most probable adverse human impacts of the unit of certification on the ecosystem, by assessing and, where appropriate, addressing and/or correcting them, taking into account available scientific information and local knowledge. Accordingly, these impacts are likely to be irreversible or very slowly reversible; if so, effective remedial action shall be taken. Reversibility refers to the effects of a process or condition capable of being reversed or that the previous state is restored.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization considers the most probable adverse impacts of the unit of certification on the ecosystem, by assessing and, where appropriate, addressing and/or correcting them, taking into account available scientific information and local knowledge. Accordingly, these catches (including discards) are monitored and do not threaten these non-target stocks with serious risk or extension, recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible; if such impacts arise, effective remedial action is taken. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
Adverse environmental effects on fish resources from fishery-related activities are evaluated through a PSEIS. The 2004 Alaska Groundfish Fisheries PSEIS evaluated the cumulative changes in the management of the groundfish fisheries since the implementation of the BSAI and GOA FMPs and considered a broad array of policy-level programmatic alternatives. On the basis of the analysis, the Council adopted a management approach statement, policy goal statements, and accompanying objectives. Periodically, the Council conducts a review of the policy goal statements and objectives to assess how they are being implemented and to see whether changes are warranted. They also reviewed factors that may influence the timing for supplementing or updating the 2004 PSEIS.

NEPA requires agencies to prepare a supplemental EIS (SEIS) to either draft or final EISs if the agency (1) makes substantial changes in the proposed action that are relevant to environmental concerns or (2) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. An SEIS is required if the new information is sufficient to show a proposed or remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered. In April 2014, the Council evaluated whether the triggers for supplementing the PSEIS have been met and concluded both that a supplemental EIS was not required and that they did not choose to reinitiate programmatic changes to the groundfish fisheries that would necessitate a SEIS. NMFS has since reached a determination affirming that the 2004 PSEIS continues to provide NEPA compliance for the groundfish FMPs (NMFS 2015).

Current Status/Appropriateness/Effectiveness:
The requirements of NEPA set a legislative framework for the evaluation of adverse effects from human activities. This is enacted through the PSEIS process (and subsequent reviews) for fishery-related effects and through EISs by the relevant organizations for non-fishery related effects, in which NOAA Fisheries, the Council, and ADFG would be consulted, as appropriate. There is clear evidence that appropriate assessments have been carried out and reviewed for fishery-related effects (notably the 2004 PSEIS and 2014 review).

Evidence Basis:
The PSEIS and review documents are publicly available (e.g., NMFS 2015).

References:

NMFS. 2015. Alaska Groundfish Programmatic Supplemental Environmental Impact Statement (PSEIS). https://www.fisheries.noaa.gov/action/alaska-groundfish-programmatic-supplemental-environmental-impact-statement-pseis.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.3 The role of the *stock under consideration* in the food web shall be considered, and if it is a key prey species[15] in the ecosystem, management objectives and measures shall be in place to avoid severe adverse impacts on dependent predators.

FAO Eco (2009) 31.2
FAO Eco (2011) 41.2

Evaluation Parameters

[15] See Appendix 1 page 150 of the Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America (v2.1).

Process: *There is a mechanism in place by which the role of the stock under consideration in the food web is assessed and monitored, and its relative importance as a prey species is determined. If the species is considered by the fisheries management organization to be an important prey species, there shall be specific management objectives relating to minimizing the impacts of the fishery on dependent predators. The FAO Guidelines require that all sources of fishing mortality on the stock under consideration are taken into account (whether or not it is a prey species) in assessing the state of the stock under consideration, including discards, unobserved mortality, incidental mortality, unreported catches, and catches in other fisheries.*

Current Status/Appropriateness/Effectiveness: *Management measures have been developed and are in place to achieve the management objectives described in the process parameter, and there is evidence to demonstrate that they are successful to this end. If the species under assessment is not considered to be a key prey species, then this parameter shall be considered fulfilled.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the role of the stock under consideration in the food web is considered, and if it is a key prey species in the ecosystem, objectives and management measures are in place to avoid severe adverse impacts on dependent predators. Examples may include various stock and ecosystem assessment reports.*

Evaluation (per parameter)

Process:
The role of each stock in the food web is specifically considered in the EBS, AI, and GOA systems. This includes specific monitoring and evaluation of ecosystem interactions, notably through the ecosystem indicators reported to the stock assessment authors and considered at the Plan Team, SSC and Council deliberations. These indicators include physical conditions and prey and predator indicators, such as mesozooplankton, copepod size, capelin populations, apex fish biomass, and Steller sea lions and northern fur seal success.

In addition, ecosystem modelling is relatively well developed, including the Forage Euphausiid Abundance in Space and Time (FEAST) model, which is concentrated on climate/forage fish/zooplankton interactions with specific applications for cod, pollock, and arrowtooth flounder. Food-web modelling using Ecopath/Ecosim has been carried out for EBS, AI, and GOA, providing predominantly guild-level analyses of cumulative and ecosystem level indicators. The CEATTLE model combines predation between cod, pollock, and arrowtooth flounder inter- and intraspecies predation with climatic effects, aiming to develop reference points in relation to prevailing climatic conditions and multi-species ABCs.

The use of ecosystem monitoring and modelling information is specifically required or requested by the Council, notably the use of ecosystem indicators in the SAFE process, multispecies models, and the FEAST spatial model (although these are used more in EBS than in the AI or GOA). This therefore provides a mechanism by which the role of the stocks under consideration in the food web is assessed and monitored, and its relative importance as a prey species is determined and evaluated. While pollock is prey for seabirds and the endangered Steller sea lion, it is not the primary food source. It is noted that through catch reporting and observer monitoring of all fleets, all sources of F on the stocks under consideration are taken into account in assessing the state of the stocks under consideration, including discards, unobserved mortality, incidental mortality, unreported catches, and catches in other fisheries.

Current Status/Appropriateness/Effectiveness:
The development of ecosystem indicators and models and the incorporation of these into stock assessments and Plan Team, SSC, and the Council evaluation process allow for the ongoing development of management measures to achieve the management objectives. These may include precautionary adjustments of TACs and designation of essential habitat for mammalian predators.

Evidence Basis:
The ecosystem indicators and other ecosystem modelling information used in the SAFE assessments, endangered species management plans, and the outcomes of SSC and Council evaluations are all publicly available on the NMFS and Council websites.

References:

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.

NOAA Fisheries. 2012. Resource Ecology and Ecosystem Modeling Program: Forage Euphausiids Abundance in Space and Time (FEAST). https://www.afsc.noaa.gov/Quarterly/amj2012/divrptsREFM3.htm.

NOAA Fisheries. 2022h. https://www.integratedecosystemassessment.noaa.gov/regions/alaska/alaska-eastern-bering-sea-integrated-ecosystem-assessment-modeling.

NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.
Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.
Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**		**Number of EPs NOT met**		**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.4 There shall be outcome indicator(s) consistent with achieving management objectives seeking 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.[16]

FAO Eco (2011) 41.2

Evaluation Parameters

Process: *There is a mechanism in place that allows the establishment of outcome indicator(s) consistent with achieving management objectives seeking 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.[17] Mortality is usually accounted for all removals of given species. The state and federal fish accounting systems operate in depth and make an explicit effort to document all removals to confirm with regulations in force. The assessors shall ensure that all removals are accounted for in the system (fish ticket, eLandings) for stock assessment and management purposes.*

Current Status/Appropriateness/Effectiveness: *There is evidence that outcome indicators and management measures have been developed, are in place, and have succeeded in achieving the objectives described in the process parameter.*

[16] See Appendix 1 page 150 of the Guidance to Performance Evaluation forthe Certification of Wild Capture and Enhanced Fisheries in North America (v2.1).
[17] General harvest guidelines based on Lenfest report: " in fisheries with an intermediate level of information (which will include most well-managed forage fisheries), there must be at least 40% of virgin or unfished biomass (B0) left in the water, and fishing mortality should be no higher than 50% of FMSY. Low information fisheries should leave at least 80% of B0 in the water. High information fisheries (which have a high information not just on the fished stock, but the full ecosystem), may exceed these reference points if justified by the science, but in no case should fishing mortality exceed 75% of FMSY or biomass fall below 30% of B0. Link: http://www.lenfestocean.org/~/media/legacy/lenfest/pdfs/littlefishbigimpact_revised_12june12.pdf?la=en

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that there are effective outcome indicator(s) consistent with achieving management objectives seeking 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. Examples may include various stock and ecosystems assessment reports.*

Evaluation (per parameter)

Process:
At a fundamental level, the SAFE assessment process provides single-species stock assessments for all target groundfish species in the BSAI and GOA. These stock assessments are informed by highly accurate catch and discard data through state and federal online catch reporting, fish tickets, electronic landing, and observer data. The SAFE process provides ABCs and overfishing limits, which in turn are considered by the SSC and the Council in setting TACs for each species.

TAC-setting within the NPFMC demonstrably follows the precautionary principle. This is also informed by the range of ecosystem indicators reported to the plan teams as part of the SAFE process. These indicators include mammalian predators of groundfish (e.g., Northern fur seals, Seller sea lions), which are considered by the stock assessment plan teams, SSC, and the Council in setting TACs. For mammalian predators of groundfish (e.g., pollock), outcome indicators of direct mortality are required by the MMPA and ESA in terms of allowable mortalities.

In addition, ecosystem modelling is relatively well developed, including the Forage Euphausiid Abundance in Space and Time (FEAST) model, which is concentrated on climate/forage fish/zooplankton interactions with specific applications for Pacific cod, pollock, and arrowtooth flounder. Food-web modelling using Ecopath/Ecosim has been carried out for EBS, AI and GOA, providing predominantly guild-level analyses of cumulative and ecosystem level indicators. The CEATTLE model combines predation between Pacific cod, pollock, and arrowtooth flounder inter- and intraspecies predation with climatic effects, aiming to develop reference points in relation to prevailing climatic conditions and multi-species ABCs.

The mechanisms in place through the catch reporting, observer program, and in-season CASs ensure that all removals are accounted. These data are then incorporated into the SAFE process, providing ABCs and overfishing limits, and then into the SSC and the Council review process in setting stock TACs. These processes also include for ecosystem indicators, including mammalian and fish apex predators. The monitoring and management of fisheries in relation to marine mammal predators includes the setting of mortality limits and additional protection measures, such as fishery exclusion from essential habitat. Developments in ecosystem modelling and multi-species modelling progress are part of the fishery management process.

Current Status/Appropriateness/Effectiveness:
There is evidence from ABCs and overfishing limits for groundfish; precautionary TACs, which include ecosystem indicators; and marine mammal mortality, habitat, and trophic management measures that outcome indicators and management measures are in place that have been developed to achieve the objectives described in the process parameter. In terms of maintaining groundfish populations at sustainable levels and implementing measures to protect mammalian predators, these have been demonstrably successful.

Evidence Basis:
SAFE assessments (including ecosystem indicators) for each species are published annually, together with endangered species management plans, marine mammal monitoring, and management measures. Developments in ecosystem modelling are published in the scientific press and are included in the SAFE assessments, where relevant.

References:

Barbeaux, S., J. Ianelli, and W. Palsson. 2021. Chapter 1A: Assessment of the Pollock Stock in the Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIpollock.pdf.

Ferriss, B. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOAecosys.pdf.

Ianelli, J., B. Fissel, S. Stienessen, T. Honkalehto, E. Siddon, and C. Allen-Akselrud. 2021a. Chapter 1: Assessment of the Walleye Pollock Stock in the Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSPollock.pdf.

Ianelli, J.N., S.J. Barbeaux, and D. McKelvey. 2021b. 1.B. Assessment of the walleye pollock in the Bogoslof Island Region. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2021/BOGpollock.pdf.

Monnahan, C.C., M.W. Dorn, A.L. Deary, B.E. Ferriss, B.E. Fissel, T. Honkalehto, D.T. Jones, M. Levine, L. Rogers, S.K. Shotwell, A. Tyrell, and S. Zador. 2021. Chapter 1: Assessment of the Walleye Pollock Stock in the Gulf of Alaska. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/GOApollock.pdf.

NOAA Fisheries. 2012. Resource Ecology and Ecosystem Modeling Program: Forage Euphausiids Abundance in Space and Time (FEAST). https://www.afsc.noaa.gov/Quarterly/amj2012/divrptsREFM3.htm.
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NPFMC. 2007. Aleutian Islands Fishery Ecosystem Plan. https://www.npfmc.org/wp-content/PDFdocuments/conservation_issues/AIFEP/AIFEP12_07.pdf.
NPFMC. 2019c. Bering Sea Fishery Ecosystem Plan. https://meetings.npfmc.org/CommentReview/DownloadFile?p=c334ad33-4139-4b5a-b205-a8b7c5028562.pdf&fileName=D6%20Final%20BS%20FEP%20Jan%202019.pdf.
NPFMC. 2020a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area https://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf.
NPFMC. 2020b. Fishery Management Plan for Groundfish of the Gulf of Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfmp.pdf.
Ortiz, I. and S. Zador (eds.). 2021. Ecosystem Status Report 2021: Aleutian Islands. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/AIecosys.pdf.
Siddon, E. (ed.). 2021. Ecosystem Status Report 2021: Eastern Bering Sea. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.5 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).

FAO CCRF (1995) 8.7.1

Evaluation Parameters

Process: *The appropriate regulations have been implemented.*

Current Status/Appropriateness/Effectiveness: *These regulations and their enforcement are effective and in line with the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the State has introduced and enforces 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). Examples may include various regulations, data, and reports.*

Process:

The United States has enacted the Act to Prevent Pollution from Ships of 1980, implementing the provisions of MARPOL annexes to which the United States is a party. The Act is applicable to all U.S.-flagged ships anywhere in the world and to all foreign-flagged vessels operating in navigable waters of the United States or while at port under U.S. jurisdiction. Regulations are produced by the Environmental Protection Agency in consultation with the U.S. Coast Guard. Relevant laws and accompanying regulations to implement MARPOL 73/78 have been introduced through federal legislation and agencies.

Specifically, all fishing vessels operating in federal waters are required to comply with MARPOL Annex V, which specifically prohibits the at-sea disposal of all plastics. Vessels operating in the North Pacific therefore have three options: 1) non-plastics can be disposed of at sea within the legal restrictions, 2) they can incinerate wastes onboard the vessel, or 3) they can hold the wastes for shoreside disposal at port. Vessels are required to post oil pollution and garbage placards; have a written solid waste management plan that describes procedures for collecting, processing, storing, and discharging garbage; and have a designated person in charge of carrying out the plan. Together with Coast Guard inspections, observers are also tasked with monitoring for compliance with these Code of Federal Regulations.

Current Status/Appropriateness/Effectiveness:
The United States has demonstrably introduced and continues to enforce laws and regulations based on MARPOL 73/78.

Evidence Basis:
Laws and regulations are publicly available to view. The USCG and the Observer Program have each been reviewed elsewhere in the standard, and both are considered to be effective in enforcing regulations.

References:

96th US Congress. 1980. An Act to implement the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973, and for other purposes.
Code of Federal Regulations. 2001. https://www.govinfo.gov/content/pkg/CFR-2001-title33-vol2/xml/CFR-2001-title33-vol2-part151.xml.
Code of Federal Regulations. 2012. https://www.govinfo.gov/content/pkg/CFR-2012-title33-vol2/xml/CFR-2012-title33-vol2-part155.xml.

Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.6 Research shall be promoted on the environmental and social impacts of fishing gear especially on the impact of such gear on biodiversity and coastal fishing communities.

FAO CCRF (1995) 8.4.8, 7.6.4

Evaluation Parameters

Process: *Research is promoted on the environmental and social impacts of fishing gear and its impacts on biodiversity and coastal fishing communities, as applicable to the fishery.*

Current Status/Appropriateness/Effectiveness: *There is evidence for this research, and is it considered appropriate for overall fisheries management purposes.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that research is promoted on the environmental and social impacts of fishing gear especially the impact of such gear on biodiversity and coastal fishing communities. Examples may include various regulations, data, and reports.*

Evaluation (per parameter)

Process:
The Council's overarching policy includes the objective of applying judicious and responsible fisheries management practices, based on sound scientific research and analysis. Also, all management measures are to be based on the best scientific information available.

Key to delivering this scientific evidence base is the work of the AFSC. The AFSC has a five-year strategic research plan based on three goals. The relevant AFSC plan elements include:

1. "Monitor and assess fish, crab, and marine mammal populations, fisheries, and marine ecosystems."
    A. "Conduct high utility and quality assessments which will directly contribute to the most effective assessment tier of fish and crab, and level of excellence for marine mammal stocks, while improving efficiency of fisheries-dependent and independent data collection."
    B. "Conduct applied marine ecosystem and socioeconomic analyses and assessments to support sustainable fisheries management and marine mammal conservation."
    C. "Create next generation fish, crab, and marine mammal stock assessments."
    D. "Reduce bycatch using fishery-dependent bycatch analysis, spatial modeling, data on environmental conditions, and conservation engineering."
2. "Investigate, model, and predict ecosystem and climate impacts on living marine resources."
    A. "Investigate ecosystem-level changes (habitat, food webs, trophic dynamics, distributional shifts, etc.) with field and modeling studies."
    B. "Investigate ecosystem-level changes (habitat, food webs, trophic dynamics, distributional shifts, etc.) with field and modeling studies."
    C. "Identify and implement Arctic research priorities."
3. "Advance new initiatives and innovations."
    A. "Promote data innovation and quality improvement to facilitate science and support data-driven decision making."
    B. "Develop innovative technologies to support our mission with improved performance and cost effectiveness."
    C. "Expand 'omics research capacity."

(NOAA Fisheries 2022i)

The southeastern BS and GOA regional action plan were developed in 2016 and 2018, respectively. Currently, there is no plan for the AI.

It is also noted that research is often promoted and encouraged by academic institutions, furthering the aim of the Council. Research continues into community development associated with fisheries. Industry is also regularly involved in research, such as investigating ways to minimize salmon bycatch in trawl gear, which is in response to Council objectives for prohibited species.

Overall, research is promoted by the Council on the environmental and social impacts of fishing gear and its impacts on biodiversity and coastal fishing communities. This is directly applicable to the groundfish fishery.

Current Status/Appropriateness/Effectiveness:
There is evidence for this research through the research plans of the AFSC but also work carried out by universities and industry that is of relevance to the fishery (such as through the EFH review). The information being collected is considered directly appropriate for overall fisheries management purposes.

Evidence Basis:
The NPFMC objectives, AFSC research plans, and various outputs and work of academic institutions are widely available through respective websites. Research is of high quality and applicability.

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Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

12.7 The fishery management organization shall make use, where appropriate, of Marine Protected Areas (MPAs). The general objectives for establishing MPAs shall include ensuring sustainability of fish stocks and fisheries and protecting marine biodiversity and critical habitats.

FAO FM/MPA (2011) 1.2

Evaluation Parameters

Process: *There is a process available for the consideration of MPAs as appropriate, as a tool for management.*

Current Status/Appropriateness/Effectiveness: *There shall be evidence for the use of MPAs, if appropriate (e.g., if they are employed MPAs as part of suite of management tools), as a tool for effective management with the general objectives of ensuring sustainability of fish stocks and fisheries and protecting marine biodiversity and critical habitats.*

Evidence Basis: *The availability, quality, and/or adequacy of the evidence is sufficient to substantiate that the fishery management organization has made use, where appropriate, of MPAs. The objectives of establishing MPAs are ensuring sustainability of fish*

stocks and fisheries and protecting marine biodiversity and critical habitats. Examples may include various regulations, data, and reports.

Evaluation (per parameter)

Process:
The MSA requires Councils to identify EFHs for all fisheries and to "prevent, mitigate or minimize, to the extent practicable" any adverse effects of fishing on EFH that are "more than minimal and not temporary". Councils are also required to give special attention to HAPCs. Each Council FMP contains provisions for a review of EFH issues every five years. Under the MSA, the Council is required to prepare and submit an FMP to the secretary of Commerce for approval for each fishery under its authority that is considered to require conservation and management. In so doing, the FMPs must be consistent with ten national standards for fishery conservation and management (16 USC § 1851).

The latest EFH review developed a hierarchical impact assessment methodology to operationalize the "more than minimal and not temporary" criterion. This is based on the model of EFH impact and recovery outlined earlier. Stock assessment authors are required to determine whether the population under assessment is above or below its limit reference point. For stocks at this level, mitigation measures would be required if the stock assessment author determines that there is a plausible connection to reductions in EFH. The next question is whether the CEA (defined as the 50% quantile of EFH) is disturbed by fishing. If so, then stock assessment authors must determine whether critical life-history characteristics of the stock are correlated with the proportion of CEA affected. If correlations suggest a plausible stock effect, plan teams and SSC will consider appropriate mitigation measures to recommend to the Council.

HAPCs are designated following a nomination process according to Council priorities. HAPC nominations are generally on a five-year cycle but may be initiated at any time. Previous priorities have been seamounts and undisturbed coral areas; the last process was carried out according to a priority of identifying skate nursery areas. The SAFE reports also include specific indicators of vulnerable habitat (e.g., corals, sponges, sea whips) for which trends are monitored and appropriate mitigation may be implemented as necessary.

The mechanisms developed to identify significant effects on EFH and for identifying HAPC 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.

Current Status/Appropriateness/Effectiveness:
The Council has in place groundfish FMPs in the BSAI and GOA that include the pollock fisheries. Within these FMPs, there is a management and policy objective to reduce and avoid impacts to habitat, specifically regarding marine protected areas:

- Develop a marine protected area policy in coordination with national and state policies.
- Develop goals, objectives, and criteria to evaluate the efficacy and suitable design of marine protected areas and no-take marine reserves as tools to maintain abundance, diversity, and productivity.
- Implement marine protected areas if and where appropriate.

Several HAPCs are identified throughout the EBS, AI, and GOA – Alaska Seamounts, Bowers Ridge, GOA Coral Habitat, GOA Slope Habitat (bottom contact gear prohibited or restricted), and skate nursery areas (monitoring priority areas). Figure 23 shows HAPC and other habitat closures in Alaska waters. All BSAI and GOA certified fisheries must abide by the same area closures, gear limitations, etc., which ensures that cumulative impacts on HAPCs and EFHs are minimal.

Evidence Basis:
MPAs cover 26% of U.S. waters, including many within the Alaska EEZ (https://marineprotectedareas.noaa.gov/). The Council's FMPs outline the consideration and implementation of MPAs. Research is of high quality and applicability.

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Conclusion:

Numerical Scoring:	**Starting score**	**Number of EPs NOT met**			**Overall score**
	10	- (	0	x 3) =	10
Confidence Rating:	Low (score = 1) ☐	Medium (score = 4 or 7) ☐			High (score = 10) ☒
Non-Conformance:	**Critical NC Lacking in three or more parameters Score = 1**	**Major NC Lacking in two parameters Score = 4**	**Minor NC Lacking in one parameter Score = 7**		**Full Conformance Fulfills all parameters Score = 10**
	Critical ☐	Major ☐	Minor ☐		None ☒
Non-Conformance Number (if applicable):					

6 NON-CONFORMANCE AND CORRECTIVE ACTION PLAN

One minor NC was raised on supporting Clause 3.1 during the 4th surveillance of the previous certification cycle of the Alaska pollock fishery. The corrective action plan from the client is as follows:

1	Non-conformance number
	1
2	Fundamental Clause
	Fundamental Clause 3, Supporting Clause 3.1
3	Score
	Minor non-conformance
4	Non-conformance
	By year 5 (2028), clear fishery specific objectives for the Alaska pollock fishery should be explicit at the state level of management for the Prince William Sound state waters fishery. The fishery specific 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. This will ensure legal responsibility and adherence to clear management measures that will protect the long-term sustainability and economic health of the fishery, among other things.
5	Milestone(s)
	The client should work with the Board of Fisheries and Alaska Department of Fish and Game to establish specific management objectives for Alaska pollock and translate those into a plan or other management document. By the first annual audit (2024), the fishery demonstrates that they have a plan to ensure short- and long-term objectives are in place for Alaska pollock in State of Alaska waters (specifically Prince William Sound). By the second annual audit (2025) the fishery will show that the plan is progressing according to schedule. By the third annual audit (2026) the fishery will show that the plan is progressing according to schedule. By the fourth annual audit (2027), the fishery will show that specific management objectives are in place for the Alaska pollock fishery in State waters, and those objectives are translated into a fishery management plan or other management document in accordance with supporting clause 3.1.
6	Summary of action plan

	By the first annual audit (2024), the fishery will demonstrate a plan to ensure specific fishery objectives are in place for Alaska pollock in State of Alaska waters (specifically Prince William Sound). APA will work with stakeholders, including the Alaska Department of Fish and Game, to develop a plan which identifies possible entities to submit a proposal to the Board of Fisheries for inclusion of explicit fishery management objectives. APA will also provide an outline of the proposal (completed) and a timeline for submission to and potential approval by the Board of Fisheries. Until the condition is met, at the time of each annual audit, APA will submit to the Certification Body a progress report specifically describing progress toward satisfying this condition.

Milestone	Action	Roles & Responsibilities	Outputs
First Annual Audit (2024)	Fishery will demonstrate a plan to ensure specific fishery objectives are in place for Alaska pollock in State of Alaska waters (specifically Prince William Sound).	APA will coordinate with AFDF to work with the Board of Fisheries and Alaska Department of Fish and Game to draft a proposal for submission to the BOF for inclusion of explicit fishery management objectives in a fishery management plan or other management document.	An outline of the BOF proposal and a timeline for submission, with a progress report specifically describing tangible progress towards satisfying this condition.
Second Annual Audit (2025)	Fishery will demonstrate that the plan is progressing according to schedule.	BOF proposal will be submitted by APA and AFDF and stakeholders will be engaged to support approval of a fishery management plan for the state waters groundfish fisheries.	A progress report specifically describing tangible progress towards satisfying this condition.
Third Annual Audit (2026)	Fishery will demonstrate that the plan is progressing according to schedule.	BOF proposal will be submitted and approved.	A progress report specifically describing tangible progress towards satisfying this condition.
Fourth Annual Audit (2027)	The fishery will show that specific management objectives are in place for the Alaska pollock fishery in State waters, and those objectives are translated into a fishery management plan or other management document in accordance with supporting clause 3.1.	BOF proposal will be approved and implemented.	An approved and implemented fishery management plan or other management document will be publicly available and presented to the Certification Body.

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APPENDICES

Appendix 1 Stakeholder submissions

No stakeholder comments were received during announced consultation opportunities for the reassessment site visit. Two sets of stakeholder comments were received during the public comment period. These comments and the team's responses can be found below.

Submission from SalmonState

January 19, 2023

Jodi Bostrom
DNV Business Assurance USA, Inc.
1400 Ravello Drive
Katy, Texas 77449
jodi.bostrom@dnv.com

Re: Stakeholder Comments Regarding Re-certification for Alaska Pollock, Applicant Group: At-sea Processers Association, Geographic Location: Gulf of Alaska and Bering Sea and Aleutian Islands

Dear Ms. Bostrom, Mr. Scarcella, and Mr. Knapman,

Please accept the following comments from SalmonState, an Alaska based effort focused on making sure Alaska remains a place where wild salmon and the people who depend on them thrive. We appreciate the opportunity to offer our comments.

SalmonState is deeply concerned with the status of fish populations throughout Western Alaska and management decisions enabling wasteful practices by the Bering Sea and Gulf of Alaska pollock trawl fleet. Maintaining the status quo for the pollock trawl fleet through the current management regime has contributed to and will continue to aggravate the low abundance of other important fish species in Western Alaska and further adverse impacts to local Alaska communities that depend upon those species. As such, an Responsible Fisheries Management ("RFM") certification of sustainability for the Alaska pollock fishery that focuses almost solely on the target species stock status and not the impacts of the fleet on the ecosystem as a whole is a cause for concern at a time with so many other fisheries are restricted or in some cases, completely closed.

TEAM RESPONSE:
The assessment team would like to thank SalmonState for their interest in this fishery and for their comments. Please refer to the responses to the specific comments below.

I. Certification Programs Should not Define Sustainable Seafood by a Management Practice without Considering the Underlying Inequities and Deficiencies of Such Management

Sustainable seafood certifications such as the RFM program are intended to guide seafood consumers in purchasing and consuming seafood sourced from environmentally sustainable and socially responsible fisheries. The purpose of the RFM certification program is "to establish and maintain a program that provides for independent third party certification of Responsible Fisheries Management… with the main objective being the biological sustainability of the 'stock under consideration', *with consideration for conservation, biodiversity and ecosystem integrity; and due regard to social responsibility and the economic viability of the fishery*."[18] Furthermore, the Certified Seafood Collaborative, responsible for the RFM certification program, defines "sustainable seafood" as "fish and shellfish caught for human consumption by fishermen operating under sustainable fishery management systems that *conserve fish stocks and the ecosystems that support them*."[19]

Under these descriptions, Alaskan fisheries are generally considered sustainable, and their management regimes under National Marine Fisheries Service and by the Alaska Department of Fish and Game are held in high esteem. While for many of Alaska's fisheries this is true, it has become clear that the current management system for the Alaska pollock fishery in the Bering Sea and Gulf of Alaska is failing these ocean ecosystems and Alaska's coastal communities. In the case of Alaska pollock, RFM certification can no longer simply rely on management under the current system as sufficient to justify a stamp of approval.

[18] *Emphasis added*, Responsible Fisheries Management Certification Program, Fisheries Standard Version 2.1, September 2020, p. 1. https://rfmcertification.org/wp-content/uploads/2021/06/CSC-RFM-V2.1-StandardFINAL-Sept-2020_Final-1.pdf
[19] *Emphasis added,* https://rfmcertification.org/about-rfm/certifications-and-rating-systems/

TEAM RESPONSE:
As noted in the stakeholder announcement that accompanied the Public Comment Report, "Any recommendations or criticisms should be supported with data or literature citations so that the assessment team can evaluate these comments." Unfortunately, SalmonState has not provided any clear evidence to support their stance. Further, the criticisms appear to be more with the RFM and CSC rather than with the assessment team's Public Comment Report for this fishery. DNV would like to highlight CSC's online comment page (https://rfmcertification.org/stakeholder-involvement/), which may be more appropriate in this instance.

I. Regarding Section D. Serious Impacts of Fishery on the Ecosystem; Number 12 Consideration of fishery interactions and their effects on the ecosystem… Adverse impacts of the fishery shall be appropriately assessed and effectively addressed.

It is well documented that Northern Pacific ecosystems are in crisis.[20] The Bering Sea and Gulf of Alaska are reeling from the impacts of climate change. Rising ocean temperatures are altering the marine ecosystem and changing fish species distribution and productivity, leading to a series of cascading impacts to the marine ecosystem and the people who depend on its resources.[21] Western Alaska Chinook and chum salmon runs have significantly declined in the last few years.[22] King crab and snow crab populations have also plummeted.[23] Sustainability certifications for Alaska pollock should reflect the true environmental cost of the trawl efforts and fishing methods, something the current assessment fails to do.

In their December 2022 meeting, the North Pacific Fishery Management Council received over one hundred comments from stakeholders, fishermen, community members, and the public imploring the Council to take action to reduce bycatch by the pollock trawl fleet. These pleas were met with no action by the Council. This is a far cry from responsive or responsible fisheries management when western Alaska Chinook and chum salmon runs are on the brink of disappearing. This outpouring of written and in-person testimony of the management failures of the pollock trawl fishery included the following:

> "It's not right that all our salmon is being killed via bycatch. When along the Yukon we can't even fish. We take only 1% of salmon. And can't fish yet trawlers are allowed to fish with the gross income of thousands of dollars. Yet we can't even fish to put food on our tables in the rural villages. Some small villages don't even have stores. Also wanted to point out we have less species of fish to harvest. We don't waste like the trawlers, throwing tons of ground salmon in the ocean, while all we want to do is eat our salmon!"[24] - Janet L. Woods Rampart Tribal Member

> "Trawl bycatch directly impacts the health of my business as a small fisherman as well as the subsistence and personal use opportunities for all Alaskans. Alaska salmon, halibut, and crab populations are showing the stress of climate change and industrial fishing pressures. In the past few years, communities along the Yukon and Kuskokwim Rivers have stopped fishing entirely for subsistence harvest. These communities bear the brunt of conservation measures and depend upon fish for income, food, and the foundation of their culture. Alaska subsistence fishers and small boat direct fishers have foregone multiple fishing seasons due to the declining runs of Chinook and chum salmon. Meanwhile, only the trawl fleet has not faced caps or fishing restrictions. Currently, the pollock trawl fishery harvests a significant number of Chinook and chum salmon originating from these same Western Alaska waters where subsistence harvest has been curtailed. In 2020, the Bering Sea Aleutian Island pollock trawl season resulted in 32,294 Chinook salmon and 320,478 chum salmon taken as bycatch. Of those bycaught salmon, 16,796 Chinook originated from Western Alaska waterbodies. This disproportionate burden of conservation measures on Alaska communities and fishers, who are the most dependent upon salmon, halibut, and crab stocks, contradicts the purpose of the Magnuson-Stevens Act." [25]- Thomas Emmerson, Commercial Salmon Troller

> "Alaska's fisheries are being threatened by climate change, habitat loss, and management practices that allow waste and excessive harvest. Conservative management actions are necessary immediately in order to mitigate harm. Climate change is driving unprecedented changes and our current management system is too slow to respond to these dynamic changes, amplifying the negative impacts to our community-based fisheries." [26]- Fernando Divina, Slow Fish

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[25] https://meetings.npfmc.org/Meeting/Details/2964?agendaID=14743
[26] https://meetings.npfmc.org/Meeting/Details/2964?agendaID=14743

These above are a small sample of the high volume of testimony received by the North Pacific Fishery Management Council. This RFM assessment team should consider this testimony, as well as the other factors identified above during its next round of the sustainability certification process for the Alaska pollock trawl fishery.

TEAM RESPONSE:
The assessment report includes discussion of climate change (e.g., clauses 2.6, 3.2.2, 4.8, 5.2, and 5.3 as it relates to fishery management, section 3.9 and clause 12.1 as it relates to fishery impacts). Given that the Council's meeting took place in December 2022, the assessment team concludes that there has not been sufficient time for the Council to enact substantive change. As noted in a final motion (e.g., https://meetings.npfmc.org/CommentReview/DownloadFile?p=3f466f72-7d09-4dda-a442-50d53b5206ec.pdf&fileName=D1%20Council%20Motion%20Salmon%20Bycatch%20FINAL.pdf), the Council will review information and develop recommendations. Therefore, the team concludes that these stakeholder comments may be more relevant at the first surveillance audit once potential actions may have been taken.

II. Regarding Section A. The Fishery Management System; Numbers 1 & 3 Management System and Management Objectives and Section C. Management, Measures, Implementation, Monitoring, and Control; Number 8 Management Measures to Maintain Stocks

Certification for sustainability of the Alaska pollock trawl fleet should closely scrutinize the management measures set by the Council through the lens of Ecosystem-based Fishery Management. This Ecosystem-based Fishery Management of the pollock fishery must be based on a comprehensive look at the fishery impacts to the whole ecosystem, including other fisheries, communities, and habitat. Necessary management measures should include those to reduce bycatch for all species seeing a decline in population. Such ecosystem management should also balance the economic benefits of the pollock fishery with the economic, cultural, and ecological devastation it causes on other sectors, particularly the customary and traditional harvest of salmon by Indigenous residents of Kuskowkim and Yukon Rivers, Currently federal fisheries management in Alaska disproportionately places the burden of conservation measures on those communities and fishermen most dependent upon those species taken as bycatch the trawl fleet. The lack of management measures by the Council to address this contradicts the purpose and directives of the Magnuson-Stevens Fishery Conservation and Management Act and the foundation of an RFM certification for sustainability

For example, in the 2020 Bering Sea Aleutian Islands pollock trawl season, a total of 32,294 Chinook salmon and 320,478 chum salmon were taken as bycatch. Of those salmon caught as bycatch, 16,796 Chinook originated from Western Alaska waterbodies, in a year when runs in the Nushagak River, Kuskokwim River, Yukon River, and Norton Sound were all below average, and almost none of the escapement goals were met.[27] In 2020 and 2021, in those Western Alaska waterbodies, subsistence, and sport fishing were severely limited and commercial fisheries closed .[28] While 16,796 Chinook salmon are only a portion of the Chinook salmon PSC take for the BSAI pollock trawl fishery, that number far outstrips what was harvested by Western Alaska fishermen targeting Chinook. At a time when "Western Alaska Chinook salmon run sizes in 2020 and 2021 were the poorest observed over the past 40 years" the burden of conservation measures due to low abundance is disproportionately applied to these communities and fishermen of Western Alaska while the pollock trawl fleet enjoy full and lucrative seasons while contributing to the devastation of the Chinook population though bycatch.

Western Alaska subsistence fishers, small boat direct fishery participants, and sport fishermen have all foregone several years of fishing upon which their livelihoods and food security depend upon due to declining runs of Chinook and chum salmon to their natal waterbodies. At the same time the pollock trawl fishery continues to harvest a significant number of Chinook and chum salmon originating from these same waters. As such, the CSC and the RFM assessment team should not regard the management measures for the Alaska pollock trawl fishery set by the Council as "high" or adequate in meeting the standards for sustainability set by RFM Fisheries Standard Version 2.1.[29]

TEAM RESPONSE:
It appears that the stakeholder's issues, at least in part, pertain to the RFM Standard and therefore should be directed to CSC. Clause 8.3 directly assesses inclusion of "indigenous people and local fishing communities" in the management process, and the evaluation measures for Clauses 8.5 and 8.5.1 demonstrate relative management mechanisms (e.g., minimum/maximum retention requirements, salmon bycatch mitigation measures, endangered species conservation plans and measures including avoiding critical habitats). The assessment team has determined that sufficient evidence has been provided in the Public Comment Report within these clauses.

[27] https://meetings.npfmc.org/CommentReview/DownloadFile?p=7bb8ba14-30b7-440f-8d79- 57ebf95c5ca9.pdf&fileName=D1a%20ADFG%20W AK%20Chinook%20and%20chum%20stock%20stat us%20update.pdf
[28] *Id.*
[29] https://rfmcertification.org/fisheries-standard/version-2-1/

III. Regarding Section A. The Fishery Management System: Number 7 Precautionary Approach based Management Actions and Measures for Conservation

The precautionary approach for management actions should include evaluation and prevention of adverse impacts to the ecosystem rather than focus on the impacts of harvest limits to the target species. Under current federal management practices, the Council sets harvest limits based on the pollock stock, and bycatch limits are secondary, and in some cases, such as chum salmon, bycatch limits are not set. This has led to continued bycatch of chum and Chinook salmon, and crab by the trawl fleet as Chinook and chum salmon and crab direct target subsistence, sport, and commercial fisheries are closed for several seasons in Western Alaska.

In assessing the management decisions of the Council for the pollock fishery, protection of important fish species experiencing declining populations to a level that closes subsistence and direct target sport and commercial fishing in Western Alaska communities should be closely examined. Under a precautionary approach, protective measures such as area and temporal closures for the pollock fishery are the best management options in front of the Council for recovery of chum and Chinook salmon, as well as crab, halibut, squid, and herring species. However, the Council has failed to seriously consider these management actions when they could lead to a reduction of the pollock harvest.[30]

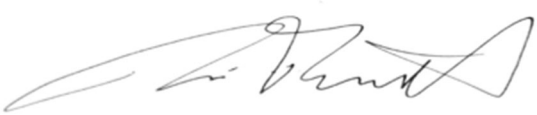
TEAM RESPONSE:
Given that the Council's meeting took place in December 2022, the assessment team concludes that there has not been sufficient time for the Council to enact substantive change. As noted in a final motion (e.g., https://meetings.npfmc.org/CommentReview/DownloadFile?p=3f466f72-7d09-4dda-a442-50d53b5206ec.pdf&fileName=D1%20Council%20Motion%20Salmon%20Bycatch%20FINAL.pdf), the Council will review information and develop recommendations. Therefore, the team concludes that these stakeholder comments may be more relevant at the first surveillance audit once potential actions may have been taken.

IV. Conclusion

The RFM Assessment Team has recommended that the Alaska Pollock trawl fishery be recertified according to RFM Standards v2.1. We do not agree with this recommendation and do not believe that the pollock fishery has or is meeting the principles and standards for RFM certification. The RFM assessment should not take the federal management of the Alaska pollock trawl fishery on face-value when it's clear management through the Council process is failing to adapt to the rapidly changing ecosystem, is creating inequity in access to important fish resources for Alaska Native people and local communities and is exacerbating pressures on populations and habitat of important species such as Chinook and chum salmon, Red King Crab, and halibut. Rather, RFM should consider at least delaying and possibly denying the recertification of Alaska pollock until these issues are adequately addressed.

TEAM RESPONSE:
The assessment team has concluded that the Council is attempting to address salmon bycatch within the pollock fishery (e.g., https://meetings.npfmc.org/CommentReview/DownloadFile?p=3f466f72-7d09-4dda-a442-50d53b5206ec.pdf&fileName=D1%20Council%20Motion%20Salmon%20Bycatch%20FINAL.pdf). However, since the Council's meeting took place in December 2022, the assessment team concludes that there has not been sufficient time for the Council to enact substantive change. As noted in a final motion, the Council will review information and develop recommendations. Therefore, the team concludes that these stakeholder comments may be more relevant at the first surveillance audit once potential actions may have been taken.

Please contact the undersigned at tim@salmonstate.org or loretta@salmonstate.org with any questions. Thank you for the opportunity to comment.
Sincerely,



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[30] *See*, D1 Chum Salmon Bycatch Discussion Paper, November 15, 2022, North Pacific Fishery Management Council and National Marine Fisheries Service, p. 9, https://meetings.npfmc.org/CommentReview/DownloadFile?p=a06bdc4c- 02cd-4fcc-83ac-c775a1f3283d.pdf&fileName=D1b%20Chum%20Salmon%20Bycatch%20Discussion%20Paper.pdf

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Submission from Alaska Marine Conservation Council

January 19, 2023

Re: Responsible Fisheries Management Announcement for Public Comment for Alaska Pollock Fishery

To the Responsible Fisheries Management Certification Body,
The Alaska Marine Conservation Council (AMCC) is dedicated to protecting the long-term health of Alaska's marine ecosystems which sustain vibrant fishery-dependent communities. Our members include fishermen, subsistence harvesters, marine scientists, small business owners, and diverse fishing families. Our ways of life, livelihoods and local economies depend on the sustainable fishing practices that contribute to healthy ecosystems.

In the interest of ensuring the sustainability of all fisheries, and the wellness of the ecosystem within which it operates, we would like to voice concern about current practices within the pollock fishery and propose some improvements for prosecution and assessment of that fishery. **Our comments will focus on the Fisheries Standard D – Serious Impacts of the Fishery on the Ecosystem.**

Over the years many documented statements have claimed that pelagic trawl fishes off the bottom or "mid-water" i.e.:

- **Fishwatch**[31] U.S. Seafood Facts Wild Caught FAQs: Fishing methods vary in scale and operation depending on species and area being fished. For example fishermen tow large trawl nets through the water column to harvest schools of Alaska pollock.
- **At-Sea Processors Association**[32] The Alaska Pollock Fishery *A Case Study of Successful Fisheries Management:* Pollock vessels tow cone-shaped, mid-water trawl nets to harvest the resource. Pollock swim in large schools above the ocean floor. The fishing nets do not drag along the ocean bottom. In fact, federal regulations prohibit "bottom trawling" for pollock.
- **At-Sea Processors Association**[33] *Avoiding Incidental Catch of Non-Pollock Species*: Pollock aggregate in enormous schools and are harvested using "midwater" trawl nets that are not dragged along the ocean floor. As a result, the pollock fishery is a very "clean" fishery, that is, non-pollock species account for about 1% of the catch.
- **Midwater Trawl Cooperative**[34] *Let's Talk Trawling*: Our member vessels pull conical nets either in the middle of the water column (midwater) or closer to the bottom – depending upon the species targeted.
- **NOAA Fisheries**[35] *Fishing Gear Midwater Trawls:* Midwater trawling is a fishing practice that herds and captures the target species by towing a net through the water column.
- **Marine Stewardship Council**[36] *Pelagic Trawl*: Pelagic trawls are generally much larger than bottom trawls. They are designed to target fish in the mid- and surface water. Midwater trawls have no contact with the seabed.

The "performance standard" for PTR gear is a standard used to determine adherence to the gear designation[37]. In this case, the designation of "pelagic" trawl (PTR), which differentiates the fleet from "non-pelagic" trawl (NPT) or bottom trawl, rests upon a performance standard linked to the number of crab (infauna) that end up in the net and hauled aboard. The regulation states that "crabs were chosen for the standard because they inhabit the seabed and, if caught with trawl gear, indicate that the trawl has been in contact with the bottom." The Stock Author refers to this in the 2023 Essential Fish Habitat review:

> Presently the fishery is closely monitored for bottom contact by the mandatory pelagic trawls. If bottom contact were to increase substantially (based on infauna within sets) then this should be evaluated further[38].

When reviewing the gear itself, however, it becomes apparent that **crab catch is not a suitable standard for determining bottom contact**. A document from the North Pacific Fishery Management Council (NPFMC) on Salmon Bycatch Frequently Asked Questions describes the size of the nets (*emphasis added*):

> Pelagic trawls are constructed to achieve large openings with minimum drag, and herd pollock into the back of the net (codend) where they are captured. Pelagic trawls typically have an opening of 160-400' wide by 40-100' high depending on the horsepower of the vessel. *Mesh size of a pelagic trawl can be 100' at the opening*, progressively getting smaller towards the codend, which typically has 4 to 4.5 inch stretched mesh[39].

Local knowledge of pollock behavior is helpful to illuminate how this gear functions in action: while pollock generally live above the seafloor ("at least for a significant period during early life and spawning[8]"), their response is to dive when they sense a threat. Trawl

[31] https://www.fishwatch.gov/sustainable-seafood/faqs
[32] https://static1.squarespace.com/static/5a625f328a02c7a950486d60/t/5aa08aa54192022702834a0c/1520470698279/pollock+fishery+description.pdf
[33] https://www.google.com/url?q=https://www.atsea.org/read-more&sa=D&source=docs&ust=1673567071249009&usg=AOvVaw1qxJxPfNOQCx54KQEJ4zSV
[34] https://www.midwatertrawlers.org/category/issues/
[35] https://www.fisheries.noaa.gov/national/bycatch/fishing-gear-midwater-trawls
[36] https://www.msc.org/what-we-are-doing/our-approach/fishing-methods-and-gear-types/pelagic-trawls
[37] Fisheries of the Exclusive Economic Zone Off Alaska; Prohibition of Nonpelagic Trawl Gear in the Bering Sea and Aleutian Islands Pollock Fishery
[38] Evaluation of Fishing Effects on Essential Fish Habitat January 2023
[39] Salmon Bycatch Frequently Asked Questions

nets are designed to herd pollock toward the codend, with the meshes decreasing in size. It is reasonable to expect that the diving behavior of pollock could incentivize fishermen to bring their nets as close to the seafloor as the gear would allow. For any infauna such as crab - which cannot move quickly to avoid the net or swim away - that manages to pass over the footrope (illustrated below)[40] and might get caught in the opening of the net, it is likely to fall out of the first series of meshes which can be upwards of 100' wide.

C1 RKC Savings Area
December 2022

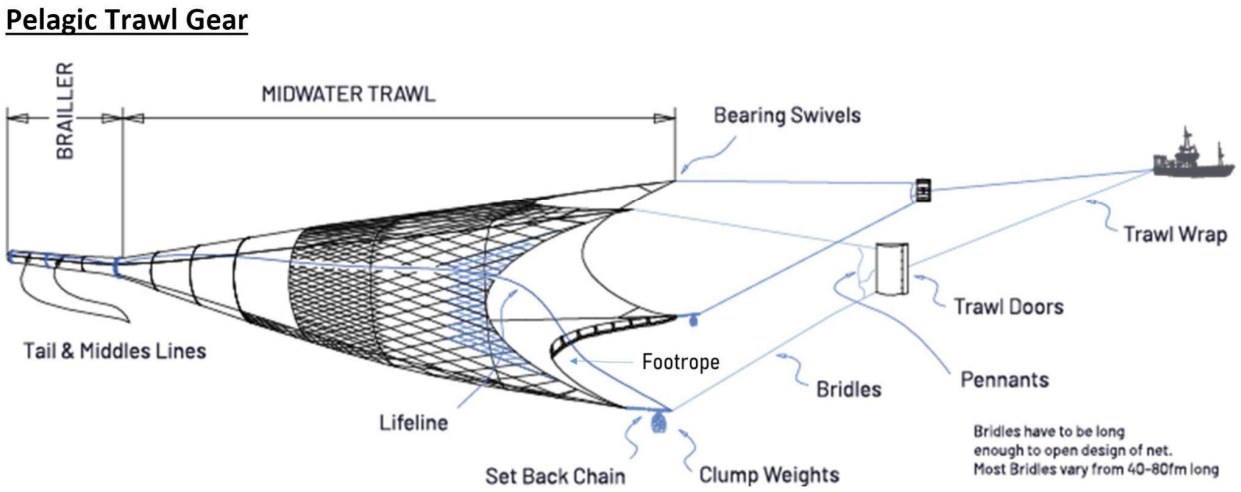

Figure 3. Example of pelagic trawl gear configuration.

The legal definition of PTR gear actively prohibits meshes smaller than 20 inches between knots in the forward part of the net, and 15 inches between knots in the aft part of the net[41]. The Bering Sea Aleutian Island Fishery Management Plan (FMP) for groundfish confirms this by describing the capacity for animals to swim *into* the net: "these nets have a large enough mesh size in the forward sections that few, if any, benthic organisms that actively swim upward would be retained in the net. Thus, benthic animals that were found in other studies to be separated from the bottom and removed by trawls with small-diameter footropes would be returned to the seafloor immediately by the Alaska pelagic trawls[42]." The FMP continues to describe benthic interactions, characterizing the use of small mesh size as a mechanism for reducing impacts to large living organisms that provide habitat (*emphasis added*):

> Sessile organisms that create structural habitat may be uprooted or pass under pelagic trawl footropes, while those that are more mobile or attached to light substrates may pass over the footrope, with less resulting damage. Non-living structures may be more affected by pelagic trawl footropes than by bottom trawl footropes because of the *continuous contact and smaller, more concentrated, surfaces over which weight and towing force are applied*. In contrast, bottom trawls may capture and remove more of the large organisms that provide structural habitat than pelagic trawls because of their smaller mesh sizes. The bottom trawl doors and footropes could add complexity to sedimentary bedforms as mentioned previously, while *pelagic trawls have an almost entirely smoothing effect*.

The next portion of our letter goes into further detail about the potential impacts, including trophic cascade, that may well be occurring due to the disturbance of both living and non-living habitat from PTR gear. Unlike non-pelagic trawl (NPT) or bottom trawl gear, PTR does not have any gear modifications to prevent habitat damage or contact with benthic creatures by the footrope. When looking at the Responsible Fisheries Management (RFM) Reassessment of the Alaska Pollock Fishery section 3.8.2 Habitat figures 18, 19, and 20, only present habitat disturbance for bottom trawl gear. We have attached figures specific to pelagic trawl habitat disturbance that we believe should be included and considered (Figure 1 and 2). In the April 2022 North Pacific Fisheries Management Council's (NPFMC) Bristol Bay Red King Crab Information Discussion Paper[43], on page 20 the authors point out that it is a fact "known to fishery participants and is documented in work reviewed by the SSC: pelagic trawl gear contacts the seafloor." With this statement and data to

[40] Red King Crab Savings Area December 2022
[41] Federal Register
[42] FMP for Groundfish of the BSIA Management Area
[43] BBRKC April 2022

follow, the need to take into consideration pelagic trawl's impacts on the seafloor and benthic creatures becomes clear, knowing they are likely more devastating than NPT gear due to the absence of gear modifications to lessen the impacts.

The estimated bottom contact values from the NPFMC's February 2022 Effects of Fishing on Essential Fish Habitat (EFH) Discussion Paper[44] for the pelagic pollock fleets areas as follows:

Vessel Type	Season	Contact Adjustment (Low)	Contact Adjustment (High)
Bering Sea Pelagic Pollock Trawl			
Catcher Vessels	A	20%	60%
Catcher Vessels	B	20%	60%
Catcher Processors	A	70%	90%
Catcher Processors	B	80%	100%
Gulf of Alaska Pelagic Pollock Trawl			
Catcher Vessels		0%	40%

To further examine the concern with the PTR time in contact with the seafloor, the NPFMC December 2022 Red King Crab Savings Area[45] discussion paper reported a consistent, high rate of pot interception by PTR gear in the Red King Crab Savings Area over the past 10 years. Observer data shows that 9-21% of tows in the CP sector and 0-21% of tows in the CV sector intercepted pot gear, which sits on the seafloor when deployed. This compares to catch rates in NPT gear, which ranged from 2-12% of tows in the CP sector and an annual average of 0% of tows in the CV sector. On average, 1 out of every 11 PTR tows captures at least one pot, a rate that is greater than NPT pot captures rates, implying a consistent pattern of PTR bottom contact and a significant, largely unaddressed, management concern.

Consequences of this contact likely include significant habitat loss and crab mortality that is unaccounted for. Not all crab mortality is observable and therefore reported directly in mortality rates. However, it is known that not all crabs that encounter trawl gear are captured or avoided[46]. Crab can be injured or killed by contact with any section of trawl gear: doors, sweeps, footropes, footrope gear, and net. Aside from contact, they can also be affected by the silt cloud stirred up by trawl gear dragging across the ocean floor. Rose et. al 2012 provided a limited study of unobserved mortality of tanner, snow, and red king crabs from interaction with bottom trawl gear. Recapture nets were used to retain crab that interacted with the gear but did not end up in the primary net. They found that mortality rates of tanner and snow crab ranged from 4%-15%, and red king crab mortality rates ranging from 9% to 32%[47]. It could be estimated that those rates could be higher for pelagic trawl nets considering their lack of contact mitigation gear. Regardless, this demonstrates confidence in a range of numbers that could and should be associated with unobserved mortality. However, the current rate of unobserved mortality accounted for in crab stock assessments is 0[48]. In 2009, NPFMC added a gear modification requirement to non-pelagic trawl in order to raise sweeps off the bottom and reduce negative impacts to benthic animals. This gear modification reduced the mortality rates of crab for the non-pelagic gear fleet and further reduced their benthic habitat impact. No gear modifications were mandated for the pelagic fleet due to the assumption of mid-water fishing due to a flawed performance standard. The pelagic trawl fleet functions without these mitigation measures.

The statistic that only 1% of species caught in the pollock fishery are non-target species is often touted as a successful ratio, and utilized as an indication of low impact. However, this is misleading. When looking at the holistic ecosystem and bycatch stock abundance, the impacts of these "small" volumes are quite large. Salmon escapement goals, which are salmon returns required to

[44] Effects of Fishing on EFH February 2022
[45] Considering a Closure to the Red King Crab Savings Area for all Gear Types December 2022
[46] Crab Bycatch in the Bering Sea/Aleutian Islands Fisheries June 2010
[47] Quantification and reduction of unobserved mortality rates for snow, southern Tanner, and red king crabs (*Chionoecetes opilio, C. bairdi, and Paralithodes camtschaticus*) after encounters with trawls on the seafloor
[48] Bristol Bay Red King Crab Information April 2022

maintain a population's abundance, are not being met for chum and Chinook Salmon in Western Alaska. These species have faced downward trends for more than a decade, with decreasing escapement goals over that time. Holders of local and traditional knowledge have testified repeatedly to the NPFMC, expressing their concerns about bycatch and other factors contributing to the declines. Now, many of those communities have experienced multiple years of complete closure to subsistence fishing, while there remains no cap on chum salmon bycatch for the pollock trawl fleet. This means the indigenous peoples whose ancestors began stewarding these resources some 15,000 years ago and whose identities are inextricable with salmon, are the sole fisheries participants bearing the burden of conservation. As a result, vital cultural practices are not being passed between generations. Testimony to the NPFMC has detailed this inequity; one testifier found her young granddaughter hiding "dry fish" away because she understood elders' concerns about the scarcity of salmon; another community leader described the cultural erasure resulting from inequitable management as ongoing genocide.

At the same time, we are seeing historic crab fisheries in the Bering Sea closed while bycatch is allowed of both snow crab and red king crab, and the PTR fleet can operate in the Red King Crab Savings Area (RKCSA) that is closed to bottom trawling. These areas are shown in Figure 1 and Figure 2. Consequences of those closures affect crab fishermen and crew, their communities, and communities adjacent to that fishery that provide processing services.

As we are currently facing critically low abundance of multiple crab stocks, chum salmon and Chinook Salmon in Alaskan waters, we are overdue to more seriously consider fishing impacts and habitat disturbance for its impacts on the ecosystem as a whole and not solely on individual species populations, as is done with EFH assessments. Disturbance to the core critical crab habitat can affect all the species down to the smallest of feed organisms. For example: greater protection of crab EFH has conservation implications far beyond crab, as benthic organisms (such as sea whips) and sediment (like shell hash) provide both protection and food[49].

While the sustainability of the pollock fishery as a single species fishery has been globally celebrated, the ecosystem around this fishery is in peril. Failing to fully consider the significant bottom contact of PTR means ignoring long-term damage to important habitat features — like slow-growing octocorals, Modiolus beds and various highly productive coarse-grained sediments — that underpin a complex and increasingly fragile ecosystem, and provide irreplaceable resources for resilience and recovery at times of ecosystem stress. Habitat loss and climate change are influencing biodiversity in ways that are difficult to anticipate. Individual species suffering from significant declines are not isolated casualties of the climate, but are instead stress indicators that signal a need for scrutiny and conservation by other harvests within that same ecosystem, including careful consideration of their impact on EFH and other components of that ecosystem matrix. Due diligence in assessing habitat damage is needed to protect food web integrity, recovery resources for collapsed species, the ongoing productivity of other species (i.e. trophic cascade), and perhaps most importantly the integrity of ocean biodiversity inextricably linked to intact, healthy habitat. These are the most critical, baseline tools of resilience in the ocean.

Advancements in technology have been incentivized and applied for decades to increase the efficiency of harvesting fish, and it is questionable whether an appropriate counterbalance of consistent, non-invasive monitoring has been engineered to support habitat integrity and biodiversity: most of the information that informs EFH analysis comes from bottom trawl surveys. We are concerned about the diminished sophistication and understanding of marine habitats, which inevitably results in collapses and that are generally only made visible with the disappearance of commercially valuable species. Status quo approaches to habitat protections and ecosystem interactions are insufficient.

Most focus of sustainability criteria is on not over-harvesting pollock, which our current management system has done well. What is lacking is consideration for habitat and ecosystem impacts that adequately recognizes the shortcomings of NPFMC processes. If pelagic trawl gear was fished off the bottom and incorporated bottom sensors, this would be a great step in recognizing and protecting benthic habitat for the functionality of the entire ecosystem. We recognize the concerns from industry that any change constrains the fleet, and potentially increases costs or decreases revenue. Those impacts are challenging; however, it is widely appreciated that habitat is essential to biodiversity, which supports the greater marine ecosystem. Skillful stewardship is of the utmost importance, especially considering the increasing stressors these ecosystems are experiencing.

To that end, continuous review of current fishing impacts on stock health, and comprehensive ecological analysis to support responsible decision-making, is critical to maintain a viable ocean commons. We appreciate the opportunity to contribute to this dialogue. Thank you for considering our comments.

TEAM RESPONSE:
The assessment team would like to thank Alaska Marine Conservation Council for their interest in this fishery and for their comments. Please refer to the responses to the specific comments below.

[49] North Pacific Fishery Management Council. 2021. Fishery Management Plan for Bering Sea/ Aleutian Islands King and Tanner Crabs. NPFMC, Anchorage, AK.

Respectfully,

Marissa Wilson
Executive Director
Alaska Marine Conservation Council
PO Box 2190
Homer. Alaska 99603

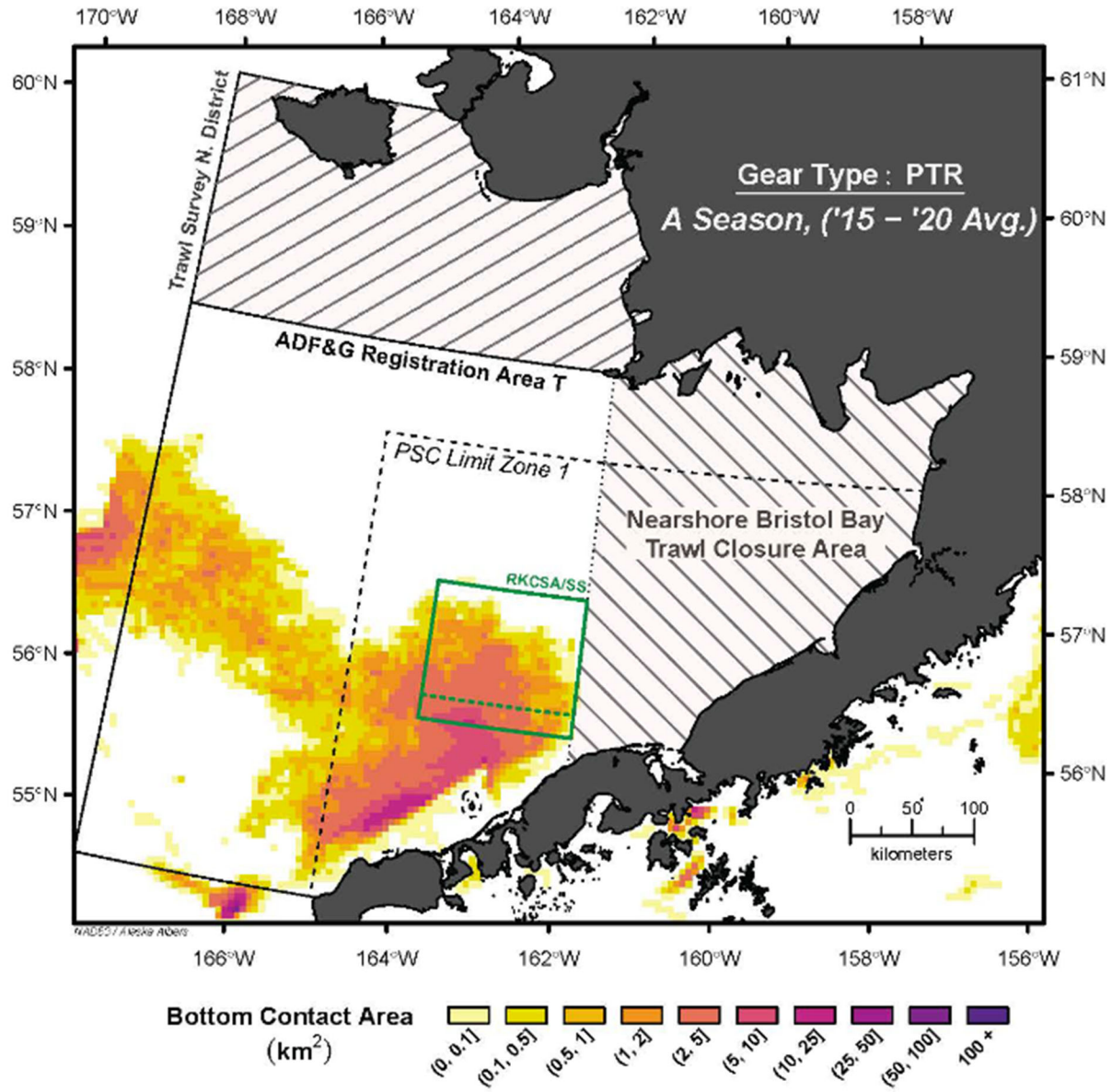

Figure 1 Pelagic trawl average bottom contact area 2015-2020 during A season (Source APU FAST Lab).

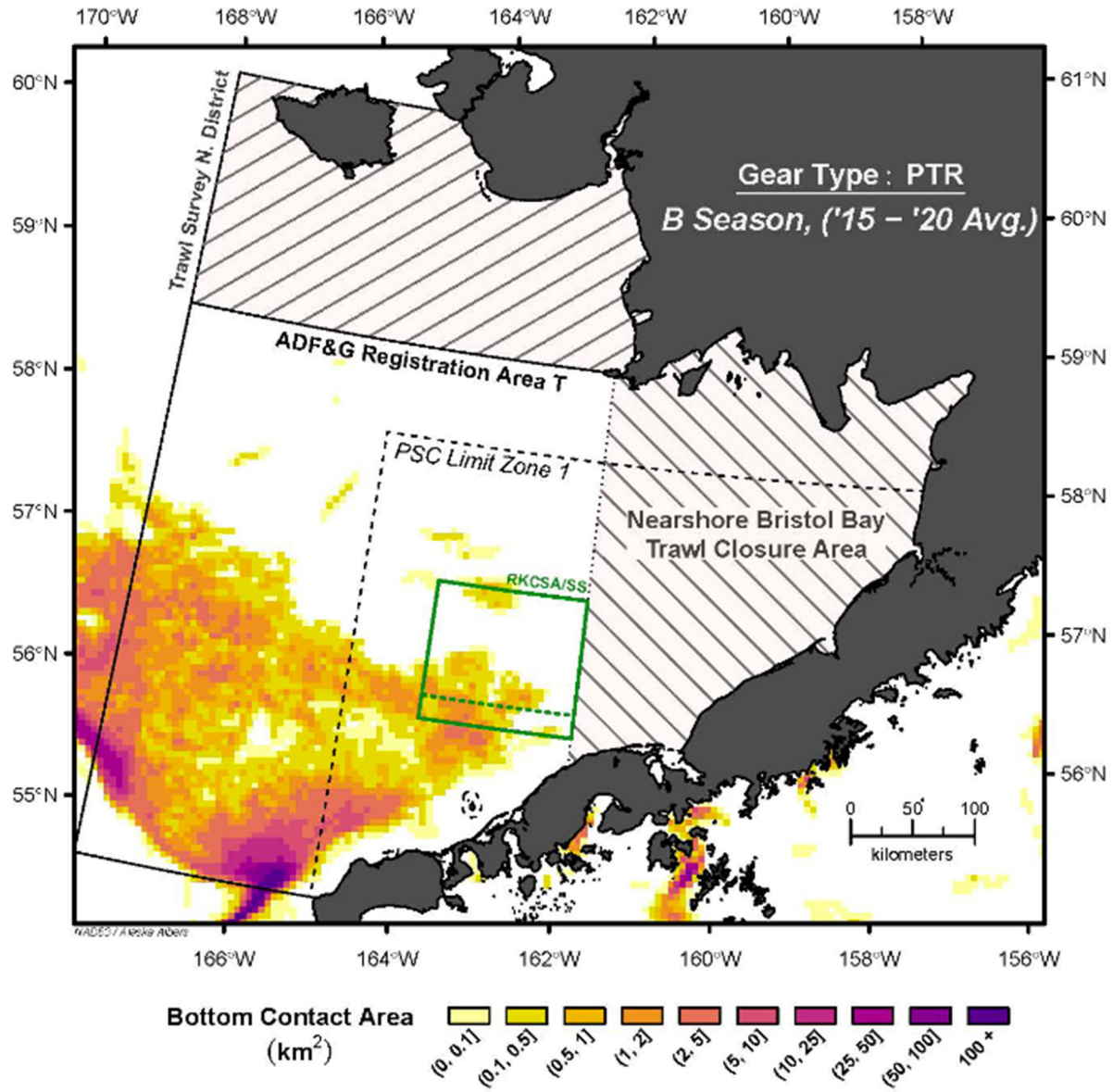

Figure 2 Pelagic trawl average bottom contact area 2015-2020 during B season (Source APU FAST Lab).

RESPONSIBLE FISHERIES MANAGEMENT PUBLIC COMMENT

Project: Alaska Pollock
Reviewer: Alaska Marine Conservation Council
Date: January 19, 2023

General comments:

Comment	CB response

Please see our attached cover letter.	Thank you. Please refer to responses to the specific comments below.

Specific comments

Section/Clause	Comment	CB response
1 Summary	Please see our attached cover letter.	Thank you. Please refer to responses to the specific comments below.
2.5	The economic value of coastal resources is assessed most thoroughly and effectively where economic data is readily and regularly collected, resulting in underrepresentation of resource-dependent communities where such practices are uncommon. Such communities may be considered to be represented by consideration of impacts to Community Development Quota (CDQ) Program participants, but beneficiaries of CDQ programs are a minority of Alaska Native peoples. Within the boundary of the State of Alaska, 229 federally recognized tribes maintain sovereignty. Analysis by "the appropriate fisheries management organization" does consider economic CDQ program impacts as well as assessments of social and cultural value. However, fishery participants often raise concerns that such assessments are rushed, incomplete and/or conducted without sufficient community participation. Of particular concern in Alaska is the trust obligation of the Federal government to engage in meaningful and ongoing consultation with Alaska Native Tribes, which NMFS has historically failed to honor consistently. In lieu of satisfactory tribal consultation, a process which is only one of many components of equitable fisheries management, we encourage RFM to consult and consider incorporating components of the Code of Conduct for Responsible Fisheries and Indigenous Peoples, developed by the United Nations Food and Agriculture Organization and unanimously adopted in 1995. An excerpt: > According to Article 7 of the Code, which deals specifically with fisheries management, the core objective of fisheries management is the conservation of fishery resources and their sustainable use (Arts. 7.1.1 and 7.2.1). These provisions do not emphasize social objectives such as employment creation, poverty alleviation and food security but address them indirectly through Article 7.6.6 which recognizes explicitly the interests of 'local fishing communities' and 'indigenous peoples' by stipulating that "when deciding on the use, conservation and management of fisheries resources, due recognition should be given ... to the traditional practices, needs and interests of indigenous peoples and local fishing communities which are highly dependent on fishery resources for their livelihood". Furthermore, Article 7.2.2 (c) states that "the interests of fishers, including those engaged in subsistence, small-scale and artisanal fisheries [should be] taken into account. The guide continues: > The implementation of the Ecosystem Approach to Fisheries (EAF) may have substantial impact on the	These comments are directed at the RFM Standard. While they may be very laudable suggestions, they are beyond the purview of the assessment team; therefore, DNV encourages the stakeholders to bring these suggestions to the standard setter and engage them in discussion with the evolution and revision of the standard (https://rfmcertification.org/stakeholder-involvement/).

	governance framework for fisheries, in particular in terms of institutional structure and process and would, therefore, also affect indigenous fishing communities. It builds on current fisheries management practices and more explicitly recognizes the interdependence between human well-being and ecosystem well-being. Its social and economic dimension can be extremely supportive for indigenous fishing communities. An EAF is fundamental to the implementation of the FAO Code of Conduct, providing a way to achieve sustainable development in the fisheries context. [...] For example: the Code refers to the need for prior impact assessment and monitoring of gear impact (12.11), the prohibition of destructive practices (8.4.2) and the development of environmentally safe gear.	
3.1.2	Please see our attached cover letter. This fishery is executed primarily by the pelagic trawl fleet which has no bottom contact disturbance reducing gear. The time on the bottom that NPFMC papers have revealed is statistically significant. There have been studies that show trawl gear without bottom contact reducing gear (i.e. cookies, rockhoppers, raised footropes) shows less disturbance to the habitat. https://onlinelibrary.wiley.com/doi/full/10.1111/faf.12431 https://www.fao.org/3/a1466e/a1466e.pdf Considerations of habitat impacted by the unit of certification's fishing gear underrepresents actual impacts by assuming that because the species is considered to be pelagic, it does not have essential habitat. From the 2023 Essential Fish Habitat discussion paper, input provided by the Stock Author (SA): 5.1.16 Walleye pollock ● EFH research recommendations ○ The SA noted: "Being a pelagic species (at least for a significant period during early life and spawning) EFH research requirements seem limited." ● SA chose a qualitative FE assessment using other sources of information: The SA chose the FE model with 50% CEA as the most appropriate approach to assess the effects of fishing on EFH for AI Walleye pollock. The SA chose a qualitative assessment for EBS Walleye pollock. EBS Walleye Pollock Fishing Effects Assessment by Stock Author Presently the fishery is closely monitored for bottom contact by the mandatory pelagic trawls. If bottom contact were to increase substantially (based on infauna within sets) then this should be evaluated further. The "infauna within sets" component is related to the "performance standard" by which the gear is considered to be interacting with the seafloor; for pelagic trawl gear, that is determined by the number of crabs over a certain carapace size that are observed in the catch. Reconciling this performance standard with descriptions of the gear type, which describes meshes at the front of the net so large an airplane could drive through them but angled so as to herd pollock into the net, it is no wonder that crabs are rarely	Clause 3.1.2 pertains to whether or not management objectives are in place that avoid, minimize, or mitigate impacts by the fishery on pollock essential fish habitat and habitats that are highly vulnerable to damage by the gear. The assessment team is of the understanding that the EFH provisions require the NPFMC to conduct comprehensive reviews of fishing effects every five years and that the most recent EFH assessment began in 2020 and is ongoing. Several clauses within Fundamental Clause 3 discuss and summarize the EFH process and show that stock assessment authors are required to take into account habitat impacts and recovery. As part of the last EFH assessment in 2015, it was reported that the groundfish and crab plan teams concurred with the stock assessment authors conclusions that habitat reduction within the 'core EFH areas' was not affecting their stocks in ways that were more than minimal or not temporary (https://meetings.npfmc.org/CommentReview/DownloadFile?p=8547b7bb-396d-4288-8bf0-32eaa5f0ee96.pdf&fileName=C6%20EFH%20Omnibus%20Ams%202017%20Final%20EA.pdf). The rationale within Clause 3.1.3 has been updated to include additional information to address the stakeholder's concerns. Also, new information that is made available through the EFH process or any other processes will be the subject of review at future annual audits for this fishery.

	caught in sets: they fall out, and are likely to be crushed after by the weight of the "cod end" of the trawl. Therefore, while bottom contact is indeed occurring at a rate much greater than previously estimated as discussed in recent NPFMC analyses on declines of crab in the Bering Sea, the description of pelagic gear does not allow for this fleet to be formally engaging in *bottom contact* due to a faulty performance metric.	
3.1.3	The justification for this section breaks down conservative harvest levels that are being set through TACs. The pollock industry is well managed as a single species, not taking into account any external factors. It does not take into account the effect this fleet is having on the ecosystem fully. A season fully overlaps with the molting and mating season of the Bristol Bay Red King Crab. This species is seeing abundance levels that are severely low, as well as Snow Crab in this area. The performance mechanism put in place to keep pelagic trawl off bottom of less than 20 Red King Crab on board is not working. Time on bottom of pelagic trawl not only has unobserved mortality (currently accounted for as 0 in the models), but creates disturbances to the habitat and food web. Slow growing habitat is under-represented in the Fishing Effects model due to models predicting habitat features based on substrate, and slow-growing features are assumed not to occur in more common soft-bottom sediment. This is patently false in the case of the octocoral H. Willemosi, which is estimated to live at least 50 years but estimated to recover in EFH and Fishing Effects modeling in as quickly as 5 years. This is directly counter to "Wherever impacts are identified (and again this is far more precautionary than addressing only effects with serious consequences), there is evidence available to support the use of an immediate management response." Please see section 12.1 https://meetings.npfmc.org/CommentReview/DownloadFile?p=7608c5c6-d20a-4b3e-a23a-7fb0754d3f71.pdf&fileName=D1%20BBRKC%20Information%20Paper.pdf	Clause 3.1.3 pertains to whether or not management objectives are in place to minimize adverse effects of the fishery on structure and function of the ecosystem that are likely to be irreversible or slowly reversible. Thank you for providing the link to NPFMC Discussion paper on Bristol Bay Red King Crab. The discussion paper appears to be in response to concerns about an ongoing decline in the Bristol Bay Red King Crab (BBRKC) stock and is intended to provide the best available information on four topics related to BBRKC: 1. Molting/mating cycles and overlap with fisheries and the potential effect thereof; 2. Boundaries used for BBRKC survey, stock assessment, PSC Limits and the directed fishery; 3. Pelagic trawl gear bottom contact and potential impact on BBRKC stocks; and, 4. Management mechanisms and how they might be used to protect BBRKC. The assessment team believe this provides an example of a management system collating the best available information upon which to inform the management process. The rationale in Clause 3.1.3 confirms that "…[NPFMC] review includes consideration of inputs on effects on habitats, protected species and the wider ecosystem, all of which may affect decision making." The Current Status / Appropriateness / Effectiveness sections highlight that "In some cases, further information may be required, and if so, studies are implemented generally with an accompanying precautionary management measure." The assessment team concludes that this serves to show the management process is following what is expected under the Evaluation Parameters.
3.2.2	Using the economic stability of the pollock sector as a guideline achievement of a responsible fishery is irresponsible. This sets any conservation measure up to fail if it has the potential to impact the profitability of status quo harvest guidelines. Current harvest levels of pollock are increasing while the Eastern Bering Sea ecosystem is not healthy. While the pollock fleet is not solely responsible for this decline in health, their contributions are woefully unaccounted for.	Clause 3.2.2 looks to ensure that economic conditions under which the fishery operates promote responsible fisheries. The merit of using economic stability as a guideline, a measure, or indicator is not within the purview of the assessment team.

3.2.3	Please see section 2.5.	Refer to response to Clause 2.5.
3.2.4	Biodiversity in the ecosystem goes so much further than single species management and endangered species interactions. Mobile gear on the ocean floor interacts with a multitude of critical benthic creatures in a negative way. Many of these creatures are slow growing and take decades to recover, meaning centuries are required for habitat to return to original health. Considering the frequency of tows in certain areas, these slow-growing species which provide for biodiversity are never given the time to recover. https://link.springer.com/article/10.1023/A:1016509506094	Clause 3.2.4 pertains to whether or not the management system has in place objectives and management measures to conserve and protect ETP species and biodiversity. The rationale in Clause 3.1.3 focuses on ETP species and directs the reader to Clauses 3.1.2 and 12.2.6-12.2.8 with respect to biodiversity of ecosystems as this subject is dealt with in more detail there. With respect to ETP species, the management system clearly does have objectives and measure in place to protect ETP species (e.g., acceptable biological catch levels, EFH and HAPC designations). With respect to the broader subject of biodiversity, Clauses 3.1.2 and 12.2.6-12.2.8 highlight HAPC EFH as management measures to conserve and protect biodiversity.
4.6	The fisheries management organization, the NPFMC, is making efforts to incorporate local and traditional knowledge, but the scope of this is limited and mechanisms for it to inform action is unclear. Additionally, it is important for *holders* of traditional knowledge to be represented within the NPFMC in order that such knowledge and values are actually and accurately applied. The NPFMC has heard requests to add designated, voting seats to the Council and its advisory bodies. To date, just one seat on an advisory body has been designated for a Tribal member or representative. According to the latest population census, about one in five respondents in Alaska identifies as Alaska Native. Please see section 2.5.	The clause pertains to the inclusion in fishery management of traditional fisheries knowledge and technologies. It is clear from the evidence cited that the explicit objective in the NPFMC FMP is to increase Alaska Native consultation and continue to increase Alaska Native participation and consultation in fishery management. The assessment team concludes that sufficient evidence has been provided in the Public Comment Report.
5.2	There are many studies that directly relate to the pollock fishery in Alaska. Priority should be given to studies investigating disturbance differences of pelagic gear and non pelagic gear or encorporating studies that are already out there into the best available science of the North Pacific. Unobserved mortality of crab species that interact with the foot rope and never come up to the surface as bycatch needs to be investigated. The consequences of 30+ years of genetic removal of Western Alaska chum and Chinook Salmon from spawning escapements needs to be studied.	The clause pertains to the establishment of research capacity necessary also to assess and monitor the impacts of ecosystem changes resulting from fishing activity, pollution, or habitat alteration. The assessment team concludes that the Integrated Ecosystem Research Program adequately covers these issues. Please refer to previous work on unobserved mortality of crabs (https://www.researchgate.net/publication/268686716_Quantification_and_reduction_of_unobserved_mortality_rates_of_snow_southern_Tanner_and_red_king_crags_Chionoecetes_opilio_C_bairdi_and_Paralithodes_camtschaticus_after_encounters_with_trawls_on_the_se). Additionally, there is ongoing work to look at salmon genetics (https://www.fisheries.noaa.gov/alaska/science-data/genetics-research-alaska-fisheries-science-center).,
6.5	There are significant resource and habitat problems taking place, and although the pollock fleet has made some efforts, a greater overhaul of this gear type needs to take place:	The clause pertains to the identification and protection of depleted stocks. The stakeholders have provided similar

	• Pelagic gear needs to decrease the habitat impact by coming off the seafloor. This could be monitored by bottom sensors. ○ This would decrease negative impacts on slow-growing organisms, preserve biodiversity of the ecosystem, and decrease unobserved mortality of benthic living species. • Bycatch reduction measures have seen some progress, but species like chum and Chinook salmon need to be better protected due to every fish making a difference in not only returns but a culturally vital way of life.	comments against other clauses (e.g., Clauses 3.1.2, 5.2) so the assessment team concludes that responses to these comments are included elsewhere.
7.1	In the absence of scientific information in terms of ecosystem and habitat effects, unobserved mortality, and habitat disturbance, the pollock fleet has grown substantially over the last 30 years. There are major research and management gaps that should have been investigated over the years. Please see 3.2.4, and 5.2.	The clause pertains to the precautionary approach that is to be implemented in the absence of information. The assessment team disagrees about the knowledge gaps of the pollock fishery as evidenced in the rationales of the evaluation. The assessment team concludes that sufficient evidence has been provided in the Public Comment Report.
7.1.2	Please see 3.2.4, 5.2, and 7.1.	Refer to responses to Clauses 3.2.4, 5.2, and 7.1.
8.1	National Standard 1 provides guidelines for achieving optimum yield on a continuing basis for each fishery. Optimum Yield (OY) is not described as a number of fish or pounds of food provided to the nation, but as a diverse set of values providing benefits that are and are not quantifiable, including economic, social and ecological factors, and the integrity of marine ecosystems. The law also notes that OY should be "responsive to changing circumstances in the fishery". NS1 does identify some values that should be weighted and receive serious attention, like local economies and maintaining productive habitat, and also notes that there will be inherent trade offs between them. One of the social factors that requires serious consideration is the "cultural place of subsistence" and "preservation of a way of life for fishermen and their families."	As stated in the Assessment Report under this clause, "National Standard 1 of the MSA requires that conservation and fisheries management measures prevent overfishing while achieving optimal yield on a continuing basis…the NMFS and NPFMC follow a multi-faceted PA (OFL, ABC, TAC, OY) to manage the federal pollock fisheries, based on targets, limits, and pre-defined HCRs, as well as overall ecosystem considerations (e.g., the OY limits). The objectives are spelled out clearly in modern FMPs for BSAI and GOA Regions, and both FMPs contain long-term management objectives for the Alaska pollock fishery. The biomass of pollock stocks has been maintained well above the limit reference points, and thus management measures are effective in avoiding overfishing." The assessment team concludes that sufficient evidence has been provided in the Public Comment Report.
8.5.1	This fleet interacts with two salmon species that are at critical abundance levels in Western Alaska: chum and Chinook Salmon. There is currently no chum salmon bycatch cap. Two crab species are declining to record low abundance levels: Red King Crab and Snow Crab. We know that unobserved mortality is playing a larger role than "0" mortality. This has not been updated. Constant mobile gear tows over fragile long lived benthic organisms is systematically removing biodiversity and critical food and structure that affects all species in this ecosystem.	This clause pertains to measures to minimize unwanted catch and impact on ETP species. The evaluation parameters demonstrate mechanisms intended to achieve this (e.g., minimum/maximum retention requirements, salmon bycatch mitigation measures, endangered species conservation plans and measures including avoiding critical habitats.) Also, the crab unobserved mortality issue is currently being assessed through the Council process and industry research

	Northern fur seals are in direct competition with the pollock fleet and the lack of food availability directly contributes to poor survival rates of first year pups. The pollock fleet is not the sole cause of these struggling species, but they do play a role and we do not have a complete understanding of their impact. Status quo is not working. More research and conservation measures need to be put in place.	efforts. Therefore, the assessment team concludes that sufficient evidence has been provided in the Public Comment Report.
12.1	The population of northern fur seals in the Bering sea has dropped by nearly 70% in the last 40 years. Short et al. 2021 has connected the lack of food availability (direct competition with the pollock fleet for pollock) contributes to the poor survival rates of first year pups. More needs to be done to address this. J. Mar. Sci. Eng. 2021, 9(9), 975; https://doi.org/10.3390/jmse9090975	Northern fur seals are discussed in more detail in other clauses. In Clause 12.4, the assessment team states that outcome "indicators include mammalian predators of groundfish (e.g., Northern fur seals, Seller sea lions), which are considered by the stock assessment plan teams, SSC, and NPFMC in setting TACs. For mammalian predators of groundfish (e.g., pollock), outcome indicators of direct mortality are required by the MMPA and ESA in terms of allowable mortalities." Therefore, direct competition is considered as part of the SAFE process. This information has been added to this clause's rationale.
12.2.7	In the 2022 Fishing Effects model results, 16 species in the Bering Sea came back with EFH having greater than 10% of their core essential areas disturbed by fishing. The majority of this habitat is not only overlapped by the other species as EFH, but also trawled by the pelagic pollock fleet. It's necessary and appropriate to focus on habitat impacts from trawling because trawling accounts for 97.4% of all the fisheries' contact-adjusted footprint (i.e. hook-and-line and pots even after expanded for unobserved fishing, are estimated 2.6% of the footprint). https://meetings.npfmc.org/CommentReview/DownloadFile?p=e2ce3106-4ade-4f5b-ac82-13b668a69a6b.pdf&fileName=D8%20EFH%20Fishing%20Effects%20Evaluation%20Discussion%20Paper.pdf https://meetings.npfmc.org/CommentReview/DownloadFile?p=9b93241e-1ccb-4069-acf9-f3c364d7934d.pdf&fileName=C4%20EFH%20Component%202%20Fishing%20Effects%20Evaluation%20Discussion%20Paper.pdf	Several clauses within Fundamental Clause 3 discuss and summarize the EFH process and show that stock assessment authors are required to take into account habitat impacts and recovery. The rationale within Clause 3.1.3 has been updated to include additional information to address the stakeholder's concerns. Also, given that the new EFH assessment process is ongoing, new information that is made available through that process or any other processes will be the subject of review at future annual audits for this fishery.
12.2.11	The only impacts to the ocean we can control are the human impacts and fishing effects are a large part of those effects.	The assessment team concludes that the rationale speaks to human impacts as required by the RFM requirements.
12.3	Please see section 12.1	Refer to responses to Clause 12.1.
Notes		

Appendix 2 Peer reviewer comments and team responses

Peer Reviewer 1

General comments:

Comment	CB response
In my opinion the assessment team has done a very thorough job of reviewing the Alaska pollock fishery against requirements of the RFM Standard. Below are my comments and suggestions on the assessment report. Notwithstanding this feedback, I do concur with the assessment team's overarching conclusion that the Alaska pollock fishery meets the RFM Standard and should be re-certified.	Thank you. See responses to specific comments below.

Specific comments

Section/Clause	Comment	CB response
1 Summary	Fine	
2 Assessment team and peer reviewer details	The assessment team is highly experienced and appears to be more than adequately qualified to perform re-assessment of Alaska pollock fishery against the RFM standard.	Thank you. No response needed.
3 Background	Overall, the background section is comprehensive, detailed, accurate, and clearly written. In section 3.8.1 it may be helpful to provide the reader with a brief overview of some of the key fishery interactions with non-target species/ETPs (e.g., Stellar sea lion, northern fur seal, Chinook salmon). Likewise, section 3.8.2 could be expanded with a paragraph or two describing the habitats/benthic communities the fishery has potential to interact with (also see my comment on SC 12.2.7).	Sections 3.8.1 and 3.8.2 have been revised to include additional information as requested.
4 Assessment process	Adequately described	Thank you. No response needed.
5 Assessment outcome	Section 5 gives an accurate summary of the scores assigned by the team although there appears to be two errors in Table 18 (SC 3.2 and SC 12.2).	Table has been corrected.
Key Component A: The Fisheries Management System		
1.1	Agree with the score assigned by the assessment team	Thank you. No response needed.
1.2	Agree	Thank you. No response needed.
1.2.1	Agree	Thank you. No response needed.
1.3	The rationale for 'Current Status' EP isn't focused on pollock from the convention area/donut hole as per the Process and Evidence EPs?	Thank you. Additional text has been added to the Current Status EP and an additional reference included.
1.3.1	Agree	Thank you. No response needed.
1.4	Three EPs aggregated into one. Better to treat separately as done for supporting clause 1.5?	Thank you. The EPs have been separated.
1.4.1	Same comment as for 1.4	Thank you. The EPs have been separated.
1.5	Agree	Thank you. No response needed.
1.6	Agree	Thank you. No response needed.
1.6.1	Agree – N/A	Thank you. No response needed.
1.7	Agree	Thank you. No response needed.
1.8	Agree	Thank you. No response needed.
1.9	Agree	Thank you. No response needed.
Key Component B: Science and Stock Assessment Activities and the Precautionary Approach		
2.1	Agree	Thank you. No response needed.

2.1.1	Agree, score is appropriate although this SC is effectively N/A	Thank you. No response needed.
2.1.2	Evidence EP: I fully agree that robust resources and scientific/technical capacity are in place to manage the pollock fishery. But the rationale should identify how those resources/capacities are deployed to represent the fisheries sector in the coastal management process.	Thank you. Additional text has been added to indicate how resources and technical capacity is made available to fishing communities.
2.2	Agree	Thank you. No response needed.
2.3	Agree	Thank you. No response needed.
2.4	Rationale is ok. The three EPs (process, status, evidence) have been combined?	Thank you. The EPs have been separated.
2.5	Evidence EP refers back to SC 2.1.1 but that SC does not discuss the CDQ program?	The text has been amended and no longer refers to SC 2.1.1.
2.6	Agree	Thank you. No response needed.
2.7	Agree	Thank you. No response needed.
3.1	Agree with team's rationale and their finding of a non-conformity for the PWS stock	Thank you. No response needed.
3.1.1	Process EP: short-tailed albatross, not short-toed. Pls check throughout doc.	Thank you. Corrected.
3.1.2	Agree	Thank you. No response needed.
3.1.3	Agree	Thank you. No response needed.
3.2	-	
3.2.1	Agree	Thank you. No response needed.
3.2.2	The Status EP and Evidence EP are combined?	Thank you. The EPs have been separated.
3.2.3	Agree	Thank you. No response needed.
3.2.4	Agree	Thank you. No response needed.
4.1	Agree	Thank you. No response needed.
4.1.1	Agree	Thank you. No response needed.
4.1.2	Agree, SC 4.1.2 should be scored as being in full conformity	Thank you. No response needed.
4.2	Agree	Thank you. No response needed.
4.2.1	Agree	Thank you. No response needed.
4.3	Agree	Thank you. No response needed.
4.4	Agree	Thank you. No response needed.
4.5	Agree	Thank you. No response needed.
4.6	Agree	Thank you. No response needed.
4.7	Agree	Thank you. No response needed.
4.8	Agree	Thank you. No response needed.
4.9	Agree, this SC is N/A	Thank you. No response needed.
4.10	Agree, this SC is N/A	Thank you. No response needed.
4.11	Agree, this SC is N/A	Thank you. No response needed.
5.1	Agree	Thank you. No response needed.
5.1.1	Agree, SC 5.1.1 should be scored as being in full conformity	Thank you. No response needed.
5.1.2	Agree	Thank you. No response needed.
5.2	Agree	Thank you. No response needed.
5.3	Agree	Thank you. No response needed.
5.4	Agree	Thank you. No response needed.
5.5	Status EP: NMFS also has an obligation to protect confidential info (e.g., NOAA Administrative Order 216-100)	Thank you. This was added to the Evidence Basis.
6.1	Agree	Thank you. No response needed.
6.2	Evidence EP: rationale covers the status of EBS, AI, GOA and Bogoslof pollock stocks. Status of the state-managed PWS stock is not discussed.	Thank you for the comment. The state pollock fishery in Prince William Sound (PWS) is managed using a Guideline Harvest Level (GHL) set as a percentage of the GOA federal Allowable Biological Catch (ABC).

		Pollock catches used in the GOA assessment include those taken in the state fishery in PWS. This information has been added to the rationale.
6.3	See comment on SC 6.2	Thank you for the comment. Also, this section was modified as above for SC 6.2.
6.4	Agree	Thank you. No response needed.
6.5	Agree	Thank you. No response needed.
7.1	Agree	Thank you. No response needed.
7.1.1	Agree	Thank you. No response needed.
7.1.2	Doesn't the NPFMC also play a role in identifying/setting research priorities for Alaska pollock?	Thank you for the comment. NPFMC was added in the Evidence Basis.
7.2	Agree, this SC is N/A	Thank you. No response needed.
Key Component C: Management, Measures, Implementation, Monitoring, and Control		
8.1	Agree	Thank you. No response needed.
8.1.1	Agree	Thank you. No response needed.
8.1.2	Agree	Thank you. No response needed.
8.2	Agree	Thank you. No response needed.
8.3	Agree	Thank you. No response needed.
8.4	Agree	Thank you. No response needed.
8.4.1	Agree	Thank you. No response needed.
8.5	Agree. Appreciate the very detailed rationale.	Thank you. No response needed.
8.5.1	Agree	Thank you. No response needed.
8.6	Agree	Thank you. No response needed.
8.7	Agree	Thank you. No response needed.
8.8	Agree	Thank you. No response needed.
8.9	Agree	Thank you. No response needed.
8.10	Agree, this SC is N/A	Thank you. No response needed.
8.11	With respect to international information exchange, it might also be worth noting that much of the research done on pollock in the US is made publicly available. Also, NMFS and ADFG scientists often publish their research results in international journals and make presentations at international conferences.	Thank you. The text has been modified and mention made of NMFS and ADFG staff publishing research in international journals and participating in international conferences.
8.12	Agree	Thank you. No response needed.
8.13	Agree, this SC is N/A	Thank you. No response needed.
9.1	The Status EP and Evidence EP are combined (?)	Thank you. The EPs have been separated.
9.2	Agree	Thank you. No response needed.
9.3	Agree	Thank you. No response needed.
10.1	Agree	Thank you. No response needed.
10.2	Agree	Thank you. No response needed.
10.3	Agree, this SC is N/A for the reasons cited by the assessment team	Thank you. No response needed.
10.3.1	Agree, this SC is N/A	Thank you. No response needed.
10.4	Agree, this SC is N/A	Thank you. No response needed.
10.4.1	Agree, this SC is N/A	Thank you. No response needed.
11.1	Table: Are the observed violation rates for 2019 and 2020 (16% and 14%) correct? They seem a bit high. Combined EPs: see comment on SC 1.4	Thank you. The wrong figures were used in the table, they are in fact 2% and 3%, respectively. This has been corrected. The EP have also been separated.
11.2	Scoring rationale for SC 11.2 does not directly address the question of whether sanctions affect authorization/permission to fish	Thank you. The text has been revised as suggested.
11.3	Agree	Thank you. No response needed.
11.4	Agree, this SC is N/A	Thank you. No response needed.
Key Component D: Serious Impacts of the Fishery on the Ecosystem		
12.1	Agree	Thank you. No response needed.

12.2	Not applicable since SC 12.2 is a non-scoring clause. Note: Table 18 shows that the team assigned it a score of 10.	Table has been corrected.
12.2.1	Looking at RFM guidance to performance evaluation v2.0…are the main/minor thresholds based on % of target species catch by weight? Or are thresholds based on % of total bycatch profile by weight?	The catch data tables have been simplified to show only relevant species and have been revised to make it easier to see which species falls within which category. Also, the tables and text within 12.2.1 have been revised to show that the team assessed based on % of total bycatch.
12.2.2	See question about main/minor for SC 12.2.1	The catch data tables have been simplified to show only relevant species and have been revised to make it easier to see which species falls within which category. Also, the tables and text within 12.2.1 have been revised to show that the team assessed based on % of total bycatch.
12.2.3	Agree	Thank you. No response needed.
12.2.4	Agree. Very thorough rationale	Thank you. No response needed.
12.2.5	Agree	Thank you. No response needed.
12.2.6	Agree	Thank you. No response needed.
12.2.7	Agree with score. But it would be helpful to identify and briefly describe the main habitat(s)/benthic community type(s) the pollock fishery interacts with. Perhaps this could be given as background info in section 3.8.2?	Section 3.8.2 has been updated to include additional information on habitat types. Section 3.8.2 and the inserted figures have been cross referenced in the rationale.
12.2.8	Agree	Thank you. No response needed.
12.2.9	Agree	Thank you. No response needed.
12.2.10	Agree	Thank you. No response needed.
12.2.11	Agree	Thank you. No response needed.
12.3	Process EP: Does monitoring/modelling show that the UOC pollock stocks should be considered key prey species? Also, please check reference in the 3rd paragraph to “these flatfish species”.	The text was corrected to discuss pollock more clearly and to remove mistaken discussion of flatfish.
12.4	Dependent predators: Is pollock considered a key prey species for Stellar sea lion and northern fur seal?	The text was corrected to discuss pollock more clearly and to remove mistaken discussion of flatfish.
12.5	Agree	Thank you. No response needed.
12.6	Agree	Thank you. No response needed.
12.7	Agree	Thank you. No response needed.
13.1	N/A	NA
13.1.1	N/A	NA
13.2	N/A	NA
13.2.1	N/A	NA
13.3	N/A	NA
13.4	N/A	NA
13.5	N/A	NA
13.6	N/A	NA
13.7	N/A	NA
13.7.1	N/A	NA
13.7.2	N/A	NA
13.7.3	N/A	NA
13.8	N/A	NA
13.9	N/A	NA
13.10	N/A	NA
13.11	N/A	NA
13.12	N/A	NA
13.13	N/A	NA

6 Non-conformances and corrective actions	One – a non-conformity against SC 3.1 regarding the repeal of long-term objectives for the PWS stock. The team's description of this NC is adequately supported by objective evidence. The proposed action plan, milestones, and timeframe are reasonable.	Thank you. No response needed.
7 References	Good. Thank you for providing links to all documents	Thank you. No response needed.
Appendix 1 Stakeholder submissions	N/A – no stakeholder comments presented	NA
Appendix 2 Peer reviews	N/A	NA

Peer Reviewer 2

General comments:

Comment	CB response
Overall, the decision to re-certify this fishery against the RFM standard is justified. The team has set out a generally well justified report.	
There are some areas that require attention that are addressed in the specific comments below. I would highlight that the following points require careful consideration: 1. **International management –** I have highlighted the need to add more information about the international dimension of the management regime for several SCs. It is clear that there are agreements in place between the US and Russia and also for the "Donut Hole" but very little evidence is presented to support the assertions that meetings take place annually to address management issues. The only clear evidence of any action is the agreement on a fishing moratorium in the Donut Hole. The report would benefit considerably from the addition of such information (in the form, for instance, of records of meetings between parties to each agreement). 2. **Transparency (SC1.8) –** given the rationale presented for SC3.1, the team really need to consider if the management arrangements and decision-making processes are organised in a transparent manner. It is a matter of fact (reported in SC3.1) that the decision by the BOF to repeal the guiding principles for groundfish management plans was not apparent to the CAB until 9 years AFTER their repeal. The fishery was RFM certified at that time, and during the intervening period it has been subject to annual surveillance audits and a re-assessment. If we can assume that the CAB has been carrying out its audits thoroughly, the only explanation for this must be a major lack of transparency. I feel that this needs to be addressed.	1. **International agreement –** Thank you. Additional text and evidence have been provided in the relevant SCs. 2. **Transparency –** Thank you. Some background information has been provided in relation to SC 1.8 and SC 3.1, which provides some context to how this was overlooked in previous audits and assessments.

Specific comments

Section/Clause	Comment	CB response
1 Summary	No comments.	Thank you. No response needed.
2 Assessment team and peer reviewer details	No comments.	Thank you. No response needed.
3 Background	Good information, a bit hard to "navigate" around the information for each management area (EBS / AI / GOA etc). It would be helpful if there was a fourth hierarchy of headings (i.e., "3.1.2.1 EBS"; "3.1.2.2 GOA" etc).	Thank you for the comment. A 4th level heading has been added in section 3.1 and 3.3.

	Similar comment for figure and table legends (i.e., modify the legend for "Figure 8: Comparison of FMSY and man selected age" and add the words "for **EBS Pollock"**). This will not be necessary for all cases (e.g., Figure 10). Figure 14 (bottom) seems to be an SPR time series, and not what the legend says. §3.9 States that "Recent conditions have been an unusually warm phase…" including Figure 14 as evidence of this. The map in the figure dates from a NOAA publication in 2014. Hardly "recent". The trend has continued and is now more significant (see https://www.fisheries.noaa.gov/feature-story/central-gulf-alaska-marine-heatwave-watch) and this section should be updated. The COVID-19 pandemic has been the biggest challenge for all aspects of fishery management (monitoring, data gathering, stock assessment, management) for a generation. There is no mention of how this has affected management until the rationale for supporting clause 4.2. It would also be appropriate to mention COVID-19 and its impacts in the narrative text as well.	
4 Assessment process	The team has responded appropriately to Covid-19 restrictions by interviewing a wide range of stakeholders remotely.	Thank you. No response needed.
5 Assessment outcome	TBC	NA
Key Component A: The Fisheries Management System		
1.1	It is clear from the rationale that at the Federal and State level the US has an effective legal and administrative framework in place. What is less clear from this rationale is how international actors are engaged in the framework. There is a reference to the Joint Statement on Enhanced Fisheries Cooperation between the US and Russia, but no explanation about the scope or relevance of this agreement to the conservation and management of this fishery. It is noted in section 3.6.5 that there is a "Donut Hole" outside the Alaska EEZ that is managed through an agreement with Russia, Japan & Korea. This must be relevant to stock management and should be mentioned here as well. The current difficulties in international cooperation caused by the Russia- Ukraine war should be considered here. In many other international fisheries, the Russian participants have either reduced or withdrawn cooperation. Is this the case here? It is stated in SC1.2 below that 99% of the EBS pollock stock is caught within the Alaskan EEZ (and by inference, none of the AI or GOA stocks). It would be useful to highlight that fact in this SC as it puts the international dimension into a clear context. If the international dimension of management for this fishery is given the coverage it deserves, a score of 10 would however seem appropriate.	Thank you. Additional text has been provided to explain the international aspect of the management framework.
1.2	The scoring is appropriate.	Thank you. No response needed.
1.2.1	The scoring is appropriate	Thank you. No response needed.

1.3	The scoring is appropriate.	Thank you. No response needed.
1.3.1	The scoring is appropriate.	Thank you. No response needed.
1.4	Further to previous comments, the key agreements for the management of the pollock stock outside the Alaskan EEZ are the US-Soviet agreement of 1988; the more recent Joint Statement on Fisheries Cooperation agreed in 2013; and the international agreement for the Donut Hole. The existence of these agreements is not evidence of "…*ongoing cooperation in stock assessment, data sharing, and other activities*" (EP for Process). I can see no evidence in the scoring rationale of data sharing with Russia and other partners (though it is clear from the rationale in SC1.5 that the US and Russia allow scientists to participate in research aboard one another's vessels). It would appropriate here to document how and to what extent the COVID-19 pandemic affected collaboration; and also, to consider the effect of the Russia-Ukraine war on data sharing (in other fisheries with Russian participation this collaboration has been adversely affected). The score awarded here cannot be justified until these issues are addressed.	Thank you. Additional text has been provided to explain the international cooperation aspect of the management system.
1.4.1	The score awarded would be better justified if the rationale included evidence of the issues discussed at the annual "Donut Hole" meetings, as well as the nature of the consultations with Russia (such as agreed records of meetings). It is reported under SC1.5 that US-Russia meetings take place annually and that would be appropriate to mention here.	Thank you. Additional text has been provided to support the awarded score.
1.5	The scoring is appropriate. It also relevant to SC1.4.	Thank you. No response needed.
1.6	The scoring is well evidenced and appropriate.	Thank you. No response needed.
1.6.1	I agree that this is not relevant.	Thank you. No response needed.
1.7	The rationale provided a detailed and comprehensive summary of how the US and Alaskan fishery management system is kept under review. Given that there is an international dimension to this stock it would be appropriate to describe how the US-Russia and "Donut Hole" agreements are kept under review.	Thank you. Additional text has been provided to support the awarded score.
1.8	The transparency inherent in the US and Alaskan management arrangements is clearly detailed. No information is presented about management arrangements or decision-making processes under the US-Russia or "Donut Hole" agreements. I note with concern that the team has not make the link between the fact that it took 9 years for it to become apparent that the guiding principles in the BOF had been repealed in 2013 (see EP 3.1 and the corresponding non-conformity). The fact that there had been annual surveillance audits in the intervening period and also a re-assessment of the fishery in 2017 suggest that in actual fact the decision-making processes are NOT organised in a transparent manner (if they were, then this change would have been detected much sooner).	Thank you. Additional text with respect to the international aspects of the management system have been added. With respect to the concern about transparency, at the 2017 re-assessment, information was provided by the consultant used by the client that showed that the guiding principles had been developed for BOF groundfish management plans. These fulfilled the expectation of the re-assessment team with regard to this SC. However, the re-assessment team did recommend that the BOF review the guiding principles and more explicitly state them in the PWS Pollock Management Plan. A recommendation is non-binding and so, while this was reviewed at each subsequent audit, no changes were reported.

	In the absence of the information, about decision making at the international level, the score of 10 is not justified. Given the lack of transparency revealed by SC3.1 a lower score would seem appropriate here.	At this re-assessment, the same team member who was on the last re-assessment team, sought further clarification from the client group on the status of the management plans and the potential for their review. It was at this point that it came to light that these guiding principles had been repealed in 2013. The re-assessment team do not consider this was due to a lack of transparency, rather, an oversight in gathering and provision of information at the last re-assessment of the fishery.
1.9	I agree that this is not relevant.	
Key Component B: Science and Stock Assessment Activities and the Precautionary Approach		
2.1	The description of the legal framework shows how it addresses the first two of the three issues identified in this parameter, but not the third ("*the rights and needs of coastal communities*"). The rationale for SC2.5 about the Community Development Quota is relevant here; and so are the FMP objectives listed for SC3.1. Once again, there is no consideration of whether there is an appropriate framework in place at the international level to meet the requirements of this SC. If this information is provided, a score of 10 would seem appropriate.	Thank you. Additional text has been added to better demonstrate the "rights and needs of coastal communities, in the context of integrated use of coastal resources. With respect to the international aspect, the only other coastal state in the Bering Sea is Russia. Given the distance between the more populated regions of each country is vast, the need for a mechanism to allow for cooperation between neighboring countries to improve coastal resource management is not applicable in this instance. The only other coastal state in the Gulf of Alaska is Canada to the south. In this instance, the pollock stock is not considered to be a shared stock. The US 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 (CCG) counterparts have effectively coordinated living marine resource enforcement efforts despite occasional related political and economic tensions. This is set out in 2.1.
2.1.1	The scoring is appropriate.	Thank you. No response needed.
2.1.2	The scoring is appropriate.	Thank you. No response needed.
2.2	The scoring is appropriate.	Thank you. No response needed.
2.3	The scoring is appropriate.	Thank you. No response needed.
2.4	The scoring is appropriate.	Thank you. No response needed.
2.5	The scoring is appropriate.	Thank you. No response needed.
2.6	The scoring is appropriate.	Thank you. No response needed.
2.7	The scoring is appropriate.	Thank you. No response needed.
3.1	The decision to raise a minor NC in respect of the changes to the BOF is appropriate. The fact that it took 9 years for this change to come to light raises serious questions about the transparency of the management system, which I have mentioned in connection with SC1.8.	Thank you. With respect to the concern about transparency, this has been explained in 1.8 above.
3.1.1	The scoring is appropriate.	Thank you. No response needed.
3.1.2	The SC asks that "*There shall be management objectives seeking to avoid, minimise or mitigate impacts….*". What are these objectives, and where are they listed? Similar comments apply with regard to highly vulnerable habitats. What are the outcome indicators for them?	Thank you. Additional text has been added in relation to Habitat Areas of Particular Concern (HAPC).

	To justify a score of 10 there is a need for more detail here that is directly relevant to the SC. The current text does not support the score awarded	
3.1.3	The scoring is appropriate.	Thank you. No response needed.
3.2	No SC, no comment.	Thank you. No response needed.
3.2.1	The scoring is appropriate.	Thank you. No response needed.
3.2.2	The scoring is appropriate.	Thank you. No response needed.
3.2.3	The scoring is appropriate.	Thank you. No response needed.
3.2.4	The scoring is appropriate.	Thank you. No response needed.
4.1	The rationale presents an adequate description of the systems in place for routine monitoring of the fishery. It does not, however, describe how this system was affected by, and responded to, the COVID-19 pandemic. This presumably impacted the collection and analysis of data concerning fishery removals. The score of 10 would be better justified if the rationale was updated to reflect this point.	Thank you for the comment. As far as we discussed during the site visits, COVID 19 did not affect the science and stock assessment activities, and the precautionary approach. A sentence has been added to better clarify this point.
4.1.1	The rationale presents an adequate description of the systems in place for routine monitoring of the fishery. It does not, however, describe how this system was affected by, and responded to, the COVID-19 pandemic. This presumably impacted the collection, analysis and distribution of fishery statistics. The score of 10 would be better justified if the rationale was updated to reflect this point.	Thank you for the comment. As far as we discussed during the site visits, COVID 19 did not affect the science and stock assessment activities, and the precautionary approach. A sentence has been added to better clarify this point.
4.1.2	The scoring is appropriate.	Thank you. No response needed.
4.2	The rationale mentions that "*…during the COVID pandemic in 2020, the Observer Program was conducted without major issues.*". This statement requires additional, ideally quantitative, context. In most fisheries globally, the pandemic has some short-term impacts and these should be documented, along with a clear view on their significance. With the provision of this additional quantitative information, a score of 10 would be better justified.	Thank you for the comment. As far as we discussed during the site visits, COVID 19 did not affect the science and stock assessment activities, and the precautionary approach. A sentence has been added to better clarify this point. A link is available with the quantitative amount of observations.
4.2.1	This SC is very much focussed on observer programs. It is therefore surprising that no mention is made here of the impact of COVID-19 on the observer programs, particularly with respect to quantitative estimates of catches, discards and incidental catches of marine organisms. To justify the score of 10 awarded here it is necessary to document how the observer programs have been impacted by COVID-19, the mitigation that has been put in place, and the extent to which the accuracy of quantitative estimates of the relevant parameters have been affected.	Thank you for the comment. As far as we discussed during the site visits, COVID 19 did not affect the science and stock assessment activities, and the precautionary approach. A sentence has been added to better clarify this point.
4.3	The scoring is appropriate.	Thank you. No response needed.
4.4	The scoring is appropriate.	Thank you. No response needed.
4.5	The scoring is appropriate.	Thank you. No response needed.
4.6	The rationale presented here does not seem to address the issues tested by the SC. It is clear that the bulk of the fishery removals from each stock are taken by modern vessels fishing in areas that traditional fisheries would not have prosecuted; however, it is also evident that there is a locally significant inshore fishery (within 3nmi of the shore) where there are smaller	Thank you for the comment. The team is of the opinion that the rationale fully covers the parameters in 4.6.

	scale operators, to which these traditional fisheries would be relevant. To justify the score of 10 that is awarded, the rationale needs to be revise and better aligned with the issues that are being tested by this SC.	
4.7	The scoring is appropriate.	Thank you. No response needed.
4.8	The scoring is appropriate.	Thank you. No response needed.
4.9	I agree that this is not relevant.	Thank you. No response needed.
4.10	I agree that this is not relevant.	Thank you. No response needed.
4.11	I agree that this is not relevant.	Thank you. No response needed.
5.1	The scoring is appropriate.	Thank you. No response needed.
5.1.1	I agree that this is not relevant.	Thank you. No response needed.
5.1.2	The scoring is appropriate.	Thank you. No response needed.
5.2	The scoring is appropriate.	Thank you. No response needed.
5.3	The scoring is appropriate for the "Donut Hole" but does not mention cooperation (detailed for other SCs) between the US and Russia. This should also be mentioned here.	Thank you for the comment. The rationale has been modified.
5.4	I agree that this is not relevant.	Thank you. No response needed.
5.5	Although the scoring is appropriate, it would be bolstered by including some specific examples rather than the rather vague statement that publications from research into the fishery have been "…*documented in some previous sections*…". It would be nice to reward the exertions of at least some of the many researchers with a name-check here.	Thank you for the comment. The team is of the opinion that there is no need to repeat the publications here.
6.1	The scoring is appropriate.	Thank you. No response needed.
6.2	It is reported that EBS, GOA and AI pollock are in "Tier 3" of the NPFMC system; that the EBS stock are in Tier 1; and that Bogoslof pollock are in "Tier 5". The rationale provides a detailed consideration of Tier 3 stocks and how their reference points are determined and used. This is good. The rationale is silent about how reference points are determined for Tier 1 or Tier 5 stocks. This omission needs to be rectified to justify the score awarded.	Thank you for the comment. The team presented the definition of Tier 1 and 5 in the rationale.
6.3	The rationale is incorrect. It states that "*The GOA, EBS and AI stocks are well above the MSST limit reference point for biomass, and above the B35% (MSY proxy) reference point.".* The EBS pollock stock is currently perceived to be below B_{MSY} (see Figure 11 & Table 10). It is certainly the case that F for all of the stocks is below F_{MSY}, so the requirements of the SC are met, but this error needs to be corrected.	Thank you for the comment. The team modified the rationale accordingly.
6.4	The rationale has the same problems as for SC6.2. The management actions for Tier 3 stocks are explained in detail; but there is no information for the Tier 5 Bogoslof stock nor the Tier 1 EBS stock. To justify scoring a "perfect 10" this omission needs to be addressed.	Thank you for the comment. The team presented the definition of Tier 1 and 5 in the rationale.
6.5	In the light of previous comments, can the team please identify the measures that would be introduced for a depleted stock in each of Tiers 1, 3, & 5.	Thank you for the comment. The team presented the definition of Tier 1 and 5 in the rationale.
7.1	The scoring is appropriate.	Thank you. No response needed.
7.1.1	The scoring rationale provides information on the first parts of the SC but omits the need to demonstrate how	Thank you for the comment. This part is covered on Section D.

	the implementation of the PA takes into account of "*…inter alia…the impact of fishing activities (including discards) on non-target and associated or dependent predators, and environmental and socioeconomic conditions.*" The only information about any of these aspects of the SC in the rationale is the news that "*Extensive research….is presented annually*." This is neither a qualitative nor quantitative demonstration of how the PA applies to them. To justify scoring a "10" for this SC, these omissions need to be addressed.	
7.1.2	The scoring is appropriate. The bibliographic entries in the References section are incomplete.	Thank you for the comment. Links for references are provided.
7.2	I agree that this is not relevant.	Thank you. No response needed.
Key Component C: Management, Measures, Implementation, Monitoring, and Control		
8.1	The scoring is appropriate.	Thank you. No response needed.
8.1.1	The scoring is appropriate.	Thank you. No response needed.
8.1.2	The scoring is appropriate.	Thank you. No response needed.
8.2	The scoring is appropriate.	Thank you. No response needed.
8.3	The scoring is appropriate.	Thank you. No response needed.
8.4	The scoring is appropriate.	Thank you. No response needed.
8.4.1	The scoring is appropriate.	Thank you. No response needed.
8.5	The scoring is appropriate.	Thank you. No response needed.
8.5.1	The scoring is appropriate.	Thank you. No response needed.
8.6	The scoring is appropriate.	Thank you. No response needed.
8.7	The scoring is appropriate.	Thank you. No response needed.
8.8	The scoring is appropriate.	Thank you. No response needed.
8.9	The scoring is appropriate.	Thank you. No response needed.
8.10	I agree that this is not relevant.	Thank you. No response needed.
8.11	It is not clear to what extent the cooperation between international parties meets the requirements of this SC with respect to research "*..involving fishing gear selectivity*…" etc. No evidence is presented of meetings, nor of the dissemination of results or the transfer of technology. Further evidence is needed to justify the score awarded.	Thank you. This SC has been re-written and more appropriately responds to the requirements of the SC and EPs.
8.12	The scoring is appropriate.	Thank you. No response needed.
8.13	I agree that this is not relevant.	Thank you. No response needed.
9.1	The scoring is appropriate.	Thank you. No response needed.
9.2	The scoring is appropriate.	Thank you. No response needed.
9.3	The scoring is appropriate.	Thank you. No response needed.
10.1	There is clearly a well-founded mechanism in place for MCS in this fishery. A significant omission here, as for the observer programme earlier, is an explicit consideration of the extent to which the COVID-19 pandemic affected MCS operations. In many fisheries globally there was a period of time when routine fishery inspections at sea and ashore were not possible, and alternative approaches had to be implemented. Some detail about this would be appropriate here to justify the score awarded.	Additional text has been added to cover the impacts of COVID-19.
10.2	The scoring is appropriate.	Thank you. No response needed.
10.3	The scoring is appropriate.	Thank you. No response needed.
10.3.1	I agree that this is not relevant.	Thank you. No response needed.

10.4	I agree that this is not relevant.	Thank you. No response needed.
10.4.1	I agree that this is not relevant.	Thank you. No response needed.
11.1	The scoring is appropriate.	Thank you. No response needed.
11.2	The scoring is appropriate.	Thank you. No response needed.
11.3	The scoring is appropriate.	Thank you. No response needed.
11.4	I agree that this is not relevant.	Thank you. No response needed.
Key Component D: Serious Impacts of the Fishery on the Ecosystem		
12.1	The scoring is appropriate.	Thank you. No response needed.
12.2	Noted that this is not a scoring clause.	This mistake has been corrected and labelled as "NA" in the scoring table.
12.2.1	Although the scoring is appropriate, the rationale is not particularly clear. It would be helpful to begin the rationale with a clear statement of whether there are any "main" associated species (*sensu* Appendix 1 Part 3 of RFM v2.1) before describing the objectives for protecting them.	The catch data tables have been simplified to show only relevant species and have been revised to make it easier to see which species falls within which category. Also, the tables and text within 12.2.1 have been revised to show that the team assessed based on % of total bycatch.
12.2.2	As for 12.2.1 the rationale is not very clear. It would be helpful to start with a list of the "minor" associated species (if any) before the descriptive text.	The catch data tables have been simplified to show only relevant species and have been revised to make it easier to see which species falls within which category. Also, the tables and text within 12.2.2 have been revised to show that the team assessed based on % of total bycatch.
12.2.3	It would seem to be appropriate to include a Table or summary of the statistics to show the actual catches, ABC and OFL for non-target species to justify the score fully.	Given that the bycatch from this fishery is minimal, the assessment team has determined that this level of detail is unnecessary.
12.2.4	The scoring is appropriate. It is good to see some information presented her that quantifies key interactions between the fishery and marine wildlife.	Thank you. No response needed.
12.2.5	The scoring is appropriate.	Thank you. No response needed.
12.2.6	The scoring is appropriate.	Thank you. No response needed.
12.2.7	This SC requires that "*There shall be knowledge of the essential habitats for the stock under consideration and potential fishery impacts on them….*". This information is missing. The only information presented here is about the next part of the SC (i.e., how impacts are managed). I would have begun here by listing the essential habitats for pollock and the potential impacts that have been identified by the management system. To justify a score of 10, this rationale needs to be updated to demonstrate that there is both knowledge of EFH for Pacific cod and the impacts of the fishery on them.	Section 3.8.2 and the rationale have been updated to include additional information on habitat types. Section 3.8.2 and the inserted figures have been cross referenced in the rationale.
12.2.8	Again, the rationale is heavy on process and light on key facts. The SC asks that "*There shall be outcome indicators….*". What are they? It appears from the text that if the stock assessor identifies that the reason that a stock is at or below a reference point, and if this is a result of impacts on EFH, then mitigation measures are considered and recommended to NPFMC. This process is not the same thing as having indicators in place for "*.avoiding, minimising or mitigating the impacts...*" as required by this SC. It is, if you will excuse the metaphor, a process for having a debate about	Text has been added to Section 3.8.2 and to this rationale to address these concerns and provide more detail.

	whether it would have been a good idea to close the stable door as the horse is vanishing over the horizon. This process will always be too little, too late. Similar comments apply with regard to HAPCs. What are the outcome indicators for these areas, and how are they consistent with the management objectives for these habitats? To justify a score of 10 there is a need for more detail here that is directly relevant to the SC. The current text does not support the score awarded.	
12.2.9	The scoring is appropriate.	Thank you. No response needed.
12.2.10	The scoring is appropriate.	Thank you. No response needed.
12.2.11	The scoring is appropriate.	Thank you. No response needed.
12.3	The scoring is appropriate.	Thank you. No response needed.
12.4	The scoring is appropriate.	Thank you. No response needed.
12.5	The scoring is appropriate.	Thank you. No response needed.
12.6	The scoring is appropriate.	Thank you. No response needed.
12.7	The rationale here is cursory and fails to mention initiatives that are documented elsewhere in the report and that show how fishery management organisations are using MPAs: for instance, HAPCs, EFH (see SC12.2.8) and the various closures documented in the map at SC12.2.6. As such, the rationale neither addresses the SC adequately nor makes use of the available information. Additional justification is needed to support the score of 10.	As suggested, supporting text from other areas has been inserted into the rationale.
13.1	NA	NA
13.1.1	NA	NA
13.2	NA	NA
13.2.1	NA	NA
13.3	NA	NA
13.4	NA	NA
13.5	NA	NA
13.6	NA	NA
13.7	NA	NA
13.7.1	NA	NA
13.7.2	NA	NA
13.7.3	NA	NA
13.8	NA	NA
13.9	NA	NA
13.10	NA	NA
13.11	NA	NA
13.12	NA	NA
13.13	NA	NA
6 Non-conformances and corrective actions	The proposed milestones for the non-conformance on SC3.1 are appropriate.	Thank you. No response needed.
7 References	There is a comprehensive bibliography.	Thank you. No response needed.
Appendix 1 Stakeholder submissions	Not applicable – there were no stakeholder comments.	NA
Appendix 2 Peer reviews	NA.	NA

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