Responsible Fishery Management (RFM)

US Alaska Salmon Commercial Fisheries

Third Surveillance Report

Certification Body (CB):	**Global Trust Certification**
Assessment team:	Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor
Fishery client:	Alaska Fisheries Development Foundation
Assessment Type:	Surveillance 3 of 2nd Re-assessment
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Global Trust Certification
Quayside Business Park,
Mill Street, Dundalk,
Co. Louth, Ireland.
T: + 353 42 932 0912
E: ClientServicesie@nsf.org

Foreword

The Responsible Fisheries Management (RFM) Certification program is a third-party sustainable seafood certification program for wild capture fisheries owned by the Certified Seafood Collaborative (CSC), a 501(c)(3) non-profit foundation led by a diverse board of seafood and sustainability industry experts.

The program was previously owned by the Alaska Seafood Marketing Institute (ASMI) when it was known as the Alaska RFM program but when ownership passed to the CSC in July 2020 scope of the program was expanded to include other North American fisheries outside the State of Alaska.

The Responsible Fisheries Management (RFM) Standard is composed of Conformance Criteria based on the 1995 FAO Code of Conduct for Responsible Fisheries and the FAO Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries adopted in 2005 and amended/extended in 2009. The Standard also includes full reference to the 2011 FAO Guidelines for the Eco-labelling of Fish and Fishery Products from Inland Fisheries which in turn are now supported by a suite of guidelines and support documents published by the UN FAO. Further information on the RFM program may be found at: https://rfmcertification.org/.

1. Contents

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2. Glossary

Acronym	Full name
ABC	Allowable Biological Catch
AC	Advisory Committee
ACC	Alaska Administrative Code
ADFG	Alaska Department of Fish and Game
AFA	American Fisheries Act
AFDF	Alaska Fisheries Development Foundation
AFSC	Alaska Fisheries Science Center
AS	Alaska Statue
ASMI	Alaska Seafood Marketing Institute
AWT	Alaska Wildlife Troopers
AYK	Arctic Yukon Kuskokwim
BC	British Columbia
BEG	Biological Escapement Goal
BOF	Board of Fisheries
BSAI	Bering Sea and Aleutian Islands
CCRF	Code of Conduct for Responsible Fisheries
CIAA	Cook Inlet Aquaculture Association
CMA	Chignik Management Area
CDQ	Community Development Quota
CFEC	Commercial Fisheries Entry Commission
COAR	Commercial Operators Annual Report
CPUE	Catch per Unit Effort
CWCS	Comprehensive Wildlife Conservation Strategy
CWT	Coded Wire Tags
DEC	Department of Environmental Conservation
DIPAC	Douglas Island Pink and Chum Inc.
DNR	Department of Natural Resources
EIS	Environmental Impact Statement
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FAO	Food and Agriculture Organization of United Nations
FDA	Food and Drug Administration
FMP	Fishery Management Plan
FSB	Federal Subsistence Board
GOA	Gulf of Alaska
GHL	Guideline Harvest Level
HAPC	Habitat Area of Particular Concern
HCD	Habitat Conservation Division
IFQ	Individual Fishing Quota

Acronym	Full name
IJC	International Joint Commission
IMS	Institute of Marine Sciences
IRFA	Initial Regulatory Flexibility Analysis
IRIU	Improved Retention/Improved Utilization
IUCN	International Union of Conservation of Nature
IUU	Illegal Unreported and Unregulated
KSMSC	Kodiak Seafood and Marine Science Center
MMPA	Marine Mammal Protection Act
MOU	Memorandum of Understanding
MSFCMA	Magnuson-Stevens Fisheries Management and Conservation Act
MRA	Maximum retainable allowances
MT	Metric tons
MSY	Maximum Sustainable Yield
Ne	Effective Population
NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NIH	US National Institutes of Health
nm	Nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
NPRB	North Pacific Research Board
NSRAA	Northern Southeast Aquaculture Association
OEG	Optimal Escapement Goal
OFL	Overfishing Level
OLE	Office for Law Enforcement
OY	Optimum Yield
PAR	Permit Alteration Request
PNP	Private Non-Profit
PSMFC	Pacific States Marine Fisheries Commission
PSC	Pacific Salmon Commission
PSC	Prohibited Species Catch
PWS	Prince William Sound
PWSAC	Prince William Sound Aquaculture Center
PWSSC	Prince William Sound Science Center
RAC	Regional Advisory Council
RACE	Resource Assessment and Conservation Engineering
REFM	Resource Ecology and Fisheries Management
RFM	Responsible Fisheries Management
SAFE	Stock Assessment and Fishery Evaluation (Report)
SEAK	Southeast Alaska

Acronym	Full name
SEG	Sustainable Escapement Goal
SET	Sustained Escapement Threshold
SOC	Stocks of Concern
SSC	Scientific and Statistical Committee
SSL	Steller Sea Lion
SSSC	Sitka Sound Science Center
TAC	Total Allowable Catch
UCI	Upper Cook Inlet
USCG	U.S. Coast Guard
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife
VFDA	Valdez Fisheries Development Association
YRP	Yukon River Panel

3. Executive Summary

3.1. Brief Intro and description of surveillance process

This Surveillance report documents the 3rd Surveillance report from the 2nd reassessment cycle for the US Alaska Salmon commercial fishery originally certified on 11th March 2011, and recertified on 9th March 2017 and 8th March 2020 and presents the recommendation of the Assessment Team for continued RFM Certification.

Unit of Certification

The certification covers the United States Alaska commercial salmon fisheries [all Pacific salmon species: Chinook *Oncorhynchus tschawytscha*, sockeye *O. nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta*]. Fisheries employ troll, purse seine, drift gillnet, beach seine, set gillnet, dip net, and fish wheel (Upper Yukon River only) gear in the four administrative regions of Alaska that are principally managed by the Alaska Department of Fish and Game (ADFG). While certification covers the entire Alaska Exclusive Economic Zone (EEZ), most of the harvest is taken in the internal waters (0-3 nautical miles, and other enclosed waters) of the state of Alaska.

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

The assessment was conducted according to the Global Trust procedures for RFM Certification using the fundamental clauses of the RFM Conformance Criteria Version (v 2.1, September 2020) in accordance with ISO 17065 accredited certification procedures.

The assessment is based on 4 major components of responsible management derived from the FAO Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labelling of products from marine capture fisheries (2009); including:

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

The surveillance process also included substantive meetings with representatives from some of the key fishery management agencies charged with management of the US Alaska Salmon commercial fisheries. Assessment team meetings included: different divisions of Alaska Department of Fish & Game (ADFG), and Kodiak Regional Aquaculture Association. The assessment team also met with the Alaska Fisheries Development Foundation (AFDF) – fishery client and certificate holder. All meetings were held remotely via video conferencing.

As described more fully in the following report sections, the assessment team did note some minor changes to the fishery management system. However, none of these changes were seen to undermine continued compliance of the fishery management system for US Alaska Salmon commercial fisheries with requirements of the RFM standard. Progress in addressing non-conformities, as judged against defined milestones in client action plans, was judged to be adequate and on target.

A summary of the site meetings is presented in Section 6. Assessors included two externally contracted fishery experts and Global Trust Certification internal staff.

3.2. Summary of Main Findings

The Audit Team has determined that the US Alaska Salmon commercial fishery operated within the defined Alaskan UoA remained in compliance with the RFM Fishery Standard's Fundamental Clauses for the Fisheries Management System component (Clauses 1, 2, and 3), Stock Assessment Activities and the Precautionary approach (Clauses 4, 5, 6,7), Management Measures, Implementation, Monitoring, and Control (Clauses 8, 9,10,11), and Ecosystem Impact (Clauses 12 and 13). No evidence exists to indicate that nonconformance situations arose during the 3rd Surveillance audit.

3.3. Recommendation with respect to continuing Certification

The assessment team recommends the continued certification of the applicant fisheries, the United States Alaska commercial salmon [Chinook *Oncorhynchus tschawytscha*, sockeye *O. nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta*] fisheries employing troll, purse seine, drift gillnet, set gillnet, fish wheel, dip net and beach seine gears in the four administrative Regions of Alaska that are principally managed by the Alaska Department of Fish and Game (ADFG).

3.4. Assessment Team Details

The Assessment Team for this assessment was as follows; further details are provided in Appendix 1):

- Dr. Ivan Mateo – Lead Assessor, Responsible for Fundamental Clauses 9 and 11.
- Mr. Scott Marshall – Assessor 1, Responsible for Fundamental Clauses 4, 5, 6, 8, 10.
- Mr. Ray Beamesderfer – Assessor 2, Responsible for Fundamental Clauses 1, 2, 3, 7, 12, 13.

3.5. Details of Applicable RFM Documents

This assessment was conducted according to the relevant program documents outlined in Table 1 below.

Table 1. Relevant RFM program documents including applicable versions.

Document title	Version number, Issue Date	Usage
RFM Procedure 2: Application to Certification Procedures for the RFM Fishery Standard.	Version 6, September 2020	Process
Responsible Fisheries Management Certification Program Fisheries Standard.	Version 2.1, September 2020	Standard
Responsible Fisheries Management Certification Program Guidance to Performance Evaluation for the Certification of Wild Capture and Enhanced Fisheries in North America.	Version 2.1, January 2021	Guidance to Standard

4. Client contact details

Table 2. Client details and key contact information.

Applicant Information		
Organization/Company Name:		Alaska Fisheries Development Foundation
Address:	Street:	PO Box 2205
	City:	Juneau
	State:	Alaska
	Country:	USA
	Zip code	99802
Applicant Key Contact Information		
Name:		Kristy Clement
Position:		Chief Executive Officer
E-mail:		kclement@afdf.org

5. Units of Certification

5.1. Units of Certification

The Units of Certification (i.e., what is covered by the certificate) are as described in Table 3.

Table 3. Units of Certification (UoC).

Units of Certification			
Species:	Common name: Latin name:	1	King/Chinook *Oncorhynchus tschawytscha*
	Common name: Latin name:	2	Sockeye/Red *Oncorhynchus nerka*
	Common name: Latin name:	3	Coho/Silver *Oncorhynchus kisutch*
	Common name: Latin name:	4	Pink/Humpback *Oncorhynchus gorbuscha*
	Common name: Latin name:	5	Keta/Chum *Oncorhynchus keta*
Geographical areas:		All	State and Federal waters of the U.S. state of Alaska in FAO major fishing area 67
Stocks:		1	ADFG Admin Region 1: Southeast & Yakutat
		2	ADFG Admin Region 2: Central
		3	ADFG Admin Region 3: Arctic-Yukon-Kuskokwim
		4	ADFG Admin Region 4: Kodiak, Chignik, Alaska Peninsula, Aleutian Islands
Management system:		All	Alaska Department of Fish and Game (ADFG)
Fishing gears/methods:		1	Troll
		2	Purse Seine
		3	Beach Seine
		4	Drift Gillnet
		5	Set Gillnet
		6	Dipnet
		7	Fish Wheel
Client Group			Alaska Fisheries Development Foundation

5.2. Changes to the Units of Certification

There have been not changes to the Units of Certification.

6. Summary of site visits and/or consultation meetings

Desktop reviews are the preferred assessment vehicle within the RFM program. In general, on-site/off-site audits are required only if the Certification Body deems that a desktop review may be inadequate for determining whether the fishery is continuing to comply with the RFM Fishery Standard, based on the performance of the fishery, status of non-conformances and related corrective actions.

Table 4. Summary of site visits and/or consultation meetings.

Meeting Date and Location	Personnel	Areas of discussion
Date: 03/18/2024 Location: Conference call via MS Teams	**Client AFDF** Kristy Clement Hannah Wilson Ann Robertson **Assessment Team Members** Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	Topics discussed: ▪ Purpose of surveillance audit. ▪ Updates on performance of the fishery
Date: 03/19/2024 Location: Conference call via MS Teams	**Client AFDF** Kristy Clement Hannah Wilson Ann Robertson **ADFG** Forrest Bowers Bill Templin Andrew Munro Sara Gilk Ed Jones **KRAA** Tina Fairbanks **Assessment Team Members** Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	Topics discussed: ▪ Progress on Southeast Alaska (SEAK) and Prince William Sound (PWS) Pedigree Fitness Studies and Final Pink and Chum Salmon Assessment Papers ▪ Stock Status Chinook Salmon: research and Downturn
Date: 03/20/2024 Location: Conference call via MS Teams	**Client AFDF** Kristy Clement Hannah Wilson Ann Robertson **KRAA**	Topics discussed: ▪ Update on KRAA Progress on Marking and Sampling.

Meeting Date and Location	Personnel	Areas of discussion
	Tina Fairbanks **Assessment Team Members** Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	
Date: 03/20/2024 Location: Conference call via MS Teams	**Client AFDF** Kristy Clement Hannah Wilson Ann Robertson **Assessment Team Members** Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	Topics discussed: ▪ Progress on the NCs. ▪ Discussion Surveillance Findings

7. Summary findings

Surveillance audits are summary audits intended to evaluate continued compliance with the RFM Fishery Standard. Each aspect of the fishery they are intended to focus on is addressed below.

7.1. Update on topics that trigger immediate failure

The following fisheries management issues cause a fishery to immediately fail RFM assessment:

- Dynamiting, poisoning, and other comparable destructive fishing practices.
- Significant illegal, unreported, and unregulated (IUU) fishing activities in the country jurisdiction.
- Shark finning.
- Slavery and slave labor on board fishing vessels.
- Any significant lack of compliance with the requirements of an international fisheries agreement to which the U.S. 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 US has been notified of that citation of non-compliance.

The Assessment Team has, as part of this surveillance, carried out a review of any new evidence with respect to these issues and found no evidence that any of the above issues are occurring/describe any issues identified and the consequences for the fishery.

7.2. Changes in the management regime and processes

There have been no changes in the management regime and processes that affect the outcome of certification or that have potential to change the effect of the fishery on resources.

7.3. Changes to the organizational responsibility of the main management agencies

Responsibility for management of federal waters in Upper Cook Inlet is being assumed by the North Pacific Fishery Management Council. Authority for salmon management in federal waters outside 3 miles from shore, has long been delegated to the State of Alaska and its Board of Fisheries. The United Cook Inlet Drift Association (UCIDA) filed a lawsuit in 2013 against the National Marine Fisheries Service (NMFS) and the Secretary of Commerce, challenging approval of previous decisions by the North Pacific Fishery Management Council to remove federal waters in Cook Inlet from the scope of the federal salmon fishery management plan. After prolonged litigation in the U.S. District and Appeals Courts, the NMFS has now proposed amendments to its fishery management plan for salmon management in federal waters of Upper Cook Inlet. The plan is expected to be implemented in 2024.

There have been no other significant changes to the organizational responsibility in the Alaska Department of Fish and Game.

7.4. New information on the status of stocks

Pink salmon runs in 2022 throughout the state were above average and escapement goals were met or exceeded in most areas. Sockeye salmon runs have been exceptionally strong in Bristol Bay and fairly stable in most other areas of the state. Chinook salmon runs have continued to exhibit low productivity throughout the state. Chum salmon returns in Western Alaska remain very low and have resulted in complete closures of commercial fishing. Coho salmon stocks have been relatively stable statewide. Additional detail is provided in the following sections on catches and escapements.

7.5. Update on fishery catches

Statewide the runs in 2016, 2018, 2020, 2022 were much less than in the odd-numbered years of 2013, 2015, 2017, 2021 and 2023 (2023 data is preliminary). The differences between run sizes of the even and odd year runs are attributable to variation in returns of Pink Salmon along the Gulf of Alaska coast Figure 1.

The 2023 statewide harvest of 163 million fish (Table 5) weighed 747 million pounds (Table 6) was composed primarily of Sockeye salmon (378 million pounds) and Pink salmon (244 million pounds). Most the Sockeye salmon was landed in the Bristol Bay UoC, while most of the Pink salmon was landed in the Prince William Sound, Southeast and Kodiak UoCs. Low runs of Chinook and Chum salmon precluded fishing in the Kuskokwim and Yukon.

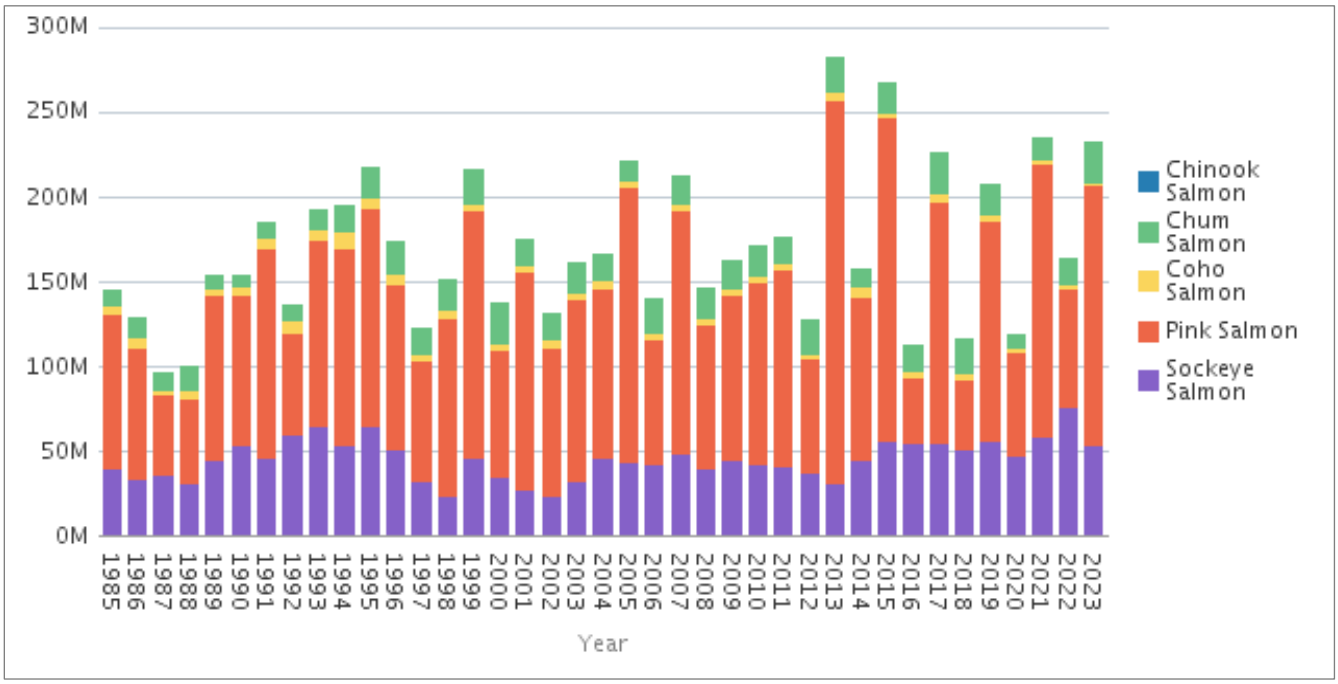

Figure 1. Alaska commercial salmon catch, 1985 - 2023[1].

[1] https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmon_landings

Table 5. Estimated number of salmon landed in Alaska's 2022 commercial fishery by UoC and species.

Unit of Certification	Species					UoC Total
	Chinook	Chum	Coho	Pink	Sockeye	
Alaska Peninsula/Aleutian Islands	14,302	825,702	53,685	5,815,493	7,965,965	**14,675,147**
Bristol Bay	7,733	303,418	18,035	115,214	60,514,206	**60,958,606**
Chignik	3,595	70,852	40,081	1,042,556	334,554	**1,491,638**
Copper/Bering	12,292	14,093	52,731	66,777	606,226	**752,119**
Kodiak	8,451	550,407	88,158	15,464,608	2,365,103	**18,476,727**
Kotzebue	0	475,504			0	**475,504**
Lower Cook Inlet	258	53,781	1,601	402,897	289,345	**747,882**
Norton Sound	0	31,249	13,464	84,261	1,233	**130,207**
Prince William Sound	1,235	3,092,827	50,929	28,371,423	1,088,345	**32,604,759**
Southeast	247,035	10,439,019	1,408,524	18,251,032	1,141,945	**31,487,555**
Upper Cook Inlet	2,106	99,142	100,529	100,404	1,121,121	**1,423,302**
Yakutat	12,086	789	80,111	22,852	47,931	**163,769**
Species Total	**309,093**	**15,956,783**	**1,907,848**	**69,737,517**	**75,475,974**	**163,387,215**

Table 6. Landed weight of the 2022 Alaska commercial salmon harvest by UoC and species (pounds).

Unit of Certification	Species					UoC Total
	Chinook	Chum	Coho	Pink	Sockeye	
Alaska Peninsula/Aleutian Islands	99,798	4,755,589	330,206	19,704,341	40,289,664	**65,179,597**
Bristol Bay	69,661	1,678,871	109,213	397,229	302,971,215	**305,226,189**
Chignik	19,861	423,384	234,559	3,732,043	1,656,593	**6,066,440**
Copper/Bering	175,881	89,290	390,268	233,666	3,206,624	**4,095,728**
Kodiak	48,381	3,632,136	603,362	50,034,723	10,639,180	**64,957,782**
Kotzebue	0	3,621,931			0	**3,621,931**
Lower Cook Inlet	2,759	391,217	9,449	1,413,938	1,267,441	**3,084,804**
Norton Sound	0	190,823	76,129	286,802	6,961	**560,715**
Prince William Sound	12,131	20,320,769	369,369	99,669,467	5,401,340	**125,773,076**
Southeast	2,836,634	74,349,588	8,105,152	68,067,821	6,586,334	**159,945,530**
Upper Cook Inlet	25,039	655,413	558,112	366,849	5,998,462	**7,603,875**
Yakutat	128,606	5,286	537,022	91,375	241,615	**1,003,904**
Species Total	**3,418,751**	**110,114,297**	**11,322,841**	**243,998,253**	**378,265,429**	**747,119,571**

Spawning Escapements

In 2022, 67% of the stocks assessed had escapements that met or exceeded their escapement goals (Munro, 2023). The percentage of all stocks assessed in 2022 that were within the goal range (or above the lower bound if a lower-bound SEG) was 47%, which is within the observed range for recent years (40–50%). In 2022, 20% of the goals were exceeded, which was a decrease from 30% in 2021. In recent years the percentage of escapement goals that were exceeded ranged from 18% to 41%. The percentage of goals for which minimum escapement was not achieved in 2022 was 33%; an increase from 30% in 2021 and above the recent average of 25% for the years 2014–2021.

The 2022 escapements in Southeast and Yakutat for Sockeye, Coho, and Pink salmon were generally met or exceeded. Chinook escapements to largest three rivers (Chilkat, Taku, and Stikine) remained below goals despite extensive fishery closures. Chum salmon escapements were generally met except for the fall run into the Excursion Inlet, and the summer runs along the northern outside coast.

For 2022 escapements in the Central Region for Chinook salmon were mixed. Notably for Chinook salmon, the Nushagak Kenai and some tributaries of the Susitna continued to not meet goals, while other runs, like the Copper River did meet its goal. Sockeye salmon goals were either met or exceeded throughout Central Region except for a few systems in Lower Cook Inlet and Prince William Sound areas. Pink salmon goals were generally exceeded in Prince William Sound. In Lower Cook Inlet, Pink salmon escapements were mixed with half the stocks meeting or exceeding goals and half not meeting goals. Chum salmon escapements were also mixed throughout Central Region. There were only four Coho salmon systems surveyed in 2002, and three of the four were below goal.

In the AYK Region, virtually all Chinook salmon systems continued to have escapements below targets despite continued fishery closures. The same was true for Chum salmon, except that in Norton Sound Chum salmon escapement goals were generally met. Pink and Sockeye salmon goals were generally met. There were only four Coho salmon surveys in 2022 and 3 of the stocks were below goal.

In the Westward Region for 2022, three of the four Chinook salmon stocks were below goals. All the Sockeye and Pink salmon goals were either met or exceeded. All but one Chum salmon goal was met or exceeded. For Coho salmon, three of the five stocks met or exceeded their goal.

Since 2012, just less than half the Chinook stocks have met their goals (Table 7). For the all the other species, the goals have been met about two thirds of the time.

Table 7. Percentage of stocks (by area and species) that met or exceeded their escapement goals 2012 -2022.

Area	Chinook	Chum	Coho	Pink	Sockeye
Alaska Peninsula	55%	58%	74%	46%	64%
Bristol Bay	55%	70%	75%	100%	81%
Chignik	45%	64%		55%	64%
Cook Inlet	43%	58%	60%	64%	66%
Kodiak	32%	46%	56%	68%	74%
Kotzebue Sound		100%			
Kuskokwim		64%	80%		80%
Kuskokwim (Total run)	54%				
Norton Sound	25%	68%	50%	82%	82%
Prince William Sound	55%	62%	77%	73%	68%
Southeast & Yakutat	38%	61%	71%	64%	59%
Yukon	54%	66%	45%		
Unweighted Average	**45%**	**65%**	**66%**	**69%**	**71%**

Stocks of Concern

Alaska's sustainable salmon fishery policy (5 AAC 39.222) requires ADFG to report to the BOF any salmon stock that has chronically failed to meet its escapement goal. The policy defines three levels of concern (yield,

management, and conservation) with yield being the lowest level of concern and conservation the highest level of concern. Chronic inability is defined as "the continuing or anticipated inability to meet expected yields over a 4 to 5-year period." This designation allows the BOF and ADF&G to develop specific management measures to prevent fishing activity from allowing rebuilding to sustainable levels. The action plans contain goals, measurable and implementable objectives, and provisions for fishery management actions needed to achieve rebuilding. Also included are performance measures appropriate for monitoring and gauging the effectiveness of the action plan, and as deemed appropriate, a research plan. There are 20 stocks of concern (Table 8). Eighteen stocks have been identified as a management concern and 2 have been identified as a yield concern.

Implementing a management framework designed to increase escapements, to the extent possible, is a key element of the stocks of concern process. The following are examples of BOF plans to guide ADF&G in-season management under observed levels of abundance:

- Lynn Canal and Chilkat River King Salmon Fishery Management Plan 5 AAC 33.384 (ADFG 2019a)
- McDonald Lake Sockeye Salmon (Gray *et al.* 2019)
- Yukon River Chinook Management Plan 5 AAC 05.360 **(**ADFG 2019 b)
- Chinook and Sockeye Salmon Stocks in Upper Cook Inlet (ABF 2011)

Table 8. Alaska's current stocks of concern[2].

Region	Stock	Species	Listing Date	Level of Concern
Southeast	Chilkat River	Chinook	Jan - 2018	Management
	King Salmon River	Chinook	Jan - 2018	Management
	Unuk River	Chinook	Jan - 2018	Management
	Stikine River	Chinook	Mar - 2022	Management
	Andrew Creek	Chinook	Mar - 2022	Management
	Chickamin River	Chinook	Mar - 2022	Management
	Taku River	Chinook	Mar - 2022	Management
	McDonald Lake	Sockeye	Jan - 2018	Management
	Klukshu River	Sockeye	Mar - 2022	Management
Central	McNeil River	Chum	Dec - 2016	Management
	Chuitna River	Chinook	Feb - 2011	Management
	Theodore River	Chinook	Feb - 2011	Management
	Alexander River	Chinook	Feb - 2011	Management
	Nushagak	Chinook	2022	Management
	East Susitna River	Chinook	Feb - 2020	Management
AYK	Yukon	Chinook	Sept - 2020	Yield
	Norton Sound Sub Dist. 5 & 6	Chinook	Jan - 2004	Yield
Westward	Karluk	Chinook	Jan - 2011	Management
	Ayakulik	Chinook	Jan - 2020	Management
	Chignik River - early run	Sockeye	Mar - 2022	Management

7.6. Significant changes in the ecosystem effects of the fishery

We found no evidence to suggest that significant changes have occurred with respect to the fishery's effects on the ecosystem, associated species, or the environment. Fishery managers in Alaska work closely with researchers and managers from within and outside Alaska to closely monitor how the environment, harvest, and enhancement

[2] http://www.adfg.alaska.gov/index.cfm?adfg=specialstatus.akfishstocks

affect the diversity, abundance, and distribution of salmon in Alaska. Regulations on harvest timing, location, and methods are established, enforced, and modified when needed to protect sensitive stocks and ensure sustained yield of salmon, as mandated by Alaska's constitution and state laws. International treaties and associated federal regulations further limit fishery impact on threatened salmon populations and protect dependent predators from severe impacts to their prey base. Where adverse impacts have been identified, research is conducted to resolve uncertainty and management actions are taken to alleviate severity. In cases where significant information gaps have been identified, such as exists for fishery interactions with seabirds, new and expanded research efforts are developed. Salmon fishery enhancement activities, achieved primarily through hatchery propagation, are strictly regulated by state managers to minimize impacts to the environment and naturally spawning salmon populations. Ongoing and improved marking of hatchery-produced salmon in Alaska facilitates accounting of hatchery and wild components in harvest and on spawning grounds. Ongoing genetic monitoring and research contributes to stock identification in harvest and improves understanding of enhancement activities on wild population productivity.

7.7. Violations and enforcement information

No significant changes have been made with respect to Alaska's approach to establishing and enforcing regulations for its commercial salmon fishery. State managers (ADFG) set and publish regulations each year, and these regulations are enforced by ADFG and Alaska Wildlife Troopers (AWT).

On February 23,.2024 the assessment team contacted Alaska Division of Wildlife Troopers for information on law enforcement in Alaska's commercial salmon fishery. Captain Derek DeGraaf reported that for commercial fishing activity with the date range of June 1, 2023, through August 1, 2023 the Alaska Wildlife Troopers made 3,110 contacts with commercial fishery participants, 150 warnings were given during these contacts, and 210 persons charged with offenses. The majority of these offenses consisted of fishing in closed waters, and fishing in closed seasons.

7.8. Other information that may affect the outcome of certification

There was no other information that may affect the outcome of certification.

7.9. Update on consistency to the fundamental clauses of the RFM Fishery Standard

There were no changes in the fishery relevant to the fundamental clauses of the RFM Fishery Standard. The fishery continues to conform to the requirements of all Fundamental Clauses of the RFM Fishery Standard.

7.9.1. Section A: The Fisheries Management System

7.9.1.1. Fundamental Clause 1. Structured and legally mandated 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.**
Summary of relevant changes:	Responsibility for management of federal waters in Upper Cook Inlet has been assumed by the North Pacific Fishery Management Council. Accordingly, the NMFS has now proposed amendments to its fishery management plan for salmon management in federal waters of Upper Cook Inlet. There have been no other significant changes in the legal structure or administrative framework of the management system. 1.1. There shall be an effective legal and administrative framework established at local and national level appropriate for the fishery resource and conservation and management. As described in detail by the 2017 US Alaska Commercial Salmon Reassessment Report (GTC 2017), Alaska's commercial salmon fisheries are managed in accordance with a transparent structure of laws, regulations, treaties, and other legal mandates at the international, national, and local (state) levels. These include the Magnuson-Stevens Fishery Conservation and Management Act, the Alaska state Constitution and a complex of state statutes and administrative code. Management of commercial fisheries is guided by policies and regulations promulgated by an appointed Board of Fisheries, administered by ADFG's Commercial Fisheries Division and implemented ADFG's area fishery managers. ADFG'S management approach and decision-making processes for Alaska commercial salmon fisheries are made available to the public through the agency's website. 1.2. Management measures shall take into account the whole stock unit over its entire area of stock distribution. ADFG's priority for salmon management is to maintain adult escapement levels that ensure adequate natural spawning, long-term viability of stocks and, consequently, sustainability of associated fisheries. Management considers each stock over its entire distribution, considering the cumulative effect all factors affecting salmon runs and harvest. Annual reports for each management area describe fish runs, fishery implementation, harvest, and spawning escapements. Fishing regulations, including allocation criteria and subsistence determinations, also consider past use and management. Accordingly, Alaska's commercial salmon fishery management system is informed and abides by all previously- agreed management measures. 1.3/1.4/1.5/1.6. Transboundary stocks Management agreements and arrangements for promoting research have been developed for Pacific salmon throughout the range of all five North American species. Representatives from state and federal fishery management and natural resource agencies participate in several national and international bodies governed by national and international agreements in order to foster cooperation in salmon fisheries research, development, and management (NPAFC 2016, 2022, PSC 2023, PSMFC 2020). Management of non-local salmon stocks is governed by the Pacific Salmon Treaty under processes administered by Pacific Salmon Commission and related agreements between USA and Canada governments. The North Pacific Anadromous Fish Commission (NPAFC) and Pacific States Marine Fisheries Commission (PSMFC) foster cooperation among governments and states with regard to salmon fisheries research and management. These organizations share information about aquatic and marine ecosystems, recognize sustained yield and conservation as their highest priority and strive for compatibility in their salmon fishery management measures.

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.
	1.7. Review and Revision of conservation and management measures Alaska's salmon fisheries are managed by ADFG, and the agency's Division of Commercial Fisheries manages commercial harvests (Clark *et al.* 2006). The Division of Subsistence manages removals by subsistence fishermen. The Division of Sport Fisheries manages sport and personal use harvests. Every three years (based on the Board of Fisheries (BoF) schedule) each Alaska Region updates its escapement information and submits a salmon stock status report to the BoF. This report (mandated in the Policy for the Management of Sustainable Salmon Fisheries [5 AAC 39.222] reviews the status of all stocks within each management area, recommends escapement goals based on the past three years' data, identifies stocks of concern, and develops management and action plans to address relevant issues. 1.8. Transparent management arrangements and decision making The management arrangements and decision-making processes for Alaska commercial salmon fisheries are organized in a very transparent manner and are made available to the public through ADFG's website. Both annual (pre-season) and in-season management arrangements are employed in Alaskan commercial salmon fisheries. Similarly, BoF and ADFG use both pre- and in-season decision-making processes that involve and consider public comment, to manage Alaskan salmon fisheries. 1.9. Compliance with international conservation and management measures Staff from US agencies participate within several international organizations responsible for high seas fisheries management. Conservation and management measures include a prohibition of high seas fishing for salmon by all nations involved (Japan, Canada and the United States).
References:	5 AAC 39.222. Policy for the management of sustainable salmon fisheries https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2016-2017/jointcommittee/5aac39.pdf ADF&G (Alaska Department of Fish and Game). 2015. Commercial Fisheries Entry Commission Review. https://www.adfg.alaska.gov/static-f/home/pdfs/cfec_program_review_final_report.pdf Clark, J. H, A. McGregor, R. D. Mecum, P. Krasnowski and A. Carroll. 2006. The Commercial Salmon Fishery in Alaska. Alaska Fishery Research Bulletin — Vol. 12(1):1–146. https://www.adfg.alaska.gov/FedAidPDFs/AFRB.12.1.001-146.pdf GTC (Global Trust Certification). Alaska Responsible Fisheries Management Certification – Full assessment and certification report for the U.S. Alaska Salmon Commercial Fisheries. Facilitated by the Alaska Fisheries Development Foundation. https://rfmcertification.org/wp-content/uploads/2021/06/ALASKA-RFM-SALMON-REASSESSMENT-Final-Report-March-2017.pdf NPAFC (North Pacific Anadromous Fish Commission). 2016. Science Plan 2016–2022. The Science Sub-Committee and the Committee on Scientific Research and Statistics. NPAFC Doc. 1665 (Rev. 1). 8 pp. NPAFC (North Pacific Anadromous Fish Commission). 2022. Annual Report 2022. https://www.npafc.org/wp-content/uploads/Public-Documents/2022/AR2022.pdf PSC (Pacific Salmon Commission). 2023. Thirty-eighth Annual Report 2022/2023. https://www.psc.org/download/31/psc-annual-reports/15508/38th-psc-annual-report-2022-23.pdf

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.**	
	PSMFC (Pacific States Marine Fisheries Commission). 2020. Annual Report. https://www.psmfc.org/wp-content/uploads/2022/06/PSMFC_Annual_Report_2020.pdf	
Statement of consistency to the RFM Fishery Standard		The ADFG has a fishery management system based upon the responsible utilization of stocks and the conservation of the marine environment and continues to conform to the requirements of Fundamental Clause 1 of the RFM Fishery Standard

7.9.1.2. Fundamental Clause 2. Coastal area management frameworks

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.**
Summary of relevant changes:	There have been no significant changes in coastal area management framework. 2.1/2.2/2.3/2.4. Policy, legal and institutional frameworks adopted to achieve sustainable and integrated use of marine resources along with mechanisms to avoid conflict shall be in place. Representatives of the fisheries sector and fishing communities shall be consulted in decision making processes and information related to management measures shall be disseminated. The salmon fishery management organizations in Alaska (principally, ADFG and NOAA, participate in coastal area management-related institutional frameworks processes that safeguard biological species and their habitats (i.e., NEPA, EFH). ADFG is responsible for the protection, management, conservation, and restoration of Alaska's fish and game resources. ADFG also has the statutory responsibility for protecting freshwater anadromous fish habitat and providing free passage for anadromous and resident fish in fresh water bodies [AS 16.05.841871]. The Department of Environmental Conservation (DEC) implements statutes and regulations affecting air, land and water quality. DEC is the lead state agency for implementing the federal Clean Water Act and promotes high quality fish and wildlife habitat through pollution prevention. The Department of Natural Resources (DNR) manages all state-owned land, water and natural resources except for fish and game. The BoF is responsible for considering and adopting regulations to allocate resources among user groups; establishing fish reserves and conservation areas, fishing seasons, quotas, bag limits and size restrictions; habitat protection; stock enhancement; and developing commercial, subsistence, sport, and personal use fisheries. The BoF process also serves to provide a forum for fishery conflict resolution. NMFS and regional Fishery Management Councils (Councils) must describe and identify Essential Fish Habitat (EFH) in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide relevant habitat conservation recommendations. NMFS' Habitat Conservation Division (HCD) works in coordination with industries, stakeholder groups, government agencies, and private citizens to avoid, minimize, or offset the adverse effects of human activities on Essential Fish Habitat (EFH) and living marine resources in Alaska. Further, the NEPA review process, deliberately takes into account all marine and fishery resources and users of those resources in order to resolve potential conflicts among users before project approvals are given. 2.5. The economic, social and cultural value of coastal resources shall be assessed in order to assist decision-making on their allocation and use. The value of coastal salmon resources from economic, cultural, and social perspectives is regularly assessed to inform allocation and use decisions. The Alaska Commercial Fisheries Entry Commission (CFEC) helps conserve and maintain the economic health of Alaska's commercial fisheries by limiting the number of participating fishers. The National Environmental Policy Act (NEPA) processes provide the public with information and an opportunity for involvement at both state and federal levels. Decisions are made through public processes and involvement by fishery managers and stakeholders is encouraged through public advertisement and announcement of scheduled meetings.

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.**
	2.6./2.7/2.8. Research and monitoring of the coastal environment, mechanisms for cooperation and coordination, appropriate technical capacities and financial resources, conflict avoidance amongst user groups. ADFG participates with federal, state, and international agencies and institutions in numerous research and monitoring programs that assess physical, chemical, biological, economic and social parameters of the coastal area. Management organizations like the North Pacific Anadromous Fish Commission (NPAFC), the Pacific Salmon Commission (PSC) and the Pacific States Marine Fisheries Council (PSMFC) derive their technical capacities from member parties and are funded by annual dues paid by participant governments (PSC), as well as federal grants and contracts (PSMFC). ADFG regularly publishes their findings in agency technical reports that can typically be accessed online, through their website. The NPAFC is to provide a venue for coordinating the collection, exchange, and analysis of scientific data on anadromous fishes, primarily Pacific salmon, and other ecologically-related species. The NPAFC's scientific research focuses on trends in marine production of salmon stocks, their population structure and diversity in marine ecosystems of the North Pacific and impacts from climate change (Farley *et al.*, 2009).
References:	ADF&G (Alaska Department of Fish and Game). 2015. Commercial Fisheries Entry Commission Review. https://www.adfg.alaska.gov/static-f/home/pdfs/cfec_program_review_final_report.pdf Farley, Jr., E., T. Azumaya, R. Beamish, M. Koval, K. Meyers, K.B. Seong, S. Urawa. 2009. Climate change, production trends, and carrying capacity of Pacific Salmon in the Bering Sea and adjacent waters. N. Pac. Anad. Fish Comm. Bull. 5. NPAFC Suite 502. West Pender St, Vancouver, B.C. VC 3B2 Canada. https://npafc.org/bulletin-5/ http://www.adfg.alaska.gov/index.cfm?adfg=uselicense.main NPAFC (North Pacific Anadromous Fish Commission). 2022. Annual Report 2022. https://www.npafc.org/wp-content/uploads/Public-Documents/2022/AR2022.pdf GTC (Global Trust Certification). Alaska Responsible Fisheries Management Certification – Ful assessment and certification report for the U.S. Alaska Salmon Commercial Fisheries. Facilitated by the Alaska Fisheries Development Foundation. https://rfmcertification.org/wp-content/uploads/2021/06/ALASKA-RFM-SALMON-REASSESSMENT-Final-Report-March-2017.pdf
Statement of consistency to the RFM Fishery Standard	ADFG participates in coastal area institutional frameworks and decision-making processes and continues to conform to the requirements of Fundamental Clause 2 of the RFM Fishery Standard

7.9.1.3. Fundamental Clause 3. Management objectives and plan

3.	**Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.**
Summary of relevant changes:	3.1. Long-term management objectives shall be translated into a plan or other management document and be subscribed to by all interested parties. The principal role of the Board of Fisheries (BoF) is to conserve and develop the fishery resources of Alaska. The Board achieves its mission in part by setting seasons and regulations for the state's subsistence, commercial, sport, guided sport, and personal use fisheries. The BoF also establishes policy and provides management direction for the state's fishery resources. The BoF is charged with making allocative decisions, and ADFG is responsible for management based on those decisions. General precepts are established by the BoF and incorporated into regulation. The long-term objectives for Alaska's commercial salmon fisheries are primarily established through three policy statements, incorporated into state regulation, Title 5 Alaska Administrative Code, by the BoF: 5 AAC 39.220 Policy for the Management of Mixed Stock Salmon Fisheries, 5 AAC 39.222 Policy for the Management of Sustainable Salmon Fisheries, 5 AAC 39.223 Policy for State-wide Salmon Escapement Goals. Federal management of salmon fisheries in Alaska is directed by a management plan as prescribed by the U.S. Magnuson-Stevens Act and administered by the North Pacific Fishery Management Council. 3.2. Management measures should limit excess fishing capacity, promote responsible fisheries, take into account artisanal fisheries, protect biodiversity and allow depleted stocks to recover. Alaska has successfully managed sustained yield of its salmon fisheries since implementation of the limited entry permit system in 1973 (Clark *et al.* 2006). The Alaska Commercial Fisheries Entry Commission (CFEC) regulates the number of participating fishers, thereby conserving the resource, and safeguarding the economic viability of the fishery. Entry into regional salmon fisheries is controlled by the Commission, and the number of permits issued is regulated in accordance with the projected value of each fishery. While the BoF and ADFG continue to set and adjust biologically-based escapement goals to conserve Alaska's salmon stocks, the limited entry permitting process of the CFEC serves to safeguard the economic viability of dependent fisheries (ADFG 2015).
References:	5 AAC 39.220 Policy for the Management of Mixed Stock Salmon Fisheries https://casetext.com/regulation/alaska-administrative-code/title-5-fish-and-game/part-1-commercial-and-subsistence-fishing-and-private-nonprofit-salmon-hatcheries/chapter-39-general-provisions/article-2-salmon-fishery/section-5-aac-39220-policy-for-the-management-of-mixed-stock-salmon-fisheries 5 AAC 39.222. Policy for the management of sustainable salmon fisheries https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2016-2017/jointcommittee/5aac39.pdf 5 AAC 39.223 Policy for State-wide Salmon Escapement Goals https://casetext.com/regulation/alaska-administrative-code/title-5-fish-and-game/part-1-commercial-and-subsistence-fishing-and-private-nonprofit-salmon-hatcheries/chapter-39-general-provisions/article-2-salmon-fishery/section-5-aac-39223-policy-for-statewide-salmon-escapement-goals ADF&G (Alaska Department of Fish and Game). 2015. Commercial Fisheries Entry Commission Review. https://www.adfg.alaska.gov/static-f/home/pdfs/cfec_program_review_final_report.pdf Clark, J. H, A. McGregor, R. D. Mecum, P. Krasnowski and A. Carroll. 2006. The Commercial Salmon Fishery in Alaska. Alaska Fishery Research Bulletin — Vol. 12(1):1–146. https://www.adfg.alaska.gov/FedAidPDFs/AFRB.12.1.001-146.pdf

3.	Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.
Statement of consistency to the RFM Fishery Standard	ADFG fishery management objectives and actions continue to conform to the requirements of Fundamental Clause 3 of the RFM Fishery Standard

7.9.2. Section B: Science & Stock Assessment Activities, and the Precautionary Approach

7.9.2.1. Fundamental Clause 4. Fishery data

4.	**There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.**
Summary of relevant changes:	No relevant changes.

4.1. All fishery removals and mortality of the target stock(s) shall be considered by management.
To facilitate stock-specific management, state waters have been classified and numbered into regions, areas, districts, sub-districts, individual river systems and sections within rivers - when needed http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmonmaps.
Both in-season and historic commercial catch data are readily available on the Commercial Fisheries website (http://www.cf.adfg.state.ak.us/geninfo /finfish/salmon/salmcatch.php). Catch and effort data is also available in annual management reports for each area. (see for example Scannell *et al.* 2023). For sport fisheries, state-wide estimates of harvest (the state-wide harvest survey and guide logbook programs) are administered by the Research and Technical Services section (Romberg *et al.,* 2018). Sport fishery harvest and fishing effort estimates obtained from the state-wide harvest survey are available on the Sport Fish website (http://www.sf.adfg.state.ak.us/statewide/FishingSurvey/)

4.2. An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures shall be established.
State regulations (5AAC; 39.140), Inspection of Fishing Establishments and Vessels), allow ADFG and Department of Public Safety personnel unobstructed access to all fishing vessels and processing establishments to inspect catch, gear to check compliance with Alaska laws and regulations. However, observers are generally not needed to monitor compliance with regulations, or to collect data needed for management in Alaska's salmon fisheries. Alaska's commercial salmon fisheries occur close to shore or in-river and fish that are harvested are sold in Alaskan ports where the weight, number and location of harvest are reported on fish tickets. Biological samples of the harvests are typically sampled at the port of landing. Additionally, area management biologist and Department of Public Safety personnel often observe the fisheries to ensure compliance with time, area and gear requirements.

When special needs arise, the ADFG has placed observers aboard salmon fishing vessels. For example, during implementation of the Pacific Salmon Treaty there was a need to verify estimates of immature Chinook Salmon caught and released in Southeast troll fishery (Seibel *et al.* 1989) and to verify estimates of Chinook Salmon caught in the Southeast purse seine fishery (Rowse and Marshall 1988). Another example was implementation of the Alaska Marine Mammal Observe Program that provided encounter and mortality estimates for both marine mammals and sea birds in several gillnet fisheries throughout the state (Wynne *et al.* 1991).

4.3. Management entities shall make data available in a timely manner and in an agreed format in accordance with agreed procedures.
There are processes in place to share catch data (and related data such as code microwire tag recoveries) with both Canada and the states of Oregon, Washington, and Idaho where some stocks harvested in Alaska spawn. There is also a process for sharing catch and enhancement data with selected Pacific rim countries through the North Pacific Anadromous Fish Commission (NPAFC). Examples of sharing catch, effort, and stock composition data with Canada for transboundary rivers in Southeast Alaska is PSC-TCTR (2021) and for Chinook salmon stock status is PSC-JTCC (2021). An example of sharing catch data through the NPAFC is Miyauchi and Saito (2021).

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

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

State and national policies regarding seafood are guided by the U.S. Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), the U.S. National Institutes of Health (NIH), and Alaska Seafood Marketing Institute (ASMI). ASMI is the state agency primarily responsible for increasing the economic value of Alaskan seafood through marketing programs, quality assurance and industry training. The powers of the ASMI Board (AS 1651.090) include conducting or contracting for scientific research to develop and discover health, dietetic, or other uses of seafood harvested and processed in the state. The University of Alaska's Sea Grant program operates the Kodiak Seafood and Marine Science Center (KSMSC). Among other things, KSMSC works to discover better methods to preserve, process, and package seafood. It has research kitchens, biochemistry labs and food labs with experimental seafood processing equipment that are used to test production techniques and develop new seafood products and evaluate fish as food. KSMSC staff work closely with the industry to convey research results and provide educational opportunities that help seafood workers improve efficiency and the quality. The KSMSC also conducts classes in seafood processing, business aspects of fishing, and does research on the resilience of coastal communities. A complete description of research projects and outreach activities can be found at https://alaskaseagrant.org/about/kodiak-seafood-and-marine-science-center/.

Knowledge of the economic, social and cultural aspects of fish and fishing are critical to management of Alaska's salmon fisheries. The need for these kinds of data is evident in the regulations and statutes. For example:

1. The BoF must (AS 16.05.251(17) (e)) consider seven social, economic and cultural criteria when adopting a regulation that determine how to distribute fishing opportunity among identified user groups.
2. The BoF must (AS 16.05.25) consider 13 socio-economic and cultural factors to determine what areas will be open or closed to subsistence fishing.
3. The Policy for the Management of Sustainable Salmon Fisheries (5AAC 39.222(c)(5)) requires the BoF to consider (among other things) the social, cultural and economic risks and needs of future generations.

The state relies on several sources for social, cultural and economic information to develop management policy. There are 82 local Advisory Committees composed of interested citizens most of whom are participants in commercial, sport, subsistence or personal use fisheries (or hunting and trapping) to provide local knowledge of the social, economic and institutional factors to the BoF (5AAC 96.010). The Commercial Fisheries Division of ADFG maintains data on the ex-vessel and wholesale value of commercial landings. The Sport Fish Division periodically estimates the value of recreational fishing Duffield et al (2020). The Division of Subsistence publishes studies on the history and current use of salmon for subsistence. The University of Alaska maintains the Institute of Social and Economic Research that periodically conducts research on the salmon fisheries of Alaska.

The Alaska Seafood Marketing Institute (ASMI) uses various social and economic data in developing marketing campaigns. The Alaska legislature is made aware of the social cultural and economic value of salmon when crafting statutes

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

The Division of Subsistence publishes numerous papers on the history and current use of salmon for subsistence (see for example Fall *et al.*, 2019; Sill *et al.*, 2019; Trainor *et al.*, 2019). The Commercial Fisheries Entry Commission publishes research on the optimum number of permits that should be issued for a fishery (see for example Schelle *et al.*, 2004). The University of Alaska Institute of Social and Economic Research conducted research on the value of commercial fishing to local economies (Watson, 2021). Various institutions have also contracted to have economic studies done and made public. For instance, the public non-profit hatcheries contracted a study to evaluate the economic impact of hatchery production (McDowell Group, 2018) and the Salmon Alliance contracted to determine the value of the seafood industry in South Central Alaska (McDowell, 2015).

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

Essentially all stock assessments used for commercially harvested salmon are based on modern fishery science methods. However, the state has conducted research to document traditional knowledge on commercially fished salmon (Trainor *et al.* (2019), Ream and Merriam (2017), Bronwyn and Kukkonen (2017). The Alaska Board of Fisheries provided a forum for traditional knowledge to be brought into the management process for the Kuskokwim area. The Kuskokwim River Salmon Management Working Group was formed in 1988 in response to requests from stakeholders who sought a more active role in the management of salmon fishery resources. The Working Group is made up of 14-members, seats are provided for Elders, subsistence fishermen, processors, commercial fishermen, sport fishermen, the Kuskokwim River Inter-Tribal Fish Commission, member at large, federal subsistence regional advisory committee, and the Alaska Department of Fish and Game. Members participate on a voluntary basis. Participation in the Working Group process requires a great deal of time from its members and agency staff.

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

Alaska does not conduct salmon research aboard vessels in the waters of other states. There are, however, cooperative studies in the Transboundary Rivers and ADFG employees may travel into Canada via skiffs to assist in field activities. All such activities are coordinated through the Transboundary Rivers Technical Committee or Yukon River Technical Committee. All cooperative research on the Transboundary Rivers is reported annually.
https://www.psc.org/publications/technical-reports/technical-committee-reports/transboundary/

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

Research of salmon stocks on the high seas is accomplished through the North Pacific Anadromous Fish Commission (NPAFC). The NPAFC is an international organization established by the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean signed in 1992. The member countries are Canada, Japan, Republic of Korea, Russian Federation and United States. The Convention area includes the North Pacific Ocean and its adjacent seas, north of 33 degrees North Latitude beyond 200-miles zones of the coastal States. While key convention measures are aimed at prohibiting directed fishing and retention of incidentally caught salmon in the Convention area, the Convention also authorizes coordinated research on anadromous stocks. As such, the Convention authorizes fishing for anadromous fish in the Convention Area for scientific purposes under national

4.	There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.
	and joint research programs approved by the NPAFC. The NPAFC is active in coordinating scientific research under the Commission's Science Plan and has developed a consensus long-term research and monitoring plan for Pacific salmon in the North Pacific (The Science Sub-Committee (SSC), 2016). Under the research and monitoring plans, member countries are cooperating in collecting, reporting and exchanging biostatistical data, biological samples, fisheries data and organizing scientific communications, such as seminars, workshops, exchanges of scientific personnel and publications (McKinnel *et al.* [eds.] 2023). The Commission organized a coordinated multi-nation effort to conduct various research during the summer of 2022, preliminary findings can be found at https://npafc.org/iys/. The members also exchange catch, enhancement and other technical information and material pertaining to areas adjacent to the Convention Area from which anadromous stocks migrate into the Convention Area. NPAFC activities are outlined in annual reports, see for example NPAFC (2022). 4.9/4.10/4.11. States shall promote and enhance the research capacities of developing countries, support (upon request) States engaged in research investigations aimed at evaluating stocks which have been previously un-fished or very lightly fished. These clauses are not relevant.
References:	Bronwyn Jones; Malla Kukkonen. 2017. Local and Traditional Knowledge of Abundance of Chinook Salmon in the Kenai River. ADF&G Division of Subsistence, Technical Paper No. 431. http://www.adfg.alaska.gov/techpap/TP431.pdf Duffield, J. W., C. J. Neher, and M. F. Merritt. 2001. Alaska angler survey: Use and valuation estimates for 1997 with a focus on salmon fisheries in Region III. Alaska Department of Fish and Game, Special Publication No. 01-2, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/sp01-02.pdf Fall, J., A. Godduhn, G. Halas. L. Hutchinson-Scarbrough, B. Jones, B. McDavid, E. Mikow, L. Sill, A. Wiita, T. Lemons. 2019. Alaska Subsistence and Personal Use Salmon Fisheries 2016 Annual Report. ADF&G Division of Subsistence, Technical Paper No. 446. Juneau. http://www.adfg.alaska.gov/techpap/TP446.pdf Joshua T. Ream and Jessie Merriam. 2017. Local and Traditional Knowledge of Stikine River Chinook Salmon: A Local Perspective on a Vital Commercial, Sport, and Subsistence Fish. ADF&G Division of Subsistence, Technical Paper No. 430. http://www.adfg.alaska.gov/techpap/TP430.pdf McDowell Group. 2015. The economic impact of the seafood industry in South Central Alaska. Mc Dowell Group. Glacier Hwy. Suite 201. Juneau Ak. https://www.mcdowellgroup.net/portfolio-posts/economic-impact-of-the-seafood-industry-in-southcentral-alaska/ McDowell Group. 2017. The economic value of Alaska's seafood industry. 3960 Glacier Hwy. Suite 201. Juneau. https://www.mcdowellgroup.net/wp-content/uploads/2017/10/ak-seadfood-impacts-sep2017-final-digital-copy.pdf McDowell Group 2018. The economic impact of Alaska's Salmon hatcheries. Mc Dowell Group. 3960 Glacier Hwy. Suite 201. Juneau Ak. http://www.mcdowellgroup.net/wp-content/uploads/2018/10/economic-impact-of-alaskas-salmon-hatcheries.pdf McKinnell, S., A. Schubert, and P. Orlov (Editors). 2023. International Year of the Salmon 2022 Pan-Pacific Winter High Seas Expedition Hybrid Preliminary Results Meeting summary. N. Pac. Anadromous. Fish Comm. Tech. Rep. 20. 52 pp. https://doi.org/10.23849/XGMK2041 Miyauchi, Y., and T. Saito. 2021. Preliminary statistics for 2020 commercial salmon catches in Japan. NPAFC Doc. 1961. 2 pp. Salmon Research Department, Fisheries Resources Institute, Japan

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

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PSC-TCTR. 2022. Final estimates of Transboundary River salmon production, harvest and escapement and a review of joint enhancement activities in 2019. Report TCTR (22)-01 PSC. Vancouver, B.C. Canada. https://www.psc.org/publications/technical-reports/technical-committee-reports/transboundary/

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4.	**There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.**	
	https://www.fisheries.noaa.gov/resource/document/1990-salmon-gillnet-fisheries-observer-programs-prince-william-sound-and-south	
Statement of consistency to the RFM Fishery Standard		The state of Alaska continues to maintain an effective fishery data collection and analysis system for salmon stock assessment and continues to conform to the requirements of Fundamental Clause 4 of the RFM Fishery Standard.

7.9.2.2. Fundamental Clause 5. Stock assessment

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.

Summary of relevant changes:

The state and partners have developed a research program to better estimate the escapement of Chinook Salmon in the Nushagak River. The state is investing in a new vessel to support its near shore marine research program.

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

The conduct of diverse research concerning salmon is a collaborative effort of numerous state and federal agencies. ADFG supports a wide breath of research, including:

- The Commercial Fisheries Division maintains programs that research effects of enhancement, ecology, stock assessment, genetics, pathology, and maintains several critical databases including; catches, escapements, age composition, value of salmon harvested, genetic profiles, otolith anatomy, coded wire tags and disease incidence that are used in collaboration with a number of agencies.
- The Division of Subsistence researches the history and current use of salmon for subsistence.
- The Sport Fish Division studies biology, ecology, and economics of recreational fishing. It also conducts stock assessments and makes recommendations on escapement goals.

The State of Alaska, supports diverse biological, social and economic research in institutions other than ADFG, including:

- The University of Alaska has an extensive undergraduate and graduate program on a broad array of topics including quantitative stock assessment, biology, enhancement, genetics, behavioral ecology.
- The University also offers associate degrees and certificates in fisheries technology at facilities located in Juneau, Seward, Kodiak and Fairbanks. The University of Alaska Institute of Social and Economic Research conducts research on the economics of Alaska's fisheries.
- The Kodiak Marine Science and Seafood Center researches the biochemistry and nutritional value of seafood.
- The Alaska Seafood Marketing Institute contracts studies to determine the value of Alaska's Seafood industry.
- The Commercial Fishery Entry Commission publishes research on the optimum number of permits that should be issued for a fishery.

Federal Agencies and the University of Washington's Alaska Salmon Program support varied research, including:

- The University of Washington maintains three field stations in Alaska to study a broad array of topics relating to management of salmon and to train graduate students.
- The USFWS augments state stock assessment by conducting research on salmon production and habitat on federal lands. The U.S Forest Service, U.S. Park Service and U.S. Bureau of Land Management perform fisheries research projects and activities associated with management of subsistence fisheries on federal lands.

Examples of the ADFG research on technology is Burwen *et al.* (2010), on genetics is, Habicht (2019) on pathology in support of enhancement is Purcell *et al.* (2018) on ecology is Loewen and Baechler (2014) on population dynamics is Matter and Tyers (2019). The Sport Fish Division has published reports on the value of recreational fishing Southwick *et al.* (2008). Examples of The Division of

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.**
	Subsistence research on the history, social-economic values and current use of salmon for subsistence Sill *et al.* (2019). An example of The Alaska Seafood Marketing Institute supported research on economics is McDowell (2017). An example of the University of Alaska Institute of Social and Economic Research on economics is Knapp (2011). https://iseralaska.org/research-areas/natural-resources/ An example of the Commercial Fishery Entry Commission research on the optimum number of permits that should be issued for a fishery is Schelle *et al.* (2004). https://www.cfec.state.ak.us/Publications/salmon.htm Examples of the University of Alaska research in ecology are Adkison (2010) and Cunningham (2018). https://www.uaf.edu/cfos/research/rasmuson-fisheries-resear/index.php Examples of research conducted at the University of Washington on salmon are Clark *et al.* (2015) and Lincoln *et al.* (2020) other publications can be found at https://alaskasalmonprogram.org/wp-content/uploads/2020/12/ASP_pubs_through_2020.pdf Examples of the National Marine Fisheries Service Auke Bay Laboratory research include: Murphy *et al.* (2017 on early marine life history of salmon; Kondezla *et al.* (2016) and Guthrie *et al.* (2021) on genetics and stock identification and on environmental science Farrow *et al.* (2016) and have developed a method to forecast Pink Salmon returns to Southeast Alaska. . https://www.fisheries.noaa.gov/about/auke-bay-laboratories An example of the research conducted by the USFWS on the use of Radio tags to estimate Chinook abundance is Tanner and Sethi (2014) and on genetics and stock structure of Yukon salmon (Flanery *et al*. 2022). 5.2. The state of the stocks under management jurisdiction, including the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration shall be monitored. The ADFG Divisions of Commercial and Sport Fisheries take the primary lead on determining the status of salmon stocks. Alaska's salmon stock assessment program is extensive and comprehensive. The program to determine the number caught and their composition is explained in Clause 4. Research capacity in environmental science is also discussed in Clause 5.1.2. The program to estimate escapements and to set goals is explained in Clause 6. The Habitat Division performs research to monitor or evaluate the potential effects of development projects. The Sport Fish Division strategic plan prioritizes habitat research. The Sport Divisions also operates the which includes programs related to the effects of climate change, changes in sea level and marine and freshwater temperatures, frequency of storm events, rapid loss of coastal glaciers and coastal uplift. When evaluating stock status, ADFG research staff have access to a wealth of data collected and analysed by a number of other state, federal and non-profit sources as described below. A primary goal of the North Pacific Anadromous Fish Commission's Science Plan is to understand variations in Pacific salmon productivity in a changing climate. Research objectives include: (1) improve knowledge of Pacific salmon distribution, growth and survival in the ocean (current status);

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.**

(2) increase understanding of the causes of variations in Pacific salmon and steelhead trout production (mechanisms); and (3) anticipate future changes in the production of Pacific salmon and steelhead and the marine ecosystems.

The National Oceanic and Atmosphere Administration's (NOAA) Habitat Conservation Division (HCD) responsibilities include conducting and/or reviewing environmental analyses for a large variety of activities including commercial fishing, coastal development, transportation and energy projects. The HCD 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 administers the Saltonstall-Kennedy grant program for fisheries research and development. NOAA also administers the Pacific Coastal Salmon Recovery Fund that was established by Congress to provide funding to states and tribes of the Pacific Coast Region to protect, restore, and conserve Pacific Salmon and steelhead populations and their habitats.

The U.S. Fish and Wildlife Service has recognized climate change as a potential driver in aquatic systems and supports research into the possible effects and finding ways to respond and adapt to the changes that are occurring.

The North Pacific Research Board (NPRB) distributes monies from the earnings of the Environmental Improvement and Restoration Fund, created by congress to "...conduct research activities on, or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean (including any lesser related bodies of water) .... [With]...priority on cooperative research efforts designed to address pressing fishery management or marine ecosystem information needs." The Bering Sea Integrated Ecosystem Research Program, a partnership between the NPRB and the National Science Foundation, funds research and ecosystem modelling to understand the impacts of climate change and dynamic sea ice cover on the eastern Bering Sea ecosystem. The Gulf of Alaska Integrated Ecosystem Research Project seeks to understand how environmental and anthropogenic processes, including climate change, affect trophic levels and dynamic linkages among trophic levels, with emphasis on fish and fisheries, marine mammals and seabirds within the Gulf of Alaska. An example of research being conducted by the NPRB is understanding how climate is driving productivity of Yukon Chinook Salmon https://nprb.org/project-search/#metadata/0944aa83-fbd0-43d3-87bf-9f5c30776df1/project.

Examples of ADFG's research on salmon stock status is shown in Clause 4. Examples of research in environmental science is discussed in Clause 5 the extensive reporting on to estimate escapements and to set goals is explained in Clause 6.

An example of ADFG's Habitat Division's research to evaluate the potential effects of development projects is Brewster (2016). The Sport Fish Division strategic plan that prioritizes habitat research is ADFG- SF (2015). An example of the HCD focuses on activities in habitats is NOAA (2013).

An example of the U.S. Fish and Wildlife Service work on climate change is Prucha *et al.* (2013). An example of Alaska's Climate Research Canter's work to understanding potential impacts on aquatic systems is Wendler *et al.* (2015).

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	Examples of the research carried out by the NPAFC include a synopsis of research on production of salmon in a changing climate (NPAFC, 2016) https://npafc.org/iys/. 5.3. Management organizations shall cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources. The State of Alaska participates in the two international organizations that support and encourage research on salmon in and around Alaska to ensure optimum utilization. The North Pacific Anadromous Fish Commission (NPAFC) promotes conservation and sustainability of anadromous stocks and conducts regular meetings and communications in the areas of fisheries enforcement and scientific research. The Pacific Salmon Treaty between Canada and the United States was signed in 1985 and established a Commission, Panels and Technical Committees to develop agreed fishing regimes, develop coordinated research programs, coordinate stock assessment programs, monitor performance and manage a Northern Fund to help support research and enhancement. The Commission and Panels meet three times a year. The treaty process provides for policy guidance by sanctioning Panels to address harvest management issues of shared stocks in each covered fishing area and for Joint Technical Committees to provide annual stock assessments. The Yukon River Panel was established as Attachment B, Annex IV, Chapter 8, Pacific Salmon Treaty to develop and implement agreed research and management programs for shared salmon resources of the Yukon River. The Yukon Panel acts independently from other annexes under the Pacific Salmon Treaty. There is an extensive library of documents available explaining the processes followed for both the NPAFC and PSC available on their web sites at https://npafc.org/ and https://www.psc.org/. An example of the annual reports of the NPAFC is NPAFC (2021). An example of the annual reports of the PSC is PSC (2021). Likewise, there is an extensive library of technical documents, an example of PSC documents is PSC-JCTC (2022) and an example from the NPAFC is Akenhead *et al.* (2019). 5.4. The fishery management organizations shall directly, or in conjunction with other States, develop collaborative technical and research programmes to improve understanding of the biology, environment and status of trans-boundary aquatic stocks. As described in Clause 5.3 the Pacific Salmon Commission's Technical Committees, Yukon Panel Technical Committee and NPAFC develop collaborative technical and research programs to improve understanding of the biology, environment and status of transboundary aquatic stocks. There is an extensive and up-to-date library of technical reports written by the technical committees of the PSC and NPAFC available on their web sites noted in Clause 5.3. 5.5. Data generated by research shall be analysed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate. Alaska Statute 16.05.815 (Confidential Nature of Certain Reports and Records) requires strict confidentiality of an individual fisher's sales data. A fisher's data is protected and may not be released to the public. As a working rule, ADFG's policy is that if three or fewer fishers report sales within a fine scale time, area strata, the data will be redacted from public reports unless pooled into a larger stratum.

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.
	There are processes in place to share data with other states through the Pacific States Marine Fisheries Commission (PSMFC) and with Canada through the Pacific Salmon Commission (PSC). The PSMFC maintains a coast-wide database of catch needed to interpret recoveries of coded micro-wire tags. A committee within the PSMFC composed of representatives of states, federal and tribal staff guide development and maintenance of the database in accordance with their respective agencies policies and regulations such as confidentiality. The PSC has established A Data Sharing Technical Committees to compile and evaluate stock assessment data also with representative of all participating agencies. That confidentiality requirements are maintained is evident in the reports of the PSC and online data available through the PSMFC. These reports and databases only have aggregated catch data in large blocks of time and space such as an entire district's catch for a week. There are no individual records of sales in their data sets. Evidence of maintaining strict confidentially is often observed at Board of Fish meetings when a proposal seeks to place some kind of regulation on a small geographic location and the ADFG cannot release catch data because three or fewer fishermen have reported catches in that area, see for example Weiland *et al.* (2003). Evidence of the PSMFC efforts can be seen at http://www.psmfc.org/program/regional-mark-processing-center-coded-wire-tag-rmpc?pid=17). The report of the PSC's Joint Committee on Data Sharing (PSC-JTCDS 1989) explains the process used and an example of the work completed as a result of data sharing is a report of the Chinook Technical Committee PSC-JCTC (2022).
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Statement of consistency to the RFM Fishery Standard	The state of Alaska continues to maintain an effective and appropriate scientific stock assessment system that supports optimum itemization. Thus, the fishery continues to conform to the requirements of Fundamental Clause 5 of the RFM Fishery Standard.

7.9.2.3. Fundamental Clause 6. Biological reference points and harvest control rule

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.	
Summary of relevant changes:	During the 2021–2022 Alaska Board of Fisheries meeting cycle, escapement goals were reviewed for the Southeast Region (Heinl *et al.*, 2021) and Prince William Sound Management Area (Joy *et al.*, 2021). In Southeast one Coho and one Sockeye salmon goals were updated. In Prince William Sound 2 Coho and 2 Sockeye salmon goals were updated. In the Copper River, the Chinook Salmon escapement goal was revised from a lower-bound SEG to an SEG with an upper and lower bound. 6.1 States shall establish safe target reference point(s) for management Escapement goals are the primary reference points for Alaska salmon management. The Policy for Statewide Salmon Escapement Goals (5AAC 39.223) defines the types of escapements goals that may be established and the role of the ADFG and Board of Fisheries in setting and reviewing goals. The Policy for the Management of Sustainable Salmon Fisheries (AAC 39.222) sets out (among other things) that salmon fisheries shall be managed to allow escapements within ranges necessary to conserve and sustain potential salmon production and maintain normal ecosystem functioning. The Alaska Board of Fisheries has the authority under 5 AAC 39.200 to establish management plans that provide ADFG guidelines to be followed when making in-season management decisions regarding the state's subsistence, commercial, sport and personal use fisheries. The primary goal of these management plans is to protect the sustained yield of the state's fishery resources while at the same time providing an equitable distribution of the available harvest between various users. The Policy for Statewide Salmon Escapement Goals (5AAC 39.223) defines the types of escapements goals that may be established and the role of the ADFG and Board of Fisheries in setting and reviewing goals. 1. A Biological Escapement Goal (BEG) is defined as an escapement range that provides the greatest potential for maximum sustained yield. Once established, a BEG becomes the primary management objective unless the Board of Fisheries establishes an optimal escapement or in-river run goal. A BEG is developed with age specific data for a stock's catch and escapement over a series of years. Typically, a Ricker type stock – recruitment function is used to establish the BEG. ADFG seeks to maintain evenly distributed salmon escapements within the range. 2. A Sustained Escapement Threshold (SET) is defined as a threshold level of escapement below which the ability of the salmon stock to sustain itself is jeopardized. In practice, a SET can be estimated based on the lower range of historical escapement levels for which the salmon stock has consistently demonstrated the ability to sustain itself. A SET is lower than the lower bound of the BEG and lower than the lower bound of the SEG. A SET is established by the ADFG, in consultation with the Board of Fish, as needed, for salmon stocks of management or conservation concern. 3. A Sustainable Escapement Goal (SEG) is defined as a level of escapement, indicated by an index or a range of escapement estimates, that is known to have provided for sustained yield over a 5 to 10-year period. A SEG is used in situations where a BEG cannot be estimated because there is no stock-specific catch estimate. Once established, a SEG becomes the primary management objective unless an optimal escapement or in-river goal has been adopted by the BOF. A SEG is stated as a range that takes into account data uncertainty. ADFG seeks to maintain escapements within the bounds of the SEG.

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		4. In special circumstances, the Board of Fisheries may determine it is appropriate to establish a optimum escapement goal (OEG). If the board establishes an OEG, it must provide an explanation of the reasons, and with the assistance of the ADFG an estimate of expected differences in production relative to maximum sustained yield. 5. The Board of Fisheries may also establish an in-river escapement goal to provide for harvest in addition to escapement. A variety of methods are used to develop escapement goals (Munro 2023). A brief description of each is summarized below. The most commonly used methods are listed first, followed by the less common methods. 1. Spawner-Recruit Analysis: Analysis of the relationship between the number of fish in the escapement and subsequent production of adults in the next generation. The Ricker type production model is almost exclusively used. 2. Percentile Method: This method is used for establishing sustainable escapement goals and contrasts observed annual escapements (largest escapement divided by smallest escapement) and the exploitation rate of a stock to select percentiles of observed escapements for estimating lower and upper bounds of the goal Clark *et al.* 2014). 3. Risk Analysis: Risks Analysis evaluates the magnitude of management error in future years around a precautionary reference point established using past observations of escapement (Bernard *et al.* 2009). This method is primarily used to guide establishment of a lower-bound SEG for non-targeted stocks of salmon. 4. Yield Analysis: Graphical or tabular examination of yields produced from observed escapement indices from which the escapement range with the greatest yields is identified (Hilborn and Walters 1992). 5. Theoretical Spawner-Recruit Analysis: This method is used in situations where there are few or no stock specific harvest estimates and/or age data. Information from nearby stocks, or about the species, are used in a spawner-recruit production model to estimate the number of spawners needed to achieve maximum sustained yield (Clark 2005). 6. Empirical Observation: Goals are based on observed escapements over time and may be calculated as the average escapement or the value of a low escapement for which there is evidence that the stock is able to recover (ADFG 2004). 7. Zooplankton Model: This model estimates the number of sockeye salmon smolts of a threshold or optimal size that a lake can support based upon measures of zooplankton biomass and surface area of the lake. Adult production is then estimated from marine survival rates over a range of smolt sizes (Koenings and Kyle 1997). 8. Spawning Habitat Model: Estimates of spawning capacity or number of spawners that produce maximum sustained yield (see for example Burgner *et al.* 1969). 9. Euphotic Volume Model: Measurement of the volume of a lake where sufficient light penetrates to support primary production is used to estimate sockeye salmon smolt biomass carrying capacity from which adult production is then estimated using marine survival rates (Koenings and Burkett 1987). 10. Lake Surface Area: Similar to spawning habitat models, the relationship between the lake surface area and escapement are used to estimate adult sockeye salmon production (Nelson 2006). 11. Conditional Sustained Yield Analysis: Observed escapement indices and harvest are used to estimate if, on average, surplus production results from a particular goal range (Nelson *et al.*

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		2005). Estimated yields are conditioned on extreme values of measurement error in the escapement indices. 12. Brood Interaction Simulation Model: This model simulates production using a spawner–recruit relationship that modifies the simulated production for the year of return using an age-structured sub-model and estimates resulting catches and escapements under user-specified harvest strategies (Carlson *et al.* 1999). This is a hybrid of a theoretical SRA and yield analysis that has only been used to develop the escapement goal for Kenai River sockeye salmon. Recognizing the variety of methods used and quality of data available to establish an escapement goal, ADFG developed a rating system to convey their confidence in each goal (Munro and Volk 2015). • The highest rating is given when accurate estimates of escapement (by age) and stock-specific catch (by age) are available to develop a BEG. • A good rating is given when fair to good accuracy and precision of estimates of escapement from mark-recapture experiments or multiple foot/aerial surveys and escapement and age estimates are available (but may have gaps) to develop a BEG or SEG. • A fair rating is given when fair to good accuracy of escapement estimates are available but some estimates are missing or inadequate, and age estimates are missing or incomplete, but sufficient data exists to estimate a sustainable escapement goal. • A poor rating is given when fair accuracy in escapement counts or index data (e.g., single foot/aerial survey) is available, but no harvest or age data is available to allow development of a SEG. The Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222) directs ADFG to provide the Board of Fisheries with reports on the status of salmon stocks and identify any salmon stock that is not producing at the expected level. The policy defines three levels of concern. 1. Yield Concern: A stock of yield concern is defined as "a concern arising from a chronic inability, despite the use of specific management measures, to maintain specific yields or harvestable surpluses above a stock's escapement needs. 2. Management Concern: A stock of management concern is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain escapements for a salmon stock within the bounds of the SEG, BEG, OEG, or other specified management objectives for the fishery. 3. Conservation Concern: A stock of conservation concern is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain escapements for a stock above a sustained escapement threshold (SET). Among other things, the Sustainable Salmon Policy (5AAC 39.222) requires fisheries be managed in a precautionary manner to allow escapements within ranges necessary to conserve and sustain potential salmon production and maintain normal ecosystem functioning as follows: 1. Salmon spawning escapements should be assessed both temporally and geographically; escapement monitoring programs should be appropriate to the scale, intensity, and importance of each salmon stock's use. 2. Salmon escapement goals, whether sustainable escapement goals, biological escapement goals, optimal escapement goals, or in-river run goals, should be established in a manner consistent

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		with sustained yield; unless otherwise directed, the department will manage Alaska's salmon fisheries, to the extent possible, for maximum sustained yield. 3. Salmon escapement goal ranges should allow for uncertainty associated with measurement techniques, observed variability in the salmon stock measured, changes in climatic and oceanographic conditions, and varying abundance within related populations of the salmon stock measured. 4. Salmon escapement should be managed in a manner to maintain genetic and phenotypic characteristics of the stock by assuring appropriate geographic and temporal distribution of spawners as well as consideration of size range, sex ratio, and other population attributes. Escapement goals for a management area are reviewed every three years. In 2022 there were 264 active salmon stock escapement goals in the state; this is the same as in 2021. The ADFG publishes a summary of statewide salmon escapement goals, the method used to establish those goals and the actual escapements in relation to those goals for the last ten years (Munro, 2023). Escapement goals may be established for individual stocks when stock-specific catch and escapement data are available. Bristol Bay Sockeye Salmon provide a good example of where goals have been set for individual stocks (Erickson *et al.,* 2015). In cases where catches cannot be assigned to a stock, an escapement goal for a group of stocks in a management may be developed. A good example of where an escapement goal has been set for a geographic area is for pink salmon along the south side of the Alaska Peninsula (Schaberg *et al.,* 2019). 6.2 States shall establish safe limit reference point(s) for exploitation (i.e. consistent with avoiding recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible). When a limit reference point is approached, measures shall be taken to ensure that it will not be exceeded. For instance, if fishing mortality (or its proxy) is above the associated limit reference point, actions should be taken to decrease the fishing mortality (or its proxy) below that limit reference point. Almost all of Alaska's escapement goals (whether BEGs, SEGs, or OEGs) are established as a range (see Clause 6.1). A few stocks with SETs have only a lower limit. The lower end of each range, or SET is essentially a limit reference point, because all fisheries must, by regulation (5AAC 39.222) be managed to provide escapements. Prior to each season, the ADFG publishes management plans that outline expectations of run size and the management strategy for the upcoming season. The Management Plan for Southeast Alaska's District 11 gillnet fishery (Thynes, 2022) illustrates the intent to manage the fishery so as to obtain escapement goals for Chinook Salmon. "The 2022 preseason Taku River Chinook salmon terminal run forecast is below the escapement goal range and requires a conservative management approach. The forecast does not provide any AC [Allowable Catch] for directed fisheries, no assessment fishery will occur on the Canada side of the border, the 16 joint U.S./Canada in-river assessment project on the U.S. side of the border will be minimized to reduce the handling of fish, and restrictive management measures will be taken in early openings of U.S. and Canadian fisheries targeting sockeye salmon. In-season abundance estimates derived

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		from comparisons of in-river tangle net CPUE may be available in mid- to late May. However, in-season assessment may cease if the run does not appear large enough to allow the additional handling of fish. Management actions taken to reduce harvest of Taku River Chinook salmon in the District 11 drift gillnet fishery over the past 5 years have been incorporated into an action plan and were approved by the Board at the March 2022 meeting." "The District 11 drift gillnet fishery will begin the third Sunday in June (SW 26) for directed sockeye salmon fishing in Section 11-B with time, area, and mesh size restrictions. The initial opening will be for a 2-day fishing period with an area restriction closing waters in Taku Inlet north of Point Greely and west of a line of longitude running mid-inlet from the latitude of Point Greely to a point where it intersects with the shoreline south of Grand Island. A 6-inch maximum mesh size restriction and night closures will be in effect. Open area in SW 27 will likely be liberalized with waters in Taku Inlet closed north of Cooper Point and open area in SWs 28 and 29 will have increased area with the north line shifted up to Jaw Point. The maximum mesh size restriction and night closures will likely remain in place through SW 27. Taku Inlet will likely only open for 2 days through the SW 28 opening and subsequent openings will be based on in-season fishery performance and stock assessment information. The District 11 fishery will be managed through mid-August primarily based on sockeye salmon abundance. Run strength will be evaluated using harvest and CPUE data, and weekly in-river run size estimates derived from the Taku River fish wheel mark–recapture project. The in-river run size estimates produced from this project will incorporate a dropout rate which will give more confidence that the run size is not being overestimated and allow managers to consider AC targets more comprehensively on a weekly basis. Contribution of enhanced stocks of sockeye salmon will be estimated in-season by analysis of salmon otoliths sampled from the commercial harvests. The age and stock compositions of the commercial harvest of wild sockeye salmon will be estimated after the fishing season by scale pattern and GSI analysis. Port Snettisham hatchery produced sockeye salmon runs will be managed according to the District 11: Snettisham Hatchery Salmon Management Plan (5 AAC 33.378). The plan provides basic guidelines for managing enhanced sockeye salmon production from Port Snettisham including the following provisions in order of priority: 1. Ensure sustainable production of wild sockeye salmon from Crescent and Speel Lakes. 2. Manage Port Snettisham enhanced sockeye salmon run in a manner that does not prevent achieving escapement goals or PST harvest sharing agreements for Taku River salmon stocks. 3. Assessment programs shall be conducted to estimate Port Snettisham wild sockeye salmon stock escapements and contributions of enhanced sockeye salmon to the District 11 commercial fishery. 4. Common property harvests in the Speel Arm SHA shall be conducted by limiting time and area to protect wild sockeye salmon runs. Management of the fishery in Stephens Passage will focus on conservation of Port Snettisham wild sockeye salmon stocks, particularly in July. The department may implement a 6-inch minimum 17 mesh size restriction in Section 11-B south of Circle Point to reduce harvest rates of Port Snettisham wild sockeye salmon while allowing harvest of Limestone Inlet remote release site hatchery-produced chum salmon. The mesh size restriction in Section

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> 11-B will be relaxed at the end of July or after the peak migration timing of Port Snettisham wild sockeye salmon stocks through Stephens Passage".

Post season, annual management reports for each area detail how the season unfolded as stock assessment data became available. An extracted summary from the 2022 Annual Management Report for the Nushagak District of Bristol Bay illustrates management approach to meet escapement goals for both Chinook and Sockeye salmon (Tierman *et al.*, 2023).

> "The preseason plan, outlined in the outlook, indicated commercial fishing for sockeye salmon would begin in the Nushagak District when Wood River sockeye salmon escapement reached 100,000, if Nushagak Chinook escapement was projecting below 95,000. Management emphasis would also switch from Chinook salmon to sockeye salmon at this juncture; however, efforts would be made to keep drift fishing time to 12 hours or less daily for as many days as possible to protect Chinook salmon.
> Despite Chinook salmon escapement projecting above the 95,000 inriver escapement goal, the department wanted to wait as long as possible before opening commercial fishing in the district while still protecting against a big influx of sockeye salmon. Staff closely watched Wood River sockeye salmon escapement, where enumeration began on June 17, for signs of such an influx.
> Wood River sockeye salmon escapement surged with a midnight to 6:00 AM count on June 19 of 20,670 bringing the cumulative to 45,000 fish (Table 17). With the potential for an 80,000 fish escapement day, the department released a 9:00 AM announcement putting the fleet on short notice. Additional information was gathered from the subsistence fishery, test fishery, and aerial surveys and concluded there was not a sustained push of fish occurring. The decision was made to wait, and an 8:00 PM announcement advised the earliest possible openings would be the evening of June 20. On the morning of June 20, the midnight to 6:00 AM Wood River sockeye salmon escapement was 5,500 for a cumulative of 74,000. Although Nushagak Chinook salmon escapement was strong at 21,500 fish through June 19 (Table 7), the department was still concerned because of previous poor years and less than expected subsistence reports at this point in the season. Once again managers gathered as much data as possible and decided to wait at least another tide before fishing. A 9:00 AM announcement on June 20 pushed the earliest possible opening until June 21 in the morning. With another late aerial survey to assess Wood River sockeye salmon movement in the lower river, and continued updates from the test fishery, staff again updated the fleet with an 8:00 PM announcement saying earliest possible fishing would now be the evening of June 21. The morning of June 21 still indicated fish passage was slow, 8,000 midnight to 6:00 AM at Wood River tower. Staff released a 9:00 AM announcement pushing back the earliest possible fishing until June 22 in the morning. Throughout the day on June 21 staff monitored the various indicators but still saw no sign of increased fish movement through the district in the test fishery or in river via subsistence reports and an aerial survey. An 8:00 PM announcement on June 21 pushed back the earliest possible opening until the evening of June 22. The morning of June 22 Wood River tower 14 counts were still slow with 9,500 fish counted from midnight to 6:00 AM, but test fish results in the district indicated fish were starting to move. Staff released a 9:00 AM announcement for the

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	earliest possible fishing period the morning of June 23. Additional indicators showed signs of increased fish movement throughout the day. Staff released a 6:00 PM announcement on June 22, opening commercial fishing in the district from 8:30 AM until 3:00 PM for set gillnets and from 9:30 AM until 1:30 PM for drift gillnets. "The first commercial opening for the drift gillnet fleet and the Nushagak Section set gillnet fleet harvested 853,000 sockeye salmon and 436 Chinook salmon (Table 18). Although fishing started for the season and Chinook salmon escapement was projecting above the 95,000 in-river goal, staff were still conservative out of concern for Chinook salmon. The preseason plan was to limit drift fishing to 12 hours or less per day and take at least 1 tide off for all fishing every 2 days. With the timing of the tides this meant an opening the morning of June 24 and another opening late that evening, closing at 3:30 AM on June 25. Taking the afternoon tide off on June 25, the next opening was scheduled for 12:30 AM June 26. The afternoon of June 25 there were several reports from the commercial district of large volumes of fish moving along the east side of the district. At this point, it was too late to announce an opening, so the previously announced opening scheduled for 12:30 AM June 26 was fished as planned. June 26 produced a harvest of 1.7 million sockeye salmon in the Nushagak District. Another tide was taken off for the drift gillnet fleet on June 27, but set gillnets started fishing late on June 25 and did not close for the rest of the season. After June 27, the drift fleet had opportunity on every tide. The drift fleet started fishing at 3:30 AM on June 30. When staff arrived in the office in the morning, reports indicated fishing was exceptional, which prompted managers to extend fishing until 6:00 PM, July 1 (Table 18). Beginning June 30, the surge of sockeye salmon into the Nushagak District was unprecedented, surpassing the records set in 2021. In-season, the daily processor reports indicated a daily harvest of 2.5 million on June 30. This reported harvest of 2.5 million sockeye salmon shattered the record single-day harvest set in 2021 of 1.8 million fish. The final fish ticket harvest number for June 30 is 3.1 million, which exceeds the total harvest for the Nushagak District in some entire seasons, such as 2002 and 2012 (Table 18; Appendix A3). The reported daily harvest exceeded 1 million sockeye salmon 8 of the 9 days between June 30 and July 8. Another 5 million sockeye salmon were harvested after July 8. The drift fleet fished 2 tides, about 14.5 hours, per day from July 9 until fishing was extended until further notice on July 13 (Table 18). The 22.7 million sockeye salmon harvest ranks second highest of all time, only behind the 24 million harvested in 2018 (Appendix A3). On June 28, the Wood River sockeye salmon escapement exceeded 1.1 million, allowing managers to open the Wood River Special Harvest Area (WRSHA). The WRSHA was opened to commercial fishing with set gillnets providing more opportunity to control Wood River sockeye salmon escapement. The set gillnet fleet was behind in the harvest percentage in the regular district and therefore was afforded the additional opportunity in the WRSHA. The WRSHA remained open, though not continuously, until July 20 when it was closed for the season." Perhaps the best evidence that the ADGF takes management action to achieve escapement goals is the fact that escapement goals are generally attained state-wide (Munro, 2023).

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	6.3 Data and assessment procedures shall be installed measuring the position of the fishery in relation to the reference points. Accordingly, the stock under consideration shall not be overfished (i.e. above limit reference point or proxy) and the level of fishing permitted shall be commensurate with the current state of the fishery resources, maintaining its future availability, taking into account that long term changes in productivity can occur due to natural variability and/or impacts other than fishing. As stated in 6.1, ADFG has established a comprehensive program to estimate escapement goals. That process is based on methods for estimating the catch by all user groups (see clause 4) and escapement. Importantly, catch, catch per unit of effort, escapements and often biological data are collected in real time and for comparison with historic fishery performance and to historic run timing. The methods used to estimate escapement vary greatly depending upon local circumstances. For instance, counting towers are typically used for Sockeye Salmon in Bristol Bay, weirs are common for Sockeye Salmon in Kodiak, Chignik and Southeast. Mark recapture programs are common for Chinook Salmon in Southeast. Foot surveys are commonly used for Coho Salmon in Southeast. Aerial surveys are the normal practice for Pink and Chum salmon throughout the state. Sonar is used in large, occluded rivers such as the Yukon, Copper and Kenai. A complete listing of the method used for each escapement goal is found in Munro (2023). For systems that have developed BEG's such as Sockeye Salmon stocks in Bristol Bay and Westward Region and several Chinook Salmon stocks in the Yukon and Southeast Region there is a comprehensive program for estimating the age composition of both the catch and escapement. There is a mix of programs to estimate the stock specific catch in mixed stock fisheries. Coded microwire tags are used extensively in Southeast and Yakutat for Chinook and Coho salmon. Thermal marks on otoliths are used to identify hatchery Pink Salmon in Prince William Sound, and for Chum Salmon in Southeast. Thermal marking of Pink and Chum salmon has begun in Kodiak. Genetic stock Identification has/is used for Chinook Salmon in Cook Inlet and Southeast and for Sockeye Salmon in Cook Inlet, Bristol Bay and Southeast. Environmental data such as river discharge and water quality are key observations for helping to interpret escapement data based on aerial and foot surveys. The data needed for in-season management of the fisheries is obtained, synthesized and interpreted in real time by area research and management staff. Emergency Orders are issued to describe the area, time and gear allowed for fishing if surplus production is identified. For the 2022–2023 Alaska Board of Fisheries meeting cycle, escapement goals were reviewed for the Southeast Region (Heinl *et al.*, 2021) and Prince William Sound Management Area (Joy *et al.*, 2021), which had been postponed from the 2020–2021 meeting cycle because of the COVID-19 pandemic. As a result of these reviews, there were 7 escapement goal changes for in 2022. In the Southeast Region, 2 escapement goals were updated (1 coho and 1 sockeye salmon), whereas in Prince William Sound, 4 escapement goals were updated (2 coho and 2 sockeye salmon) and the Copper River Chinook salmon escapement goal was revised from a lower-bound SEG to an SEG with an upper and lower bound. For 2022, the number of salmon escapement goals in Alaska remained at 264.

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		Munro (2023) summarized the escapements relative to goals for 2022 as follows: "The percentage of all stocks assessed in 2022 that were within the goal range (or above the lower bound if a lower-bound SEG) was 47%, which is within the observed range for recent years (40–50%). In 2022, 20% of the goals were exceeded, which was a decrease from 30% in 2021. In recent years the percentage of escapement goals that were exceeded ranged from 18% to 41%. The percentage of goals for which minimum escapement was not achieved in 2022 was 33%—an increase from 30% in 2021 and above the recent average of 25% (2014–2021)." 6.4 Management actions shall be agreed to in the eventuality that data sources and analyses indicate that these reference points have been exceeded. The statewide Sustainable Salmon Policy (5AAC 39.222) mandates, among other things, that escapement goals must be established for all exploited salmon stocks and that fisheries shall be managed to allow escapements within ranges necessary to conserve and sustain potential salmon production and maintain normal ecosystem functioning. This basic policy sets the expectation among fishers that ADFG will, as needed, exercise its statutory authority to manage the time and area where fishing is allowed so as to achieve those escapement goals. This policy also requires ADFG to provide the Board of Fish, on a regular basis, a stock status report, a review of escapement goals and action plans that include management directives to promote recovery of any stock of concern. Further guidance and expectations for the ADFG's in-season management actions is found in the Policy for the Management of Sustainable Salmon Fisheries, "in the face of uncertainty, salmon stocks, fisheries, artificial propagation and essential habitats shall be managed conservatively". This regulation further defines the "precautionary approach" to involve consideration of; a) the uncertainties in salmon fisheries and habitat management, b) biological, social, cultural, and economic risks, c) consideration of the needs of future generations, and d) placement of the burden of proof on those activities that pose a risk to salmon habitat or production. Often the Board of Fisheries determines it is in the state's best interest to lay out specific management plans to guide the ADFG to achieve not only its biological goals, but also to meet Board of Fish decisions on the allocation of the annual catch among user groups. When this occurs, the Board develops specific management plans through its open public regulatory process. There are over 100 BoF salmon management plans that detail the specific management actions that are to be taken to ensure that management targets are met, these plans can be found in the Commercial fishing regulations, for example (ADFG 2020) outlines plans for the Cook Inlet area. The public Board of Fish process that permits individuals to submit regulatory proposals, to testify, present data and management options ensures that diverse points of view can be considered when crafting management plans. The authority, process and annual schedule for the BoF can be found at: http://www.adfg.alaska.gov/index. And schedule used cfm?adfg=fisheriesboard.main. A detailed example of a Board of Fish management plan is the Situk-Ahrnklin Inlet and Lost River King Salmon Management Plan (ADFG 2019). This plan includes specific management actions that are to be implemented for each fishery based on the projected in-river run at the weir. The BEG for Situk River Chinook salmon is 450 – 1050 three ocean-age or older fish. The management plans call for a

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	stepwise procedure for closing/opening the fisheries depending upon the projected run size of Chinook Salmon as follows: • Closure of all fisheries (subsistence, sport, personal use, commercial set gillnet, and near-shore troll commercial troll fishery) if the projected in-river escapement (based on weir counts and historic run timing) is below 350 fish. • If the projected in-river escapement is 350 – 450 Chinook Salmon, the sport fishery will be closed by emergency order, the commercial troll fishery may be closed by EO, the set-net fishery may be limited to "non-sale" of Chinook Salmon, and weekly fishing periods for the set-net fishery may be restricted. These regulations are designed to minimize the harvest of Chinook Salmon while allowing the harvest of the Sockeye Salmon and retention of Chinook Salmon for subsistence use. • If the project return is 451-730 Chinook Salmon, portions of the Situk River may be closed to sport fishing for Chinook salmon or the entire river may be restricted to catch and release fishing for Chinook Salmon, the commercial troll fishery may be closed by EO, the set-net fishery may be limited to "non-sale" of Chinook Salmon, and weekly fishing periods for the set-net fishery may be restricted. These actions will be taken, as needed to ensure a minimum escapement of 730 Chinook Salmon. • If the projected Chinook salmon escapement is 730 – 1,050 fish, the set-net fishery will be managed based on Sockeye Salmon run strength, and the sport, subsistence, and commercial troll fishery will be managed based on normal fishing regulations. If the projected escapement of Chinook Salmon is greater than 1,050 fish, ADFG will implement liberalized regulations to harvest the surplus of Chinook Salmon above the escapement goal range. Other examples of fishery management plans that contain pre-determined fishery management actions to meet escapement goals or other fishery targets are: • the Southeast Alaska King Salmon Management Plan (5AAC 47.055) contains numerous potential restrictions to the sport fishery to achieve the abundance-based allocation to the sport fishery. • the Kenai River Late-Run Sockeye Salmon Management Plan (5AAC 21.360) contains numerous potential regulatory actions to the commercial set gillnet fishery and was updated in 2024 to be more restrictive on both sport and commercial fisheries when run sizes are below goals. • the Tanana River Salmon Management Plan (5AAC 05.367) provides guideline harvest limits for Chinook, summer Chum and fall Chum salmon and options for commercial fisheries based on escapement status of the runs. • the Southern District Management Plan for the Alaska Peninsula (5AAC 09.360) provides management directives for the mainland fishery based on harvestable surplus of Chignik River Sockeye Salmon.
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Statement of consistency to the RFM Fishery Standard	Management of the Alaska salmon fishery continues to be based upon defining scientific escapement goals (reference points) and managing the fishery in-season by manipulating the time and area that may be fished to achieve the goals. Therefore, the fishery continues to conform to the requirements of Fundamental Clause 6 of the RFM Fishery Standard.

7.9.2.4. Fundamental Clause 7. Precautionary approach

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.**
Summary of relevant changes:	7.1. The precautionary approach shall be applied widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. Previous reports have identified three particular examples of concern: 1. Depressed runs, declining productivity, and biological changes in age and size of Chinook populations. 2. Potential detrimental impacts of hatchery origin pink salmon in Prince William Sound (PWS) and hatchery origin chum salmon in Prince William Sound and Southeast Alaska. 3. Return of hatchery fall chum to the remote facility in SE Alaska near Sitka in the Crawfish Inlet. *Chinook* Chinook salmon runs have declined since 2007 to historically low levels throughout most of Alaska (Murphy *et al.*, 2017; Ream and Merriam, 2017; Matter and Tyers, 2019; Hamazaki, 2021; PSC-TCTR, 2021; Munro, 2023). The decline has been accompanied by reductions in average age and size of return. Restrictions and closures of commercial, sport, subsistence and personal used have been widely implemented to reduce exploitation rates and protect spawning escapements. Many stocks have not met escapement goals in recent years. The decline in Chinook numbers and productivity is the result of an extended period of unfavorable ocean conditions. For example, the long-term marine survival for four Southeast stocks has declined from 4% to below 1%. Much additional mortality of the Chinook salmon is occurring in the first few months of life at sea. Changes in age composition of the return also indicate that mortality has increased at older marine ages as well. Freshwater survival has been average or even above average. Chronic failures to reach escapement goals are addressed by formal designation as a stock-of-concern and development of a corresponding action plan that includes goals, measurable and implementable objectives and provision for restoration and protection_of habitat, fishery management actions and research to address related concerns. Chinook stocks of concern have been identified in Southeast Alaska (7), Cook Inlet (5), Kodiak (2), Chignik (1), Nushagak (1), Yukon (1) and Norton Sound (1). Action plans have resulted in severe fishery restrictions and closures in many areas, with devastating impacts on many fisheries. For instance, terminal commercial, sport and subsistence fisheries for Chinook salmon in Southeast Alaska have been largely closed in order to protect escapement (E. Jones, 3/19/2024 presentation to audit team). Similar closures have occurred in the Yukon River and most recently, in Upper Cook Inlet. In response to the decline in Chinook abundance, substantial investments have also been made into new stock assessment and research on limiting factors. These included: • A Chinook Salmon research initiative from 2012-2017 that addressed: 1) stock assessment improvements targeting specific knowledge gaps on indicator stocks; 2) compilation of local and traditional knowledge regarding Chinook salmon trends in abundance, distribution, and physical appearance; 3) research on the critical juvenile life stage in the near shore marine environment; and 4) life history process studies on environmental factors affecting growth and productivity.

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- A series of studies in Yukon and Kuskokwim Rivers, Cook Inlet and Southeast Alaska funded by Congressional appropriations in 2014 for fishery disaster relief under the Magnuson-Stevens Fisheries Management and Conservation Act.
- In the Southeast region, each year around $5 million is provided by the U.S. federal government, the Pacific Salmon Commission Northern Endowment Fund and the State of Alaska for implementation of the Pacific Salmon Treaty and Chinook salmon research and management specifically.
- Joint studies on Yukon River Chinook by ADFG and Fisheries and Oceans Canada on time and location of mortality during freshwater migration based on a radio tagging study and on effects of temperature and Ichthyophonus infection on prespawning mortality.
- A five-year program beginning in 2022 to estimate the spawning escapement of Nushagak Chinook salmon with $7.0 million funded equally by the State of Alaska and the Bristol Bay Native Corporation.
- A new salmon ocean ecology program beginning in 2022 to study the productivity of waters in the North Pacific and Bering Sea.

Hatchery Impacts

Alaska has developed a complex of policies, regulations, and practices governing salmon hatcheries as a precaution against potentially-significant detrimental effects of hatchery production on wild stocks (Evenson *et al.*, 2018; Eller, 2018; Wilson, 2022). Related guidance is found in Salmon Regional Planning Plans, ADF&G Genetics Policy, the FRED Division Statute 1971, the PNP Hatchery Permitting Statute, the Regional Planning Statute 1976, the BOF Hatchery Management Policy, Fish Transport Regulations 1981, the PNP Regulations 1985, the Genetics Policy 1985, the Pathology Policy 1988, Wild and Enhanced Stock Statute 1992, Sockeye Salmon Culture Policy 1994, and the BOF Sustainable Salmon Policy 2000 (Clark *et al.*, 2006; Davis *et al.*, 1985).

Precautionary measures include:

- Prohibition of finfish farming, defined as raising fish to maturity in captivity for commercial purposes.
- Siting of hatchery facilities in areas that are isolated from areas of high wild salmon abundance and diversity for the species being produced.
- Siting of hatcheries in terminal areas which facilitate targeted harvest of returning adults.
- Establishment of hatcheries from local wild broodstock.
- Operation of hatcheries with best management practices to avoid genetic bottlenecks and directional selection.
- Marking hatchery fish releases so that the distribution and composition of hatchery and wild fish can be monitored in fisheries, spawning grounds and in hatchery broodstock.
- Ensuring release at sites and with strategies that are likely to maximize imprinting and homing.
- Release of hatchery fry after wild fry dispersal to reduce the potential for competition.
- A statewide fish health program that conducts routine surveillance, training, and diagnostic services in the case of outbreaks.
- Fishing strategies that result in differential harvest rates between hatchery and wild fish to both limit straying and ensure sustainable wild harvest rates.

Private non-profit hatchery programs in Alaska are subject to extensive regulatory oversight by ADF&G on an annual basis under the authority of the Commissioner. This oversight is facilitated by

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advisory review of Regional Hatchery Planning Teams in a public process. Annual management plans detailing production and returns are prepared by operators for review and approval. All hatchery releases are also subject to fish transport permit requirements. Any new production proposals are subject to new permit applications - new permit applications are not approved if inconsistent with established policies for wild fish protection.

Individual hatchery programs throughout the state were examined from 2012-2017 for consistency with policies and prescribed management practices. Evaluations included a review of hatchery management plans and permits, an assessment of each hatchery program's consistency with statewide policies, and recommendations to address any deficiencies found. Management plans and permits were examined to determine whether they were current, consistent with each other, and accurately described hatchery operations. Programs were generally found to be in compliance and issues were addressed as identified.

Based on concerns over hatchery pink salmon and chum salmon in PWS and hatchery Chum salmon in Southeast Alaska and in the context of evaluating the risk of hatchery straying, Alaska began a comprehensive, long-term research program in 2013 on straying and relative fitness of hatchery and wild Pink and Chum Salmon in Prince William Sound and Southeast Alaska (ADF&G, 2018; Knudsen *et al.*, 2016, 2021; Josephson *et al.*, 2021; Americus *et al.*, 2023).
This program was designed to address questions identified in 2011 by a science panel composed of current and retired scientists from ADFG, University of Alaska, aquaculture associations, and National Marine Fisheries Service:

1. What is the genetic stock structure of pink salmon in Prince William Sound (PWS) and chum salmon in Southeast Alaska (SEAK)?
2. What is the extent and annual variability in straying of hatchery pink salmon in PWS and chum salmon in PWS and SEAK?
3. What is the impact on fitness (productivity) of wild pink and chum salmon stocks due to straying of hatchery pink and chum salmon?

Population Structure –Genetic stock structure of Pink and Chum Salmon has been described by Cheng et at. (2016, 2019) and Gilk-Baumer and Templin (2019). Significant, but shallow genetic differences among wild populations of Pink Salmon in PWS and Pink and Chum Salmon in SEAK, consistent with patterns found for these species in other areas of similar geographic size.

Straying Studies – Assessments have determined that the incidence of hatchery straying is very low in the large majority of natural production areas (Piston & Heinl, 2012a, 2012b, 2020; Josephson *et al.*, 2021; Americus *et al.*, 2023). Josephson *et al.* (2021) reported unbiased estimates of the proportions of hatchery-origin summer Chum spawning in each of the three southeast Alaska management areas in 2013-2015 ranged from 0.016 to 0.081, and the estimated hatchery proportions spawning across Southeast Alaska ranged from 0.032 to 0.060. Hatchery production of Chum Salmon in Southeast Alaska is predominately of the summer run while a substantial portion the natural production of Chum salmon is of the fall run (Piston & Heinl, 2020). Thus, estimates of hatchery proportions in the aggregate Southeast Alaska Chum stock are substantially less than those based on summer Chum populations alone.

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	Hatchery-origin stray rates and total run characteristics have been estimated for Pink Salmon and Chum Salmon returning to Prince William Sound in 2013–2015 (Knudsen *et al.*, 2021). Estimated annual proportions of hatchery fish in the preharvest run ranged from 0.55 to 0.86 for Pink Salmon and from 0.51 to 0.73 for Chum Salmon. Commercial fisheries harvested 94–99% of hatchery-origin fish of both species, 27–50% of natural-origin Pink Salmon and 17–20% of natural-origin Chum Salmon. Proportions of hatchery fish across all sampled PWS spawning streams were much lower, ranging from 0.05 to 0.15 for Pink Salmon and from 0.03 to 0.09 for Chum Salmon. *Fitness Studies* – This ground-breaking work is based on first identifying the origin (hatchery/natural using otolith marks) of parents and offspring spawning in study streams and subsequently using genetics to identify parent-offspring relationships via genetic pedigree reconstruction. This information will allow estimation of the relative reproductive success (RRS; fitness) of hatchery strays and naturally produced fish spawning in streams. Genetic introgression from the hatchery population into wild stocks has previously been identified for Chum salmon in PWS but the impact is unclear (Jasper et. al., 2013). Initial studies of RRS for Pink Salmon in two Prince William Sound streams suggest that reproductive success was significantly lower for hatchery-origin relative to natural origin fish (Lescak & Dann, 2019; Lescak *et al.*, 2019; Shedd *et al.*, 2022). RRS, measured as sampled adult offspring that returned to their natal stream, was significantly lower for hatchery- vs. natural-origin parents in both lineages, ranging from 0.03 to 0.47 for females and 0.05 to 0.86 for males. The assessment of RRS in PWS Pink Salmon is ongoing. The implications of reduced RRS on wild productivity remain to be determined and will depend on whether the mechanisms underlying reduced RRS are environmentally driven, and likely ephemeral, or genetically driven, and likely persistent across generations. The field portion of this project was completed in 2023 with genetic sampling of chum genetic sampling of Fish Creek in Southeast Alaska. The chum salmon fitness study is ongoing with genotyping and parentage analysis of reference stream samples scheduled to be completed in 2024-2025. Final analysis and reporting of relative reproductive success of pink salmon in Prince William Sound is also expected in 2025. *Crawfish Inlet Chum Salmon* New information was identified during previous surveillance audits regarding a high incidence of straying of Chum Salmon from a hatchery release site in Crawfish Inlet, Southeast Alaska. According to the Northern Southeast Alaska Regional Aquaculture Association (NSRAA) website: The Crawfish Inlet chum program is a Medvejie Hatchery satellite program (remote release) permitted for 30 million eggs. The goal of the program is to produce 700,000 adult Chum Salmon for common property harvest. Crawfish was expected to be an excellent opportunity for the troll fishery based in Sitka which historically has been underserved by the hatchery programs relative to their desired harvest shares. Crawfish Inlet was identified as a suitable release site based on a comprehensive review of alternatives around 2011. The site was sufficiently segregated from natural chum spawning areas to provide for significant terminal fishing opportunities on returning fish in an area without natural Chum Salmon spawning streams, hence, little risk of significant straying into natural populations. However, large numbers of Crawfish Inlet hatchery fish were subsequently observed to return via

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	West Crawfish Inlet which is connected to Crawfish Inlet by a small channel. Several chum spawning streams are located in West Crawfish Inlet and significant numbers of hatchery Chum Salmon have been observed straying into these streams. One of these streams is also a wild index stream for stock assessment purposes. The local wild population is a summer run stock. The Medvejie hatchery stock is a fall run stock. There is therefore little interbreeding opportunity of the two runs. However, the hatchery fall-run spawns on top of the wild natural summer run, digging up redds and likely reducing abundance. This is clearly a situation where hatchery production has negatively impacted a wild stock. The impact is not large relative to the large scale of wild production of Chum Salmon. However, it is inconsistent with the certification standard as well as Alaska Hatchery Policy. NSRAA and ADF&G are jointly working to implement measures to remedy this straying situation (Americus *et al.*, 2023). A primary strategy will be to maximize harvest of the hatchery fish to reduce the incidence of straying. A targeted hatchery cost recovery fishery is being conducted in addition to common property net and troll fisheries. It is unclear whether migration and straying patterns observed to date are a typical condition or an artifact of recent drought conditions and a larger-than-average initial return. Recent fishery measures appear to have been largely effective under normal conditions in harvesting hatchery Chum Salmon in this area before significant straying can occur. Assessment of harvest patterns and hatchery contribution to the fisheries and spawning areas is ongoing. NSRAA has advised the assessment team that additional measures, such as weirs on the spawning streams, will be considered where necessary to reduce hatchery strays to acceptable levels. 7.2. For new and exploratory fisheries, procedures shall be in place for promptly applying precautionary management measures, including catch or effort limits. Specific and precautionary procedures are explicitly identified for new and exploratory fisheries in Alaska State Regulation under the Policy for the Management of Sustainable Salmon Fisheries [5 AAC 39.222 (d)(1)(D)(I)]. The policy directs that ADF&G provided corresponding reports to the BoF to provide the basis for development of effective management plans. Also, 5AAC 39.210, the Management Plan for High Impact Emerging Fisheries requires that high impact emerging fisheries be closed until an interim management plan and associated regulations are developed.
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Statement of consistency to the RFM Fishery Standard	The ADFG fisheries management continues to be based on the precautionary approach to ecosystem management and conform to the requirements of Fundamental Clause 7 of the RFM Fishery Standard

7.9.3. Section C: Management Measures, Implementation, Monitoring, and Control

7.9.3.1. Fundamental Clause 8. Management measures

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.**
Summary of relevant changes:	At the March 2022 meeting of the Alaska Board of Fish for Southeast and Yakutat, they: • Approved a series of Management Plans for the conservation of Chinook Salmon in Southeast. • Made some minor admirative changes. At the November 2022 meeting for Bristol Bay, the BoF: • Made several changes to the management approach in the Nushagak District to conserve Chinookk Salmon. • Increased the distance offshore a set net could be operated in the Nushagak District. • Made several minor changes in District boundaries and other admirative details. At the January 2023 and March meeting for AYK the BoF: • Allowed Kotzebue commercial salmon fishermen to leave their set gillnet gear unattended during commercial fishing periods. • Repealed and replaced Yukon Area commercial salmon fishing gear specifications. • Modified Kuskokwim Area lawful gear and gear specifications and operation to provide greater opportunity to harvest salmon other than king salmon, during times of salmon conservation Establish times when a commercial gillnet permit holder in Kuskokwim Area may use dip net and beach seine gear to commercially harvest salmon and standardize Kuskokwim Area dipnet lawful gear specifications and operation. At the February 2023 meeting for Chignik, Ak Peninsula and Aleutians, the BoF: • Amended the Southeastern District Mainland Salmon Management Plan to allow more commercial salmon fishing time in Orzinski Bay if the escapement objectives into Orzinski Lake are met. • Amended the South Unimak and Shumagin Islands June Salmon Management Plan to implement a Chum Salmon harvest cap to reduce commercial fishing time. • Amended gillnet specifications and operations to allow offshore anchoring of the up to 25 fathom seine web lead. • Amended the Chignik Area Salmon Management Plan to reflect changes to Chignik River sockeye salmon escapement goals. • Amended the Chignik Area Salmon Management Plan to apply mandatory closures in the Chignik Management Area, repeal the in-river run goal in August and September and remove the 48-hour maximum weekly fishing period in September. • Amend the Southeastern District Mainland Salmon Management Plan to reflect changes to Chignik River sockeye salmon escapement goals. • Made several administrative changes to District boundaries. • Amended gillnet specifications and operations to allow monofilament web in the Northern District commercial salmon set gillnet fishery. • The Bof also reviewed both Management Plans for Chignik sockeye and chinook and provided additional guidance to ADFG on implementation. At the March 2023 state wide meeting the BoF: • Adopted numerous amendments to the Nushagak-Mulchatna King Salmon Management Plan. • Modified the dates sinking of gillnets are allowed in the Yukon Area from October 1 to April 30. At the April 2023 Special Meeting, the BoF:

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.**

- Closed the Kuskokwim Area District 4 on Sundays and allowed only one gillnet to be operated per vessel in the subsistence and commercial fisheries between June 1 and July 15.

At the November/December Lower Cook Inlet & supplemental issues meeting the BoF:

- Amended the list of waters closed to commercial fishing in Cook Inlet.
- Amend the Southeast Alaska King Salmon Management Plan to align with new methods to set catch limits adopted by the Pacific Salmon Commission.

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

The Alaska State Constitution Section 4 states "Sustained Yield. Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses. The Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.22), directs management measures to ensure sustainability of yield. The Policy is implemented through the various fishery management plans for different fisheries in different regions and areas of the state.

The BoF has the power to develop management plans and allocate fishery resources among personal use, sport, guided sport, and commercial fisheries under state law (AS 16.05.251). Management plans are developed in an open public process that permits all citizens the opportunity to propose alternative schemes. When developing such plans and deciding how the conservation burden will be shared, the Board uses the following criteria:

- The history of each personal use, sport, and commercial fishery.
- The characteristics and number of participants in the fisheries.
- The importance of each fishery for providing residents the opportunity to obtain fish for personal and family consumption.
- The availability of alternative fisheries resources.
- The importance of each fishery to the economy of the state.
- The importance of each fishery to the economy of the region and local area in which the fishery is located.
- The importance of each fishery in providing recreational opportunities for residents and non-residents.

Legislation was passed in 1973 to establish a "limited entry" system to allow the state to limit the number of Participants in a specific fishery. State statute AS 16.43.140 states, "After January 1, 1974, a person may not operate gear in the commercial taking of fishery resources without a valid entry permit or a valid interim-use permit issued by the commission.

The Commission established an "Optimum Number" of permits for each salmon fishery through its research on the economics of the individual and management needs of that fishery. Various reports prepared by the Commission can be found at: https://www.cfec.state.ak.us/Publications/salmon.htm

Since implementation of limited entry, other actions have been taken to improve economic viability of the fishing fleet, for example, in 2008, the Southeast Revitalization Association conducted a permit

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		buy-back program in the Southeast Alaska salmon purse seine fishery which resulted in the purchase and subsequent relinquishing of 35 limited entry permits to CFEC. 8.2. States shall prohibit dynamiting, poisoning and other comparable destructive fishing practices. Under Alaska regulations (5AC39.150), the use of an explosive, chemical or poison in the taking of fish or shellfish is prohibited, except for the use of chemical baits or lures to attract shellfish. 8.3. States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery. Four general classes of salmon users have been identified: commercial, subsistence, recreational, and personal use. Both state (AS 16.05.258 (b)) and federal (ANILCA Title VIII) laws prioritize subsistence uses over all other consumptive uses of fish and game. State law (16.05.251(e)) requires that "allocation decisions deal with identifying parties with a legitimate interest in the use and management of the fishery. The Alaska Board of Fish is responsible for deciding how the available harvest will be allocated among users. The BoF is a citizen panel comprised of a membership representing all user groups. The BoF receives formal proposals and advice from 82 Advisory Committees that representative all classes of resource users in local communities. Fishery management plans, based on scientific research and fishery data conducted by ADFG, are not adopted by the BoF until it also considers effects on the various domestic parties with a legitimate interest in the use and management of the affected fisheries. This information is obtained from Advisory Councils, public testimony, and technical information provided by ADFG. Criteria used by the BoF when making decisions regarding how the conservation and utilization of resources is outlined in Supporting Clause 8.1. 8.4 Mechanisms shall be established where excess capacity exists, to reduce capacity. Fleet capacity operating in the fishery shall be measured. States shall maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations and a record of all authorizations to fish allowed by them. See clause 8.1 8.5 Technical measures shall be taken into account, where appropriate, in relation to: fish size, mesh size or gear, closed seasons, closed areas, areas reserved for particular (e.g. artisanal) fisheries, protection of juveniles or spawners. Types of legal gear for Alaska fisheries are listed in regulation (5 AAC39.105). Specific requirements for gear (i.e., gillnet and purse seine length, depth, and mesh sizes) are defined for each management area as well as in specific management plans and regulations. Within each management area, zones are established, typically near the mouths of streams that are permanently closed to fishing. Likewise, within each management area, times when fishing may be permitted. Size of fish that may be retained is generally not implemented for commercial fisheries. One notable exception is that a minimum size of 28 inches is established for the troll caught Chinook salmon in Southeast. Harvest of juveniles is not permitted. Waters near spawning grounds are closed to fishing. In addition, state law (AS 16.10.010) prohibits Interference with salmon spawning streams and water regulation activities in and or

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around streams in either fresh or salt water. The regulations for Southeast are good example of the scope of these types of regulations[3].

8.6 Fishing gear shall be marked.
By statute, (AS16.05.510 and AS 16.05.520)) salmon fishing vessels are required to be licensed by the State of Alaska, and to display their permanent vessel license plate. The fishing gear itself must be marked in accordance with state regulations (5AAC 06.334). Also, there are region-specific regulations which require how salmon fishing gear must display their names and permit numbers. All Alaska salmon fishing, except for a very small troll fishery in Southeast Alaska, is conducted in state waters ("internal waters"). This means it is very unlikely that any fishing gear deployed by Alaskan salmon fishers will be encountered by vessels of other nations.

8.7 Measures shall be introduced to identify and protect depleted resources and those resources threatened with depletion, and to facilitate the sustained recovery/restoration of such stocks. Also, efforts shall be made to ensure that resources and habitats critical to the well-being of such resources which have been adversely affected by fishing or other human activities are restored.
The Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222) outlines the process for identifying a depleted resource and the process to facilitate recovery. It also identifies actions to address habitat issues critical to the fishery resources. In part, the policy states the following:

1. At regular meetings of the board, the department will, to the extent practicable, provide the board with reports on the status of salmon stocks and salmon fisheries under consideration for regulatory changes, which should include:
    a. A stock-by-stock assessment of the extent to which the management of salmon stocks and fisheries are consistent with the principles and criteria contained in the policy under this section.
    b. Descriptions of habitat status and any habitat concerns.
    c. Identification of healthy salmon stocks and sustainable salmon fisheries.
    d. Identification of any existing salmon escapement goals, or management actions needed to achieve these goals, that may have allocative consequences such as the:
        i. Identification of a new fishery or expanding fishery.
        ii. Identification of any salmon stocks, or populations within stocks, that present a concern related to yield, management, or conservation; and
        iii. Description of management and research options to address salmon stock or habitat concerns.
2. In response to the department's salmon stock status reports, reports from other resource agencies, and public input, the board will review the management plan, or consider developing a management plan, for each affected salmon fishery or stock; management plans will be based on the principles and criteria contained in this policy and will:
    a. Contain goals and measurable and implementable objectives that are reviewed on a regular basis and utilize the best available scientific information.
    b. Minimize the adverse effects on salmon habitat caused by fishing.
    c. Protect, restore, and promote the long-term health and sustainability of the salmon fishery and habitat.

[3] http://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2015_2018_se_yakutat_salmon_regulations.pdf

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.**

d. Prevent overfishing.
e. Provide conservation and management measures that are necessary and appropriate to promote maximum or optimum sustained yield of the fishery resource.

3. In the course of review of the salmon stock status reports and management plans described in (1) and (2) of this subsection, the board, in consultation with the department, will determine if any new fisheries or expanding fisheries, stock yield concerns, stock management concerns, or stock conservation concerns exist. If so, the board will, as appropriate, amend or develop salmon fishery management plans to address these concerns; the extent of regulatory action, if any, should be commensurate with the level of concerns and range from milder to stronger as concerns range from new and expanding salmon fisheries through yield concerns, management concerns, and conservation concerns.
4. In association with the appropriate management plan, the department and the board will, as appropriate, collaborate in the development and periodic review of an action plan for any new or expanding salmon fisheries, or stocks of concern; action plans should contain goals, measurable and implementable objectives, and provisions, including:
   a. Measures required to restore and protect salmon habitat, including necessary coordination with other agencies and organizations.
   c. Identification of salmon stock or population rebuilding goals and objectives; Fishery management actions needed to achieve rebuilding goals and objectives, in proportion to each fishery's use of, and hazards posed to, a salmon stock.
   d. Descriptions of new or expanding salmon fisheries, management concern, yield concern, or conservation concern.
   e. Performance measures appropriate for monitoring and gauging the effectiveness of the action plan that are derived from the principles and criteria contained in this policy.
5. Each action plan will include a research plan as necessary to provide information to address concerns; research needs and priorities will be evaluated periodically, based on the effectiveness of the monitoring described in (4) of this subsection

8.8 Technologies, materials and operating methods or measures-including , to the extent practical 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 and ghost fishing effects of lost or abandoned fishing gear, pollution and waste.

First and perhaps most important is that all commercial fishing gear must be tended to while fishing. This greatly reduces the chance for loss, The potential for lost or abandoned fishing gear and subsequent effects of ghost fishing due to this lost gear, is very small for purse seines, and fish wheels. Gill nets might have the greatest potential for both loss and ghost fishing. As one example of how ADFG address issues of abandoned gear in the salmon fishery, lost or abandoned salmon gill net gear has been addressed in the Bristol Bay salmon fishery, where a regulation (5 AAC 06.331(t) requires permit holders to report lost gillnet gear within 15 hours. Troll gear, particularly the lead weights do get snagged on rocks occasionally and lost, but there is no associated ghost fishing.

8.9 There is a system that makes available information on new developments and requirements to all fishers to avoid circumvention of fishing regulations.

Fishing regulations in Alaska are very detailed in terms of the allowable gear that may be used, and maps for fishing districts. In all cases the times and places that gear may be fished are spelled out

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.**
	in detail in either (or both) the permanent regulations promulgated by the BoF or in emergency fishing orders issued in-season by ADF&G. ADFG and the Alaska Department of Law collaborate to ensure there is no ambiguity in the regulations and emergency orders. Permanente regulations are printed, and copies are feely available in many locations around the state and on-line. In season emergency orders are distributed in several ways to ensure the fleets are kept up to date, this can include on-line posting, issuing news releases and announcements on short wave and/or VHV radios. 8.10 New gear has been recently introduced on a commercial scale within the last three years, or there is a plan too introduce new gear in the foreseeable future. This Clause is not particularly relevant. No new gear has been introduced in the last 3 years, and no need for new gear has been identified by the public or ADFG. The BoF must authorize the use of any new gear. Every three years the BoF revisits salmon regulations in each region and should the public or ADFG see the need to authorize a new type of gear, they can submit a proposal for consideration. 8.11 There is a system of international information exchange to allow knowledge to be shared. There are two primary forums that ADFG participates in where information is freely exchanged. The first is the North Pacific Anadromous Fish Commission (NPAFC). The NPAFC members include Russia, South Korea, Japan, Canada, and the U.S. The NPAFC sponsors exchange of stock assessment data, hatchery data and coordinates research on the high seas and the free exchange of such research. The second forum is the Pacific Salmon Commission between the U.S and Canada. This forum develops management plans and joint stock assessment, and research programs for the Yukon River, Southeast Alaska, and other fisheries along the west coast of Canada, Oregon, and Washington. 8.12 There is collaborative research into fishing gear selectivity, fishing methods, and strategies. Overall, there has been little need for new research undertaken on the selectivity of traditional salmon gear types with regard to non -target species because by-catch has been demonstrated to be very low. However, research into the selectivity by size and sex of gillnet gear of the target species has been undertaken on several occasions. The NPAFC encourages research programs such as fishing gear selectivity and fishing methods. 8.14. Policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. For Information on developments in other fisheries: The placement of artificial structures in marine waters of Alaska is limited to pilot research projects in Prince William Sound near Whittier and in Lynn Canal near Juneau, and to the sinking of two old vessels for scuba diving recreational purposes, also near Juneau. These structures have had little to no impact on salmonid fishes in the area and are likewise unlikely to affect salmon fishing.
References:	
Statement of consistency to the RFM Fishery Standard	ADFG fishery management measures continue to conform to the requirements of Clause 8 of the RFM standard.

7.9.3.2. Fundamental Clause 9. Appropriate standards of fishers' competence

9.	**Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards, guidelines and regulations.**
Summary of relevant changes:	There were no relevant changes. 9.1./9.2./9.3. Education and training programs. The Alaska Vocational Training Center (AVTEC), is within the Department of Labor Workforce Development, operates the Alaska Maritime Training Center[4]. The goal of the Alaska Maritime Training Centre is to promote safe marine operations by effectively preparing captains and crew members for employment in the Alaskan maritime industry. The Alaska Maritime Training Centre is a USCG approved training facility located in Seward, Alaska, and offers USCG and international Standards of Training, Certification, & Watchkeeping -compliant maritime training. The University of Alaska Sea Grant Marine Advisory Program (ASGMAP)[5] provides a robust variety of online education and training courses in several sectors, including fisheries management and ranging to seafood safety, and in the form of seminars and workshops. In addition, the program conducts sessions of their Alaska Young Fishermen's Summit[6]. Each Summit is an intense, 3-day course in all aspects of Alaska fisheries, from fisheries management & regulation (e.g., MSFCMA), to seafood markets & marketing. The target audience for these Summits is young Alaskans from coastal communities. ASMI provide educational information across a whole range of fishery and fish related matters, including quality, hygiene, food safety, sustainability, and environmental protection[7]. ADFG publishes a variety of documents, booklets and pamphlets that provide information on Alaska salmon, including regulations, educational items, and news stories[8]. Data on fishers is held in a number of agencies, including Alaska Fisheries Information Network and CFEC. Some of the information is confidential, while a substantial amount is published in summary form annually.
References:	
Statement of consistency to the RFM Fishery Standard	Alaskan Fishery operations continue to conform to the requirements of Fundamental Clause 9 of the RFM Standard.

[4] https://avtec.edu/maritime/
[5] https://alaskaseagrant.org/marine-advisory/
[6] https://alaskaseagrant.org/event/2023-alaska-young-fishermens-summit/
[7] https://www.alaskaseafood.org/
[8] https://www.adfg.alaska.gov/

7.9.3.3. Fundamental Clause 10. Effective legal and administrative framework

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.**
Summary of relevant changes:	There have no significant changes. 10.1. Effective mechanisms shall be established for fisheries monitoring, surveillance, control, and enforcement measures: The Alaska commercial salmon fishery is managed primarily by ADFG, which regularly conducts in-season monitoring and surveillance of the fishing fleet at the area level to ensure compliance with fisheries regulations. Enforcement of fisheries-related statutes and regulations is conducted by Alaska Wildlife Troopers (AWT), a Division of the Alaska Department of Public Safety, that maintains and operates a large fleet of water- and aircraft to perform its mission. ADFG Area Management Biologists also monitor the commercial salmon fishery in their area through aerial surveys and on-the-ground observations. They and their regional staff biologists are deputized law enforcement officers, trained to assist AWT with law enforcement activities. Citizens can also report fish and wildlife violations in Alaska through AWT's Safeguard organization. Recently, Botz & Somerville (2021) provided a detailed account of synergy between Alaska's law enforcement and salmon fishery management in and around the highly productive Copper River system. 10.2 Fishing Vessels shall not be allowed to operate on a stock under consideration in question without specific authorization. In 1973, Alaska Statute AS 16.43.140 established that, "After January 1, 1974, a person may not operate gear in the commercial taking of fishery resources without a valid entry permit or a valid interim-use permit issued by the commission." Under Alaska's limited entry system, only legally permitted vessels can operate in commercial salmon fisheries. Commercial fishing permits are issued and managed by the Commercial Fisheries Entry Commission (CFEC), whose mission is to promote conservation of Alaska's fishery resources and economic health of Alaska's commercial fisheries by controlling entry into commercial fisheries[4]. CFEC issues permits and vessel licenses to qualified individuals and provides due process hearings and appeals for those individuals' denied permits. A permit holder database and portal for permit application is accessible through CFEC's website. Individuals must also apply for and maintain a state-issued Crewmember License to participate in Alaska commercial salmon fisheries. In accordance with Alaska Statute 16.43.140, only state-permitted vessels can participate in Alaska commercial salmon fisheries. The CFEC maintains an online database of vessels permitted to participate in Alaska commercial salmon fisheries. The CFEC also maintains and publishes vessel census data, describing the number and types of vessels participating in Alaska commercial fisheries. 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 state's jurisdiction. Supporting Clauses 10.3 is not applicable because Alaska commercial salmon fisheries occur entirely within the State's jurisdiction and EEZ. 10.4 Fishery management organizations which are members of or participants in fisheries management organizations or arrangements, shall implement internationally agreed measures

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.
	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. Supporting Clauses 10.4 is not applicable because Alaska commercial salmon fisheries occur entirely within the State's jurisdiction and EEZ.
References:	Botz, J., & Somerville, M. A. (2021). Management of Salmon Stocks in the Copper River, 2018–2020: A Report to the Alaska Board of Fisheries. https://adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2021-2022/pws/SP21-08.pdf
Statement of consistency to the RFM Fishery Standard	The State of Alaska maintains an effective legal and administrative framework to ensure compliance with fishery laws and regulations. Therefore, the fishery continues to conform to the requirements of Fundamental Clause 10 of the RFM Fishery Standard.

7.9.3.4. Fundamental Clause 11. Framework for sanctions

11.	There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.
Summary of relevant changes:	No relevant changes have been made to state and federal sanctions associated with violations of Alaska's commercial salmon fishery regulations. 11.1/11.2/11.3. State and federal laws and regulations include sanctions of adequate severity so as to ensure compliance: ADFG publishes commercial salmon fishing regulations by area and year, which can be obtained through its website at https://www.adfg.alaska.gov/index.cfm?adfg=fishregulations.commercial. Included with regulations are clear descriptions of fines, sanctions and penalties associated with violations, following the intent of Alaska statutes (e.g. AS 16.05.710, AS 16.05.722, AS 16.05.723, and AS 16.43.850) aimed to protect wild salmon stocks and sustained resource yield. Alaska's Fish and Game Code, codified through Alaska Statute Title 16.5, provides the legal framework for establishment and enforcement of regulations governing the state's commercial salmon fisheries. Violations of fishing regulations result in strict penalties that can include fines, suspension of permits, imprisonment and seizure of catch, gear and/or vessel. In accordance with Alaska Statute 16.43.850[9], a demerit system involving serious sanctions has been developed and is enforced over commercial fishing vessels in Alaska. This Statute states that: (a) For the purpose of identifying frequent violators of commercial fishing laws in salmon fisheries, the commission shall adopt regulations establishing a uniform system for the suspension of commercial salmon fishing privileges by assigning demerit points for convictions for violations of commercial fishing laws in salmon fisheries that are reported to the commission under Alaska Statute 16.43.880. The commission shall assess demerit points against a permit holder for each violation of commercial fishing laws in a salmon fishery in accordance with (b) and (c) of this section. The commission shall assess points against a permit holder for the salmon fishery in which the violation of commercial fishing laws occurred. (b) The commission shall assess demerit points against a permit holder for a conviction of a violation of commercial fishing laws in a salmon fishery under AS 16.05.722, 16.05.723, 16.05.831; AS 16.10.055, 16.10.070 - 16.10.090, 16.10.100, 16.10.110, 16.10.120, 16.10.200 - 16.10.220, and 16.10.760 - 16.10.790 for the following violations in accordance with this schedule: (1) fishing in closed waters - 6 points (2) fishing during closed season or period - 6 points (3) fishing with more than the legal amount of gear - 4 points (5) fishing with gear not allowed in fishery - 6 points (6) fishing before expiration of transfer period - 6 points (7) interfering with commercial fishing gear - 4 points (8) fishing with more than the legal amount of gear on vessel - 4 points (9) improper operation of fishing gear - 4 points (10) permit holder not present when required - 4 points (11) fishing with underlength or overlength vessel - 6 points (12) wanton waste of fishery resources - 4 points (a) Notwithstanding (b) of this section, if a permit holder's first conviction of a violation of commercial fishing laws in a salmon fishery in a 36-month period is a conviction under AS 16.05.722, the number of demerit points assessed against the permit holder for the

[9] http://touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter43/Section850.htm

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

violation must be one-half of the points assessed for the violation under (b) of this section.

(b) The commission shall suspend a permit holder's commercial salmon fishing privileges for a salmon fishery for a period of,

(1) one year if the permit holder accumulates 12 or more points during any consecutive 36-month period as a result of convictions for violations of commercial fishing laws in the salmon fishery.

(2) two years if the permit holder accumulates 16 or more points during any consecutive 36-month period as a result of convictions for violations of commercial fishing laws in the salmon fishery.

(3) three years if the permit holder accumulates 18 or more points during any consecutive 36-month period as a result of convictions for violations of commercial fishing laws in the salmon fishery.

Following upon this law and in accordance with AS 16.43.860[10]:

(a) A permit holder whose commercial salmon fishing privileges for a salmon fishery are suspended under AS 16.43.850 - 16.43.895 may not obtain an entry permit or interim-use permit for that salmon fishery during the period of the suspension of the privileges. During the period for which the permit holder's privilege to obtain an entry permit or interim-use permit for a salmon fishery is suspended under this section, the commission may not issue a permit card to the permit holder for that fishery.

(b) A permit holder whose privilege of obtaining a commercial fishing permit for a salmon fishery is suspended under AS 16.43.850 - 16.43.895 may not

(1) engage in the salmon fishery under a crewmember license; or

(2) lease or rent the permit holder's interest in a boat to another person if the boat would be used in the salmon fishery for which the permit holder's fishing privileges are suspended.

(c) If, during the period for which a permit holder's commercial fishing privileges for a salmon fishery are suspended, the commission establishes a limited entry system for the salmon fishery, the permit holder shall be eligible to obtain an entry permit for that fishery to the extent that the permit holder qualifies for the entry permit under regulations adopted by the commission. If the permit holder qualifies for an entry permit for the fishery, the commission shall withhold issuance of the entry permit until the period of the suspension imposed under AS 16.43.850 - 16.43.895 has expired.

The commission may not transfer a commercial fishing permit for a salmon fishery under an emergency transfer under AS 16.43.180 if, at the time of the application for the emergency transfer, the permit holder's commercial salmon fishing privileges for the salmon fishery have been suspended.

Moreover, Alaska Statute 16.5.723 states that:

a) A person who negligently violates AS 16.05.440 - 16.05.690, or a regulation of the Board of Fisheries or the department governing commercial fishing, is guilty of a misdemeanor and in addition to punishment under other provisions in this title, including AS 16.05.195 and 16.05.710, is punishable upon conviction by a fine of not more than $15,000 or by imprisonment for not more than one year, or by both. In addition, the court shall order forfeiture of any fish, or its fair

[10] http://touchngo.com/lglcntr/akstats/Statutes/Title16/Chapter43/Section860.htm

11.	There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.
	market value, taken or retained as a result of the commission of the violation, and the court may forfeit any vessel and any fishing gear, including any net, pot, tackle, or other device designed or employed to take fish commercially, that was used in or in aid of the violation. Any fish, or its fair market value, forfeited under this subsection may not also be forfeited under AS 16.05.195 . For purposes of this subsection, it is a rebuttable presumption that all fish found on board a fishing vessel used in or in aid of a violation, or found at the fishing site, were taken or retained in violation of AS 16.05.440 - 16.05.690 or a commercial fisheries regulation of the Board of Fisheries or the department, and it is the defendant's burden to show by a preponderance of the evidence that fish on board or at the site were lawfully taken and retained. b) If a person is convicted under this section of one of the following offenses, then, in addition to the penalties imposed under (a) of this section, the court may impose a fine equal to the gross value of the fish found on board or at the fishing site at the time of the violation: (1) commercial fishing in closed waters; (2) commercial fishing during a closed period or season; (3) commercial fishing with unlawful gear, including a net, pot, tackle, or other device designed or employed to take fish commercially; or (4) commercial fishing without a limited entry permit holder on board if the holder is required by law or regulation to be present. c) Upon a third misdemeanor conviction within a period of 10 years for an offense listed in (b) of this section or any combination of offenses listed in (b) of this section, the court shall impose, in addition to any penalties imposed under (a) of this section, a fine equal to three times the gross value of the fish found on board or at the fishing site at the time of the offense, or a fine equal to (4) $10,000, whichever is greater On February 23,.2024 the assessment team contacted Alaska Division of Wildlife Troopers for information on law enforcement in Alaska's commercial salmon fishery. Captain Derek DeGraaf reported that for commercial fishing activity with the date range of June 1, 2023, through August 1, 2023, the Alaska Wildlife Troopers made 3,110 contacts with commercial fishery participants, 150 warnings were given during these contacts, and 210 persons charged with offenses. The majority of these offenses consisted of fishing in closed waters, and fishing in closed seasons. At the Federal level, NMFS has also published a schedule of penalties associated with illegal retention of salmon and other violations of fishery regulations[11]. Moreover, commercial fishing regulations are enforced by ADFG and AWT, with support from the United States Coast Guard (USCG) and the National Marine Fisheries Service's Office of Law Enforcement[12]. Alaska Statute 16.5.150 formally authorizes ADFW employees, State police and others deputized individuals to enforce Alaska's Fish and Game Code43. Electronic catch records and reporting requirements aid with adherence to and enforcement of Alaska's commercial salmon fishery regulations.
References:	
Statement of consistency to the RFM Fishery Standard	State and federal government provide a framework for sanctions of adequate severity to discourage violations and illegal activity in Alaska's commercial salmon fisheries.

[11] https://www.gc.noaa.gov/documents/gces/AK%20SS%20and%20Fix-it_FINAL.pdf
[12] https://www.fisheries.noaa.gov/about/office-law-enforcement

11.	**There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.**	
		Therefore, the fishery continues to conform to the requirements of Fundamental Clause 11 of the RFM Fishery Standard.

7.9.4. Section D: Serious Impacts of the Fishery on the Ecosystem

7.9.4.1. Fundamental Clause 12. 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.**
Summary of relevant changes:	No relevant changes have been made with respect to assessing and mitigating adverse impacts from Alaska's commercial salmon fishery on the ecosystem, habitat, or associated species. 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. Both ADFG and NOAA Fisheries regularly monitor oceanographic and biological conditions that can affect salmon. They share and incorporate these data into predictive models that generate salmon survival and abundance forecasts (e.g., Haeseker *et al.*, 2005; Miller *et al.*, 2022; Murphy *et al.*, 2019, Ovando *et al.*, 2022), which are in turn used by ADFG's fisheries managers to set salmon escapement and harvest goals (e.g., Brenner *et al.*, 2021, 2022; Johnson, 2021; Thynes *et al.*, 2021, Vega *et al.*, 2022) per Alaska's Policy for the Management of Sustainable Salmon Fisheries. This strategy aligns harvest with normal fluctuations in salmon abundance. ADFG publishes annual salmon harvest and escapement goals by area in season on their website and in annual post-season reports. 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. NOAA Fisheries produces ecosystem reports for the Eastern Bering Sea, Aleutian Islands, Gulf of Alaska, and Arctic regions (e.g., NOAA, 1977, 1980). These reports consider the condition and abundance of salmon in Alaska's marine environments and effects from commercial fisheries on marine ecosystems. Significant management actions have been implemented to limit incidental take of Chinook salmon by Alaska's groundfish trawl fisheries. Where Chinook salmon are intentionally harvested by Alaska's commercial fleet, management has been designed to limit harvest on Alaska's stocks of concern. Pacific Salmon Treaty agreements identify harvest limits on salmon that migrate from other areas into Alaskan waters. These management actions also limit impacts to salmon predators, including killer whales, Stellar sealions, bears and more. NOAA Fisheries conducts regular stock assessments of sensitive species of salmon predators, including killer whales and Steller sea lions, and promotes research on the environmental and social impacts of commercial salmon fishing in Alaska (Muto *et al.*, 2018). Alaska's Policy for the Management of Sustainable Salmon Fisheries states that, "salmon escapement and harvest management decisions should be made in a manner that protects non-target salmon stocks or species". Regulations clearly specify where, when, and how salmon can be harvested in Alaska, limiting undesirable interactions with non-target species and stocks. To assess the effectiveness of this approach, impacts from Alaska's commercial salmon fisheries on non-target species are monitored and recorded through a variety of state- and federally-administrated programs. Take of ESA-listed salmon occurs in some Alaskan commercial salmon fisheries but is accounted for and authorized through the Pacific Salmon Treaty. Interactions of Alaska's commercial salmon fisheries with protected seabirds are occasionally reported but are estimated to be rare and unlikely to have population-level impacts. Alaska Marine Mammal Observer Program (AMMOP) – This program provided extensive information on bycatch of

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		birds for 10 years between 1990 and 2013 (Manley 2006, 2007, 2009, 2014, 2015; Wynne *et al.* 1991, 1992). AFDF conducted a workshop in October 2022 to: 1) review information on the life history, habitats, distribution, threats to Alaska murrelets populations and 2) produce an Ecological Risk Assessment for Marbled and Kittlitz's murrelets in relation to by-catch in gillnet fisheries (Wilson et. al 2022). The ERA evaluated the source of the risk, the potential consequences of the risk and the likelihood of those consequences occurring. Consequences and likelihood are assessed against specific criteria such as life history characteristics and the likelihood of, in this case, murrelets encountering salmon gillnets. Consequence and likelihood are then combined to produce an estimated level of risk (low, medium, or high) associated with the potential hazard. Of the 13 Commercial Salmon Management Areas in Alaska, all of which were evaluated for relative risk to murrelets from interactions with the salmon gillnet fishery, 11 were ruled out as low risk during the scoping process or the SICA. Two Management Areas were moved forward from the SICA to the PSA and assigned a risk level of "low" at the end of the analysis. Based on these findings, the authors of this report believe that the Operational Objective is met by the status quo of gillnet-murrelet interactions in the Alaska gillnet salmon fishery." With regard to impacts on the physical environment, gear used in commercial salmon fisheries does not typically contact or affect benthic habitats and is unlikely to have significant environmental impact. Hatcheries used to enhance stocks are carefully sited and strictly regulated to limit impacts to native species and habitats. 12.3./12.4. The role of the stock under consideration in the food web shall be considered; there shall be outcome indicator(s) consistent with achieving management objectives seeking to avoid severe adverse impacts on dependent predators. Salmon are widely recognized as important species in the natural food webs of Alaska's marine, aquatic and terrestrial ecosystems (Aydin *et al.*, 2007; Walsh *et al.*, 2020; Wipfli *et al.*, 1999). Alaska's Policy for the Management of Sustainable Salmon Fisheries directs that "the role of salmon in ecosystem functioning should be evaluated and considered in harvest management decisions and setting of salmon escapement goals". In accordance with this policy, ADFG regularly publishes information regarding the ecological role of salmon, and the effects from salmon enhancement and commercial fisheries on natural ecosystems and employs this information when setting escapement goals for major salmon populations throughout their spawning distribution. Escapement is then estimated with data collected through aerial surveys, sonar-based counts, and other methodologies. Although the ESA-listed Southern Resident Killer Whale's range is not considered to extend into AIR waters, there is potential for indirect impacts via harvest of the population's preferred prey: Chinook Salmon. Some stocks of Chinook Salmon harvested in the Southeast fishery are the same stocks that these whales will eat. In 2018 a new 10-year agreement under the terms of the Pacific Salmon Treaty, reduced the harvest allocation of Chinook salmon by the Southeast Alaskan (SEAK) troll fishery by 7.5% to reduce potential adverse impacts on Southern Resident Killer Whales. A 2018 "no-jeopardy" opinion for the SRKW in NOAA's ESA consultation with the State of Alaska a part of their delegation of authority to manage the SEAK fisheries was subsequently challenged in federal district court which ruled the Biological Opinion invalid because funding for mitigation

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.**	
		measures was not guaranteed and due to technical matters relating to completing a NEPA analysis. In May of 2023, the State of Alaska, the Alaska Trollers Association, and NOAA fisheries appealed the 9th circuit court's decision to 'vacate' the operation of the troll fishery while NOAA fisheries corrected the flaws in its ESA and NEPA conclusion.[13] The appellate judges concluded that the economic stakes were too high to halt a regional fishery without the certainty that Southern Resident Killer whales would benefit and the troll fishery was allowed to proceeded in 2023 and 2024 while NOAA conducts its analysis. Draft environmental impact states were released in January 2024 (NOAA 2024). Once these documents are completed by NOAA fisheries and submitted to the court (likely late 2024), the 9th circuit court will make a decision on whether NOAA's proposed remedy meets the ESA and the NEPA requirements, and how to proceed on the matter of harvesting Chinook salmon in the Southeast Alaska troll fishery. 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). MARPOL 73/78 (the "International Convention for the Prevention of Pollution from Ships") is one of the most important treaties regulating pollution from ships. Six Annexes of the Convention cover the various sources of pollution from ships and provide an overarching framework for international objectives. In the U.S., including Alaska, the Convention is implemented through the Act to Prevent Pollution from Ships (APPS). Under the provisions of the Convention, the United States can take direct enforcement action under U.S. laws against foreign-flagged ships when pollution discharge incidents occur within U.S. jurisdiction. When incidents occur outside U.S. jurisdiction or jurisdiction cannot be determined, the United States refers cases to flag states, in accordance with MARPOL. These procedures require substantial coordination between the Coast Guard, the State Department, and other flag states. Different regulations apply to vessels, depending on the individual state. 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. A significant body of research has also focused on social aspects of commercial salmon fisheries in Alaska. With funds from the NOAA-administrated Saltonstall-Kennedy Program, the Alaska Fisheries Development Foundation conducted research and published a report describing social responsibility compliance aboard small commercial fishing vessels in Alaska, which included data from surveys of the commercial salmon fleet. Their findings suggested a high degree of safety compliance and social responsibility aboard small commercial fishing vessels in the state, but also suggested that some international standards were not particularly applicable to small craft fisheries in Alaska. They used this information to develop a list of priority criteria to evaluate social responsibility aboard commercial fishing vessels that included: no slave labor, no child labor (except for nearshore fishing families), no discrimination, reasonable working/rest hours, required documentation and compliance with immigration and human rights policies. 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.

[13] https://www.raincoast.org/2024/02/court-case-southeast-alaskan-troll-fishery-chinook-salmon/

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.**
	The state of Alaska has established a network of marine protected areas (MPAs) to promote the conservation of marine species and their habitats. These MPAs promote sustainable harvest of salmon and other marine species in Alaska.
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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.**

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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.**	
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Statement of consistency to the RFM Fishery Standard		Managers of Alaska's commercial salmon fisheries use information from the best available science, local knowledge, and a risk assessment approach when considering interactions between the fishery and the ecosystem. Impacts from the fishery are assessed and appropriately addressed. The fishery continues to conform to the requirements of Fundamental Clause 12 of the RFM Fishery Standard

7.9.4.2. Fundamental Clause 13. Fisheries enhancement activities (remove if not applicable)

13. Where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity.	
Summary of relevant changes:	No relevant changes have been made to the approaches by which managers assess the genetic diversity and ecosystem integrity of populations and communities potentially affected by production of hatchery salmon in Alaska. The hatchery research study is ongoing with results of fitness analyses pending for hatchery pink and chum salmon. Assessments of contributions to harvest and spawning escapement by hatchery salmon produced by the Kodiak Regional Aquaculture Association are ongoing and demonstrate progress toward full conformance for this Fundamental Clause. 13.1. The fishery management organization shall promote responsible development and management of fisheries enhancement, including an advanced evaluation of the effects of fisheries enhancement on genetic diversity and ecosystem integrity. Operation of salmon hatcheries in Alaska by private non-profit corporations is regulated by state-issued permits in accordance with a complex of policies designed to promote responsible management. Evenson *et al.* (2018) provides a thorough account of the history, permitting process, and regulatory oversight of salmon hatcheries in Alaska. ADFG's Genetic Policy establishes specific restrictions and guidelines "for stock transport, protection of wild stocks, and maintenance of genetic variance (Davis *et al.* 1985). 13.2. The fishery management organization shall produce and regularly update fishery enhancement development strategies and plans, as required, to ensure that fishery enhancement development is ecologically sustainable and to allow the rational use of resources shared by enhancement and other activities. Fisheries enhancement policies are implemented by ADFG, through research and regulatory oversight of hatchery operations. Private non-profit hatcheries are required by law to produce annual reports that document egg take, juvenile releases, and adult returns (e.g., Wilson 2022). Any proposed alteration to hatchery production requires a Permit Alteration Request (PAR), which typically relates to a change in production, new release site or stock used by the hatchery. PARs are reviewed by regional planning teams, which make recommendations for their approval or denial to the commissioner, who may then approve or deny requests. As required by statute (AS 16.05.092), ADFG prepares and publishes Annual Fisheries Enhancement Reports that describe annual levels of hatchery salmon production in Alaska, as well as harvest numbers of hatchery and wild stocks. Individual hatchery programs throughout the state were examined from 2012-2017 for consistency with policies and prescribed management practices (e.g., Stopha 2012). Evaluations included a review of hatchery management plans and permits, an assessment of each hatchery program's consistency with statewide policies, and recommendations to address any deficiencies found. Management plans and permits were examined to determine whether they were current, consistent with each other, and accurately described hatchery operations. Programs were generally found to be in compliance and issues were addressed as identified. 13.3. Effective procedures specific to fisheries enhancement activities shall be established to undertake appropriate environmental assessment and monitor (with the aim of minimizing) adverse

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

ecological changes caused by inputs (e.g., pollution, disease) and their related economic and social consequences.

Alaska Statute 16.10.420 lists a series of conditions that must be met to qualify issuance of a salmon hatchery permit. These conditions include required measures aimed to limit potential negative impacts from hatchery operations on wild salmon populations, including risks from genetic introgression and disease, and surrounding ecosystems. ADFG has regularly inspected salmon hatcheries throughout the state and, beginning in 2011, developed reports describing levels of compliance with each facility's permit, state policies (e.g., Finfish Genetics Policy, Fish Health and Disease Control Policy, etc.) and prescribed management practices. ADFG also publishes recommendations for improved compliance and operation for each hatchery inspected through these reports.

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

To facilitate the identification of hatchery salmon that are harvested, collected by hatcheries, or escape to natural spawning grounds, hatcheries in Alaska use a variety of techniques to apply recognizable marks to the otoliths of juvenile salmon they produce (Volk *et al.*, 1999; Wilson, 2022). Coded wire tags are also used by some hatcheries to allow identification of salmon they produce. Systematic sampling and analyses of otoliths and tags from fish encountered on spawning grounds and in the commercial harvests allow managers to consider the separate contributions of hatchery- and wild-origin salmon in their stock assessments.

Annual Fisheries Enhancement Reports that describe annual levels of hatchery salmon production in Alaska, as well as harvest numbers of hatchery and wild stocks (Wilson 2022). A series of assessments have also documented determined that the incidence of hatchery straying in natural production areas of Prince William Sound and Southeast Alaska (Brenner *et al.,* 2012; Piston & Heinl, 2012a, 2012b; Josephson *et al.,* 2021; Knudsen *et al.,* 2021; Americus *et al.,* 2023). Hatchery sockeye salmon straying studies have also been conducted on Kodiak Island (Baer and Honnold, 2002), in the Copper River basin (Bidlack and Valentine, 2009), and the Kenai River (Habicht *et al.*, 2013; Stopha, 2012). Pink salmon straying has been monitored in Prince William Sound (Brenner *et al.*, 2012) and Cook Inlet (Hollowell *et al.*, 2017; Hollowell and Otis 2019; Otis *et al.,* 2018, 2020, 2021).

Josephson *et al.* (2021) reported unbiased estimates of the proportions of hatchery-origin summer Chum spawning in each of the three southeast Alaska management areas in 2013-2015 ranged from 0.016 to 0.081, and the estimated hatchery proportions spawning across Southeast Alaska ranged from 0.032 to 0.060. Hatchery-origin stray rates and total run characteristics have been estimated for Pink Salmon and Chum Salmon returning to Prince William Sound in 2013–2015 (Knudsen *et al.*, 2021). Estimated annual proportions of hatchery fish in the preharvest run ranged from 0.55 to 0.86 for Pink Salmon and from 0.51 to 0.73 for Chum Salmon. Commercial fisheries harvested 94–99% of hatchery-origin fish of both species, 27–50% of natural-origin Pink Salmon and 17–20% of natural-origin Chum Salmon. Proportions of hatchery fish across all sampled PWS spawning streams were much lower, ranging from 0.05 to 0.15 for Pink Salmon and from 0.03 to 0.09 for Chum Salmon. The Alaska Hatchery Study is also evaluating the relative fitness of hatchery and wild salmon in order to inform risk assessments of observed levels of straying (Jasper *et al.*, 2013, Lescak *et al.*, 2019a, 2019b; Shedd *et al.*, 2022).

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

The 2016 RFM Reassessment found that Kitoi Bay Hatchery on Kodiak Island was an exception to the otherwise comprehensive marking of Alaskan hatchery salmon. Accordingly, these hatchery salmon could not be recognized or accounted for in stock assessments, resulting in a Minor Non-conformance for Supporting Clause (SC) 13.4. To address this Minor Non-conformance, the Kodiak Regional Aquaculture Association (KRAA), in partnership with Alaska Fisheries Development Foundation (AFDF), developed a Corrective Action Plan (CAP) outlining a series of actions to be taken, culminating with marking, and monitoring of pink salmon produced by Kitoi Bay Hatchery and subsequently sampled as adults.

Since 2018, comprehensive marking of Kodiak pink and chum salmon hatchery production has been implemented. Hatchery contributions to the fisheries and spawning escapements of index streams has been assessed from 2020-2023 (Weber 2021, 2022; Thomas 2022; Dodson 2023). From 2020 through 2022, a total of 10,647 pink salmon and 5,611 chum salmon otoliths were collected and analyzed from the commercial catch, stream spawning escapements and hatchery broodstock. Field sampling was completed for this project in 2023 and analysis of the final year's results are ongoing. A project completion report is expected to be available in 2025. Work to date has found that thermal and saltwater marking methods are effective for otolith marking of Kodiak hatchery Pink and Chum salmon, Kodiak hatchery Pink and Chum salmon contribute significant numbers to the commercial fishery harvest, some staying of Kodiak hatchery Pink and Chum salmon occurs into local streams, and hatchery-origin Pink and Chum Salmon from other Alaska hatcheries are also present. However, natural-origin Pink and Chum salmon continue to comprise a high percentage of natural spawners. Natural productivity of Pink and Chum salmon remains high in Kodiak streams as demonstrated by escapements which consistently exceed escapement goals (Munro, 2023).

Ruggerone and Irvine (2018) estimated that hatchery Pink Salmon account for just 15% of total pink Salmon abundance in the North Pacific. Alaska accounted for 68% of hatchery pink Salmon abundance, equivalent to just 10% of the combined wild and hatchery total. Alaska hatchery releases accounted for about 11% of the combined wild and hatchery total for Chum Salmon of which 60% are hatchery and 18% of hatchery are Alaskan (Ruggerone & Irvine, 2018). Alaska hatchery releases of pink salmon comprise even smaller percentages in terms of biomass – just 2.1% of the total adult and immature pink biomass in the North Pacific.[14]

13.5. Regarding the enhanced components of the stock under consideration, the species shall be native to the fishery's geographic area, there shall be natural reproductive components of the stock under consideration, and the growth during the post-release phase shall be based upon food supply from the natural environment.

Hatchery permitting, administrated by ADFG, ensures that only appropriate local broodstocks are used in hatchery populations as per Alaska's Finfish Genetics Policy. Hatchery production of salmon in Alaska is designed to supplement, and not supplant, natural production which as managed for sustained yields from spawning escapements as per Alaska's Policy for the Management of Sustainable Salmon Fisheries. Post-release growth in the natural environment is established by statute (AS 16.40.210), which prohibits "finfish farming". In Alaska, a "person may not grow or cultivate finfish in captivity or under positive control for commercial purposes" but can operate "a nonprofit corporation that holds a salmon hatchery permit under AS 16.10.400 to sell salmon returning from the natural water of the state, as authorized under AS 16.10.450, or surplus salmon

[14] https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2023-2024/uci/rcs/rc240_Commissioner_Vincent-Lang_Hatchery%20Statement%20to%20BOF.pdf

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eggs, as authorized under AS 16.10.420 and 16.10.450". Importantly, the sale of hatchery salmon is permissible only after returning from the natural water of the state, where supplemental feeding does not occur.

13.6. Naturally reproductive components of enhanced stocks shall not be overfished, and naturally reproductive components of the stock under consideration shall not be displaced by enhanced components, and in particular, displacement shall not result in a reduction of the stock under consideration below abundance-based target reference points.

Salmon fisheries in Alaska are managed to meet target escapement levels that protect wild stocks from overharvest. Estimates of hatchery and wild contributions to harvest are regularly published by ADFG as are annual estimates of escapement (Munro, 2023). Where salmon stocks have chronically failed to meet escapement goals, they have been recognized by managers as stocks of concern and protected from harvest. By siting hatcheries away from major wild salmon populations, per Alaska's state policies, wild stocks are generally protected from displacement on spawning grounds and fisheries managers are able to direct harvest effort toward "terminal fisheries" in the vicinity of hatchery release sites, where hatchery-origin fish comprise the majority of the catch.

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

State administrated permitting of hatcheries in Alaska involves a careful review process that considers siting of construction and any potential impacts to habitat and the ecosystem. Moreover, Alaska Statute 16.10.40073 states that "a permit may not be issued for construction or operation of a hatchery on an anadromous fish stream unless the stream has been classified as suitable for enhancement purposes by the commissioner". This statute further states that "a permit may not be issued for a hatchery unless the commissioner determines that the action would result in substantial public benefits and would not jeopardize natural stocks".

13.7.1/13.7.2/13.7.3. Efforts shall be undertaken to minimize the adverse impacts of introducing non-native species or genetically altered stocks, and to minimize adverse genetic, disease, and other effects of escaped farmed fish (aquaculture) on wild stocks.

Alaska has developed a complex of policies, regulations, and practices governing salmon hatcheries as a precaution against potentially-significant detrimental effects of hatchery production on wild stocks (Evenson *et al.*, 2018; Eller, 2018; Wilson, 2022). Related guidance is found in Salmon Regional Planning Plans, ADF&G Genetics Policy, the FRED Division Statute 1971, the PNP Hatchery Permitting Statute, the Regional Planning Statute 1976, the BOF Hatchery Management Policy, Fish Transport Regulations 1981, the PNP Regulations 1985, the Genetics Policy 1985, the Pathology Policy 1988, Wild and Enhanced Stock Statute 1992, Sockeye Salmon Culture Policy 1994, and the BOF Sustainable Salmon Policy 2000.

Precautionary measures include:

- Prohibition of finfish farming, defined as raising fish to maturity in captivity for commercial purposes.
- Siting of hatchery facilities in areas that are isolated from areas of high wild salmon abundance and diversity for the species being produced.
- Siting of hatcheries in terminal areas which facilitate targeted harvest of returning adults.
- Establishment of hatcheries from local wild broodstock.
- Operation of hatcheries with best management practices to avoid genetic bottlenecks and directional selection.

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- Marking hatchery fish releases so that the distribution and composition of hatchery and wild fish can be monitored in fisheries, spawning grounds and in hatchery broodstock.
- Ensuring release at sites and with strategies that are likely to maximize imprinting and homing.
- Release of hatchery fry after wild fry dispersal to reduce the potential for competition.
- A statewide fish health program that conducts routine surveillance, training, and diagnostic services in the case of outbreaks.
- Fishing strategies that result in differential harvest rates between hatchery and wild fish to both limit straying and ensure sustainable wild harvest rates.

Private non-profit hatchery programs in Alaska are subject to extensive regulatory oversight by ADF&G on an annual basis under the authority of the Commissioner. This oversight is facilitated by advisory review of Regional Hatchery Planning Teams in a public process. Annual management plans detailing production and returns are prepared by operators for review and approval. All hatchery releases are also subject to fish transport permit requirements. Any new production proposals are subject to new permit applications - new permit applications are not approved if inconsistent with established policies for wild fish protection.

Individual hatchery programs throughout the state were examined from 2012-2017 for consistency with policies and prescribed management practices. Evaluations included a review of hatchery management plans and permits, an assessment of each hatchery program's consistency with statewide policies, and recommendations to address any deficiencies found. Management plans and permits were examined to determine whether they were current, consistent with each other, and accurately described hatchery operations. Programs were generally found to be in compliance and issues were addressed as identified.

Based on concerns over hatchery pink salmon and chum salmon in PWS and hatchery Chum salmon in Southeast Alaska and in the context of evaluating the risk of hatchery straying, Alaska began a comprehensive, long-term research program in 2013 on straying and relative fitness of hatchery and wild Pink and Chum Salmon in Prince William Sound and Southeast Alaska (Knudsen *et al.*, 2016, 2021; Josephson *et al.*, 2021; Americus *et al.*, 2023).

13.8. The fishery management organization shall protect transboundary aquatic ecosystems by supporting responsible enhanced fishery practices within the States jurisdiction and cooperating to promote sustainable enhanced fishery practices.

There have been no relevant changes to transboundary management of salmon since the last RFM Assessment. Since 1985, the Pacific Salmon Treaty (re-negotiated in 2019) has provided policy direction for the responsible management of salmon fisheries and fishery enhancement activities along transboundary rivers of Alaska and Canada.

13.9. The fishery management organization shall, with due respect to their neighboring States and in accordance with international law, ensure responsible choice of species, siting, and management of enhanced fisheries activities that could affect transboundary aquatic ecosystems.

As noted for SC 13.8, the Pacific Salmon Treaty outlines policy for salmon fisheries enhancement activities that affect transboundary ecosystems. Chapter 1 of this treaty states that participating parties (including Alaska) will "identify existing and/or future enhancement projects that: i. assist the devising of harvest management strategies to increase benefits to fishermen with a view to permitting additional salmon to return to Canadian waters; and ii. have an impact on natural

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	transboundary river salmon production" Choice of species, stock, hatchery siting and management of fisheries activities are regulated through Alaska Statutes 16.10.375 – 16.10.560, guided by Alaska's Policy for the Management of Sustainable Salmon Fisheries and subject to agreements of the Pacific Salmon Treaty. 13.10. The fishery management organization shall consult with their neighboring States, as appropriate, before introducing non-indigenous species into transboundary aquatic ecosystems The Alaska Finfish Genetics Policy prohibits the import on non-indigenous stocks, thereby precluding the release of non-indigenous salmon into transboundary waters. 13.11. The fishery management organization shall establish databases and information networks to collect, share, and disseminate data related to their enhanced fishery activities Data have been collected for Chinook, coho, pink, chum, and sockeye salmon in Alaska and throughout the northern Pacific. Fisheries performance, monitoring, and other relevant data are disseminated by ADFG through various publicly-accessible online databases (e.g., data for commercial harvest, fish marks and tags. Releases of hatchery salmon throughout the Pacific are documented by the North Pacific Anadromous Fisher Commission. 13.12. The fishery management organization shall cooperate in the elaboration, adoption, and implementation of international codes of practice and procedures for introductions and transfers of enhanced fish Turner (1988) developed internationally recognized codes of practice for introductions and transfers of marine and freshwater organisms, which includes specific guidelines for salmonids. Introductions and transfers of salmon in Alaska are also guided by the Finfish Genetics Policy, which states: A. Interstate: Live salmonids, including gametes, will not be imported from sources outside the state. Exceptions may be allowed for trans-boundary rivers. B. Inter-regional: Stocks will not be transported between major geographical areas: Southeast, Kodiak Island, Prince William Sound, Cook Island, Bristol Bay, AYK and Interior. C. Regional: Acceptability of transport within regions will be judged on the following criteria: 1. Phenotypic characteristics of the donor sock must be shown to be appropriate for the proposed fish culture regions and the goals set in the management plan. 2. No distance is set or specified for transport within a region. It is recognized that transplants occurring over greater distances may result in increased straying and reduce the likelihood of a successful transplant. Although the risk of failure affects the agency transporting the fish, transplants with high probability of failure will be denied. Proposals for long distance transport should be accompanied by adequate justification for non-local stock.
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Statement of consistency to the RFM Fishery Standard	Minor Non-conformance Overall, management of Alaska's commercial salmon fishery and stock enhancement programs considers the genetic diversity of wild salmon

13.	**Where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity.**	
		populations and the integrity of natural ecosystems. A single Minor Non-conformance is maintained during this Surveillance period, as mass marking used to identify the contributions from hatchery-produced fish continues to improve and integrate with stock assessment methodologies.

8. Update on compliance and progress with non-conformances and agreed action plans

This section details compliance and progress with non-conformances and agreed action plans including:

a) A review of the performance of the Client specific to agreed corrective action plans to address non-conformances raised in the most recent assessment or re-assessment or at subsequent surveillance audits including a summary of progress toward resolution.
b) A list of pre-existing non-conformances that remain unresolved, new nonconformances raised during this surveillance, and non-conformances that have been closed during this surveillance.
c) Details of any new or revised corrective action plans including the Client's signed acceptance of those plans.
d) An update of proposed future surveillance activities.

8.1. Closed non-conformances

There are no closed non-conformances.

8.2. Progress against open non-conformances

There are no new non-conformances.

8.3. New non-conformances

Non-conformance 1 (of 1)	
Clause:	13.4
Non-conformance level:	Minor
Non-conformance:	Minor Non-conformance was associated with ASMI RFM v1.3 sub-clause 13.4, which states that "with due regard to the assessment approach employed, stock assessment of fisheries that are enhanced through aquaculture inputs shall consider the separate contributions from aquaculture and natural production", not met in full due to releases of unmarked hatchery pink salmon by the Kodiak Regional Aquaculture Association (KRAA).
Rationale:	No evidence available to demonstrate that evaluation of straying pink salmon has been conducted in Kodiak region since the 1980's. At this time (August 2016) a plan for implementation of marking of Kodiak hatchery pink salmon has not been finalized. Furthermore, there is no formal commitment by ADFG to initiate marking of pink salmon. The Assessment team considers that marking of the enhanced component of pink salmon will support the assessment approach employed considering the separate contributions from aquaculture and natural production.
Corrective Action Plan (CAP):	In late 2016, the Kodiak Regional Aquaculture Association (KRAA), in partnership with Alaska Fisheries Development Foundation, developed a Corrective Action Plan (CAP) to address the Minor Non-conformance associated with release of unmarked salmon from KRAA's Kitoi Bay Hatchery. The CAP outlined a series of actions to be taken, culminating with marking and monitoring of pink salmon produced by Kitoi Bay Hatchery and subsequently sampled as adults. For more details about the CAP Please see: https://cdn.rfmcertification.org/wp-content/uploads/2021/06/AK_SAL-Alaska-salmon-2nd-Reassessment-Report-Final-1.pdf

Non-conformance 1 (of 1)	
Progress against the CAP:	**Year 1 (2021)** Progress against the CAP: KRAA has made remarkable progress with implementation of their CAP. Ahead of the plan's schedule, otolith marking of pink salmon produced at the Kitoi Bay Hatchery began in 2019 and continues until present. KRAA Executive Director, Tina Fairbanks, offered evidence of further progress with CAP implementation during our offsite meeting on 16 December 2021, referencing otolith sampling and analysis efforts by KRAA and ADFG. Results from adult pink and chum salmon sampled from the commercial harvest and streams of Kodiak and Afognak islands were provided in a report produced by KRAA (Weber, 2021), partially summarized here in Table 11 (1st surveillance report). Non-conformance 1 (of 1): In ADFG's 2020 Alaska Salmon Fisheries Enhancement Annual Report, Wilson (2021) recognized KRAA's transition to mass marking of all fish produced at its facilities and reported the percent of Alaska's commercial salmon harvest attributable to hatchery production. KRAA's commitment to enabling identification of its contribution to harvested salmon stocks in Alaska demonstrates major progress toward full compliance of RFM Supporting Clause 13.4. However, given the novelty of the KRAA otolith marking program and statistical uncertainties associated with extrapolating estimates from the small number of samples collected from Kodiak's commercial harvesters toward stock assessments, no change of conformance level is as of yet warranted. Future surveillances will continue to monitor progress of the KRAA otolith marking program and applications to management. **Year 2 (2022)** The Corrective Action Plan developed in 2016 by AFDF and KRAA outlines a series of tasks to be completed to meet full conformance with Supporting Clause 13.4. Through collaboration with ADFG and their own initiative, KRAA has made significant progress toward completion of nearly all tasks listed in their plan. Reports by Weber (2021, 2022) document this progress, highlighting KRAA's successful establishment of a comprehensive otolith marking program at Kitoi Bay Hatchery, sampling of salmon harvested or recovered from streams in the Kodiak region, as well as analysis and reporting of otolith mark results. Notably ahead of schedule, KRAA has completed nearly all tasks described in their CAP. Tasks 5-1 and 5-2 remain to be completed in full through reporting of results from a third year of PHOS study and clear demonstration that sampling was conducted in accordance with study designs that involved ADFG collaboration and approval. Lastly, continued marking of salmon produced by KRAA and other hatcheries will be necessary to satisfy the conditions of SC 13.4 into the future. **Year 3 (2023)** Pink and Chum salmon hatchery production continues to be marked in Kodiak hatcheries. Assessments of hatchery contributions to the commercial fishery harvest and spawning escapement were continued in 2022 and 2023. The sampling

Non-conformance 1 (of 1)	
	project was extended from for an additional year (year 4) with cost savings from the previous years. Methods and results for 2020 and 2021 are detailed in annual progress reports (Weber, 2021; 2022). Sample numbers and locations were summarized for 2020 through 2022 by Thomas (2022). From 2020 through 2022, a total of 10,647 pink salmon and 5,611 chum salmon otoliths were collected and analyzed from the commercial catch, stream spawning escapements and hatchery broodstock. Stream sampling results from 2022 were reported by Dodson (2023). Field sampling was completed for this project in 2023 and analysis of the final year's results are ongoing. A project completion report is expected to be available in 2025. This work has found that thermal and saltwater marking methods are effective for otolith marking of Kodiak hatchery Pink and Chum salmon, Kodiak hatchery Pink and Chum salmon contribute significant numbers to the commercial fishery harvest, some staying of Kodiak hatchery Pink and Chum salmon occurs into local streams, and hatchery-origin Pink and Chum Salmon from other Alaska hatcheries are also present. However, natural-origin Pink and Chum salmon continue to comprise a high percentage of natural spawners. Natural productivity of Pink and Chum salmon remains high in Kodiak streams as demonstrated by escapements which consistently exceed escapement goals (Munro, 2023). With the pending completion of a final project report summarizing otolith marking, sampling, and analyses conducted from 2020 through 2023, the client action plan will have been successfully completed and this minor non-conformance may be closed.
Non-conformance status:	Open –Non-conformance to be closed at the next annual audit upon receipt of a project completion report.

8.4. New or revised corrective action plans

There are no new corrective action plans or pre-existing plans that have been revised as well as Client-signed acceptance of the action plan.

8.5. Proposed surveillance activities

This fishery will be assessed again on the 4th surveillance.

9. Recommendations for continued certification

9.1. Certification Recommendation

Following this surveillance audit, the Assessment Team recommends that, the United States Alaska commercial salmon [Chinook *Oncorhynchus tschawytscha*, sockeye *O. nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta*] fisheries employing troll , purse seine, drift gillnet, set gillnet, fish wheel, dip net and beach seine gears in the four administrative Regions of Alaska that are principally managed by the Alaska Department of Fish and Game (ADFG) fishery be awarded continuing certification against RFM Certification Program Fisheries Standard Version 2.1.

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5 AAC 39.222. Policy for the management of sustainable salmon fisheries https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2016-2017/jointcommittee/5aac39.pdf

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11. Appendices

11.1. Appendix 1 – Assessment Team Bios

11.1.1. Assessment Team Bios

Based on the technical expertise required to carry out this assessment, an Assessment Team was selected as follows.

Ivan Mateo, Ph.D. (Lead Assessor)

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

Scott Marshall (Assessor 1)

Mr. Scott Marshall received a B.S. in Fisheries Science at Oregon State University, an M.S. Fisheries Science University of Washington 1974 – 1980. Mr. Marshall was the Fisheries Scientist and Project Leader at the Fisheries Research Institute, University of Washington. His primary emphasis was on researching sockeye salmon productivity in the Chignik Lakes, Alaska, on determining the origins of Chinook salmon harvested by foreign vessels operating in the North Pacific Ocean, and on the population dynamics of sockeye salmon in the Lake Washington watershed of Washington.

1980 - 2001. Alaska Dept. Fish and Game: Mr. Marshall served in three primary capacities, Research Project Leader, Principal Fishery Scientist for Pacific Salmon Commission Affairs and Regional Supervisor. As a Project Leader Mr. Marshall lead research teams in the study of population structure and dynamics of the state's Pacific Salmon and Pacific herring stocks. As a Principal Scientist Mr. Marshall served as a Co-Chairman or as Alaska's senior representative on several international technical teams established by the Pacific Salmon Treaty (e.g., Chinook Salmon, Transboundary Rivers, Canadian/Alaska Boundary Area Fisheries, Interceptions Accounting Committee, Data Sharing Committee, Editorial board). He served on Scientific and Statistical Committee of the North Pacific Management Council. As the Division of Commercial Fisheries Regional Supervisor for Southeast Alaska, Mr. Marshall represented the Department at Alaska Board of Fisheries meetings, reviewed and/or critiqued numerous regulatory proposals for the fisheries of Southeast Alaska. He oversaw the daily research and management of the Southeast Region's commercial, personal use and subsistence fisheries. He also served as Co-Chairman of the Transboundary Rivers Panel of the Pacific Salmon Commission. Undertook numerous administrative responsibilities, such as budgeting, hiring HR etc.

2000- 2005. Idaho Department of Fish and Game: Mr. Marshall served as the Fisheries Bureau's Staff Biologist for Endangered Species Act Affairs. This included developing Biological Assessments, Applications for ESA Section 7 & 10 permits, and writing reports for incidental take of endangered Pacific salmon that occurred during the conduct of research activities, recreational fisheries and hatchery operations. He also served as the Department's representative on the Habitat Committee of the Pacific Fishery Management Council.

2005 - 2013 U.S Fish and Wildlife: Mr. Marshall was a Fisheries Administrator in charge of the Lower Snake River Compensation Plan (a hatchery mitigation program to compensate for construction and operation of four hydroelectric dams on the Lower Snake River in Washington Oregon and Idaho). He developed, presented, and negotiated budgets for the program to the Bonneville Power Administration (roughly $30 million annually). He reviewed and negotiated annual budgets, contracts, annual spending, and scientific reports developed by our fish and wildlife agency co-operators who implemented the program (3 states, 3 tribal agencies and several U.S Fish and Wildlife Service field offices). Mr. Marshall developed a series of three Programmatic Reviews (one for each of the primary species raised in our hatcheries) as required by the Northwest Power Planning Council's implementation legislation.

Mr. Ray Beamsderfer (Assessor 2)

Mr. Beamesderfer meets all general requirements for an RFM Team Member. Mr. Beamesderfer holds a bachelor's degree in Wildlife and Fisheries Biology from the University of California, Davis, and a Master's in Fishery Resources from the University of Idaho. He worked in fish research, fishery management, and policy analysis for the Oregon Department of Fish and Wildlife for 17 years and has been a consultant since 2000. Mr. Beamsderfer has completed a wide variety of projects in fishery management, biological assessment, and conservation/recovery planning. He is the author of numerous reports, management plans, and scientific articles on fish population dynamics, fish conservation, fishery, and hatchery management, sampling, and species interactions. Mr. Beamsderfer has served on fishery assessment teams for salmon fisheries in Alaska, Japan, and Russia since 2000 and brings perspective and harmonization among salmon fishery assessments in the Pacific.