Responsible Fishery Management (RFM)

US Alaska Salmon Commercial Fisheries

Fourth Surveillance Report

Certification Body (CB):	**Global Trust Certification**
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Fishery client:	Alaska Fisheries Development Foundation
Assessment Type:	Surveillance 4 of 2nd Re-assessment
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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://www.alaskaseafood.org/rfm-certification/

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
IJC	International Joint Commission

Acronym	Full name
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
SEG	Sustainable Escapement Goal
SET	Sustained Escapement Threshold
SOC	Stocks of Concern
SSC	Scientific and Statistical Committee

Acronym	Full name
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

This Surveillance report documents the 4th 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.

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.

3.1 Surveillance process

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 4th 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 Unit(s) of Certification

5.1 Unit(s) of Certification

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

Table 3. Unit(s) of Certification.

Unit 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 area:		All	State and Federal waters of the U.S. state of Alaska in FAO major fishing area 67
Stock(s):		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 gear/method:		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 Unit(s) of Certification (if any)

There have been no changes to the Unit(s) 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	Time	Location	Personnel	Areas of discussion
March 5, 2025	8:30AM-9:00 AM	APICDA 717 K Street Anchorage , Alaska	Client AFDF Kristy Clement Hannah Wilson Ann Robertson Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	Initial Client meeting ▪ Purpose of surveillance audit. ▪ Updates on performance of the fishery
	9:00AM-10:30 AM		ADF&G Bill Templin Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ Updates on research, budgets and future direction. ▪ Significant changes to the status of salmon stocks or fisheries ▪ Significant changes in fishery management or related programs ▪ Significant challenges currently and potentially in the future for sustainable management of salmon stocks ▪
	10:30AM-11:30 AM		ADF&G Forrest Bowers Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor	▪

			Mr. Ray Beamesderfer, Assessor	
	11:30 AM-12:30PM		ADF&G Andrew Munro Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ Updates/changes in stock assessment ▪ Significant changes to the status of salmon stocks or fisheries ▪ Significant changes in fishery management or related programs ▪ Significant challenges currently and potentially in the future for sustainable management of salmon stocks
	2:30 PM-3:30PM		ADF&G Dani Evenson Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ Updates on Pacific Salmon Commission ▪ Updates fish stocks and species of relevance to the State of Alaska under the Endangered Species Act and Marine Mammal Protection Act.
March 6, 2025	10:00AM-11:00 AM	APICDA 717 K Street Anchorage , Alaska	Aaron Poetter, ADF&G Central Region Supervisor Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ Updates/changes in: o stock assessment o research o management ▪ significant BOF decisions/actions ▪ budgets, and staffing ▪ significant changes to the status of salmon stocks or fisheries ▪ significant changes in fishery management or related programs ▪ significant challenges currently and potentially in the future for sustainable management of salmon stocks
	11:00AM-12:00 PM		ADF&G Westward Region Kevin L Schaberg Nicholas H. Sagalkin (remote) Global Trust Assessment Team Members	▪ Updates/changes in: o stock assessment o research o management ▪ significant BOF decisions/actions ▪ budgets, and staffing

			Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ significant changes to the status of salmon stocks or fisheries ▪ significant changes in fishery management or related programs ▪ significant challenges currently and potentially in the future for sustainable management of salmon stocks
	1:00PM-2:00 PM		Anne Reynolds Manney, ADF&G SEAK Region Supervisor (remote)	▪ Updates/changes in: o stock assessment o research o management ▪ significant BOF decisions/actions ▪ budgets, and staffing ▪ significant changes to the status of salmon stocks or fisheries ▪ significant changes in fishery management or related programs ▪ significant challenges currently and potentially in the future for sustainable management of salmon stocks
	2:00 PM-3:00 PM		John Linderman, ADF&G AYK Region Supervisor (remote) Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ Updates/changes in: o stock assessment o research o management ▪ significant BOF decisions/actions ▪ budgets, and staffing ▪ significant changes to the status of salmon stocks or fisheries ▪ significant changes in fishery management or related programs ▪ significant challenges currently and potentially in the future for sustainable management of salmon stocks
	3:00PM-4:00PM		PNP Hatchery Operators Tina Fairbanks, KRAA Katie Harms, DIPAC Dean Day, CIAA Geoff Clark, PWSAC (remote) Global Trust	▪ Updates in PNP programs o egg take goals, o release strategies, o release locations, o research undertaken, ▪ Information regarding success of current programs

			Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	in meeting association goals. ▪ Update on KRAA Progress on Marking and Sampling
	5:30PM-6:00PM		Client AFDF Kristy Clement Hannah Wilson Ann Robertson Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	Closing Client meeting ▪ Progress on the NCs. ▪ Discussion Surveillance Findings
March, 10, 2025	2:00PM-3:00PM		PNP Hatchery Operators Susan Doherty, SSRAA Taylor Scott, NSRAA Scott Wagner, NSRAA Global Trust Assessment Team Members Dr. Ivan Mateo, Lead Assessor Mr. Scott Marshall, Assessor Mr. Ray Beamesderfer, Assessor	▪ Updates in PNP programs o egg take goals, o release strategies, o release locations, o research undertaken, ▪ Information regarding success of current programs in meeting association goals.

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

The Alaska Board of Fisheries held regularly scheduled regulatory meetings for the Kodiak, Prince William Sound, Copper River, Upper Cook Inlet Southeast and Yakutat areas. While several minor changes in regulation were made, there were no changes in the management regime and processes that affect the outcome of certification or that have potential to adversely change the effect of the fishery on resources. Changes that were made are outlines under the relevant clause.

Responsibility for management of federal waters in Upper Cook Inlet was assumed in 2024 by the North Pacific Fishery Management Council. Authority for salmon management in federal waters outside 3 miles from shore, had previously been delegated to the State of Alaska and its Board of Fisheries. The National Marine Fisheries Service amended its fishery management plan for this area in response to prolonged litigation in the U.S. District and Appeals Courts. A methodology for adopting a Total Allowable Catch was developed and implemented in 2024 with other commercial fishery regulations generally following established practice under state management. TACs were sufficiently conservative to provide for effective state management of their fisheries based on abundance in order to meet established escapement goals.

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

7.3 Changes to the organizational responsibility of the main management agencies

Normal changes in management staff of the Alaska Department of Fish and Game occurred. This included appointments of an acting Director of the Commercial Fisheries Division and a new Southeast Region Supervisor for the Commercial Fish Division.

7.4 New information on the status of stocks

Pink Salmon runs in 2023 throughout the state were above average and most 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 and widespread restrictions and closures were implemented in order to optimize escapements to the extent

allowed by low abundance. 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.

On January 11, 2024, the National Marine Fisheries Service (NMFS) received a petition to list all Gulf of Alaska Chinook salmon as a threatened or endangered species under the Endangered Species Act (ESA) and designate critical habitat. This is a massive area that includes Chinook that spawn in the rivers of Southeast Alaska, Prince William Sound, Cook Inlet, Kodiak, and the Alaska Peninsula. The petition was filed by the Wild Fish Conservancy-- a Washington-based environmental group and the same group that sued NMFS to shut down the Southeast Alaska commercial troll "hook and line" fishery. On May 24, NMFS issued what's called a positive 90-Day finding. The positive finding indicates that NMFS believes the petition provides substantial information that an ESA listing for these Chinook stocks may be warranted. The positive finding started a formal status review under the ESA. The result of the status review will be a decision on whether to list any or all GOA Chinook stocks as threatened or endangered under the ESA. Currently, NMFS is in the status review stage which is statutorily required to be completed within one year. NMFS did not meet the January 11, 2025 deadline, and Wild Fish Conservancy has sent NMFS a notice of intent to sue. It is currently unclear when the status review will be published given that it is a federal document but ADFG anticipates publication during spring of 2025.

7.4.1 Spawning Escapements

The number of systems with escapements can vary annually as goals are periodically reevaluated as a result some systems are combined into large management units, some groups of systems may be separated, some systems may be dropped or added for a variety of reasons. In 2023 there were 257 salmon escapement goals. Weather and logistic issues sometimes prevent assessment of some escapements; in 2023, escapements were successfully assessed in 214 systems. Overall, 74% of the escapement goals were met or exceeded and that is more than the 67% in 2022.

Chinook salmon runs continue to be below historic averages throughout the state. Despite significant restrictions in fishing opportunity for all gear groups only 31 percent of the goals were met statewide. Of particular note, 2023 was the 16th consecutive year that there were no commercial fishery openings for Chinook salmon in the Yukon management area. Regions where goals were met include Southeast (6 of 11) Copper River (1 of 1), Kuskokwim (5 of 5) and the North Peninsula (1of 1) (Table 7).

Statewide over 90% of the escapement goals for Sockeye Salmon were met or exceeded. Regions where goals were not met include Southeast (3 of 12), Prince William Sound (1 of 2), Norton Sound (1 of 1) Kodiak (1 of 12). Of special note, the Chignik River the sockeye salmon runs continue to show improvement and goals were met for both the early and late runs (Table 7).

Coho salmon runs are generally difficult to assess in Alaska because they enter the rivers in the late summer or fall when storms often result in high and muddy water. In 2023, 83 percent of the Coho Salmon escapement goals were met or exceeded. Of the 22 systems with Coho escapement goals, half are in Southeast and all but one stock met or exceeded its goal. All escapement goals were met or exceeded in the Bering/Copper, Kuskokwim, and Kodiak areas (Table 7).

Eight-eight percent of the Pink Salmon escapement goals were achieved. In contrast, Pink Salmon returns to Norton Sound were very low and only 1 of 3 goals was met (Table 7).

Chum salmon runs in western Alaska were very low (e.g., Yukon River fall chum run was the 5th lowest on record and only 3 of 5 stocks met or exceeded goals, while the summer run fish met their goal. The runs in Norton Sound were also weak with only one of four stocks meeting their escapement goal. Elsewhere in Alaska, most Chum Salmon escapement goals were met (Table 7).

Table 5. Summary of escapements by region and species, 2023 (from Munro 2024).

Region	Area	Species	Number of Systems			Percent within or over goal range
			Under range	Within range	Over range	
Region 1	Southeast Alaska	Chinook	5	6		55%
		sockeye	3	4	5	75%
		coho	1	3	7	91%
		pink		1	2	100%
		chum	2	3	3	75%
			11	**17**	**17**	**76%**
Region 2	Upper Cook Inlet	Chinook	10			0%
		sockeye		2	5	100%
		coho	2	2		50%
		chum		1		100%
	Lower Cook Inlet	Chinook	2			0%
		sockeye		4	3	100%
		pink	2	4	12	89%
		chum	1	4	7	92%
	Bristol Bay	Chinook	1			0%
		sockeye		6	3	100%
		coho				NA
		pink				NA
		chum	1			0%
	Prince William Sound	sockeye	1	1		50%
		pink	1	5	2	88%
		chum	3	2		40%
	Copper/Bering River	Chinook		1		100%
	`	sockeye		2		100%
		coho				100%
			24	**36**	**32**	**74%**
Region 3	Yukon River	Chinook	6			0%
		coho				NA%
		chum (summer)		1		100%
		chum (fall)	2	3		60%
	Kuskokwim	Chinook		4	1	100%
		sockeye			2	100%
		coho		1	1	100%
		chum				NA
	Norton Sound	Chinook	2			0%
		sockeye	1			0%
		coho	1			0%
		pink	2	1		33%
		chum	3	1		25%
	Kotzebue	chum				NA
			17	**11**	**4**	**47%**
Region 4	Kodiak	Chinook	2			0%
		sockeye	1	9	2	92%
		coho		3		100%
		pink		1	1	100%
		chum		1		100%
	Chignik	Chinook	1			0%
		sockeye			2	100%

		pink			1	100%
		chum			1	100%
	South Alaska Peninsula	sockeye		2	1	100%
		pink			1	100%
		chum			3	100%
	North Alaska Peninsula	Chinook		1		100%
		sockeye		5	4	100%
		coho				NA
		chum		1	1	100%
	Aleutian Islands	sockeye		1		100%
			4	**24**	**17**	**91%**
Statewide Totals			**56**	**88**	**70**	**74%**

Note: Escapement goals that are only a lower-bound threshold (known as lower-bound sustainable escapement goals in Alaska) were classified as "within goal" if escapement was above the goal.

Region 1 = Southeast Alaska, Region 2 = Central Region; Region 3 = Arctic-Yukon-Kuskokwim Region; Region 4 = Westward Region.

7.4.2 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 23 stocks of concern (Table 8). Nineteen stocks have been identified as a management concern and 2 have been identified as a yield concern. Two new stocks were added in 2024/25 and three stocks met goals for de-listed.

Implementing a management framework to increase escapements, 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 varying 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 6. Alaska's current stocks of concern.[1]

Region	Stock	Species	Year Designated	Level of Concern
Southeast	King Salmon River	Chinook	2017	Management
	Stikine River	Chinook	2021	Management
	Andrew Creek	Chinook	2021	Management
	Taku River	Chinook	2021	Management
	McDonald Lake	Sockeye	2021	Management
	Hugh Smith	Sockeye	2025	Management
	N. SEAK Outside Subregion	Chum	2025	Management
Central	McNeil River	Chum	2016	Management
	Chuitna River	Chinook	2010	Management
	Theodore River	Chinook	2010	Management
	Alexander Creek	Chinook	2010	Management
	Nushagak	Chinook	2022	Management
	East Susitna River	Chinook	2019	Management
	Kenai River Late Run	Chinook	2023	Management
	Mikfik Lake	Sockeye	2023	Management
AYK	Yukon	Chinook	2000	Yield
	Norton Sound Sub Dist. 5 & 6	Chinook	2003	Yield
Westward	Karluk	Chinook	2010	Management
	Ayakulik	Chinook	2019	Management
	Chignik River - early run	Sockeye	2021	Management
	Chignik River	Chinook	2023	Management

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. 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 estimated 2023 statewide harvest of 232 million fish (Table 5) weighed 924 million pounds (Table 6) was composed primarily of Pink Salmon (468.9 million pounds), Sockeye Salmon (285.1 million pounds) and Chum Salmon 152.6 million pounds. Most the Sockeye Salmon was landed in the Bristol Bay, most of the Pink Salmon was landed in the Prince William Sound and Southeast. Most of the Chum Salmon was landed in Southeast. Low runs of Chinook and Chum salmon precluded fishing in the Kuskokwim and Yukon.

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

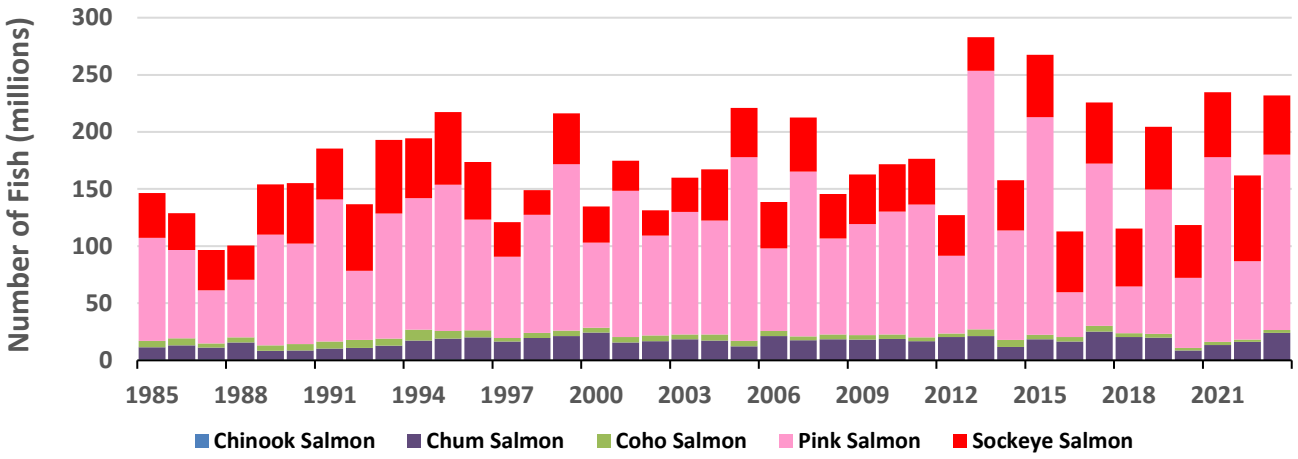

Figure 1. Alaska Commercial Salmon Catch 1985 - 2023.[2]

Table 7. Estimated number of salmon landed in Alaska's 2023 commercial fishery by area and species.

Area	Chinook Salmon	Chum Salmon	Coho Salmon	Pink Salmon	Sockeye Salmon	Grand Total
Alaska Peninsula/Aleutian Islands	12,587	1,226,216	206,696	17,199,390	2,899,795	21,544,684
Arctic/Kotzebue						
Bristol Bay	8,243	343,333	17,579	3,140	40,614,164	40,986,459
Chignik	2,297	109,695	52,644	2,143,701	1,069,702	3,378,039
Cook Inlet	1,103	165,820	83,125	2,759,585	1,923,633	4,933,266
Kodiak	10,417	828,156	265,803	24,739,646	2,561,251	28,405,273
Norton Sound/Port Clarence						
Prince William Sound	11,538	5,344,961	189,755	58,809,910	1,976,734	66,332,898
Southeast/Yakutat	200,646	15,721,448	1,794,355	47,817,278	927,689	66,461,416
Grand Total	246,831	23,739,629	2,609,957	153,472,650	51,972,968	232,042,035

Table 8. Landed weight of the 2023 Alaska commercial salmon harvest by area and species (pounds).

Area	Chinook Salmon	Chum Salmon	Coho Salmon	Pink Salmon	Sockeye Salmon	Grand Total
Alaska Peninsula/Aleutian Islands	116,437	7,996,965	1,154,822	53,673,727	15,512,648	78,454,599
Arctic/Kotzebue						
Bristol Bay	86,946	2,020,079	102,373	10,173	224,911,219	227,130,789
Chignik	18,852	724,568	270,734	6,243,599	6,422,240	13,679,993
Cook Inlet	13,915	1,078,011	436,963	8,192,904	10,329,664	20,051,458
Kodiak	54,963	5,645,625	1,672,742	77,587,056	12,158,083	97,118,469
Norton Sound/Port Clarence						
Prince William Sound	176,854	33,236,414	1,435,635	176,725,088	10,560,902	222,134,893
Southeast/Yakutat	2,228,606	101,953,741	9,750,510	146,484,649	5,244,948	265,662,454
Grand Total	2,696,573	152,655,402	14,823,779	468,917,195	285,139,705	924,232,654

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

7.6 Significant changes in the ecosystem effects of the fishery

Following prolonged litigation in federal district court over indirect fishery impacts on SRKW in NOAA's ESA consultation with the State of Alaska and related NEPA requirements, NOAA fisheries released a new Biological Opinion (BiOp) and Environmental Impact Statement (EIS) for Southeast Alaska salmon fisheries.

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.

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).

For the 2024 salmon fishery the State troopers reported the following information regarding enforcement efforts:

Kodiak/Aleutian/Bristol Bay: 3324 contacts; 180 warnings and 168 citations.
Cook Inlet, Prince William Sound, and SE Alaska: 3514 contacts; 116 warnings and 175 citations.

They noted that this level of contacts, warnings and citations was typically of what is seen in most years.

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 to the fundamental clauses of the RFM Fishery Standard or to consistency to those fundamental clauses.

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 was assumed in 2024 by the North Pacific Fishery Management Council under the auspices of the National Marine Fisheries Service. Authority for salmon management in federal waters outside 3 miles from shore, had previously been delegated to the State of Alaska and its Board of Fisheries. The NPFMC fishery management plan for this area was amended in response to prolonged litigation in the U.S. District and Appeals Courts. A methodology for adopting a Total Allowable Catch was developed and implemented in 2024 with other commercial fishery regulations generally following established practice under state management. TACs were sufficiently conservative to provide for effective state management of their fisheries based on abundance in order to meet established escapement goals. 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).

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.**
	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. 1.7. 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

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.**
	NPFMC (North Pacific Fishery Management Council). 2024. Fishery Management Plan for the Salmon Fisheries in the EEZ off Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/Salmon/SalmonFMP.pdf PSC (Pacific Salmon Commission). 2023. Thirty-ninth Annual Report 2023/2024. https://www.psc.org/download/31/psc-annual-reports/18915/39th-psc-annual-report-2023-24.pdf PSMFC (Pacific States Marine Fisheries Commission). 2023. 2022 – 2023 Annual Report. https://www.psmfc.org/wp-content/uploads/2024/06/PSMFC-Annual-Report-2022-23-FINAL.pdf
Statement of consistency to the RFM Fishery Standard	The fishery management system of the state of Alaska and National Marine Fisheries Service (for U. S. federal waters) is 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 socialparameters 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://www.npafc.org/wp-content/uploads/2017/09/bulletin5.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). 2022. Annual Report 2022. https://www.npafc.org/wp-content/uploads/Public-Documents/2022/AR2022.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:	There have been no significant changes in management objectives or their implementation. 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:	There were 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 (where needed). This system provides a framework for reporting catches, escapements and relevant associated biological and physical data. 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/sample catches, inspect gear and, to check for compliance with related statutes 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 Observer 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 (2022) and for Chinook Salmon stock status is PSC-JTCC (2023). 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 Institute 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 in 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 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. 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 and 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

4.	**There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.**	
		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 in Alaska 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 provides a forum for traditional knowledge to be brought into the management process. The Kuskokwim River Salmon Management Working Group was formed in 1988 in response to requests from stakeholders who sought a more active role in salmon management. The Working Group is made up of 14-members, seats are provided for elders, subsistence fishermen, processors, commercial fishermen, sport fishermen, 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 in the Transboundary and Yukon rivers is reported annually https://www.psc.org/publications/technical-reports/technical-committee-reports/. 4.8. States shall promote the adoption of uniform guidelines governing fisheries research conducted on the high seas. Salmon research in the North Pacific Ocean is coordinated 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. The Convention authorizes fishing for anadromous fish in the Convention Area for scientific purposes under national and joint research programs approved by the NPAFC. The Commission's Science Plan was developed by consensus through the Science Sub-Committee, (SSC, 2016). Under the plan, member countries cooperate in collecting, reporting and exchanging biostatistical data, biological samples, fisheries data and organizie 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

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	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 Fisheries Research and Education Agency. https://npafc.org/wp-content/uploads/Public-Documents/2021/1961Japan.pdf North Pacific Anadromous Fish Commission. 2022. Annual Report. N. Pac. Anadr. Fish Comm. Vancouver. https://www.npafc.org/wp-content/uploads/Public-Documents/2022/AR2022.pdf PSC-JTCC. 2023. Annual report of catch and escapement for 202. TCCHINOOK (23)-02 Pacific Salmon Commission., Vancouver, B.C. Canada. https://www.psc.org/publications/technicalreports/technical-committee-reports/chinook/

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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/ Ream J. T. and J. Merriam. 2017. Local and Traditional Knowledge of Stikine River Chinook Salmon: A Local Perspective on a Vital Commercial, Sport, and Subsistence Fish. ADFG Division of Subsistence, Technical Paper No. 430. http://www.adfg.alaska.gov/techpap/TP430.pdf Romberg, W., I. Rafferty, and M. Martz. 2018. Alaska statewide sport fish harvest survey, 2018. Alaska Department of Fish and Game, Division of Sport Fish, Regional Operational Plan ROP.SF.4A.2018.07. http://www.adfg.alaska.gov/sf/Publications/index.cfm?ADFG=main.mainSearchSubmit Rowse, M. and S. Marshall. 1988. Estimates of catch and mortality of Chinook salmon in the 1987 Southeast Alaska purse seine fishery. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J88-18, Juneau. http://www.adfg.alaska.gov/FedAidPDFs/rir.1j.1988.18.pdf Scannell, H., J. Botz, K. Gatt, J. Morella, J. Buza, and R. Ertz. 2023. 2021 Prince William Sound area finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 23-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-06.pdf Schelle, K., K. Iverson, N. Free-Sloan and S. Carlson. 2004. Bristol Bay salmon drift gillnet fishery optimum number report. CFEC Report 04-3N. Juneau Ak. https://www.cfec.state.ak.us/RESEARCH/04_3N.htm Seibel, M., A. Davis, A., J. Kelly and J. E. Clark. 1989. Observations on Chinook salmon hook and release in the 1988 Southeast Alaska troll fishery. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J89-41, Juneau. (Not available on-line) Sill, L., G. Halas, D. Koster. 2019. Copper River Chinook salmon: the intersection of commercial fisheries and the subsistence way of life in Cordova, Alaska. ADF&G Division of Subsistence, Technical Paper No. 444. Juneau. http://www.adfg.alaska.gov/techpap/TP444.pdf Tiernan, A., T. Elison, T. Sands, J. Head, S. Vega, and G. Neufeld. 2021. 2020 Bristol Bay annual management report. Alaska Department of Fish and Game, Fishery Management Report No. 21-16, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR21-16.pdf Trainor, A. B.M. McDavid, L.A. Sill, L.S. Naaktgeboren. 2019. Local traditional Knowledge of the Freshwater Life Stages of Yukon River Chinook and Chum Salmon in Anvik, Huslia, Allakaket, and Fort Yukon. ADF&G Division of Subsistence, Technical Paper No. 447. Juneau. http://www.adfg.alaska.gov/techpap/TP%20447.pdf Watson B, Reimer MN, Guettabi M, Haynie A. Commercial Fisheries & Local Economies. Journal of Environmental Economics and Management. January 2021. https://doi.org/10.1016/j.jeem.2021.102419 Wynne, K, D. Hicks and N. Munro. 1991. 1990 Salmon gillnet fisheries observer programs in Prince William Sound and South Unimak Alaska. Final report to NOAA. Saltwater Inc. Anchorage Ak. https://www.fisheries.noaa.gov/resource/document/1990-salmon-gillnet-fisheries-observer-programs-prince-william-sound-and-south

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

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:	ADFG has expanded its ocean ecology program to include surveys in the Gulf of Alaksa and southern Bering Sea in cooperation with NOAA fisheries. ADFG has developed a research program to identify the stock of Chum and Chinook Salmon caught in the Area M fishery. 5.1 An appropriate institutional framework shall be established to determine the applied research required and its proper use (i.e. assess/evaluate stock assessment model/practices) for fishery management purposes. 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 programs covering 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 ecology and management of salmon and to train graduate students. • The USFWS augments state stock assessment by conducting research on salmon production and habitat on some 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, Barcley et al (2024) and 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

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	of The Division of 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) Woodward et al (2025) . 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), Lincoln et al. (2020) and Roe et al (in Press) 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). Research by the U.S Geological Survey is seeking to determine the cause-and-effect relationships between *Ichthyophonus* infection prevalence and severity, water temperatures, and the swimming performance of Yukon River Chinook salmon https://www.usgs.gov/centers/western-fisheries-research-center/news/plight-yukon-river-chinook-salmon. 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 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); (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. ADF&G also maintains an ocean ecology program to understand the causes for early marine survival of salmonids. 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,

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		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) (https://nprb.org/) 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 provides for "restoring fish impacts of development habitats from the and/or invasive species, for the benefit of fish and anglers. By conducting research on fish habitats and their use by species important to fisheries, the Division provides resulting information for ADF&G, other agencies, and the public to use for permitting, planning, and fisheries management" (ADFG-SF 2022). 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). Examples of the research carried out by the NPAFC include a synopsis of research on production of salmon in a changing climate (Stanbury 2025) 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

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		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 (2022). An example of the annual reports of the PSC is PSC (2023). Likewise, there is an extensive library of technical documents, an example of PSC documents is PSC-JCTC (2024) and an example from the NPAFC is McKinnel et al. (2024) 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 salmon 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 time, area strata, the data will be redacted from public reports unless pooled into a lager stratum. 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 Committee to compile and evaluate stock assessment data also with representative of all participating agencies that ensures confidentiality is maintained. 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 (2024).

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.**
References:	ADFG-SF. 2022. Alaska Dept. Fish and Game Division of Sport Fish strategic plan 2022-2027. ADFG. Juneau. https://www.adfg.alaska.gov/static/fishing/PDFs/sport/Strategic_Plan_2022.pdf Adkison, M. 2010. Models of the effects of marine-derived nutrients on salmon (Oncorhynchus spp.) population dynamics. Canadian Journal of Fisheries and Aquatic Sciences. 67(1). https://www.researchgate.net/publication/237153378_Models_of_the_effects_of_marine-derived_nutrients_on_salmon_Oncorhynchus_spp_population_dynamics Barclay, A.W., T.H. Dann, K. Gruenthal, and S.E. Gilk-Baumer. 2024. A coastwide chum salmon genetic baseline for Western Alaska and high-seas genetic stock identification. *(External PDF)* NPAFC Doc. 2153. 58 pp. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/index.cfm?adfg=fishinggeneconservationlab.publications_scientificjournals Brewster, B.P. 2016. Aquatic studies at the Kensington Gold Mine, 2015. ADFG Tech Rept. 16-03. Douglas Ak. http://www.adfg.alaska.gov/static/home/library/pdfs/habit/16_03.pdf Burwen, D. L., S. J. Fleischman and J. D. Miller. 2010. Accuracy and precision of manual fish length measurements from DIDSON sonar images. Transactions of the American Fisheries Society, 139:1306-1314. https://www.tandfonline.com/doi/abs/10.1577/T09-173.1 Clark, S.C., T.L. Tanner, S.A. Sethi, K.T. Bentley and D.E. Schindler. 2015. Migration timing of adult Chinook salmon into the Togiak River, Alaska, watershed: is there evidence for stock structure? Transactions of the American Fisheries Society 144: 829-836. https://www.tandfonline.com/doi/abs/10.1080/00028487.2015.1031281 Cunningham, C.J., P.A.H. Westley, and M.D. Adkison. (2018). "Signals of large-scale climate drivers, hatchery enhancement, and marine factors in Yukon River Chinook salmon survival revealed with a Bayesian life history model". Global Change Biology. 24(9):4399–4416. https://doi.org/10.1111/gcb.14315 Farrow, K., A. Brinson, K. Wallimo and D. K. Lew. 2016. Environmental attitudes in the aftermath of the Gulf Oil Spill. Ocean Coastal Manage. 119:128-134. http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=153.5&context=usdeptcommercepub Flannery BG, Loges RG, Wenburg JK (2021) Microsatellite Variation in Yukon River Coho Salmon: Population Structure and Application to Mixed-Stock Analysis. North American Journal of Fisheries Management 41, 1408-1422. https://www.fws.gov/node/268043 C.M. Guthrie III, Hv. T. Nguyen, K. Karpan, J. T. Watson and W. A. Larson. 2021. Genetic Stock Composition Analysis of the Chinook Salmon (Oncorhynchus tshawytscha) Bycatch from the 2019 Bering Sea Pollock Trawl. NMFS. Technical Memorandum NMFS-AFSC-418. https://repository.library.noaa.gov/view/noaa/29539 Habicht, C., C. T. Smith, A. Barclay, H. Hoyt, K. Turnquist, and W. A. Larson. 2019. Discriminating among Pacific salmon, Rainbow Trout, and Atlantic Salmon species using commonly available genetic screening methods. Journal of Fish and Wildlife Management: Volume 10, Issue 1. https://www.fwspubs.org/doi/pdf/10.3996/052018-JFWM-038 Knapp, G. 2011. Local permit ownership in Alaska salmon fisheries. Marine Policy 35(5) pgs. 658-666. https://www.semanticscholar.org/paper/Local-permit-ownership-in-Alaska-salmon-fisheries-Knapp/11585d74a42c486c4fc9d62e970552f1f486fbc9 Kondzela, C. M., J. A. Whittle, D. Yates, S. C. Vulstek, H. T.Nguyen and J. R. Guyon. 2016. Genetic stock composition analysis of chum salmon from the prohibited species catch of the 2014 Bering Sea walleye pollock trawl fishery and Gulf of Alaska groundfish fisheries. U.S. Dep.

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Commer., NOAA Tech. Memo. NMFS-AFSC-314, 49 p. U.S. Dep. Commer., NOAA-TM-AFSC-314, 49 p. https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-314.pdf

Lincoln, A.E., R. Hilborn, A.J. Wirsing, and T.P. Quinn. 2020. Managing salmon for wildlife: Do fisheries limit salmon consumption by bears in small Alaskan streams? Ecol App. . 2020 Apr;30(3). https://pubmed.ncbi.nlm.nih.gov/31863535/

Loewen, M., and N. Baechler. 2014. The 2014 Chignik River sockeye salmon smolt outmigration: an analysis of the population and lake rearing conditions. Alaska Department of Fish and Game, Fishery Data Series No. 15-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FDS15-02.pdf

Matter, A. N., and M. Tyers. 2019. Chinook salmon escapement in the Chena and Salcha Rivers and Coho salmon escapement in the Delta Clearwater River, 2019-2023. Alaska Department of Fish and Game, Regional Operational Plan ROP.SF.3F.2019.03, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.3F.2016.07.pdf

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-ep2017-final-digital-copy.pdf

McKinnell, S., W. Stanbury, and V. Radchenko. 2024. Salmon in a Rapidly Changing World: Synthesis of the International Year of the Salmon and a Roadmap to 2030. N. Pac. Anadr. Fish Comm. Bull. 7. 93 pp. https://www.npafc.org/bulletin-7/

Murphy, J., K. Howard, J. Gann, K. Cecile, W. Templin and C. Gutherie III. 2017. Juvenile Chinook Salmon abundance inn the Northern Bering Sea: Implications for future returns and fisheries in the Yukon River. Deep Sea research Par II: Topical Studies in Oceanography. Vol 135 Pgs. 156-167. https://www.sciencedirect.com/science/article/abs/pii/S0967064516301618

NOAA. 2013. Biological characterization: An overview of Bristol, Nushagak, Kvichak Bays; essential fish habitat, process and species assemblages. NOAA, Ak Region. Anchorage, Ak.https://www.fisheries.noaa.gov/resource/document/biological-characterization-overview-bristol-nushagak-and-kvichak-bays-essential

Stanbury, W. (Editor). 2025. First workshop on developing a mechanistic understanding of the impact of a changing climate on salmon abundance and distribution trends. N. Pac. Anadr. Fish Comm. Tech. Rep. 23. 92 pp. https://doi.org/10.23849/npafctr23

NPAFC. 2022 Annual Report for 2022. NPAFC Suite 502.West Pender St, Vancouver , B.C. VC 3B2 Canada. https://npafc.org

Prucha, R., J. Leppi, S. McAfee and W. Loya. 2013.Development and application of an integrated hydrological model to study the effects of climate change on the Chutina watershed, Alaska. US FWS. Contract report by Integrated Hydro Systems and the Wilderness Society. Anchorage Ak. https://www.arlis.org/docs/vol1/D/794294243.pdf

Pacific Salmon Commission. 2023. *Thirty-Eighth Annual Report 2022/2023*. (https://www.psc.org/download/31/psc-annual-reports/15459/28th-psc-annual-report-2022-23.pdf).

PSC-TCDS. 1989. Information content and standards for a coastwide coded-wire tag database. PSC Report TCDS (89) 1. Vancouver, B.C. Canada. https://www.psc.org/publications/technical-reports/technical–committee-reports/data-sharing/

PSC-JCTC. 2024. Annual Report of Catch and Escapement for 2023. Pacific Salmon Commission, Vancouver, BC. https://www.psc.org/reports/tcchinook-24-01

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.
	Purcell MK, Powers RL, Evered J, Kerwin J, Meyers TR, Stewart B, Winton JR. 2018. Molecular testing of adult Pacific salmon and trout (Oncorhynchus spp.) for several RNA viruses demonstrates widespread distribution of piscine orthoreovirus in Alaska and Washington. J Fish Dis. 41: 347-355 https://doi.org/10.1111/jfd.12740 Ro, H., J.H. Stern, A.J. Wirsing, and T.P. Quinn. (In press 2025). Stable isotopes reveal variation in consumption of Pacific salmon by brown bears, despite ready access in small streams. Journal of Fish and Wildlife Management https://meridian.allenpress.com/jfwm/pages/Editorial_Board Schelle, K., K. Iverson, N. Free-Sloan and S. Carlson. 2004. Bristol Bay salmon drift gillnet fishery optimum number report. CFEC Report 04-3N. Juneau Ak. https://www.cfec.state.ak.us/RESEARCH/04_3N.htm Sill, L., G. Halas, D. Koster. 2019. Copper River Chinook salmon: the intersection of commercial fisheries and the subsistence way of life in Cordova, Alaska. ADF&G Division of Subsistence, Technical Paper No. 444. Juneau. http://www.adfg.alaska.gov/techpap/TP444.pdf Southwick Associates Inc. and W. J. Romberg, A. E. Bingham, G. B. Jennings and R. A. Clark. 2008. Economic impacts and contributions of sport fishing in Alaska, 2007. Alaska Department of Fish and Game, Professional Paper No. 08-01, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/PP08-01.pdf Tanner, T. and S. Sethi. 2014. Estimation of Chinook salmon escapement, distribution and run Timing in the Togiak River watershed using radio telemetry, Togiak National Wildlife Refuge, Alaska, 2012. Alaska Fisheries Data Series Number 2014-11, October 2014 U.S. Fish and Wildlife Service. https://www.fws.gov/alaska/sites/default/files/pdfs/fisheries/data-series/d_2014_11.pdf Wendler, G. , K. Galloway and M. Stuefer. 2015. On the climate and climate change of Sitka, Southeast Alaska. Theor. Appl. Climate. 1-8. https://www.researchgate.net/publication/282539585_On_the_climate_and_climate_change_of_Sitka_Southeast_Alaska GA Woodard, DE Schindler, J Ohlberger, CJ Cunningham. (2025). Body size as a leading indicator of run size and application to in-season forecasting of sockeye salmon in Bristol Bay, Alaska. Canadian Journal of Fisheries and Aquatic Sciences 82, 1-8. https://journals.scholarsportal.info/browse/0706652x/v56i0008
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 utilization.

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:	From 2023 through February 2025, Alaska Board of Fisheries reviewed escapement goals for the AYK Region (Liller and Savereide 2022), Chignik (Finkle et al. 2022a), Alaska Peninsula/Aleutians (Finkle et al. 2022b), Lower Cook Inlet (Otis et al. 2023), Upper Cook Inlet (McKinley et al. 2024) and for Prince William Sound and Copper River (Morella et al. 2024). *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 as follows. 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. 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.

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	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. 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).

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	1. The highest rating is given when accurate estimates of escapement (by age) and stock-specific catch (by age) are available to develop a BEG. 2. 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. 3. 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. 4. 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 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. 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 2024. Bristol Bay Sockeye Salmon provide a good example of where goals have been set for individual stocks (Vega et al. 2022). In cases where catches cannot be assigned to a stock, an escapement goal for a group of stocks in a management are may be developed. A good example of where an escapement goal has been set for a geographic area is for pink salmon in Southeast Alaska (Piston and Fish 2024).

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	Munro (2024) reported the following: "In 2023 there were 257 salmon escapement goals in Alaska and 214 of the systems with escapement goals were successfully assessed for escapement (Table 2, Munro *in prep.*). Overall, 74% of the escapement goals were achieved or exceeded—up from 67% in 2022, and 4% greater than the previous 5-year average. Achievement of escapement goals in 2023 decreased for Chinook salmon, compared to 2022, remained about the same for sockeye salmon, and increased for coho, pink and chum salmon. A summary by species is as follows: *Chinook salmon*—In 2023, 31% of the escapement goals were met for Chinook salmon compared to a recent high of 72% in 2019 and a 5-year average of 48%. *Sockeye salmon*—Within Alaska, 91% of the sockeye salmon escapement goals were achieved in 2023 this was similar to 2022 (92%) and higher than the 5-year average of 85%. *Coho salmon*—Achievement of escapement goals for coho salmon increased to 83% in 2022, compared to 59% in 2022. This achievement rate is higher than the recent 5-year average of 74% for coho salmon escapement goals *Pink salmon*—The percentage of pink salmon escapement goals met in 2023 was 86%, an increase from 2022 (75%) and higher than the 5-year average of 84%. *Chum salmon*—For chum salmon, 73% of the escapement goals were met in 2023 (Figure 6), which is substantial increase compared to the 50% achieved in 2022 and continues the trend in improvement from the low of 44% in 2020." 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 have established Sustainable Escapement Goal Thresholds with only a lower limit. Escapement goals are yield-based target reference points. Limit reference points are not specifically defined for Alaska salmon because target reference points generally function to avoid low escapements where recruitment might be significantly impaired because all fisheries must, by regulation (5AAC 39.222) be managed to provide escapements. The escapement goal strategy is precautionary because it seeks to curtail fishing when annual salmon runs periodically fall below levels where minimum escapement goal targets can be achieved. Management for spawning escapements consistent with sustained high levels of production generally protect populations from critical low levels that potentially reduce diversity, resilience and future production to the point of appreciable risk of impairing reproductive capacity. Thus, management for target reference points provides an operational equivalent of a limit reference point in salmon management systems by effectively avoiding lower escapements to the extent that this is possible by regulating fisheries. 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 2024) illustrates the intent to manage the fishery so as to obtain escapement goals for Chinook and Sockeye salmon. "The 2024 terminal run forecast of 17,300 Taku River large Chinook salmon does not provide any AC for either U.S. or Canada directed fisheries. Similar conservation efforts to recent seasons will be utilized in the early sockeye salmon openings in District 11. DIPAC forecasts runs totalling 1,100 large hatchery Chinook salmon returning to their release sites at Gastineau Channel, Fish Creek, and Lena Cove.

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> The 2024 terminal run of Taku River wild sockeye salmon is forecasted to be 200,000 fish, above the average of 155,000 fish. The Taku River sockeye salmon escapement goal range is 40,000 to 75,000 fish with a management objective of 58,000 wild fish (which total allowable catch and resulting harvest allocations are based). The preseason forecast will be used in conjunction with the management objective to calculate ACs until in-season estimates become available. Adult returns to date from the joint U.S./Canada Taku River sockeye salmon enhancement projects at Tatsamenie and Trapper Lakes have been minimal. The Tatsamenie and Trapper Lakes enhanced sockeye salmon run is forecasted to be 7,000 fish in 2024 which would result in a 77% U.S./23% Canada allocation split resulting in a U.S. AC of approximately 109,000 fish. The Speel Lake sockeye salmon escapement goal range is 4,000 to 9,000 fish. No forecast is produced, and primary parent-year escapements were average and below average. Crescent Lake salmon escapements will continue to be monitored by aerial surveys in 2024 and there is no formal stock assessment program. The 2024 DIPAC Port Snettisham (Snettisham Hatchery and Sweetheart Lake) run forecast is 131,000 fish, above the 2023 run size of approximately 95,000 fish and well above the 2021 and 2022 run sizes that were impacted by the near complete loss of fish from the 2017 brood year."

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 (Elison et al. 2024).

> "The 2023 inshore run forecast for the Nushagak District was 16.3 million sockeye salmon with 2.6 million projected for escapement and 13.7 million projected for harvest. The run forecast for each river system was 7.8 million fish expected to return to the Wood River, 6.8 million for the Nushagak River, and 1.7 million for the Igushik River (Table 2). The 2023 Nushagak District total inshore sockeye salmon run was 16.9 million fish, 4% above the preseason forecast of 16.3 million fish (Tables 2 and 14). Commercial sockeye salmon harvest in Nushagak District reached 12.0 15 million fish, 12% below the preseason projected surplus of 13.6 million fish and 22% above the 2003–2023 average harvest of 9.8 million sockeye salmon (Table 2; Appendices A3 and A15). The Board adopted a King Salmon Conservation Action Plan (action plan) in the spring of 2023 (ADF&G 2023). Under this action plan, Optimum Escapement Goals (OEGs) were adopted for Nushagak and Wood River sockeye salmon (Table 1). These goals were not in place when the forecast was released in the fall of 2022 and the projected surplus did not account for the higher OEGs established by the Board. Prior to the season the department released a preseason outlook (Sands et al. 2023) to inform stakeholders of the approach the department would be taking for management. The following is an excerpt from the Nushagak District preseason outlook that explains the strategy based on the new Nushagak District King Salmon Stock of Concern Management Plan (5 AAC 06.391).
>
> There are three triggers that guide when to start fishing under the new Nushagak King Salmon Action Plan regulations, commercial fishing with drift gillnets in the Nushagak District and set gillnets in the Nushagak Section may begin once any one of the following triggers is met:
>
> • The Nushagak River trigger is 420,000 sockeye salmon projected past the sonar.
>
> • The Wood River trigger is 800,000 sockeye salmon projected past the counting tower.
>
> • If neither of the above conditions are met by 9:00 AM June 28, then fishing may be allowed in the Nushagak District at that time.

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In addition to the triggers that regulate the start of fishing, the board adopted Optimal Escapement Goals (OEGs) larger than department SEGs, which can reduce effort after commercial fishing starts. Those OEGs are structured such that 15% of the preseason forecast is added to the upper end of each SEG range. Lower bounds of both SEGs remain unchanged.

- The 2023 upper bound of the Wood River OEG is 3.0 million sockeye salmon.
- The 2023 upper bound of the Nushagak River OEG is 2.0 million sockeye salmon.

The strategy for 2023 was to start directed sockeye salmon openings once one or more of the triggers had been met. From that point on, the department would make tide-by-tide decisions attempting to balance escapements of Chinook, chum, and sockeye salmon with fishing opportunity. It was indicated that set gillnet permit holders should expect to have occasional closures into the second week of July and drift gillnet openings would be timed to give opportunity for Chinook and chum salmon to pass through the district. Permit holders were asked to avoid areas where they may catch higher numbers of Chinook and chum salmon. Commercial fishing openings would be scheduled based on sockeye salmon escapement levels in the Nushagak and Wood Rivers. Mesh size was limited to 5.5 inches or smaller beginning June 1 for the conservation of Chinook salmon. If the run came in as forecast, it waslikely that the Wood River Special Harvest Area would be used in 2023 to harvest surplus sockeye salmon. In this case, fishing opportunity would be afforded to the gear type behind on harvest percentage relative to the allocation.

The sonar escapement enumeration project at Portage Creek was fully operational on June 6 (Table 7). As the Chinook salmon run developed, it tracked below historical passage expectations from the beginning. This continued for the entire season, with the final escapement index at only 16 31,499 fish. Under the new King Salmon stock of concern action plan, management of the sockeye salmon fishery was initially focused on efforts to protect Chinook salmon and achieve the escapement goal. Under previous regulations, sockeye salmon openings would have been triggered on June 22 when 100,000 sockeye salmon escapement was projected past the Wood River tower. Under the new action plan, commercial fishing for sockeye salmon did not start until late on June 25, when both triggers were met for 420,000 sockeye salmon projected past the Nushagak sonar and 800,000 sockeye salmon projected past the Wood River tower. This additional delay in starting the sockeye salmon fishery allowed over 10,000 Chinook salmon to pass through the district and escape into the river.

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Once fishing began, openings occurred on every tide, although there were periods where all drift gear and all Nushagak Section set gillnet gear were out of the water every day until

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	July 2 (Table 18). Staff considered weather, escapement, and harvest information and flew aerial surveys to try to find the best way to allow harvest opportunity on sockeye salmon while still having fishing breaks with all gear out of the water to allow passage of king and chum salmon. Unfortunately, the total Chinook salmon return to the Nushagak River was well below average. The peak daily escapement and the midpoint of the escapement was June 25 (Table 7). The Chinook salmon run produced a commercial harvest of 5,785 Chinook salmon in the Nushagak District in 2023 (Tables 6 and 18). This harvest is 18% of the 2003-2023 average harvest of 33,026 fish for the Nushagak District (Appendices A4 and A17). The Chinook salmon sonar index for the Nushagak River was 31,499, well below the 55,000-salmon lower end of the escapement goal range (Tables 2 and 7; Appendix A17). The later start to commercial fishing resulted in more sockeye salmon escapement early in the season. For the Wood River, this meant the trigger to open the Wood River Special Harvest Area (WRSHA) was achieved on June 27. At that time the drift gillnet fleet harvest percentage was less than the 74% allocation. Therefore, the WRSHA was opened to commercial fishing with drift gillnets starting at 5:00 PM, June 27. By the end of the day on June 28, the drift gillnet fleet harvest percentage had exceeded the 74% allocation. Therefore, the WRSHA was opened to set gillnet fishing beginning on June 29 and continued for the rest of the season until the WRSHA closed on July 20. Igushik set gillnet fishing opened on June 1 to continuous fishing and remained open until June 12, when additional buyers were able to begin operations for the season (Table 18). Once a major buyer began operations, fishing was limited to no more than 15 hours a day until June 25, when 17 the fishing was extended until further notice. Escapement into the Igushik River was stronger than usual from the 4th day of counting on June 27 (Table 17). Escapement continued at an aboveaverage pace and the 150,000-salmon lower end of the escapement goal was exceeded on July 2 (Table 17). Sockeye salmon escapement in the district's 3 major river systems was 2,648,616 for Wood River, 542,496 for Igushik River, and 1,772,676 for Nushagak River (Tables 7 and 17). Igushik River sockeye salmon escapement was above the escapement goal range (150,000–400,000), while the Nushagak and Wood Rivers' escapements were within the upper end of the OEG ranges established by the Board, 370,000–2.0 million and 700,000–3.0 million respectively (Table 1). Fishing remained open continuously in the Nushagak District for both drift and set gillnets, but effort gradually diminished over the remainder of the season (Table 18). Without sonar counts, it was impossible to quantify the pink or coho salmon runs in 2023. Pink salmon do not occur in large numbers on odd years in Bristol Bay, so pink salmon abundance in the Nushagak District was minimal. With no significant pink salmon run and decreasing sockeye salmon abundance, most major processors ceased buying operations in the third week of July and fishing quickly tapered off. There was very little, if any, directed fishing for coho salmon because most permit holders were still focused on sockeye salmon harvesting opportunities on the Eastside of Bristol Bay." 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 2024). 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.

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		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 (2024). 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, Lower Cook Inlet and Kodiak, and for Chum and Sockeye salmon in Southeast. Genetic stock Identification has/is used for Chinook Salmon in Cook Inlet and Southeast for Sockeye Salmon in Cook Inlet, Bristol Bay and Southeast and for Chum Salmon in the Alaska Peninsula. 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/when surplus production is identified. <u>6.4 Management actions shall be agreed to in the eventuality that data sources and analyses indicate that these reference points have been exceeded.</u> 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

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	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 2024) 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 between 2022 and 2025 (ADFG 2022). This plan includes specific management actions that are to be implemented for each fishery based on the projected in-river run at the weir. "(a) The purpose of the management plan in this section is to provide for the biological escapement goal requirements of spawning king salmon to the Situk-Ahrnklin River systems. This management plan provides guidelines to the department in an effort to preclude allocation conflicts between the various user groups of the king salmon resource. Action points and associated ranges within the plan are intended to be based on the current king salmon escapement goal ranges for the Situk River system. (b) The biological escapement goal for the Situk River king salmon is 730 three ocean age and older fish, with a range of 450 - 1,050 fish. (c) The department shall manage the commercial, sport, and subsistence fisheries as follows: (1) if the projected escapement is less than 350 three ocean age and older fish, the commissioner shall close, by emergency order, the king salmon (A) sport fishery in the Situk River; (B) subsistence, personal use, and commercial set gillnet fisheries in the Situk/Ahrnklin Inlet and Lost River; and (C) commercial troll fishery in the waters of Alaska bounded on the west by the seaward limit of the three-nautical-mile territorial sea and on the north by a line extending seaward from 59° 30.49' N. lat., 139° 46.58' W. long. (Ocean Cape) and intersecting the three-nautical-mile limit at 59° 28.65' N. lat., 139° 51.17' W. long. and on the south by a line extending seaward from 59° 20.30' N. lat., 139° 16.50' W. long. and intersecting the three-nautical-mile limit at 59° 18.25' N. lat., 139° 21.94' W. long.; (2) if the projected escapement is 350 - 450 three ocean age or older fish the commissioner (A) shall, by emergency order, close the sport fishery for king salmon in the Situk River; and (B) may, by emergency order, implement one or more of the following management measures for conservation purposes: (i) establish a non-retention king salmon season in the Situk-Ahrnklin Inlet and Lost River set gillnet fisheries; (ii) close the commercial salmon troll fishery in the waters of Alaska bounded on the west by the seaward limit of the three-nautical-mile territorial sea and on the north by a line extending seaward from 59° 30.49' N. lat., 139° 46.58' W. long. (Ocean Cape) and intersecting the three-nautical-mile limit at 59° 28.65'

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N. lat., 139° 51.17' W. long. and on the south by a line extending seaward from 59° 20.30' N. lat., 139° 16.50' W. long. and intersecting the three-nautical-mile limit at 59° 18.25' N. lat., 139° 21.94' W. long.;

(iii) restrict the weekly fishing periods in the Situk-Ahrnklin Inlet and Lost River set gillnet fisheries;

(3) if the projected escapement is 451 - 730 three ocean age or older fish, the commissioner shall, by emergency order, implement one or more of the following management measures for conservation purposes:

(A) establish a non-retention king salmon season in the Situk-Ahrnklin Inlet and Lost River set gillnet fisheries;

(B) close the commercial salmon troll fishery in the waters of Alaska bounded on the west by the seaward limit of the three-nautical-mile territorial sea and on the north by a line extending seaward from 59° 30.49' N. lat., 139° 46.58' W. long. (Ocean Cape) and intersecting the three-nautical-mile limit at 59° 28.65' N. lat., 139° 51.17' W. long. and on the south by a line extending seaward from 59° 20.30' N. lat., 139° 16.50' W. long. and intersecting the three-nautical-mile limit at 59° 18.25' N. lat., 139° 21.94' W. long.;

(C) restrict the weekly fishing periods in the Situk-Ahrnklin Inlet and Lost River set gillnet fisheries; and

(D) restrict the sport harvest of king salmon in the Situk River by implementing one or more of the following management measures:

(i) close portions of the Situk River to sport fishing for king salmon;

(ii) establish a catch and release sport fishery only for king salmon 28 inches or greater in length.

(4) if the projected escapement is greater than 730 three ocean age and older fish but less than 1,050 fish, the department shall,

A) manage the commercial set gillnet fisheries in the Situk-Ahrnklin Inlet and Lost River based on the sockeye salmon run strength;

(B) manage the commercial salmon troll fishery as specified in 5 AAC 29.100 in the waters of Alaska bounded on the west by the seaward limit of the three-nautical-mile territorial sea and on the north by a line extending seaward from 59° 30.49' N. lat., 139° 46.58' W. long. (Ocean Cape) and intersecting the three-nautical-mile limit at 59° 28.65' N. lat., 139° 51.17' W. long. and on the south by a line extending seaward from 59° 20.30' N. lat., 139° 16.50' W. long. and intersecting the three-nautical-mile limit at 59° 18.25' N. lat., 139° 21.94' W. long.;

(5) if the projected escapement is greater than 1,050 three ocean age and older fish, the department shall manage the commercial, sport, and subsistence fisheries as necessary to harvest large king salmon in excess of the biological escapement goal range; to achieve this goal the commissioner may, by emergency order, implement one or more of the following management measures:

(A) liberalize seasons, areas, and method and means in the Situk River under 5 AAC 75.003(2)(A);

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	(B) increase the bag and possession limits for king salmon 28 inches or greater in length, to three fish per day and six in possession, with no annual limit; (C) repealed 7/13/2012; (D) manage the commercial set gillnet fisheries in the Situk-Ahrnklin Inlet and Lost River based on the sockeye salmon run strength; (E) in the Situk-Ahrnklin Inlet and Lost River set gillnet fisheries, allow the use of one additional gillnet that is no more than 20 fathoms in length and no more than 45 meshes in depth, with a mesh size of no less than seven and one-half inches, for the directed taking of king salmon during periods when sockeye salmon may or may not be retained." 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; ▪ 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. ▪ 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; and ▪ 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.
References:	ADF&G. 2004. Escapement goal review of select AYK Region salmon stocks. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A04-01, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS15-08.pdf ADFG. 2022. 2022–2025. Southeast Alaska and Yakutat Commercial Salmon Fishing Regulations. ADFG. Juneau. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/cf_se_yakutat_salmon_regs_2022_2025.pdf ADFG. 2024. 2024–2027 Cook Inlet Area Commercial Salmon Fishing Regulations. ADFG Juneau. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2024_2027_cf_cook_inlet_salmon.pdf Bernard, D. R., J. J. Hasbrouck, B. G. Bue and R. A. Clark. 2009. Estimating risk of management error from precautionary reference points (PRPs) for non-targeted salmon stocks. Alaska Department of Fish and Game, Special Publication No. 09-09, Anchorage. http://www.sf.adfg.state.ak.us/fedaidpdfs/SP09-09.pdf Burgner, R. L., C. J. D. Costanzo, R. J. Ellis, G. Y. Harry, Jr., W. L. Hartman, O. E. Kerns, Jr., O. A. Mathison and W. F. Royce. 1969. Biological studies and estimates of optimum escapements of Sockeye Salmon in the major river systems of Southwestern Alaska. Fishery Bulletin 67: 405–459. https://www.st.nmfs.noaa.gov/spo/FishBull/fcontentarchive2.htm Carlson, S. R., K. E. Tarbox, B. G. Bue. 1999. The Kenai Sockeye Salmon Simulation Model: A Tool for Evaluating Escapement and Harvest Levels. Alaska Department of Fish and Game, Division

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of Commercial Fisheries, Regional Information Report 2A99-08, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/RIR.2A.1999.08.pdf

Clark, R. A. 2005. Stock status and recommended escapement goals for Coho Salmon in selected waters along the Juneau road system, 1981-2004. Alaska Department of Fish and Game, Special Publication No. 05-21, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/sp05-21.pdf

Clark, R. A., D. M. Eggers, A. R. Munro, S. J. Fleischman, B. G. Bue, and J. J. Hasbrouck. 2014. An evaluation of the percentile approach for establishing Sustainable Escapement Goals in lieu of stock productivity information. Alaska Department of Fish and Game, Fishery Manuscript No. 14-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS14-06.pdf

Elison, T., A. Tiernan, T. Sands, S. Vega, and P. Stacey. 2024. 2023 Bristol Bay annual management report. Alaska Department of Fish and Game, Fishery Management Report No. 24-11, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-11.pdf

Finkle, H., K. L. Schaberg, M. B. Foster, and T. Polum. 2022a. Review of salmon escapement goals in the Chignik Management Area, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 22-05, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-05.pdf

Finkle, H., K. L. Schaberg, M. B. Foster, M. L. Wattum, and T. Polum. 2022b. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 22-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-06.pdf

Foster, M. B., T. B. Polum, M. L. Wattum, E. K. C. Fox, T. R. McKinley, K. L. Schaberg, and H. Finkle. 2023. Review of salmon escapement goals in the Kodiak Management Area, 2022. Alaska Department of Fish and Game, Fishery Manuscript No. 23-03, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS23-03.pdf

Hilborn, R., and C. J. Walters. 1992. Quantitative fisheries stock assessment: Choice, dynamics and uncertainty. Chapman and Hall, New York https://www.springer.com/gp/book/9780412022715

Heinl, S. C., E. L. Jones III, A. W. Piston, P. J. Richards, J. T. Priest, J. A. Bednarski, B. W. Elliott, S. E. Miller, R. E. Brenner, and J. V. Nichols. 2021. Review of salmon escapement goals in Southeast Alaska, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 21-03, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS21-03.pdf

Joy, P. J., S. B. Haught, R. E. Brenner, S. Miller, J. W. Erickson, J. W. Savereide, and T. R. McKinley. 2021. Escapement goal review of Copper and Bering Rivers and Prince William Sound Pacific salmon stocks, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 21-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS21-02.pdf

Joy, P. J., M. Ocaña, J. W. Savereide, and M. Tyers. 2024. Run reconstruction, spawner-recruit analysis, and escapement goal recommendation for Chinook salmon in the Chena and Salcha Rivers. Alaska Department of Fish and Game, Fishery Manuscript No. 24-02, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-02.pdf

Koenings, J. P. and R. D. Burkett. 1987. Population characteristics of Sockeye Salmon (Oncorhynchus nerka) smolts relative to temperature regimes, euphotic volume, fry density, and forage base within Alaskan lakes. Pages 216– 234 [In] H. D. Smith, L. Margolis and C. C. Wood, editors. Sockeye Salmon (Oncorhynchus nerka) population biology and future management. Canadian Special Publications of Fisheries and Aquatic Science No.

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96, Ottawa. http://publications.gc.ca/collections/collection_2016/mpo-dfo/Fs41-31-96-eng.pdf

Koenings, J. P. and G. B. Kyle. 1997. Consequences to juvenile Sockeye Salmon and the zooplankton community resulting from intense predation. Alaska Fishery Research Bulletin 4(2): 120–135. http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/koenv4n2.pdf

Liller, Z. W., and J. W. Savereide. 2022. Escapement goal review for select Arctic–Yukon–Kuskokwim Region salmon stocks, 2023. Alaska Department of Fish and Game, Fishery Manuscript No. 22-08, Anchorage. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2022-2023/ayk/FMS22-08.pdf

McKinley, T. R., J. W. Erickson, T. Eskelin, N. DeCovich, and H. Hamazaki. 2024. Review of salmon escapement goals in Upper Cook Inlet, Alaska, 2023. Alaska Department of Fish and Game, Fishery Manuscript No. 24-01, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-01.pdf

Morella, J. R., R. M. Ertz, J. W. Erickson, J. W. Savereide, A. N. Matter, and T. R. McKinley. 2024. Escapement goal review of Copper and Bering Rivers, and Prince William Sound Pacific salmon stocks, 2024. Alaska Department of Fish and Game, Fishery Manuscript No. 24-03, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-03.pdf

Munro, A. R., and E. C. Volk. 2015. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2006 to 2014. Alaska Department of Fish and Game, Fishery Manuscript Series No. 15- 34, Anchorage http://www.adfg.alaska.gov/FedAidPDFs/FMS15-04.pdf

Munro, A.R. 2024. Summary of Alaska's 2023 Pacific salmon escapement and commercial harvest. NPAFC Doc. 2152. 13 pp. Alaska Department of Fish and Game (https://npafc.org).

Nelson P. A., M. J. Witteveen, S. G. Honnold, I. Vining and J. J. Hasbrouck. 2005. Review of salmon escapement goals in the Kodiak Management Area. Alaska Department of Fish and Game, Fishery Manuscript No. 05-05, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/fms05-05.pdf

Nelson, P. A., J. J. Hasbrouck, M. J. Witteveen, K. A. Bouwens and I. Vining. 2006. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas. Report to the Alaska Board of Fisheries, 2004. Alaska Department of Fish and Game, Fishery Manuscript No. 06-03, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/FMS09-09.pdf

Otis, E. O., J. W. Erickson, M. D. Booz, and T. McKinley. 2023. A review of escapement goals for salmon stocks in Lower Cook Inlet, Alaska, 2023. Alaska Department of Fish and Game, Fishery Manuscript No. 23-02, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS23-02.pdf

Piston, A. W., and T. M. Fish. 2024. Pink salmon stock status and escapement goals in Southeast Alaska through 2023. Alaska Department of Fish and Game, Special Publication No. 24-16, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP24-16.pdf

Priest, J. T., A. W. Piston, J. V. Nichols, E. L. Jones III, P. J. Richards, J. A. Bednarski, B. W. Elliott, and S. E. Miller. 2024. Review of salmon escapement goals in Southeast Alaska, 2024. Alaska Department of Fish and Game, Fishery Manuscript No. 24-04, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-04.pdf

Thynes, T., N. Zeiser, S. Forbes, T. Kowalske, B. Meredith, and A. Dupuis. 2024. 2024 Southeast Alaska salmon drift gillnet Fishery Management Plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No., Douglas.

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.**	
	https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/southeast/2024_seak_drift_gillnet_management_plan_draft.pdf Vega, S. L., J. M. Head, T. Hamazaki, J. W. Erickson, and T. R. McKinley. 2022. Review of salmon escapement goals in Bristol Bay, Alaska, 2021. Alaska Department of Fish and Game, Fishery Manuscript Series No. 22-07, Anchorage. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2022-2023/bb/FMS22-07.pdf	
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.

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:	Since the previous audit, new information has been provided on precautionary management with respect to 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. Related information is summarized below. 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. *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. 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 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

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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?

Research about hatchery and wild chum salmon interactions is ongoing and the impacts of these interactions is not definitive at this time (Vincent-Lang 2025). Pending completion of the Alaska Hatchery Research Project, ADF&G commissioner Vincent-Lang issued a "Hatchery Statement" at the 2024 Cook Inlet Upper Cook Inlet Finfish Board of Fish articulating a policy decision to not increase permitted Pink Salmon egg-take capacity until concerns over hatchery-wild interactions are addressed (Vincent-Lang 2024, Americus 2025). The last increase in permitted Pink Salmon egg take occurred in 2018, in Prince William Sound (+1.5% of statewide pink capacity; Stopha 2019). The last increase in permitted Chum Salmon egg take occurred in 2019, in Southeast Alaska (+1.5% of statewide capacity; Wilson 2020).

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 West Crawfish Inlet which is connected to Crawfish Inlet by a small channel. Several chum spawning

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		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. These included: • Annual assessments of hatchery straying into a nearby escapement index stream were implemented to determine the magnitude and nature of issue. • Targeted hatchery cost recovery and common property net and troll fisheries have been implemented to maximize harvest of the hatchery fish to reduce the incidence of straying. These fisheries have successfully reduced escapements of large numbers of hatchery Chum Salmon. • The West Crawfish NE arm index stream has been removed from the annual escapement index so as not to confound assessments of wild stock status • Fry outmigration patterns were assessed to identify potential factors in the olfactory imprinting life stage that might contribute to straying. Additional telemetry studies are planned to assess adult migration patterns in relation to straying. • In response to the Northern Outside Southeast Alaska Chum Salmon Stock of Concern designation, the Commissioner of ADF&G issued a statement at the 2025 Board of Fisheries meeting identifying an intent to reduce permitted hatchery Chum Salmon egg take by 25% in 2025 (Vincent-Lang 2025). This reduction in conjunction with increased monitoring, was intended to help better assess and understand the impacts of wild Chum Salmon in the area. The proposed reduction was supported by the regional aquaculture association in 2/7/2025 testimony to the Board of Fisheries. • The Alaska Board of Fisheries reviewed options for reducing straying of hatchery-produced Chum Salmon and incidental harvest of wild summer-run Chum Salmon at their February 2025 Southeast Alaska meeting as part of an action plan for addressing the NSE Outside summer Chum Salmon designation as a stock of Management Concern in 2024. The Board of Fisheries effectively supported the Commissioner's planned reduction in permitted release number in Crawfish Inlet. Board members spoke to the importance of protecting wild stocks as the first priority, adequately enforcing the existing genetics management policy and identifying criteria for acceptable levels of straying. • The Commissioner also directed the Joint Southeast Regional Planning Team to conduct a review of Chum Salmon release strategies, release numbers, and release locations and report to the commissioner by December 31, 2025, their findings and recommendations regarding what is working well, what is not working well, impacts on wild salmon stocks, and potential improvements to the salmon fishery enhancement program (Vincent-Lang 2025). Wild Pink and Chum Salmon escapements in regions where hatchery production is significant, continue to meet or exceed established goals. If hatchery impacts were significant, we would expect an increasing difficulty in meeting spawning escapement goals as stock productivity was eroded but no such pattern is apparent. Escapement assessments of wild stocks are not confounded by hatchery

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	strays because streams with significant numbers of hatchery fish are do not occur in the large majority of index streams. 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.
References:	ADFG. 2018. State of Alaska hatchery research project: A study of the interactions between hatchery and natural pink and Chum Salmon in Southeast Alaska and Prince William Sound. Progress synopsis. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/alaska_hatchery_research_project_synopsis_june_2018.pdf ADFG. 2022. State of Alaska Hatchery Research Project: A study of the interactions between hatchery and natural pink and chum salmon in Southeast Alaska and Prince William Sound streams Progress Synopsis May 2022. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/ak_hatchery_research_project_synopsis_2022.pdf Americus, B. 2025. Update on Alaska Hatchery Salmon Production, Research and Management (2024). Report prepared by Granite Bay Biological on Behalf of the Alaska Fisheries Development Foundation with Review by the Alaska Department of Fish and Game for Marine Stewardship Council Audit of Alaska Salmon, January 6–10, 2025 Americus, B., B. Adams, T. Sheridan and S. Wagner. 2022a. Crawfish Inlet Report to MSC/RFM Assessment Teams. Alaska Fisheries Development Foundation. Americus, B., T. Sheridan and J. Decker. 2022b. Alaska Hatchery Research Program Synthesis. Report by the Alaska Fisheries Development Foundation for MSC/RFM Sustainability Certification. Anderson, T. J., K. Jackson, and A. E. Dorner. 2023. Kodiak Management Area Commercial Salmon Fishery Annual Management Report, 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-23.pdf Botz, J., H. Scannell, M. Olson, J. Morella, and R. Ertz. 2024. 2023 Prince William Sound Area Finfish Management Report. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-15.pdf CIRPT (Cook Inlet Regional Planning Team). 2007. Cook Inlet Regional Salmon Enhancement Planning Phase II Plan: 2006-2025. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/plans/ci_salmonenhancement_p2_2006-2025.pdf Conrad, S., and T. Thynes. 2024. 2024 Overview of the 2023 Southeast Alaska and Yakutat Commercial, Personal Use, and Subsistence Salmon Fisheries. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-19.pdf Davis, B., B. Allee, D. Amend, B. Bachen, B. Davidson, T. Gharrett, S. Marshal, and A. Wertheimer. 1985. Genetic policy. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement, and Development, Juneau.

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.**	
		Davis, B., and B. Burkett. 1989. Background of the genetic policy of the Alaska Department of Fish and Game. Fisheries Rehabilitation, Enhancement and Development Report No. 95. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau. Dupuis A, Tydingco T, Thynes T, Fowler P, Vercessi L. 2023 NSRAA Little Port Walter Hatchery Management Feasibility Analysis. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/license/hatcheries/pdfs/2024_lpw_mgt_feasibility_analy sis.pdf Dupuis, A. W., T. M. Fish, A. M. Walloch, A. W. Piston, and T. A. Tydingco. 2024. DRAFT: Northern Southeast Outside Chum Salmon Stock Status and Action Plan. 2025. Alaska Dept. Fish and Game, Report to Alaska Board of Fisheries, Douglas, AK. https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.proposalbook Eller, J. J. 2018. Policy Analysis: Alaska's Salmon Hatcheries. Master's Thesis. University of Montana, Missoula. Eggers, D. M., and S. C. Heinl. 2008. Chum salmon stock status and escapement goals in Southeast Alaska. Alaska Department of Fish and Game, Special Publication No. 08-19, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/sp08-19.pdf Evenson, D. F., C. Habicht, M. Stopha, A. R. Munro, T. R. Meyers and W. D. Templin. 2018. Salmon hatcheries in Alaska – A review of the implementation of plans, permits, and policies designed to provide protection for wild stocks. Alaska Department of Fish and Game Special Publication 18-12. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/ws/SP18-12.pdf Hilborn, R. and D. Eggers. 2000. A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska. Transactions of the American Fisheries Society, V. 129, pp. 333-350. http://www.adfg.alaska.gov/FedAidPDFs/CFPP.173.Hilborn.2000.pdf Hilborn, R. and D. Eggers. 2001. A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska: Response to comment. Transactions of the American Fisheries Society, V. 130, pp. 720-724. IFC (Intertek Fisheries Certification). 2015. First Annual Surveillance Report Alaska Salmon Fishery. February 2015. Marine Stewardship Council. London UK. IMM (Intertek Moody Marine). 2013. Alaska Salmon Fishery Final Determination Report. October 2013. Marine Stewardship Council. London UK. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments Jasper, J., C. Habicht, S. Moffitt, R. Brenner, J. Marsh, B. Lewis, E. Fox, Z. Grauvogel, S. D. Rogers Olive, and W. S. Grant. 2013. Source-sink estimates of genetic introgression show influence of hatchery strays on wild Chum Salmon populations in Prince William Sound, Alaska. PLoS ONE 8(12):e81916. Lewis, B., Botz, J., Brenner, R., Moffitt, S., Hollowell, G., Gray, D., Regnart, J., Palmer, S., Farrington, C. and B. White. 2009. Alaska Department of Fish and Game internal review of Prince William Sound Aquaculture Corporation. ADF&G, Special Publication 09-10, Anchorage. 207 pp. Lewis, B., W. S. Grant, R. E. Brenner, and T. Hamazaki. 2015. Changes in size and age of Chinook Salmon Onchorynchus tshawytscha returning to Alaska. PLoSONE10(6):e0130184.doi:10.1371/ journal.pone.0130184. Munro, A. R., and R. E. Brenner. 2022. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2013 to 2021. Alaska Department of Fish and Game, Fishery

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Manuscript Series No.22-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS22-02.pdf

Morella, J. R., R. M. Ertz, J. W. Erickson, J. W. Savereide, A. N. Matter, and T. R. McKinley. 2024. Escapement Goal Review of Copper and Bering Rivers, and Prince William Sound Pacific Salmon Stocks, 2024. Alaska Department of Fish and Game Fishery Manuscript 24-03. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/pws/rc3-1_escapement.pdf

Musslewhite, J. 2011a. An evaluation of the Kitoi Bay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J11-01, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2011.01.pdf

Musslewhite, J. 2011b. An evaluation of the Pillar Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J11-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2011.02.pdf

Scott, T., B. Adams, and S. Wagner. 2024. An Investigation into the Homing Patterns and Water Chemistry of Crawfish and West Crawfish Inlets Related to Hatchery Chum Production. Northern Southeast Regional Aquaculture Association (NSRAA) Technical Report.

Schrof, S., and S. Honnald. 2003. Salmon Enhancement, Rehabilitation and Evaluation and Monitoring Efforts Conducted in the Kodiak Management Area Through 2001. ADF&G ROR No. 4K03-41. Kodiak.

Stopha, M. 2012a. An evaluation of the Port Graham salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-28, Anchorage.

Stopha, M. 2012b. An evaluation of the Trail Lakes salmon hatchery for consistency with statewide policies and prescribed management practice. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-21, Anchorage.

Stopha, M. 2013a. An evaluation of the Armin F. Koernig salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-11, Anchorage.

Stopha, M. 2013b. An evaluation of the Cannery Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-06, Anchorage.

Stopha, M. 2013c. An evaluation of the Eklutna Salmon Hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-02, Anchorage.

Stopha, M. 2013d. An evaluation of the Gulkana salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-05, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2013.05.pdf

Stopha, M. 2013e. An evaluation of the Main Bay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-07, Anchorage.

Stopha, M. 2013f. An evaluation of the Solomon Gulch Salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report SJ13-04, Anchorage.

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.**	
		Stopha, M. 2013g. An evaluation of the Wally Noerenberg Hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. SJ13-10, Anchorage. Stopha, M. 2014a. An evaluation of the Macaulay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Regional Information Report 5J14-03, Anchorage. Stopha, M. 2014b. An evaluation of the Sheep Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Regional Information Report 5J14-06, Anchorage. Stopha, M. 2014c. An evaluation of the Snettisham salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J14-01, Anchorage. Stopha, M. 2015a. An evaluation of the Haines Projects Hatchery permit for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-01, Anchorage. Stopha, M. 2015b. An evaluation of the Hidden Falls salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-05, Anchorage. Stopha, M. 2015c. An evaluation of the Medvejie Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-03, Anchorage. Stopha, M. 2015d. An evaluation of the Port Armstrong salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-06, Anchorage. Stopha, M. 2015e. An evaluation of the Sawmill Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-02, Anchorage. Stopha, M. 2015f. An evaluation of the Sheldon Jackson salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-07, Anchorage. Stopha, M. 2016a. Alaska fisheries enhancement annual report 2015. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-03, Anchorage. Stopha, M. 2016b. An evaluation of the Klawock River salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-05, Anchorage. Stopha, M. 2016c. An evaluation of the Port St. Nicholas salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-04, Anchorage. Stopha, M. 2016d. An evaluation of the Whitman Lake salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-08, Anchorage. Stopha, M. 2017a. An evaluation of the Burnett Inlet salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J17-01, Anchorage.

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.**
	Stopha, M. 2017b. An evaluation of the Neets Bay Salmon Hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J17-02, Anchorage. Stopha, M. 2018 Alaska Salmon Fisheries Enhancement Annual Report 2017. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2018.02.pdf Stopha, M. 2019. Alaska salmon fisheries enhancement annual report 2018. Alaska Department of Fish and Game Regional Information Report No. 5J19-01. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2019.01.pdf Stopha, M., and J. Musslewhite. 2012. An evaluation of the Tutka Bay Lagoon salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-05, Anchorage. Templin, B. 2024. Alaska Hatchery Interactions Research: Overview of results and products. Alaska Board of Fisheries Presentation, Cordova, Alaska. Alaska Department of Fish and Game. December 10, 2024. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/pws/RC3_Tab16_Alaska_Hatchery_Interactions_Research_Overview.pdf Thynes, T. 2024. 2023 Southeast Alaska Salmon Escapement Summary. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/southeast/meetings/2023_southeast_salmon_escapement_handout.pdf Vincent-Lang, D. 2024 Hatchery Statement to BOF. RC240. 2024 Upper Cook Inlet Board of Fisheries Meeting. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2023-2024/uci/rcs/rc240_Commissioner_Vincent-Lang_Hatchery%20Statement%20to%20BOF.pdf Vincent-Lang, D. 2025. Statement regarding the Northern Southeast Outside Summer Run Chum Salmon Stock of Concern Action Plan. RC090. 2025 Southeast Alaska Board of Fisheries Meeting. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/se/rcs/rc090_Commissioner_Vincent-Lang_Re_Northern_SE_Outside_Summer_Run_Chum.pdf Wertheimer, A.C., Smoker, W.W., Joyce, T.L. and W.R. Heard. 2001. Comment: A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska. Transactions of the American Fisheries Society, V. 130, pp. 712-720. Wilson, L. 2022. Alaska salmon fisheries enhancement annual report 2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J22-02, Juneau. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-02.pdf . Wilson L. 2023. Alaska Salmon Fisheries Enhancement Annual Report 2022. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2023.04.pdf Wilson L. 2024. Alaska Salmon Fisheries Enhancement Annual Report 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2024.05.pdf
Statement of consistency to the RFM Fishery Standard	The ADFG fisheries management continues to be based on the precautionary approach to ecosystem management and

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.**	
		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 January 2024 meeting, the Board of Fish made the following changes to the commercial salmon fishing regulations for the Kodiak area: 1. Modified gillnet specification and operations to increase the allowable size of "hooks". 2. Increased the allowable length of purse seine nets in the Kodiak Management area. 3. Modified the Westside Kodiak Salmon Management Plan to allow the department more flexibility for setting fishing periods in the Outer Karluk Section. 4. Modified the Westside Kodiak Salmon Management Plan to allow increased fishing opportunity in the Southwest Afognak Section 5. Modified the Westside Kodiak Salmon Management Plan to increase fishing opportunity. At the February 2024 meeting, the Board of Fish made the following changes to the commercial salmon fishing regulations in the Upper Cook Inlet area: 1. Amended Kenai Late-Run Chinook Salmon Management Plan by Lowering the threshold for when the Upper Subdistrict may be open to the set gillnet fishery from 15,000 to 14,250 large Chinook. 2. Reduced the Guideline Harvest Level of Chinook Salmon that may be commercially harvested in the Northern District of Upper Cook Inlet to 4,500 fish. 3. Modified the Northern District Salmon Management Plan and Northern District King Salmon Management Plan Amended by removing the reference to Sockeye Salmon. 4. Allowed the use of dipnets in the Upper Subdistrict commercial salmon fishery. 5. Repealed sections of the Central District Drift Gillnet Fishery Management Plan to provide additional commercial salmon fishing opportunity with drift gillnet gear. 6. Increased waters closed to commercial fishing for salmon. At the December 2024 meeting, the Board of Fish made the following changes to the commercial salmon fishing regulations in the Prince Wiliam Sound and Copper River areas: 1. Reduced commercial salmon fishing opportunity in the Copper River District by restricting the earliest date the Department may open the fishery to May 22. At the January 2025 meeting, the Board of Fish made the following changes to the commercial fishing regulations for the Southeast and Yakutat areas: 1. Amended the Situk-Ahrnklin Inlet and Lost River King Salmon Fisheries Management Plan to reflect recent management strategies. 2. Closed commercial fishing in Sudden Stream and Malaspina Lake. 3. Established a terminal harvest area and associated management plan for harvesting hatchery produced salmon in Burnett Inlet. 4. Modified boundaries of the Hidden Falls terminal harvest area for chum, king, and coho salmon and the Hidden Falls special harvest area for chum and king salmon. 5. Modified the Wrangell Narrows-Blind Slough Terminal Harvest Area Salmon Management Plan. 6. Modified the structure of the Southeast Alaska King Salmon Management Plan by changing the annual allocation to 77% troll / 23% sport 7. Increase the number of days open for trolling in the spring period from 1 day to 2 days. 8. Established criteria a limited harvest by the troll fishery in August and to allow for more than one limited harvest fishery to occur. 8.1. Conservation and management measures shall be designed to ensure the long-term

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.**	
		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 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 and harvest 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 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 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 (both resident and non-resident) 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

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		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 and stakeholders. 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. In addition, state law (AS 16.10.010) prohibits Interference with salmon spawning streams and water regulation activities in and or around streams in either fresh or salt water. The regulations for Southeast are good example of the scope of these types of regulations[32]. 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 of Fish, the Department will, to the extent practicable, provide the board with reports on the status of salmon stocks and salmon fisheries under

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		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; d. Prevent overfishing; and 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; and

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.**
	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. They specifically address such things as the allowable gear, areas that may be open and times that fishing may occur. These permanent regulations are made available in both printed form and on-line. Changes in regulations are posted as they occur on the Board of Fish web site. The Alaska Department of Law collaborates to ensure there is no ambiguity in the regulations. In-season emergency orders are widely distributed to the press, are posted on-line, posted on telephone recordings and often broadcast over VHF or shortwave radio. 8.10 New Gear has been recently introduced on a commercial scale within the last three years, or there is a plan to introduce new gear in the foreseeable future. This Clause is not particularly relevant. New gear has rarely been requested of approved. However, the use of beach seines and dip nets has been allowed in specific areas to foster selective harvest. All such changes must be reviewed and approved by the Board of Fish. 9.11 There is a system of international information exchange to allow knowledge to be shared. There are three 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 Alaksa and other fisheries along the west coast of Canada, Oregon and Washington. The third forum is the Pacific States Marine Fisheries Commission (PSMFC). Among other things the PSMFC maintains and coordinates the exchange of coded micro-wire tag data between the states and with Canada. 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 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.

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.**	
	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. The placement of artificial structures in marine waters of Alaska has been limited to pilot research projects in Prince William Sound near Whittier, 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. There are several avenues for fishermen to receive training to ensure they have appropriate standards of competence. **Alaska Marine Safety Education Association (AMSEA) Marine Safety Training Program** The Alaska Marine Safety Education Association (AMSEA) provides marine safety training for commercial fishermen[3], subsistence & recreational boaters, and youth & women boaters throughout Alaska and across the United States. AMSEA's Fishing Vessel Drill Conductor Trainings are accepted by the U.S. Coast Guard and meet the training requirements for fishermen onboard commercial fishing vessels **Alaska Longline Fishermen's Association (ALFA) Crew Training Program** Established in 2015 as a component of ALFA's Young Fishermen Initiative[4], the program seeks to: 1) offer young individuals aspiring to a career in commercial fishing the chance to acquire practical experience; and 2) enhance their comprehension of commercial fishing, its associated lifestyle, and its vital contribution to coastal communities. Simultaneously offering a secure, well-directed, introductory experience. The Crew Training Program assists skippers in selecting, preparing, and securely integrating beginner crew members into commercial fishing, while also offering resources to young individuals to assure their readiness for their first professional fishing experience. **Alaska Maritime Training Center** The State of Alaska, Department of Labor and Workforce Development (ADLWD) includes the Alaska's Institute of Technology, also called Alaska Vocational Training & Education Center (AVTEC). One of AVTEC's main divisions is the Alaska Maritime Training Center[5]. The Alaska Maritime Training Center is a United States Coast Guard approved training facility located in Seward, Alaska, and offers USCG/STCW (STCW is the international Standards of Training, Certification, and Watchkeeping) compliant maritime training. In addition to the standard courses offered, customized training is available to meet the specific needs of maritime companies. Courses are delivered through the use of world class ship simulator, state of the art computer based navigational laboratory and modern classrooms equipped with the latest instructional delivery technologies. AVTEC offers courses such as Able Seaman, Fire Fighting, Meteorology, Electronic Chart display and Information Systems, Seafood Processor Orientation and Safety Course, among many others

[3] https://www.amsea.org/commercial-fishermen

[4] https://www.alfafish.org/crewtraining

[5] https://avtec.edu/maritime/

9.	**Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards, guidelines and regulations.**
	University of Alaska Sea Grant Marine Advisory Program The Marine Advisory Program (MAP) is a university-based statewide program designed to help Alaskans with the practical use and conservation of the state's marine and freshwater resources MAP is based at the University of Alaska Fairbanks (UAF) College of Fisheries and Ocean Sciences[6]289. Through classes, workshops, trainings and other resources, MAP offers Alaskans technical assistance, marine education, applied research and other expert advice on how residents can sustain healthy coastal economies, communities, and ecosystems **Alaska Young Fishermen's Summit** Established in 2007 by the Alaska Sea Grant Marine Advisory Program, the Alaska Young Fishermen's Summit (AYFS)[7] is a three-day networking and skill-building conference for new entrants in managing modern commercial fishing businesses designed to provide training, information, and networking opportunities for commercial fishermen early in their careers. The event features prominent industry leaders as speakers and mentors **UAS Maritime Training Center** UAS Maritime Training Center at Ketchikan[8] provides several educational opportunities for students to follow career paths such as: ▪ Able Seaman (Seafarer) ▪ Entry Level Deckhand ▪ Charter Boat Skipper ▪ 100–200 Ton Vessel Captain ▪ Towing Vessel Officer ▪ QMED Oiler **Washington Sea Grant the Purse Seine Vessel Crew Member Training Program.** The "Crew School" Purse Seine Vessel Crew Member Training Program[9], provided by the Gig Harbor BoatShop in partnership with Washington Sea Grant, delivers essential training for commercial fishing crew members, encompassing practical experience on vessels, and aims to assist both prospective crew members and commercial fishing skippers. The "Crew School" is a four-day program aimed at delivering essential training for commercial fishing crew members, encompassing both classroom instruction and practical experience on commercial fishing vessels, particularly purse seiners. The program targets persons aspiring to work on

[6] https://alaskaseagrant.org/marine-advisory/

[7] https://alaskaseagrant.org/events/alaska-young-fishermens-summit/

[8] https://uas.alaska.edu/career_ed/maritime/index.html

[9] https://www.gigharborboatshop.org/crewschool-25

9.	Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards, guidelines and regulations.
	commercial fishing vessels, specifically purse seiners, as well as commercial fishing skippers seeking qualified crew members. Te program covers basic skills required aboard fishing vessels, including hands-on training and a glimpse into the onboard life of a commercial fishing crew member **Alaska Onboard Crewmember Training – Kodiak** The AK On-Board program[10] offers a variety of regional, practical training opportunities for beginner commercial fishers. The initiative is spearheaded by Alaska Sea Grant, Alaska Marine Safety Education Association, Alaska Longline Fishermen's Association, Alaska Marine Conservation Council, and regional collaborators to assist new crew members in acquiring fundamental skills, understanding marine safety, networking with potential employers, and connecting with industry peers. Training and activities encompass: ▪ Introduction to Alaska fisheries ▪ Knot tying ▪ Life on the water ▪ Boat handling and navigation ▪ Beginning mechanics ▪ Crew contracts ▪ Gear repair ▪ Seafood handling ▪ AMSEA Drill conductor training ▪ Tours of working fishing vessels **Kodiak College Maritime Workforce Development Program (MWDP)** The Maritime Workforce Development Program (MWDP)[11] offer short, focused workshops on critical skills for vessel repair and maintenance, deck handing, and net construction/repair. **NPFMC, NMFS and ADFG websites**

[10] https://alaskaseagrant.org/event/crewmember-training-kodiak-2025/

[11] https://koc.alaska.edu/programs/continuing-education/Maritime/

9.	**Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards, guidelines and regulations.**	
	All regulations governing salmon are available on the NPFMC[12], NMFS[13] and ADFG[14] websites. Changes to regulations are considered only after detailed processes which include open and public discussions, and the results of any changes are widely communicated. Fishermen do attend these meetings and participate in these processes where they input in and become better acquainted with fishery regulations.	
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

[12] https://www.npfmc.org/fisheries-issues/fisheries/salmon-fisheries/

[13] https://www.fisheries.noaa.gov/rules-and-announcements/notices-and-rules?title=&management_area%5BAlaska%5D=Alaska&field_species_vocab_target_id=&sort_by=field_relevant_date_value

[14] https://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main

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 by ADFG, which regularly conducts in- season monitoring and surveillance of the fishing fleets 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 boats 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 accordance with Alaska Statute 16.43.140, only state- permitted vessels can participate in Alaska commercial salmon fisheries. 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 Crew Member License to 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 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.

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.**	
	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: An exhaustive review of Alaska Statutes AS 16.05.710, AS 16.05.722, AS 16.05.723, and AS 16.43.850 for legislative amendments enacted between April 3, 2023, and April 3, 2025, reveals that Alaska Statute AS 16.05.722 was amended to modify the financial penalties for infractions and to implement a new procedural requirement for the judiciary. The study revealed no modifications to Alaska Statute AS 16.05.710, Alaska Statute AS 16.05.723, or Alaska Statute AS 16.43.850 regarding infraction fines within the designated two-year period. Section II. Preface: A review aimed at identifying revisions or improvements to particular Alaska Statutes related to commercial fishing from April 3, 2023, to April 3, 2025, was conducted in this 4th surveillance. The main goal is to determine if any modifications were made to the regulations, explanations of fines, sanctions, and penalties related to infractions of these laws. The legislation being analyzed are AS 16.05.710, AS 16.05.722, AS 16.05.723, and AS 16.43.850. III. **Examination of Revisions to Alaska Statute AS 16.05.710 (Suspension of Commercial License and Entry Permit):** A. Present Condition of AS 16.05.710: Alaska Statute AS 16.05.710, as detailed in the information available until January 1, 2022, delineates the circumstances under which a court may revoke commercial fishing licenses and entry permits subsequent to a conviction for transgressing commercial fishing regulations in fisheries excluding commercial salmon fisheries. In the case of a first or second misdemeanor or felony conviction occurring within a ten-year timeframe, the court possesses the authority to suspend one or more of the individual's commercial fishing privileges and permits for a period not to exceed one year. For a third or subsequent conviction within the same ten-year period, the Act requires the court to suspend certain rights and licenses for up to three years. Additionally, the statute pertains to crimes associated with the theft of commercial fishing equipment, as outlined in AS 16.43.990. Upon a first conviction for infringing AS 11.46.120 through AS 11.46.130 related to commercial fishing gear, the court must enforce a one-year suspension of the individual's commercial fishing rights and permits, with any other penalties mandated by law. A second or subsequent conviction for the same infraction, or a comparable statute in another jurisdiction, pertaining to commercial fishing gear mandates a two-year suspension. The Act encompasses requirements pertaining to limited entry permits. If there are ongoing processes that may result in the suspension of commercial fishing privileges or licenses for a holder

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

of a limited entrance permit, that permit cannot be permanently transferred unless explicitly permitted by a court ruling. When a limited entrance permit is suspended, or the permit holder's entitlement to acquire or utilize one is suspended, a permit card cannot be provided, and the permit cannot be transferred or sold.

This section defines many key terms: "commercial fishing law" refers to any statute or rule that governs commercial fishing activities concerning licenses, permits, catch records, gear, fishing areas, timing, and the management of fishery resources. A "commercial fishing license" is characterized as either a limited entry permit or a crew member license. "Commercial fishing privilege" denotes the entitlement to engage in activities necessitating a commercial fishing license and the authority to acquire such a license. Finally, a "limited entry permit" refers to an entry permit or an interim-use permit granted pursuant to AS 16.43.

B. Assessment of Legislative Proceedings (April 3, 2023 - April 3, 2025):

A review of legislative action during the 33rd (2023-2024) and 34th (2025) Alaska Legislatures was done to ascertain whether any amendments were enacted within the designated timeframe. The data indicates that a search for bills referencing "AS 16.05.710" in the 34th Legislature produced no results.

House Bill 66 (HB 66) from the 33rd Legislature, a comprehensive statute addressing multiple facets of criminal law and procedure, was passed during the review period, having received presidential assent on July 11, 2024. Although HB 66 introduced modifications to various Alaska Statutes concerning criminal offenses, a meticulous review of the enrolled version of the bill (HB0066Z) reveals that AS 16.05.710 was not one of the statutes revised. The legislation addressed issues like homicide, assault, stalking, human trafficking, controlled substances, sentencing, and civil commitments, while without amending the stipulations of AS 16.05.710 regarding the suspension of commercial fishing permits.

The snippet pertains to a prior amendment of AS 16.05.710, which introduced a new subsection (e) concerning limitations on leasing permits from regional community permit banks during pending suspension procedures. This legislative activity transpired during the 29th Legislature, which is outside the period from April 3, 2023, to April 3, 2025.

Senate Bill 108 (SB0108A) from the 34th Legislature, which focused on the regulation of finfish farms, changed AS 16.05.050 and AS 16.05.930 but did not alter AS 16.05.710. Likewise, Senate Bill 164 (SB0164B) from the 33rd Legislature, which modified various other Title 16 statutes pertaining to fish and game, did not include AS 16.05.710 in its modifications.

C. Overview of Modifications to Regulations, Fines, Sanctions, and Penalties:

No revisions to Alaska Statute AS 16.05.710 regarding regulations, fines, sanctions, and penalties were made from April 3, 2023, to April 3, 2025, according to the review of the legislative material given.

Section IV. Examination of Revisions to Alaska Statute AS 16.05.722 (Strict Liability Penalties for Commercial Fishing):

A. Present Condition of AS 16.05.722:

11.	**There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.**
	Alaska Statute AS 16.05.722 delineates the penalty for commercial fishing infractions committed without a guilty mental state, as outlined in the information available until January 1, 2022. Upon conviction for a violation of AS 16.05.440 through AS 16.05.690, or any regulation pertaining to commercial fishing, an individual is liable to a fine not exceeding $3,000 for a first offense, up to $6,000 for a second offense, and up to $9,000 for a third or subsequent offense within a ten-year timeframe. Moreover, the statute requires the forfeiture of any fish, or its fair market value, obtained or held due to the offense. A legal presumption exists that all fish aboard a fishing vessel involved in the infraction, or at the fishing location, were unlawfully captured or retained. The defendant bears the burden of proof to establish, by a preponderance of the evidence, that the fish were legally captured and possessed. Moreover, AS 16.05.722 mandates that those accused of a breach under this section have the right to a court trial, but not a jury trial, and are not entitled to legal counsel at public expense. B. Assessment of Legislative Proceedings (April 3, 2023 - April 3, 2025): Senate Bill 164 (SB0164B) from the 33rd Legislature specifically indicates that Section 6 of the bill modifies AS 16.05.722(a) to elevate the maximum penalties for strict liability commercial fishing infractions. The revised statute stipulates a maximum penalty of $6,000 for a first offense, $12,000 for a second offense, and $15,000 for a third or subsequent offense within a ten-year timeframe. Additionally, Section 7 of SB 164B introduces a new subsection (d) to AS 16.05.722, mandating the court to send notification of all convictions under this section to the Alaska Commercial Fisheries Entry Commission. This establishes a new procedural duty for the courts concerning breaches of this statute. The snippet indicates that Senate Bill 108 (SB0108A) from the 34th Legislature amends AS 16.05.722(a) by increasing fines and adding notification subsection (d), aligning with the modifications proposed in SB 164B. This implies that the amendments to AS 16.05.722 were likely enacted during the review period, possibly via SB 108A or a related legislative measure. C. Overview of Modifications to Regulations, Fines, Sanctions, and Penalties: From April 3, 2023, to April 3, 2025, the maximum penalties for infractions of Alaska Statute AS 16.05.722 were elevated. The revised maximum penalties are $6,000 for a first offense, $12,000 for a second offense, and $15,000 for a third or subsequent offense within a ten-year timeframe. A new regulation mandates the court to notify the Alaska Commercial Fisheries Entry Commission of all convictions under AS 16.05.722. **V. Examination of Revisions to Alaska Statute AS 16.05.723 (Misdemeanor Commercial Fishing Penalties):** A. Present Condition of AS 16.05.723: Alaska Statute AS 16.05.723, as specified in the information available until January 1, 2022, delineates the penalty for misdemeanor violations in commercial fishing. An anyone who carelessly contravenes AS 16.05.440 through AS 16.05.690, or any regulation pertaining to commercial fishing, commits a misdemeanor and, upon conviction, is subject to a penalty of a fine not exceeding $15,000,

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

imprisonment for a maximum of one year, or both. The court is required to mandate the confiscation of any fish (or its fair market value) obtained or maintained due to the violation and may also order the seizure of any vessel and fishing equipment utilized in the commission of the offense.

The statute delineates further sanctions for specific violations. If an individual is found guilty under this section for engaging in commercial fishing in prohibited waters, during a closed period or season, utilizing illegal gear, or lacking a necessary limited entry permit holder on board, the court may levy an additional fine equivalent to the gross value of the fish present on board or at the fishing site at the time of the infraction.

Upon a third misdemeanor conviction within a decade for any combination of these specified violations, the court must impose, in addition to the aforementioned penalties, a fine equivalent to three times the gross value of the fish or $10,000, whichever is greater.

B. Assessment of Legislative Proceedings (April 3, 2023 - April 3, 2025):

Senate Bill 164 (SB0164B) from the 33rd Legislature, while modifying AS 16.05.722 and other pertinent statutes, does not propose any modifications to AS 16.05.723.

Senate Bill 108 (SB0108A) from the 34th Legislature, which addressed the regulation of finfish farms, did not incorporate any revisions to AS 16.05.723.

Senate Bills 64 from the 33rd and 34th Legislatures, pertaining to controlled substances/homicide and elections, respectively, are not pertinent to possible modifications of commercial fishing penalties under AS 16.05.723.

C. Overview of Modifications to Regulations, Fines, Sanctions, and Penalties:

No revisions to Alaska Statute AS 16.05.723 regarding regulations, fines, sanctions, and penalties were adopted between April 3, 2023, and April 3, 2025, according to the review of the legislative material given.

Section VI. Examination of Modifications to Alaska Statute AS 16.43.850 (Point System for Commercial Fishing Infractions in Salmon Fisheries):

A. Present Condition of AS 16.43.850:

Alaska Statute AS 16.43.850, as outlined in the material available until January 1, 2022, established a point system administered by the Commercial Fisheries Entry Commission (CFEC) to identify habitual offenders of commercial fishing regulations, particularly in salmon fisheries. The laws requires the CFEC to establish regulations for the suspension of commercial salmon fishing rights contingent upon the accumulation of demerit points resulting from convictions of different commercial fishing law infractions, including those delineated under AS 16.05.722 and AS 16.05.723.

The statute allocates distinct demerit points for certain categories of infractions. For example, fishing in restricted waters or during a prohibited season incurs 6 points, as does fishing with an excessive amount of gear or with unauthorized equipment in the fishery. Additional infractions, including interference with commercial fishing equipment or improper use of fishing gear, incur 4 points. If a

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

permit holder's initial conviction during a 36-month timeframe is pursuant to AS 16.05.722, the demerit points assigned are reduced by fifty percent.

The statute delineates distinct suspension durations contingent upon the total points accrued during designated dates. Accumulating 12 or more points within any consecutive 36-month interval results in a one-year suspension. A total of 16 or more points accrued within a straight 36-month timeframe leads to a two-year suspension. Accumulating 18 or more points within a consecutive 36-month period results in a three-year ban of commercial salmon fishing privileges for the specific fishery where the infractions took place.

B. Assessment of Legislative Proceedings (April 3, 2023 - April 3, 2025):

Senate Bills 64 from the 33rd and 34th Legislatures, as previously indicated, do not pertain to commercial fishing penalty regimes.

Senate Bill 164 (SB0164B) from the 33rd Legislature, while modifying various statutes concerning fish and game, does not propose any modifications to AS 16.43.850.

Senate Bill 108 (SB0108A) from the 34th Legislature, which largely addresses finfish farming laws, does not incorporate any revisions to AS 16.43.850.

C. Overview of Modifications to Regulations, Fines, Sanctions, and Penalties:

No revisions to Alaska Statute AS 16.43.850 regarding regulations, fines, punishments, and penalties were adopted from April 3, 2023, to April 3, 2025, according to the review of the legislative material given.

Conclusion:

This review for the period from April 3, 2023, to April 3, 2025, indicates that only Alaska Statute AS 16.05.722 was revised to elevate the maximum penalties for strict liability commercial fishing infractions and to mandate that courts inform the Alaska Commercial Fisheries Entry Commission of convictions under this statute. No modifications impacting violation penalties were detected for Alaska Statutes AS 16.05.710, AS 16.05.723, and AS 16.43.850 within the specified period, according to the supplied legislative data.

Enforcement section

Alaska Division of Wildlife Troopers

On March 7,2025 AFDF 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, 2024, through August 1, 2024. For that period, the Alaska Wildlife Troopers made 6838 contacts with commercial fishery participants, 296 warnings were given during these contacts, and 343 persons charged with offenses. The majority of these offenses consisted of fishing in closed waters, and fishing in closed seasons.

Alaska US Coast Guard

In calendar year 2024, the Coast Guard in Alaska conducted 19 federal fisheries boardings on the Cook Inlet EEZ salmon fishery. This is the only federal fisheries enforcement currently done for

11.	There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.
	directed commercial salmon fisheries. All other commercial salmon fisheries in Alaska are inside state waters. For those 19 Cook Inlet EEZ salmon boardings, no fisheries violations or safety violations were found. In 2025, USCG will likely conduct a focused patrol during this fishery to ensure safety and compliance in the fleet. USCG work strongly with NOAA OLE for planning and executing these patrols. In 2024, USCG also conducted aerial patrols of the fishery with NOAA OLE onboard to ensure fishers who were fishing in the EEZ (outside of state waters) adhered to requirements such as permits and VMS. Enforcement priorities/enforceable regulations: -A federal permit is required (Salmon Federal Fishing Permit, SFFP) to commercially fish. -Logbooks must be maintained (this can be electronic). -VMS is required. -Receivers must have a Registered Salmon Receiver Permit. -Processors must have a Salmon Federal Processor Permit. -eLandings is required for submitting landing and production data. They need permits to open an account for eLandings. According to NOAA, 2024 had the following number of participants: Salmon Federal Fishing Permit (SFFPs) vessels: 245 Salmon Federal Processor Permit (SFPPs) shoreside: 8 Salmon Federal Processor Permit (SFPPs) vessel: 0 Registered Salmon Receiver Permits: 13 All of the USCG other salmon vessel boardings are conducted under the Commercial Fishing Vessel Safety (CFVS) program. These primarily take place in Bristol Bay and Southeast Alaska. The last aspect of salmon enforcement USCG focus on is the possible interactions with marine mammals. USCG routinely conduct marine mammal carcass surveys with NOAA Protected Resources Division (PRD) to look for Steller Sea Lions that have bullet wounds. These bullet wounds are likely caused by interactions with fishers in the gillnet fisheries. In 2024 USCG had numerous reports of sea lions washing up with bullet holes in them. Some of these sea lions were taken into evidence for NOAA to conduct further investigations. However, USCG don't have those numbers. Kate Savage and Sadie Wright from NOAA PRD are the best sources of that information. Steller Sea Lions are protected under the Marine Mammal Protection Act (MMPA) and west of 144-degrees longitude they are protected under the Endangered Species Act (ESA). The potential negative interactions between salmon fishers and Steller Sea Lions are something the Coast Guard takes very seriously. However, these violations are sometimes hard to enforce at-sea. Typically, a longer-term investigation by NOAA OLE is required to identify who violated one of these acts.

11.	**There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.**	
	At the Federal level, NMFS has also published a schedule of penalties associated with illegal retention of salmon and other violations of fishery regulations[15]. 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[16]. Alaska Statute 16.5.150 formally authorizes ADFW employees, State police and others deputized individuals to enforce Alaska's Fish and Game Code[17]. 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		**Alaskan Fishery operations continue to conform to the requirements of Fundamental Clause 11of the RFM Standard**

[15] https://www.gc.noaa.gov/documents/gces/AK%20SS%20and%20Fix-it_FINAL.pdf

[16] https://www.fisheries.noaa.gov/about/office-law-enforcement

[17] http://www.touchngo.com/lglcntr/akstats/statutes/title16/chapter05/section150.htm

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:	Following prolonged litigation in federal district court over indirect fishery impacts on SRKW in NOAA's ESA consultation with the State of Alaska and related NEPA requirements, NOAA fisheries released a new Biological Opinion (BiOp) and Environmental Impact Statement (EIS) for Southeast Alaska salmon fisheries. No other 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.

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.**
	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 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. <u>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.</u> 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. Following prolonged litigation in federal district court over indirect fishery impacts on SRKW in NOAA's ESA consultation with the State of Alaska and related NEPA requirements, NOAA fisheries released a new Biological Opinion (BiOp) and Environmental Impact Statement (EIS) for Southeast

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.**
	Alaska salmon fisheries. After reviewing and analyzing the current status of the listed species and critical habitat, the environmental baseline within the action area, the effects of the proposed action, the effects of other activities caused by the proposed action, and the cumulative effects, it is NMFS' biological opinion that the proposed action is not likely to jeopardize the continued existence of the LCR Chinook Salmon, UWR Chinook Salmon, SRFC Salmon, and Puget Sound Chinook Salmon ESUs, and the SRKW DPS, the Mexico Humpback whale DPS, and the western Steller sea lion DPS or destroy or adversely modify designated critical habitat for SRKW. These documents comply with a court order in the Wild Fish Conservancy v. Quan et al. litigation. The new BiOp is the document that provides coverage for the incidental taking of species listed as threatened or endangered under the Endangered Species Act and allows Alaska's Pacific Salmon Treaty salmon fisheries to operate. The court deemed that an EIS was also required to comply with National Environmental Policy Act. 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. 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.

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.**
References:	Aydin, K.Y., S.K. Gaichas, I. Ortiz, D.H. Kinzey, N. Friday. 2007. A comparison of the Bering Sea, Gulf of Alaska, and Aleutian Islands large marine ecosystems through food web modeling. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-178, 298 p https://repository.library.noaa.gov/view/noaa/22894/noaa_22894_DS1.pdf Brenner, R.E., S.J. Donnellan, A.R. Munro, editors. 2022. Run forecasts and harvest projections for 2022 Alaska salmon fisheries and review of the 2021 season. Alaska Department of Fish and Game, Special Publication No.22-11, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP22-11.pdf Brenner, R.E., S.J. Larsen, A.R. Munro, A.M. Carroll, editors. 2021. Run forecasts and harvest projections for 2021 Alaska salmon fisheries and review of the 2020 season. Alaska Department of Fish and Game, Special Publication No. 21-07, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP21-07.pdf Haeseker, S.L., R. M. Peterman, Z. Su, C.C. Wood. 2005. Retrospective evaluation of preseason forecasting models for pink salmon. North American Journal of Fisheries Management, 25(3), 897-918. https://doi.org/10.1577/M04-085.1 Johnson, R. 2021. Chignik Management Area commercial salmon fishery harvest strategy, 2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K21-06, Kodiak. https://www.adfg.alaska.gov/FedAidPDFs/RIR.4K.2021.06.pdf Manly, B. 2006. Incidental Catch and Interactions of Marine Mammals and Birds in the Cook Inlet Salmon Driftnet and Setnet Fisheries, 1999-2000 EcoSystems Technology Inc. 2003 Central Avenue, Cheyenne, Wyoming 82001. Available from NOAA, Juneau. https://www.fisheries.noaa.gov/resource/document/incidental-catch-and-interactions-marine-mammals-and-birds-cook-inlet-salmon Manly, B. 2007. Incidental Take and Interactions of Marine Mammals and Birds in the Kodiak Island Salmon Set Gillnet Fishery, 2002 and 2005. Western EcoSystems Technology Inc., Cheyenne, Wyoming. Available from NOOA Juneau. https://www.fisheries.noaa.gov/resource/document/incidental-take-and-interactions-marine-mammals-and-birds-kodiak-island-salmon Manly, B. 2009. Incidental take and interactions of marine mammals and birds in the Yakutat salmon set gillnet fishery, 2007 and 2008. Western Ecosystems Technology Inc., Cheyenne, Wyoming. Available from NOAA Juneau. https://www.fisheries.noaa.gov/resource/document/incidental-take-and-interactions-marine-mammals-and-birds-yakutat-salmon-setnet Manly, B. 2014. Incidental takes and interactions of marine mammals and birds in District 6, 7, and 8 Southeast Alaska drift gillnet fishery 2012 and 2013. Western EcoSystems Technology, Inc. Laramie WY. https://alaskafisheries.noaa.gov/sites/default/files/incidentaltakes2012-2013.pdf Manly, B. 2015. Incidental Takes and Interactions of Marine Mammals and Birds in Districts 6, 7 and 8 of the Southeast Alaska Salmon Drift Gillnet Fishery, 2012 and 2013. Western EcoSystems Technology Inc. Laramie, Wyoming. Available from NOAA. Juneau Ak.

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.**

https://www.fisheries.noaa.gov/resource/document/incidental-takes-and-interactions-marine-mammals-and-birds-districts-6-7-and-8

Miller, S.E., J.M. Murphy, S.C. Heinl, A.W. Piston, E.A. Fergusson, R.E. Brenner, W.W. Strasburger, J.H. Moss, 2022. Southeast Alaska Pink Salmon Forecasting Models. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-03.pdf

Muto, M.M., V. T. Helker, R. P. Angliss, P. L. Boveng, J. M. Breiwick, M. F. Cameron, P. J. Clapham, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, K. L. Sweeney, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. 2019. Alaska Marine Mammal Stock Assessments, 2018. NOAA Technical Memorandum NMFS-AFSC-393. https://repository.library.noaa.gov/view/noaa/20606

Murphy, J.M., E.A. Fergusson, A. Piston, S. Heinl, A. Gray, E. Farley. 2019. Southeast Alaska pink salmon growth and harvest forecast models. North Pacific Anadromous Fish Commission Technical Report No. 15:75–81, Vancouver, Canada. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2021-2022/se/SP20-09.pdf

NOAA (National Oceanic and Atmospheric Administration). 1977. Environmental Assessment of the Environmental Shelf. Annual Reports of Principal Investigators for the year ending 1977, https://www.arlis.org/docs/vol1/OCSEAP2/Annual/OCSEAP-annual-1977-v10.pdf

NOAA (National Oceanic and Atmospheric Administration). 1980. Environmental Assessment of the Alaskan Continental Shelf. Northeast Gulf of Alaska Interim Synthesis Report. https://repository.library.noaa.gov/view/noaa/2752/noaa_2752_DS1.pdf

NOAA (National Oceanic and Atmospheric Administration). 2024. DRAFT ENVIRONMENTAL IMPACT STATEMENT Issuance of an Incidental Take Statement under the Endangered Species Act for Salmon Fisheries in Southeast Alaska Subject to the Pacific Salmon Treaty and Funding to the State of Alaska to Implement the 2019 Pacific Salmon Treaty Agreement. https://www.fisheries.noaa.gov/s3/2024-01/NMFS-DEIS-Southeast-Alaska-Salmon-Fisheries-ITS-508-publish.pdf

NOAA (National Oceanic and Atmospheric Administration). 2024. Environmental Impact Statement for the Issuance of an Incidental Take Statement Under the Endangered Species Act for Salmon Fisheries in Southeast Alaska Subject to the Pacific Salmon Treaty and Funding to the State of Alaska. https://www.fisheries.noaa.gov/resource/document/environmental-impact-statement-issuance-incidental-take-statement-under

NOAA (National Oceanic and Atmospheric Administration). 2024. Consultation on the Delegation of Management Authority for Specified Salmon Fisheries and Federal Funding to the State of Alaska to Implement the 2019 Pacific Salmon Treaty Agreement. https://www.fisheries.noaa.gov/s3//2024-10/akro-salmon-biop.pdf

Ovando, D., C. Cunningham, P. Kuriyama, C. Boatright, R. Hilborn. 2022. Improving forecasts of sockeye salmon (Oncorhynchus nerka) with parametric and nonparametric models.

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.**

Canadian Journal of Fisheries and Aquatic Sciences, 99(999), pp.1-13. https://doi.org/10.1139/cjfas-2021-0287

Thynes T., A. Dupuis, D. Harris, B. Meredith, A. Piston, P. Salomone. 2021. 2021 Southeast Alaska purse seine fishery management plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 1J21-09, Douglas. https://www.adfg.alaska.gov/FedAidPDFs/RIR.1J.2021.09.pdf

Vega, S.L., J.M. Head, T. Hamazaki, J.W. Erickson,T.R. McKinley. 2022. Review of Salmon Escapement Goals in Bristol Bay, Alaska, 2021. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2022-2023/bb/FMS22-07.pdf

Walsh, J.C., J.E. Pendray, S.C. Godwin, K.A. Artelle, H.K. Kindsvater, R.D. Field, J.D. Reynolds, (2020). Relationships between Pacific salmon and aquatic and terrestrial ecosystems: implications for ecosystem-based management. Ecology, 101(9), e03060. https://doi.org/10.1002/ecy.3060.

Wilson, H., J. Decker, T. Sheridan and B. Americus. 2022. Ecological Risk Assessment: Marbled and Kittlitz's Murrelet Interactions with the Alaska Salmon Gillnet Fishery. Alaska Fisheries Development Foundation, Wrangell AK.

Wipfli, M.S., J.P. Hudson, D.T. Chaloner, J.P. Caouette, 1999. Influence of salmon spawner densities on stream productivity in southeast Alaska. Canadian Journal of Fisheries and Aquatic Sciences, 56(9), 1600-1611. https://doi.org/10.1139/f99-087

Wynne, K., D. Hicks and N. Munro. 1991. 1990 Salmon gillnet Fishery observer programs in Prince William Sound and South Unimak Island. NMFS, Juneau. https://www.fisheries.noaa.gov/alaska/fisheries-observers/alaska-marine-mammal-observer-program

Wynne, K.M., Hicks, D.L. and N.M. Munro. 1992. 1991 marine mammal observer program for the Salmon driftnet fishery of Prince William Sound, Alaska. Final Report, May 1, 1992. By Saltwater, Inc, for NMFS. 61 pp. http://alaskafisheries.noaa.gov/protectedresources/observers/bycatch/1991pws.pdf

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

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. Hatchery research study results are available on genetic stock structure and straying and relative reproductive success for hatchery pink and chum salmon. Relative reproductive success has been estimated for hatchery pink salmon while chum salmon assessments are ongoing. Assessments of contributions to harvest and spawning escapement by hatchery salmon have been produced by the Kodiak Regional Aquaculture Association and demonstrate 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 (Evenson et al. 2018). 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

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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).

Chronic low levels of straying by hatchery Pink and Chum Salmon have been observed across broad areas with a greater incidence in some areas of proximity to hatcheries (Knudsen et al. 2015a, 2015b, 2016, 2021; Josephson et al. 2021). Significant straying of Chinook, Coho and Sockeye hatchery salmon has not been observed and enhancement levels are relatively modest in relation to wild abundance. The highest stray proportions are observed near hatcheries and along migratory pathways (Templin 2024). Hatchery strays typically comprised small proportions of total spawning escapements of all species even in regions where large production programs occur and spawning escapement goals are generally being achieved for wild populations.

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.

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	Since 2018, comprehensive marking of Kodiak pink and chum salmon hatchery production has been implemented. Work to mark Kodiak hatchery production and assess hatchery contributions is documented in a series of reports produced from 2020 through 2024 (Weber 2021, 2022; Thomas 2022; Dodson 2023, 2024). 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 completion of project reports summarizing otolith marking, sampling, and analyses, the client action plan has been successfully completed and this minor non-conformance is closed. 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. 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 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

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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.

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).

Substantial genetic stock structure has been identified in all salmon species which could be impact if hatchery-wild interactions were significant. Divergence among populations was relatively shallow for Pink Salmon (Cheng et al. 2016, 2019, 2022; Jasper et. al. 2013) and most substantial for Sockeye

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	Salmon (Quinn et al. 2012; with Chum Salmon in between (Gilk-Baumer & Templin 2019; Barclay et al. 2024). Significant genetic population structure remains despite long-term hatchery programs and populations remain similar over time although there is some indication of introgression of hatchery strays (Templin 2024). Relative reproductive success of Pink Salmon has been found to be substantially less for hatchery than wild Pink Salmon although the basis for this difference is not yet clear (Lescak & Dann 2019; Lescak et al. 2019; McMahon 2021; Shedd et al. 2022; May et al. 2024; McMahon et al. 2025). An assessment of relative reproductive success of hatchery Chum Salmon is ongoing. Wild Pink and Chum Salmon escapements consistently meet or exceed established goals despite hatchery stray contributions and apparently lower relative reproductive success. If hatchery impacts were significant, we would expect an increasing difficulty in meeting spawning escapement goals as stock productivity was eroded but no such pattern is apparent. Escapement assessments of wild stocks are not confounded by hatchery strays because streams with significant numbers of hatchery fish are do not occur in the large majority of index streams. 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 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

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	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.
References:	ADFG. 2018. State of Alaska hatchery research project: A study of the interactions between hatchery and natural pink and Chum Salmon in Southeast Alaska and Prince William Sound. Progress synopsis. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/alaska_hatchery_research_project_synopsis_june_2018.pdf ADFG. 2022. State of Alaska Hatchery Research Project: A study of the interactions between hatchery and natural pink and chum salmon in Southeast Alaska and Prince William Sound streams Progress Synopsis May 2022. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/ak_hatchery_research_project_synopsis_2022.pdf Americus, B. 2025. Update on Alaska Hatchery Salmon Production, Research and Management (2024). Report prepared by Granite Bay Biological on Behalf of the Alaska Fisheries Development Foundation with Review by the Alaska Department of Fish and Game for Marine Stewardship Council Audit of Alaska Salmon, January 6–10, 2025 Americus, B., B. Adams, T. Sheridan and S. Wagner. 2022a. Crawfish Inlet Report to MSC/RFM Assessment Teams. Alaska Fisheries Development Foundation. Americus, B., T. Sheridan and J. Decker. 2022b. Alaska Hatchery Research Program Synthesis. Report by the Alaska Fisheries Development Foundation for MSC/RFM Sustainability Certification.

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

Anderson, T. J., K. Jackson, and A. E. Dorner. 2023. Kodiak Management Area Commercial Salmon Fishery Annual Management Report, 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-23.pdf

Barclay, A. W., T. H. Dann, K. Gruenthal, and S. Gilk-Baumer. 2024. A coastwide Chum Salmon genetic baseline for Western Alaska and high-seas genetic stock identification. NPAFC Doc. 2153. 58 pp. Alaska Department of Fish and Game. https://www.npafc.org/wp-content/uploads/Public-Documents/2024/2153USA.pdf

Bidlack, A., and E. H. Valentine. 2009. Assessment of Gulkana Hatchery sockeye straying into Upper Copper River tributaries. Ecotrust Copper River Program, PO Box 626, Cordova AK 99574.

Botz, J., H. Scannell, M. Olson, J. Morella, and R. Ertz. 2024. 2023 Prince William Sound Area Finfish Management Report. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-15.pdf

Brenner, R. E., S. D. Moffitt, and W. S. Grant. 2012. Straying of hatchery salmon in Prince William Sound, Alaska. Environmental biology of fishes 94:179–195. https://doi.org/10.1007/s10641-012-9975-7

Cheng, W., C. Habicht, W. D. Templin, Z. D. Grauvogel, S. D. Moffitt, R. E. Brenner, R. P. Josephson and A. J. Gharrett. 2016. Population genetic structure of odd-year Pink Salmon from Prince William Sound based on a single year (2013). Alaska Department of Fish and Game Alaska Hatchery Research Group Technical Document 14. http://www..alaska.gov/static/fishing/PDFs/hatcheries/research/population_genetic_structure_oddyear_pink_pws_2013.pdf

Cheng, W., C. Habicht, W. D. Templin, Z. D. Grauvogel, and A. J. Gharrett. 2019. Population structure of Pink Salmon from Prince William Sound, Alaska. Alaska Department of Fish and Game. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2019.03.07_ahrp_pink_population_structure.pdf

Cheng, W., C. Habicht, W. D. Templin, Z. D. Grauvogel, and A. J. Gharrett. 2022. Effects of hatchery strays on population structure of Pink Salmon from Prince William Sound, Alaska. American Fisheries Society 2022 National Meeting. Alaska Department of Fish and Game.

CIRPT (Cook Inlet Regional Planning Team). 2007. Cook Inlet Regional Salmon Enhancement Planning Phase II Plan: 2006-2025. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/plans/ci_salmonenhancement_p2_2006-2025.pdf

Conrad, S., and T. Thynes. 2024. 2024 Overview of the 2023 Southeast Alaska and Yakutat Commercial, Personal Use, and Subsistence Salmon Fisheries. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-19.pdf

Cooney, R. T., J. R. Allen, M. A. Bishop, D. L. Eslinger, T. Kline, B. L. Norcross, et al. 2001a. Ecosystem controls of juvenile Pink Salmon (Oncorhynchus gorbuscha) and Pacific herring (Clupea pallasi) populations in Prince William Sound, Alaska. Fish. Oceanog. 10(Suppl. 1):1-13.

Davis, B., B. Allee, D. Amend, B. Bachen, B. Davidson, T. Gharrett, S. Marshal, and A. Wertheimer. 1985. Genetic policy. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement, and Development, Juneau.

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

Davis, B., and B. Burkett. 1989. Background of the genetic policy of the Alaska Department of Fish and Game. Fisheries Rehabilitation, Enhancement and Development Report No. 95. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau.

Dodson, T. T. 2023. A Seasonal Summary of the Kodiak Pink and Chum Salmon Otolith Recovery Monitoring Project for 2022. Kodiak Regional Aquaculture Association Report No. 23-03.

Dodson, T. T. 2024. A Seasonal Summary of the Kodiak Pink and Chum Salmon Otolith Recovery Monitoring Project for 2023. Kodiak Regional Aquaculture Association Report No. 24-03.

Dupuis A, Tydingco T, Thynes T, Fowler P, Vercessi L. 2023 NSRAA Little Port Walter Hatchery Management Feasibility Analysis. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/license/hatcheries/pdfs/2024_lpw_mgt_feasibility_analy sis.pdf

Dupuis, A. W., T. M. Fish, A. M. Walloch, A. W. Piston, and T. A. Tydingco. 2024. DRAFT: Northern Southeast Outside Chum Salmon Stock Status and Action Plan. 2025. Alaska Dept. Fish and Game, Report to Alaska Board of Fisheries, Douglas, AK. https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.proposalbook

Eller, J. J. 2018. Policy Analysis: Alaska's Salmon Hatcheries. Master's Thesis. University of Montana, Missoula.

Eggers, D. M., and S. C. Heinl. 2008. Chum salmon stock status and escapement goals in Southeast Alaska. Alaska Department of Fish and Game, Special Publication No. 08-19, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/sp08-19.pdf

Evenson, D. F., C. Habicht, M. Stopha, A. R. Munro, T. R. Meyers and W. D. Templin. 2018. Salmon hatcheries in Alaska – A review of the implementation of plans, permits, and policies designed to provide protection for wild stocks. Alaska Department of Fish and Game Special Publication 18-12. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/ws/SP18-12.pdf

Gilk-Baumer, S., and W. D. Templin. 2019. Population structure of Chum Salmon in Prince William Sound and Southeast Alaska. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2019.03.07_ahrp_chum_population_structure.pdf

Grant, W. S. 2012. Understanding the adaptive consequences of hatchery-wild interactions in Alaska Salmon. Environmental Biology of Fishes 94(1):325-342.

Habicht, C., S. Gilk-Baumer, and A. Barclay. 2022. Population structure of Chum Salmon in Prince William Sound and Southeast Alaska. Hatchery Research Annual Informational Meeting. Alaska Department of Fish and Game.

Habicht, C., Simpson, E.M. and J.E. Seeb. 2000. Broodstock acquisition and release sites for hatcheries producing Pink Salmon in Prince William Sound. ADF&G, Department of Commercial Fisheries Regional Information Report 5J00-07. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2000.07.pdf

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

Hilborn, R. and D. Eggers. 2000. A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska. Transactions of the American Fisheries Society, V. 129, pp. 333-350. http://www.adfg.alaska.gov/FedAidPDFs/CFPP.173.Hilborn.2000.pdf

Hilborn, R. and D. Eggers. 2001. A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska: Response to comment. Transactions of the American Fisheries Society, V. 130, pp. 720-724.

Hollowell, G. 2024. 2024 Lower Cook Inlet Commercial Salmon Fishery Season Summary. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/applications/dcfnewsrelease/1645875233.pdf

Hollowell, G., E. O. Otis, and E. Ford. 2024. 2023 Lower Cook Inlet Area Salmon Annual Management Report. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-18.pdf

Hollowell, G., E. Otis and E. Ford. 2023. 2022 Lower Cook Inlet area salmon annual management report. Alaska Department of Fish and Game Fishery Management Report 23-04. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-04.pdf

IFC (Intertek Fisheries Certification). 2015. First Annual Surveillance Report Alaska Salmon Fishery. February 2015. Marine Stewardship Council. London UK.

IMM (Intertek Moody Marine). 2013. Alaska Salmon Fishery Final Determination Report. October 2013. Marine Stewardship Council. London UK. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

Jasper, J., C. Habicht, S. Moffitt, R. Brenner, J. Marsh, B. Lewis, E. Fox, Z. Grauvogel, S. D. Rogers Olive, and W. S. Grant. 2013. Source-sink estimates of genetic introgression show influence of hatchery strays on wild Chum Salmon populations in Prince William Sound, Alaska. PLoS ONE 8(12):e81916.

Josephson, R., Wertheimer, A., Gaudet, D., Knudsen, E. E., Adams, B., Bernard, D. R., Heinl, S. C., Piston, A. W., and W. D. Templin. 2021. Proportions of hatchery fish in escapements of summer-run Chum Salmon in Southeast Alaska, 2013–2015. Accepted Article (online access). North American Journal of Fisheries Management. https://afspubs.onlinelibrary.wiley.com/doi/10.1002/nafm.10580

Knudsen, E., and eight coauthors. 2015a. Interactions of Wild and Hatchery Pink Salmon and Chum Salmon in Prince William Sound and Southeast Alaska, Progress Report for 2013. Prince William Sound Science Center, Sitka Sound Science Center, and D. R. Bernard Consulting report to the Alaska Department of Fish and Game.

Knudsen, E., and eight coauthors. 2015b. Interactions of Wild and Hatchery Pink Salmon and Chum Salmon in Prince William Sound and Southeast Alaska, Progress Report for 2014. Prince William Sound Science Center, Sitka Sound Science Center, and D. R. Bernard Consulting report to the Alaska Department of Fish and Game.

Knudsen, E., and eight coauthors. 2016. Interactions of Wild and Hatchery Pink Salmon and Chum Salmon in Prince William Sound and Southeast Alaska, Progress Report for 2015. Prince William Sound Science Center, Sitka Sound Science Center, and D. R. Bernard Consulting report to the Alaska Department of Fish and Game.

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

Knudsen, E. E., Rand, P. S., Gorman, K. B., Bernard, D. R., and W. D. Templin. 2021. Hatchery-Origin Stray Rates and Total Run Characteristics for Pink Salmon and Chum Salmon Returning to Prince William Sound, Alaska, in 2013–2015. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 13:41–68. https://afspubs.onlinelibrary.wiley.com/doi/10.1002/mcf2.10134

Lescak, E., K. Shedd, and T. Dann. 2019. Relative productivity of hatchery Pink Salmon in a natural stream. Alaska Department of Fish and Game. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2016_sk_final_report.pdf

Lescak, E., K. Shedd, and T. H. Dann, H. A. Hoyt, D. J. Prince and C. Habicht. 2019. Relative fitness of hatchery and natural Pink Salmon in Hogan Bay, Prince William Sound, Alaska. Alaska Department of Fish and Game final report. North Pacific Research Board Project 1619. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2016_nprb_final_report.pdf

Lewis, B., Botz, J., Brenner, R., Moffitt, S., Hollowell, G., Gray, D., Regnart, J., Palmer, S., Farrington, C. and B. White. 2009. Alaska Department of Fish and Game internal review of Prince William Sound Aquaculture Corporation. ADF&G, Special Publication 09-10, Anchorage. 207 pp.

Lewis, B., W. S. Grant, R. E. Brenner, and T. Hamazaki. 2015. Changes in size and age of Chinook Salmon Onchorynchus tshawytscha returning to Alaska. PLoSONE10(6):e0130184.doi:10.1371/ journal.pone.0130184.

May, S. A., K. R. Shedd, K. M. Gruenthal, J. J. Hard, W. D. Templin, C. D. Waters, M. D. Adkison, E. J. Ward, C. Habicht, L. I. Wilson, A. C. Wertheimer, P. A. H Westley. 2024. Salmon hatchery strays can demographically boost wild populations at the cost of diversity: quantitative genetic modelling of Alaska Pink Salmon. Royal Society open science 11:240455. https://doi.org/10.1098/rsos.240455

May, S. A., K. R. Shedd, P. S. Rand, and P. A. H. Westley. 2023. Tidal gradients, fine-scale homing and a potential cryptic ecotype of wild spawning Pink Salmon (Oncorhynchus gorbuscha). Molecular ecology 32:5838–5848. https://doi.org/10.22541/au.168302763.38136079/v1

McCarrel, A., R. Heintz, C. Gray, L. Bell and Z. Danielson. 2023. Interactions of Wild and Hatchery Chum Salmon in Southeast Alaska. Sitka Sound Science Center report to the Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2023_chum_report_01212024.pdf

McMahon, J. 2021. Ocean and stream ecology of adult hatchery and wild Pink Salmon. MSc Thesis. University of Alaska Fairbanks. http://hdl.handle.net/11122/12626

McMahon, J., S. A. May, P. S. Rand, K. B. Gorman, M. V. McPhee, and P. A. H. Westley. 2025. Phenotypic Sorting of Pink Salmon Hatchery Strays May Alleviate Adverse Impacts of Reduced Variation in Fitness-Associated Traits. Ecology and Evolution 15(1). https://doi.org/10.1002/ece3.70781

Munro, A. R., and R. E. Brenner. 2022. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2013 to 2021. Alaska Department of Fish and Game, Fishery

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

Manuscript Series No.22-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS22-02.pdf

Morella, J. R., R. M. Ertz, J. W. Erickson, J. W. Savereide, A. N. Matter, and T. R. McKinley. 2024. Escapement Goal Review of Copper and Bering Rivers, and Prince William Sound Pacific Salmon Stocks, 2024. Alaska Department of Fish and Game Fishery Manuscript 24-03. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/pws/rc3-1_escapement.pdf

MRAG Americas 2017. MSC final report and determination for Alaska Salmon – Prince William Sound scope extension assessment. MRAG Americas. Seattle. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

MRAG Americas. 2019. Marine Stewardship Council 3rd Reassessment Report, Alaska Salmon Fishery, Final Report and Determination. MRAG Americas, Inc.. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

MRAG. 2024. Marine Stewardship Council 4th Reassessment Report, Alaska Salmon Fishery, Final Report and Determination. MRAG Americas, Inc. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

Mueter, F. J., R. M. Peterman, and B. J. Pyper. 2002. Opposite effects of ocean temperature on survival rates of 120 stocks of Pacific salmon (Oncorhynchus spp.) in northern and southern areas. Canadian Journal of Fisheries and Aquatic Science 59(3):456-463 (erratum 60:757).

Musslewhite, J. 2011a. An evaluation of the Kitoi Bay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J11-01, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2011.01.pdf

Musslewhite, J. 2011b. An evaluation of the Pillar Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J11-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2011.02.pdf

Otis, E. O., J. W. Erickson, M. D. Booz, and T. McKinley. 2023. Review of Escapement Goals for Salmon Stocks in Lower Cook Inlet Alaska, 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2023-2024/lci/FMS23-02.pdf

Otis, E. O., G. J. Hollowell, and E. G. Ford. 2018. Observations of Pink Salmon hatchery proportions in selected Lower Cook Inlet escapements, 2016-2017. Alaska Department of Fish and Game Special Publication 18-11. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/ws/SP18-11.pdf

Otis, T., and G. Hollowell. 2019. Thermally marked Pink Salmon in selected Lower Cook Inlet streams, 2014-2018. Alaska Department of Fish and Wildlife to the Alaska Board of Fisheries.

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

https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/hc/or3.pdf

Otis, E. O., G. J. Hollowell, A. W. Barclay and X. Zhang. 2020. Recovery and analysis of thermal mark hatchery salmon otoliths in Lower Cook Inlet, 2021. Alaska Department of Fish and Game Regional Operational Plan CF.2A.2020.03. http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.2A.2020.03.pdf

Otis, E. O., G. J. Hollowell, A. W. Barclay and X. Zhang. 2021. Recovery and analysis of thermal mark hatchery salmon otoliths in Lower Cook Inlet, 2021. Alaska Department of Fish and Game Regional Operational Plan CF.2A.2021.02. http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.2A.2021.02.pdf

Otis, E. O., G. J. Hollowell, A. W. Barclay and X. Zhang. 2022. Recovery and analysis of thermal mark hatchery salmon otoliths in Lower Cook Inlet, 2022. Alaska Department of Fish and Game Regional Operational Plan CF.2A.2022.06.

Otis, E. O., and G. J. Hollowell. 2023. Observations of pink and Sockeye Salmon hatchery proportions in Southern District commercial harvests, Lower Cook Inlet, 2013–2017. Alaska Department of Fish and Game, Fishery Data Series No. 23-07, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FDS23-07.pdf

Piston, A. W., and S. C. Heinl. 2012a. Hatchery Chum Salmon straying studies in Southeast Alaska, 2008-2010. Fishery Manuscript Series 12-01. ADF&G, Anchorage, Alaska. https://www.adfg.alaska.gov/FedAidPDFs/FMS12-01.pdf

Piston, A. W., and S. C. Heinl. 2012b. Hatchery Chum Salmon straying studies in Southeast Alaska, 2011. Fishery Manuscript Series 12-45. ADF&G, Anchorage, Alaska. https://www.adfg.alaska.gov/FedAidpdfs/FDS12-45.pdf

Piston, A. W., and T. M. Fish. 2024. Chum salmon stock status and escapement goals in Southeast Alaska through 2023. Alaska Department of Fish and Game, Special Publication No. 24-14, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP24-14.pdf

Priest, J. T., A. W. Piston, J. V. Nichols, E. L. Jones III, P. J. Richards, J. A. Bednarski, B. W. Elliott, and S. E. Miller. 2024. Review of salmon escapement goals in Southeast Alaska, 2024. Alaska Department of Fish and Game, Fishery Manuscript No. 24-04, Anchorage. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/se/RC3_Tab4_FMS24-04.pdf

Quinn, T. P., H. B. Rich, Jr., D. Gosse, and N. Schtickzelle. 2012. Population dynamics and asynchrony at fine spatial scales: A case history of Sockeye Salmon population structure in Alaska. Canadian Journal of Fisheries and Aquatic Sciences 69: 297-306.

Scott, T., B. Adams, and S. Wagner. 2024. An Investigation into the Homing Patterns and Water Chemistry of Crawfish and West Crawfish Inlets Related to Hatchery Chum Production. Northern Southeast Regional Aquaculture Association (NSRAA) Technical Report.

Schrof, S., and S. Honnald. 2003. Salmon Enhancement, Rehabilitation and Evaluation and Monitoring Efforts Conducted in the Kodiak Management Area Through 2001. ADF&G ROR No. 4K03-41. Kodiak.

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

Shedd, K. R., E. A. Lescak, C. Habicht, E. E. Knudsen, T. H. Dann, H. A. Hoyt, D. J. Prince, and W. D. Templin. 2022. Reduced relative fitness in hatchery-origin Pink Salmon in two streams in Prince William Sound, Alaska. Evolutionary Applications, 15(3): 429–446. https://doi.org/10.1111/eva.13356

Siddon, E. 2021. Ecosystem Status Report 2021: Eastern Bering Sea, Stock Assessment and Fishery Evaluation Report, North Pacific Fishery Management Council, 1007 West Third, Suite 400, Anchorage, Alaska 99501. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf

Small, M. P., S. D. Rogers Olive, L. W. Seeb, J. E. Seeb, C. E. Pascal, K. I. Warheit, and W. D. Templin. 2015. Chum Salmon genetic diversity in the north-eastern Pacific Ocean assessed with single nucleotide polymorphisms (SNPs): applications to fishery management. North American Journal of Fisheries Management 35(5): 974-987. doi: 10.1080/02755947.2015.1055014

Templin, B. 2024. Alaska Hatchery Interactions Research: Overview of results and products. Alaska Board of Fisheries Presentation, Cordova, Alaska. Alaska Department of Fish and Game. December 10, 2024. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/pws/RC3_Tab16_Alaska_Hatchery_Interactions_Research_Overview.pdf

Thomas, M.2022. KPOR Otolith Collection Summary. Memorandum to T. Fairbanks and T. Dodson. Kodiak Regional Aquaculture Association.

Thynes, T. 2024. 2023 Southeast Alaska Salmon Escapement Summary. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/southeast/meetings/2023_southeast_salmon_escapement_handout.pdf

Vincent-Lang, D. 2024 Hatchery Statement to BOF. RC240. 2024 Upper Cook Inlet Board of Fisheries Meeting. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2023-2024/uci/rcs/rc240_Commissioner_Vincent-Lang_Hatchery%20Statement%20to%20BOF.pdf

Vincent-Lang, D. 2025. Statement regarding the Northern Southeast Outside Summer Run Chum Salmon Stock of Concern Action Plan. RC090. 2025 Southeast Alaska Board of Fisheries Meeting. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/se/rcs/rc090_Commissioner_Vincent-Lang_Re_Northern_SE_Outside_Summer_Run_Chum.pdf

Weber, N. L. 2021. A seasonal summary of Kodiak Pink and Chum Salmon otolith recovery monitoring project for 2020. Kodiak Regional Aquaculture Association Report 21-03.

Weber, N. L. 2022. A seasonal summary of Kodiak Pink and Chum Salmon otolith recovery monitoring project for 2021. Kodiak Regional Aquaculture Association Report 22-03.

Wertheimer, A.C., Smoker, W.W., Joyce, T.L. and W.R. Heard. 2001. Comment: A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska. Transactions of the American Fisheries Society, V. 130, pp. 712-720.

13.	**Where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity.**
	Wilson, L. 2022. Alaska salmon fisheries enhancement annual report 2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J22-02, Juneau. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-02.pdf Wilson L. 2023. Alaska Salmon Fisheries Enhancement Annual Report 2022. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2023.04.pdf Wilson L. 2024. Alaska Salmon Fisheries Enhancement Annual Report 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2024.05.pdf
Statement of consistency to the RFM Fishery Standard	Overall, management of Alaska's Commercial salmon fishery and stock enhancement programs considers the genetic diversity of wild salmon populations and the integrity of natural ecosystems. A single Minor Non-conformance is closed 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. **The fishery continues to conform to the requirements of Fundamental Clause 13 of the RFM Fishery Standard**

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

Minor non-conformance open as of the 3rd audit was closed as scheduled in this the 4th annual audit as follows.

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.
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
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 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.

Year 4 (2024)

Work to mark Kodiak hatchery production and assess hatchery contributions is documented in a series of reports produced from 2020 through 2024 (Weber 2021, 2022; Thomas 2022; Dodson 2023, 2024).

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 completion of project reports summarizing otolith marking, sampling, and analyses, the client action plan has been successfully completed and this minor non-conformance is closed.

Non-conformance 1 (of 1)	
Non-conformance status:	Closed – following surveillance audit 4.

8.2 Progress against open non-conformances

A minor non-conformance open as of the 3rd audit was closed as scheduled in this the 4th annual audit as described above.

8.3 New non-conformances

None identified.

8.4 New or revised corrective action plans

Not applicable.

8.5 Proposed surveillance activities

The fishery is undergoing reassessment which will identify future surveillance activities.

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.

10 References

2016 Annual Report. ADF&G Division of Subsistence, Technical Paper No. 446. Juneau. http://www.adfg.alaska.gov/techpap/TP446.pdf

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

ADF&G. 2004. Escapement goal review of select AYK Region salmon stocks. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A04-01, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS15-08.pdf

ADFG. 2018. State of Alaska hatchery research project: A study of the interactions between hatchery and natural pink and Chum Salmon in Southeast Alaska and Prince William Sound. Progress synopsis. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/alaska_hatchery_research_project_synopsis_june_2018.pdf

ADFG. 2019. 2019–2021 Southeast Alaska and Yakutat Commercial Salmon Fishing Regulations. ADFG. Juneau. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2019_2021_cf_se_yakutat_salmon_regs.pdf

ADFG. 2020. 2020–2022 Cook Inlet Area Commercial Salmon Fishing Regulations. ADFG Juneau. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2020_2022_cf_cook_inlet_salmon.pdf

ADFG. 2022. 2022–2025. Southeast Alaska and Yakutat Commercial Salmon Fishing Regulations. ADFG. Juneau. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/cf_se_yakutat_salmon_regs_2022_2025.pdf

ADFG. 2022. State of Alaska Hatchery Research Project: A study of the interactions between hatchery and natural pink and chum salmon in Southeast Alaska and Prince William Sound streams Progress Synopsis May 2022. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/ak_hatchery_research_project_synopsis_2022.pdf

ADFG. 2024. 2024–2027 Cook Inlet Area Commercial Salmon Fishing Regulations. ADFG Juneau. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/2024_2027_cf_cook_inlet_salmon.pdf

ADFG-SF. 2015. Alaska Dept. Fish and Game Division of Sport Fish strategic plan 2015-2020. ADFG. Juneau. https://www.adfg.alaska.gov/static/fishing/PDFs/sport/StrategicPlan2015Final.pdf

ADFG-SF. 2022. Alaska Dept. Fish and Game Division of Sport Fish strategic plan 2022-2027. ADFG. Juneau. https://www.adfg.alaska.gov/static/fishing/PDFs/sport/Strategic_Plan_2022.pdf

Adkison, M. 2010. Models of the effects of marine-derived nutrients on salmon (Oncorhynchus spp.) population dynamics. Canadian Journal of Fisheries and Aquatic Sciences. 67(1). https://www.researchgate.net/publication/237153378_Models_of_the_effects_of_marine-derived_nutrients_on_salmon_Oncorhynchus_spp_population_dynamics

Akenhead, S., N. Bendriem, and J. Par [eds]. 2019. Report of the Proceedings for the IYS Workshop - First International Year of the Salmon Data Laboratory (ISDL) Workshop. Technical Report 14. NPAFC. Vancouver, B.C. Canada. https://npafc.org/technical-report/

Americus, A, B. Adams, T. Sheridan, S. Wagner. 2023. Crawfish Inlet Report to MSC/RFM Assessment Teams. Alaska Fisheries Development Foundation.

Americus, B. 2025. Update on Alaska Hatchery Salmon Production, Research and Management (2024). Report prepared by Granite Bay Biological on Behalf of the Alaska Fisheries Development Foundation with Review by the Alaska Department of Fish and Game for Marine Stewardship Council Audit of Alaska Salmon, January 6–10, 2025

Americus, B., T. Sheridan and J. Decker. 2022b. Alaska Hatchery Research Program Synthesis. Report by the Alaska Fisheries Development Foundation for MSC/RFM Sustainability Certification.

Anderson, T. J., K. Jackson, and A. E. Dorner. 2023. Kodiak Management Area Commercial Salmon Fishery Annual Management Report, 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-23.pdf

Aydin, K.Y., S.K. Gaichas, I. Ortiz, D.H. Kinzey, N. Friday. 2007. A comparison of the Bering Sea, Gulf of Alaska, and Aleutian Islands large marine ecosystems through food web modeling. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-178, 298 p https://repository.library.noaa.gov/view/noaa/22894/noaa_22894_DS1.pdf

Baer, R.T., and S.G. Honnold. 2002. A straying assessment of an introduced sockeye salmon stock on northern Afognak Island as determined by two methods of stock identification. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K02-56, Kodiak. http://www.adfg.alaska.gov/FedAidpdfs/RIR.4K.2002.56.pdf

Barclay, A. W., T. H. Dann, K. Gruenthal, and S. Gilk-Baumer. 2024. A coastwide Chum Salmon genetic baseline for Western Alaska and high-seas genetic stock identification. NPAFC Doc. 2153. 58 pp. Alaska Department of Fish and Game. https://www.npafc.org/wp-content/uploads/Public-Documents/2024/2153USA.pdf

Bernard, D. R., J. J. Hasbrouck, B. G. Bue, and R. A. Clark. 2009. Estimating risk of management error from precautionary reference points (PRPs) for non-targeted salmon stocks. Alaska Department of Fish and Game, Special Publication No. 09-09, Anchorage. http://www.sf.adfg.state.ak.us/fedaidpdfs/SP09-09.pdf

Bidlack, A., E.M. Valentine. 2009. Assessment of Gulkana Hatchery sockeye straying into Upper Copper River tributaries. Ecotrust Copper River Program. Cordova, Alaska.

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

Botz, J., H. Scannell, M. Olson, J. Morella, and R. Ertz. 2024. 2023 Prince William Sound Area Finfish Management Report. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-15.pdf

Brenner, R.E., S.D. Moffitt, W.S. Grant. 2012. Straying of hatchery salmon in Prince William Sound, Alaska. Environmental Biology of Fishes:1–17. http://dx.doi.org/10.1007/s10641-012-9975-7

Brenner, R.E., S.J. Donnellan, A.R. Munro, editors. 2022. Run forecasts and harvest projections for 2022 Alaska salmon fisheries and review of the 2021 season. Alaska Department of Fish and Game, Special Publication No.22-11, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP22-11.pdf

Brenner, R.E., S.J. Larsen, A.R. Munro, A.M. Carroll, editors. 2021. Run forecasts and harvest projections for 2021 Alaska salmon fisheries and review of the 2020 season. Alaska Department of Fish and Game, Special Publication No. 21-07, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP21-07.pdf

Brewster, B. P. 2016. Aquatic studies at the Kensington Gold Mine, 2015. ADFG Tech Rept. 16-03. Douglas Ak. http://www.adfg.alaska.gov/static/home/library/pdfs/habit/16_03.pdf

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

Burgner, R. L., C. J. D. Costanzo, R. J. Ellis, G. Y. Harry, Jr., W. L. Hartman, O. E. Kerns, Jr., O. A. Mathison and W. F. Royce. 1969. Biological studies and estimates of optimum escapements of Sockeye Salmon in the major river systems of Southwestern Alaska. Fishery Bulletin 67: 405–459. https://www.st.nmfs.noaa.gov/spo/FishBull/fcontentarchive2.htm

Burwen, D. L., S. J. Fleischman and J. D. Miller. 2010. Accuracy and precision of manual fish length measurements from DIDSON sonar images. Transactions of the American Fisheries Society, 139:1306-1314. https://www.tandfonline.com/doi/abs/10.1577/T09-173.1

Carlson, S. R., K. E. Tarbox, B. G. Bue. 1999. The Kenai Sockeye Salmon Simulation Model: A Tool for Evaluating Escapement and Harvest Levels. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A99-08, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/RIR.2A.1999.08.pdf

Cheng, W., C. Habicht, W. D. Templin, Z. D. Grauvogel, and A. J. Gharrett. 2019. Population structure of Pink Salmon from Prince William Sound, Alaska. Alaska Department of Fish and Game. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2019.03.07_ahrp_pink_population_structure.pdf

Cheng, W., C. Habicht, W. D. Templin, Z. D. Grauvogel, and A. J. Gharrett. 2022. Effects of hatchery strays on population structure of Pink Salmon from Prince William Sound, Alaska. American Fisheries Society 2022 National Meeting. Alaska Department of Fish and Game.

Cheng, W., C. Habicht, W.D. Templin, Z.D. Grauvogel, S.D. Moffit, R.E. Brenner, R.P. Josephson, A.J. Garrett. 2016. Population Genetic Structure of Odd-Year Pink Salmon from Prince William Sound Based on a Single Year (2013). https://www.adfg.alaska.gov/static f/fishing/PDFs/hatcheries/research/population_genetic_structure_odd year_pink_pws_2013.pdf

CIRPT (Cook Inlet Regional Planning Team). 2007. Cook Inlet Regional Salmon Enhancement Planning Phase II Plan: 2006-2025. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/plans/ci_salmonenhancement_p2_2006-2025.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

Clark, R. A. 2005. Stock status and recommended escapement goals for Coho Salmon in selected waters along the Juneau road system, 1981-2004. Alaska Department of Fish and Game, Special Publication No. 05-21, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/sp05-21.pdf

Clark, R. A., D. M. Eggers, A. R. Munro, S. J. Fleischman, B. G. Bue, and J. J. Hasbrouck. 2014. An evaluation of the percentile approach for establishing Sustainable Escapement Goals in lieu of stock productivity information. Alaska Department of Fish and Game, Fishery Manuscript No. 14-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS14-06.pdf

Clark, S.C., T.L. Tanner, S.A. Sethi, K.T. Bentley and D.E. Schindler. 2015. Migration timing of adult Chinook salmon into the Togiak River, Alaska, watershed: is there evidence for stock structure? Transactions of the American Fisheries Society 144: 829-836. https://www.tandfonline.com/doi/abs/10.1080/00028487.2015.1031281

Conrad, S., and T. Thynes. 2024. 2024 Overview of the 2023 Southeast Alaska and Yakutat Commercial, Personal Use, and Subsistence Salmon Fisheries. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-19.pdf

Cooney, R. T., J. R. Allen, M. A. Bishop, D. L. Eslinger, T. Kline, B. L. Norcross, et al. 2001a. Ecosystem controls of juvenile Pink Salmon (Oncorhynchus gorbuscha) and Pacific herring (Clupea pallasi) populations in Prince William Sound, Alaska. Fish. Oceanog. 10(Suppl. 1):1-13.

Cunningham, C.J., P.A.H. Westley, and M.D. Adkison. (2018). "Signals of large-scale climate drivers, hatchery enhancement, and marine factors in Yukon River Chinook salmon survival revealed with a Bayesian life history model". Global Change Biology. 24(9):4399–4416. https://doi.org/10.1111/gcb.14315

Davis, B., and B. Burkett. 1989. Background of the genetic policy of the Alaska Department of Fish and Game. Fisheries Rehabilitation, Enhancement and Development Report No. 95. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau.

Davis, B., B. Allee, D. Amend, B. Bachen, B. Davidson, T. Gharrett, S. Marshall, A. Wertheimer. 1985. Genetic policy. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement and Development, Juneau. http://www.adfg.alaska.gov/FedAidPDFs/FRED.GeneticsPolicy.1985.pdf

Dodson, T. T. 2023. A Seasonal Summary of the Kodiak Pink and Chum Salmon Otolith Recovery Monitoring Project for 2022. Kodiak Regional Aquaculture Association Report 23-05.

Dodson, T. T. 2024. A Seasonal Summary of the Kodiak Pink and Chum Salmon Otolith Recovery Monitoring Project for 2023. Kodiak Regional Aquaculture Association Report No. 24-03.

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

Dupuis A, Tydingco T, Thynes T, Fowler P, Vercessi L. 2023 NSRAA Little Port Walter Hatchery Management Feasibility Analysis. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/license/hatcheries/pdfs/2024_lpw_mgt_feasibility_analy sis.pdf

Dupuis, A. W., T. M. Fish, A. M. Walloch, A. W. Piston, and T. A. Tydingco. 2024. DRAFT: Northern Southeast Outside Chum Salmon Stock Status and Action Plan. 2025. Alaska Dept. Fish and Game, Report to Alaska Board of Fisheries, Douglas, AK. https://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.proposalbook

Eggers, D. M., and S. C. Heinl. 2008. Chum salmon stock status and escapement goals in Southeast Alaska. Alaska Department of Fish and Game, Special Publication No. 08-19, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/sp08-19.pdf

Elison, T., A. Tiernan, T. Sands, S. Vega, and P. Stacey. 2024. 2023 Bristol Bay annual management report. Alaska Department of Fish and Game, Fishery Management Report No. 24-11, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-11.pdf

Eller, J. J. 2018. Policy Analysis: Alaska's Salmon Hatcheries. Master's Thesis. University of Montana, Missoula.

Erickson, J. W., C. E. Brazil, X. Zhang, T. R. McKinley, and R. A. Clark. 2015. Review of salmon escapement goals in Bristol Bay, Alaska, 2015. Alaska Department of Fish and Game, Fishery Manuscript Series No 15-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS15-06.pdf

Evenson, D.F., C. Habicht, M. Stopha, A.R. Munro, T.R. Meyers, W.D. Templin. 2018. Salmon hatcheries in Alaska – A review of the implementation of plans, permits, and policies designed to provide protection for wild stocks. Alaska Department of Fish and Game, Special Publication No. 18-12, Anchorage. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/ws/SP18-12.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

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/

Farrow, K., A. Brinson, K. Wallimo and D. K. Lew. 2016. Environmental attitudes in the aftermath of the Gulf Oil Spill. Ocean Coastal Manage. 119:128-134. http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=153.5&context=usdeptcommercepub

Finkle, H., K. L. Schaberg, M. B. Foster, and T. Polum. 2022a. Review of salmon escapement goals in the Chignik Management Area, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 22-05, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-05.pdf

Finkle, H., K. L. Schaberg, M. B. Foster, M. L. Wattum, and T. Polum. 2022b. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 22-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-06.pdf

Flannery BG, Loges RG, Wenburg JK (2021) Microsatellite Variation in Yukon River Coho Salmon: Population Structure and Application to Mixed-Stock Analysis. North American Journal of Fisheries Management 41, 1408-1422. https://www.fws.gov/node/268043

Foster, M. B., T. B. Polum, M. L. Wattum, E. K. C. Fox, T. R. McKinley, K. L. Schaberg, and H. Finkle. 2023. Review of salmon escapement goals in the Kodiak Management Area, 2022. Alaska Department of Fish and Game, Fishery Manuscript No. 23-03, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS23-03.pdf

Gilk-Baumer, S., and W. D. Templin. 2019. Population structure of chum salmon in Prince William Sound and Southeast Alaska.http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2019.03.07_ahrp_chum_population_s_tructure.pdf

Grant, W. S. 2012. Understanding the adaptive consequences of hatchery-wild interactions in Alaska Salmon. Environmental Biology of Fishes 94(1):325-342.

GTC (Global Trust Certification). Alaska Responsible Fisheries Management Certification – Fill 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

Guthrie, C. M. III, Hv. T. Nguyen, K. Karpan, J. T. Watson, and W. A. Larson. 2021. Genetic Stock Composition Analysis of the Chinook Salmon (Oncorhynchus tshawytscha) Bycatch from the 2019 Bering Sea Pollock Trawl. NMFS. Technical Memorandum NMFS-AFSC-418. https://repository.library.noaa.gov/view/noaa/29539

Habicht, C., C. T. Smith, A. Barclay, H. Hoyt, K. Turnquist, and W. A. Larson. 2019. Discriminating among Pacific salmon, Rainbow Trout, and Atlantic Salmon species using commonly available genetic screening methods. Journal of Fish and Wildlife Management: Volume 10, Issue 1. https://www.fwspubs.org/doi/pdf/10.3996/052018-JFWM-038

Habicht, C., S. Gilk-Baumer, and A. Barclay. 2022. Population structure of Chum Salmon in Prince William Sound and Southeast Alaska. Hatchery Research Annual Informational Meeting. Alaska Department of Fish and Game.

Habicht, C., Simpson, E.M. and J.E. Seeb. 2000. Broodstock acquisition and release sites for hatcheries producing Pink Salmon in Prince William Sound. ADF&G, Department of Commercial Fisheries Regional Information Report 5J00-07. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2000.07.pdf

Habicht, C., T.M. Tobias, G. Fandrei, N. Webber, B. Lewis, W.S. Grant. 2013. Homing of sockeye salmon within Hidden Lake, Alaska, can be used to achieve hatchery management goals. North American Journal of Fisheries Management 33(6):777–782. https://doi.org/10.1080/02755947.2013.808290

Haeseker, S.L., R. M. Peterman, Z. Su, C.C. Wood. 2005. Retrospective evaluation of preseason forecasting models for pink salmon. North American Journal of Fisheries Management, 25(3), 897-918. https://doi.org/10.1577/M04-085.1

Hamazaki, T. 2021. Stock-specific run and escapement of Yukon River Chinook salmon 1981–2019. Alaska Department of Fish and Game, Fishery Data Series No. 21-15, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FDS21-15.pdf

Heinl, S. C., E. L. Jones III, A. W. Piston, P. J. Richards, J. T. Priest, J. A. Bednarski, B. W. Elliott, S. E. Miller, R. E. Brenner, and J. V. Nichols. 2021. Review of salmon escapement goals in Southeast Alaska, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 21-03, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS21-03.pdf

Hilborn, R. and D. Eggers. 2000. A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska. Transactions of the American Fisheries Society, V. 129, pp. 333-350. http://www.adfg.alaska.gov/FedAidPDFs/CFPP.173.Hilborn.2000.pdf

Hilborn, R. and D. Eggers. 2001. A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska: Response to comment. Transactions of the American Fisheries Society, V. 130, pp. 720-724.

Hilborn, R., and C. J. Walters. 1992. Quantitative fisheries stock assessment: Choice, dynamics and uncertainty. Chapman and Hall, New York https://www.springer.com/gp/book/9780412022715

Hollowell, G. 2024. 2024 Lower Cook Inlet Commercial Salmon Fishery Season Summary. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/applications/dcfnewsrelease/1645875233.pdf

Hollowell, G., and T. Otis. 2019. Thermally marked Pink Salmon in selected Lower Cook Inlet streams, 2014-2018. Alaska Department of Fish and Wildlife to the Alaska Board of Fisheries. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/hc/or3.pdf

Hollowell, G., E. O. Otis, and E. Ford. 2024. 2023 Lower Cook Inlet Area Salmon Annual Management Report. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/FMR24-18.pdf

Hollowell, G., E. Otis and E. Ford. 2023. 2022 Lower Cook Inlet area salmon annual management report. Alaska Department of Fish and Game Fishery Management Report 23-04. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-04.pdf

Hollowell, G., E.O. Otis, E. Ford. 2017. 2016 Lower Cook Inlet area finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 17-26, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMR17-26.pdf

IFC (Intertek Fisheries Certification). 2015. First Annual Surveillance Report Alaska Salmon Fishery. February 2015. Marine Stewardship Council. London UK.

IMM (Intertek Moody Marine). 2013. Alaska Salmon Fishery Final Determination Report. October 2013. Marine Stewardship Council. London UK. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

Jasper, J., C. Habicht, S. Moffitt, R. Brenner, J. Marsh, B. Lewis, E. Fox, Z. Grauvogel, S. D. Rogers Olive, and W. S. Grant. 2013. Source-sink estimates of genetic introgression show influence of hatchery strays on wild Chum Salmon populations in Prince William Sound, Alaska. PLoS ONE 8(12):e81916.

Johnson, R. 2021. Chignik Management Area commercial salmon fishery harvest strategy, 2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K21-06, Kodiak. https://www.adfg.alaska.gov/FedAidPDFs/RIR.4K.2021.06.pdf

Josephson, R., A. Wertheimer, D. Gaudet, E.E. Knudsen, B. Adams, D.R. Bernard, W.D. Templin. 2021. Proportions of Hatchery Fish in Escapements of Summer-Run Chum Salmon in Southeast Alaska, 2013–2015. North American Journal of Fisheries Management 41(3): 724-738. https://doi.org/10.1002/nafm.10580

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

Joy, P. J., S. B. Haught, R. E. Brenner, S. Miller, J. W. Erickson, J. W. Savereide, and T. R. McKinley. 2021. Escapement goal review of Copper and Bering Rivers and Prince William Sound Pacific salmon stocks, 2020. Alaska Department of Fish and Game, Fishery Manuscript No. 21-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS21-02.pdf

Knapp, G. 2011. Local permit ownership in Alaska salmon fisheries. Marine Policy 35(5) pgs. 658-666. https://www.semanticscholar.org/paper/Local-permit-ownership-in-Alaska-salmon-fisheries-Knapp/11585d74a42c486c4fc9d62e970552f1f486fbc9

Knudsen, E., and eight coauthors. 2015a. Interactions of Wild and Hatchery Pink Salmon and Chum Salmon in Prince William Sound and Southeast Alaska, Progress Report for 2013. Prince William Sound Science Center, Sitka Sound Science Center, and D. R. Bernard Consulting report to the Alaska Department of Fish and Game.

Knudsen, E., and eight coauthors. 2015b. Interactions of Wild and Hatchery Pink Salmon and Chum Salmon in Prince William Sound and Southeast Alaska, Progress Report for 2014. Prince William Sound Science Center, Sitka Sound Science Center, and D. R. Bernard Consulting report to the Alaska Department of Fish and Game.

Knudsen, E., and eight coauthors. 2016. Interactions of Wild and Hatchery Pink Salmon and Chum Salmon in Prince William Sound and Southeast Alaska, Progress Report for 2015. Prince William Sound Science Center, Sitka Sound Science Center, and D. R. Bernard Consulting report to the Alaska Department of Fish and Game.

Knudsen, E.E., P.S. Rand, K.B. Gorman, D.R. Bernard, W.D. Templin. 2021. Hatchery-origin stray rates and total run characteristics for Pink Salmon and Chum Salmon returning to Prince William Sound, Alaska in 2013-2015. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 13:58-85. http://dx.doi.org/10.1002/mcf2.10134

Koenings, J. P. and G. B. Kyle. 1997. Consequences to juvenile Sockeye Salmon and the zooplankton community resulting from intense predation. Alaska Fishery Research Bulletin 4(2): 120–135. http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/koenv4n2.pdf

Koenings, J. P. and R. D. Burkett. 1987. Population characteristics of Sockeye Salmon (Oncorhynchus nerka) smolts relative to temperature regimes, euphotic volume, fry density, and forage base within Alaskan lakes. Pages 216– 234 [In] H. D. Smith, L. Margolis and C. C. Wood, editors. Sockeye Salmon (Oncorhynchus nerka) population biology and future management. Canadian Special Publications of Fisheries and Aquatic Science No. 96, Ottawa. http://publications.gc.ca/collections/collection_2016/mpo-dfo/Fs41-31-96-eng.pdf

Kondzela, C. M., J. A. Whittle, D. Yates, S. C. Vulstek, H. T.Nguyen and J. R. Guyon. 2016. Genetic stock composition analysis of chum salmon from the prohibited species catch of the 2014 Bering Sea walleye pollock trawl fishery and Gulf of Alaska groundfish fisheries. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-314, 49 p. https://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-314.pdf

Lescak, E., K. Shedd, and T. H. Dann, H. A. Hoyt, D. J. Prince and C. Habicht. 2019. Relative fitness of hatchery and natural Pink Salmon in Hogan Bay, Prince William Sound, Alaska. Alaska Department of Fish and Game final report. North Pacific Research Board Project 1619. http://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2016_nprb_final_report.pdf

Lewis, B., Botz, J., Brenner, R., Moffitt, S., Hollowell, G., Gray, D., Regnart, J., Palmer, S., Farrington, C. and B. White. 2009. Alaska Department of Fish and Game internal review of Prince William Sound Aquaculture Corporation. ADF&G, Special Publication 09-10, Anchorage. 207 pp.

Lewis, B., W. S. Grant, R. E. Brenner, and T. Hamazaki. 2015. Changes in size and age of Chinook Salmon Onchorynchus tshawytscha returning to Alaska. PLoSONE10(6):e0130184.doi:10.1371/ journal.pone.0130184.

Liller, Z. W., and J. W. Savereide. 2022. Escapement goal review for select Arctic–Yukon–Kuskokwim Region salmon stocks, 2023. Alaska Department of Fish and Game, Fishery Manuscript No. 22-08, Anchorage. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2022-2023/ayk/FMS22-08.pdf

Lincoln, A.E., R. Hilborn, A.J. Wirsing, and T.P. Quinn. 2020. Managing salmon for wildlife: Do fisheries limit salmon consumption by bears in small Alaskan streams? Ecol App. . 2020 Apr;30(3). https://pubmed.ncbi.nlm.nih.gov/31863535/

Loewen, M., and N. Baechler. 2014. The 2014 Chignik River sockeye salmon smolt outmigration: an analysis of the population and lake rearing conditions. Alaska Department of Fish and Game, Fishery Data Series No. 1502, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FDS15-02.pdf

Manly, B. 2006. Incidental Catch and Interactions of Marine Mammals and Birds in the Cook Inlet Salmon Driftnet and Setnet Fisheries, 1999-2000 EcoSystems Technology Inc. 2003 Central Avenue, Cheyenne, Wyoming 82001. Available from NOAA, Juneau. https://www.fisheries.noaa.gov/resource/document/incidental-catch-and-interactions-marine-mammals-and-birds-cook-inlet-salmon

Manly, B. 2007. Incidental Take and Interactions of Marine Mammals and Birds in the Kodiak Island Salmon Set Gillnet Fishery, 2002 and 2005. Western EcoSystems Technology Inc., Cheyenne, Wyoming. Available from NOOA Juneau. https://www.fisheries.noaa.gov/resource/document/incidental-take-and-interactions-marine-mammals-and-birds-kodiak-island-salmon

Manly, B. 2009. Incidental take and interactions of marine mammals and birds in the Yakutat salmon set gillnet fishery, 2007 and 2008. Western Ecosystems Technology Inc., Cheyenne, Wyoming. Available from NOAA

Juneau https://www.fisheries.noaa.gov/resource/document/incidental-take-and-interactions-marine-mammals-and-birds-yakutat-salmon-setnet

Manly, B. 2014. Incidental takes and interactions of marine mammals and birds in District 6, 7, and 8 Southeast Alaska drift gillnet fishery 2012 and 2013. Western EcoSystems Technology, Inc. Laramie WY. https://alaskafisheries.noaa.gov/sites/default/files/incidentaltakes2012-2013.pdf

Manly, B. 2015. Incidental Takes and Interactions of Marine Mammals and Birds in Districts 6, 7 and 8 of the Southeast Alaska Salmon Drift Gillnet Fishery, 2012 and 2013. Western EcoSystems Technology Inc. Laramie, Wyoming. Available from NOAA. Juneau Ak. https://www.fisheries.noaa.gov/resource/document/incidental-takes-and-interactions-marine-mammals-and-birds-districts-6-7-and-8

Matter, A. N., and M. Tyers. 2019. Chinook salmon escapement in the Chena and Salcha Rivers and Coho salmon escapement in the Delta Clearwater River, 2019-2023. Alaska Department of Fish and Game, Regional Operational Plan ROP.SF.3F.2019.03, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/ROP.SF.3F.2016.07.pdf

May, S. A., K. R. Shedd, K. M. Gruenthal, J. J. Hard, W. D. Templin, C. D. Waters, M. D. Adkison, E. J. Ward, C. Habicht, L. I. Wilson, A. C. Wertheimer, P. A. H Westley. 2024. Salmon hatchery strays can demographically boost wild populations at the cost of diversity: quantitative genetic modelling of Alaska Pink Salmon. Royal Society open science 11:240455. https://doi.org/10.1098/rsos.240455

May, S. A., K. R. Shedd, P. S. Rand, and P. A. H. Westley. 2023. Tidal gradients, fine-scale homing and a potential cryptic ecotype of wild spawning Pink Salmon (Oncorhynchus gorbuscha). Molecular ecology 32:5838–5848. https://doi.org/10.22541/au.168302763.38136079/v1

McCarrel, A., R. Heintz, C. Gray, L. Bell and Z. Danielson. 2023. Interactions of Wild and Hatchery Chum Salmon in Southeast Alaska. Sitka Sound Science Center report to the Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/research/2023_chum_report_01212024.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

McDowell Group. 2015. The economic impact of the seafood industry in South Central Alaska. Mc Dowell Group. Glacier Hwy. Suite 201. Juneau AK.

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

McKinley, T. R., J. W. Erickson, T. Eskelin, N. DeCovich, and H. Hamazaki. 2024. Review of salmon escapement goals in Upper Cook Inlet, Alaska, 2023. Alaska Department of Fish and Game, Fishery Manuscript No. 24-01, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-01.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

McKinnell, S., W. Stanbury, and V. Radchenko. 2024. Salmon in a Rapidly Changing World: Synthesis of the International Year of the Salmon and a Roadmap to 2030. N. Pac. Anadr. Fish Comm. Bull. 7. 93 pp. https://www.npafc.org/bulletin-7/

McMahon, J. 2021. Ocean and stream ecology of adult hatchery and wild Pink Salmon. MSc Thesis. University of Alaska Fairbanks. http://hdl.handle.net/11122/12626

McMahon, J., S. A. May, P. S. Rand, K. B. Gorman, M. V. McPhee, and P. A. H. Westley. 2025. Phenotypic Sorting of Pink Salmon Hatchery Strays May Alleviate Adverse Impacts of Reduced Variation in Fitness-Associated Traits. Ecology and Evolution 15(1). https://doi.org/10.1002/ece3.70781

Miller, S.E., J.M. Murphy, S.C. Heinl, A.W. Piston, E.A. Fergusson, R.E. Brenner, W.W. Strasburger, J.H. Moss, 2022. Southeast Alaska Pink Salmon Forecasting Models. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-03.pdf

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 Fisheries Research and Education Agency. https://npafc.org/wp-content/uploads/Public-Documents/2021/1961Japan.pdf

Morella, J. R., R. M. Ertz, J. W. Erickson, J. W. Savereide, A. N. Matter, and T. R. McKinley. 2024. Escapement goal review of Copper and Bering Rivers, and Prince William Sound Pacific salmon stocks, 2024. Alaska Department of Fish and Game, Fishery Manuscript No. 24-03, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-03.pdf

MRAG Americas 2017. MSC final report and determination for Alaska Salmon – Prince William Sound scope extension assessment. MRAG Americas. Seattle. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

MRAG Americas. 2019. Marine Stewardship Council 3rd Reassessment Report, Alaska Salmon Fishery, Final Report and Determination. MRAG Americas, Inc.. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

MRAG. 2024. Marine Stewardship Council 4th Reassessment Report, Alaska Salmon Fishery, Final Report and Determination. MRAG Americas, Inc. https://fisheries.msc.org/en/fisheries/alaska-salmon/@@assessments

Mueter, F. J., R. M. Peterman, and B. J. Pyper. 2002. Opposite effects of ocean temperature on survival rates of 120 stocks of Pacific salmon (Oncorhynchus spp.) in northern and southern areas. Canadian Journal of Fisheries and Aquatic Science 59(3):456-463 (erratum 60:757).

Munro, A. R. 2023. Summary of Pacific Salmon Escapement Goals in Alaska with a Review of Escapements from 2014 to 2022. Alaska Department of Fish and Game. Fishery Manuscript Series 23-01. https://www.adfg.alaska.gov/FedAidPDFs/FMS23-01.pdf

Munro, A. R., and E. C. Volk. 2015. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2006 to 2014. Alaska Department of Fish and Game, Fishery Manuscript Series No. 1534, Anchorage http://www.adfg.alaska.gov/FedAidPDFs/FMS15-04.pdf

Munro, A. R., and R. E. Brenner. 2022. Summary of Pacific salmon escapement goals in Alaska with a review of escapements from 2013 to 2021. Alaska Department of Fish and Game, Fishery Manuscript Series No.22-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FMS22-02.pdf

Munro, A.R. 2024. Summary of Alaska's 2023 Pacific salmon escapement and commercial harvest. NPAFC Doc. 2152. 13 pp. Alaska Department of Fish and Game (https://npafc.org).

Murphy, J., K. Howard, J. Gann, K. Cecile, W. Templin and C. Gutherie III. 2017. Juvenile Chinook Salmon abundance in the Northern Bering Sea: Implications for future returns and fisheries in the Yukon River. Deep Sea research Par II: Topical Studies in Oceanography. Vol 135 Pgs. 156-167. https://www.sciencedirect.com/science/article/abs/pii/S0967064516301618

Murphy, J.M., E.A. Fergusson, A. Piston, S. Heinl, A. Gray, E. Farley. 2019. Southeast Alaska pink salmon growth and harvest forecast models. North Pacific Anadromous Fish Commission Technical Report No. 15:75–81, Vancouver, Canada. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2021-2022/se/SP20-09.pdf

Musslewhite, J. 2011a. An evaluation of the Kitoi Bay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J11-01, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2011.01.pdf

Musslewhite, J. 2011b. An evaluation of the Pillar Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J11-02, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2011.02.pdf

Muto, M.M., V. T. Helker, R. P. Angliss, P. L. Boveng, J. M. Breiwick, M. F. Cameron, P. J. Clapham, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Shelden, K. L. Sweeney, R. G. Towell, P. R. Wade, Waite, J. M., and A. N. Zerbini. 2019. Alaska Marine Mammal Stock Assessments, 2018. NOAA Technical Memorandum NMFS-AFSC-393. https://repository.library.noaa.gov/view/noaa/20606

Nelson P. A., M. J. Witteveen, S. G. Honnold, I. Vining and J. J. Hasbrouck. 2005. Review of salmon escapement goals in the Kodiak Management Area. Alaska Department of Fish and Game, Fishery Manuscript No. 05-05, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/fms05-05.pdf

Nelson, P. A., J. J. Hasbrouck, M. J. Witteveen, K. A. Bouwens and I. Vining. 2006. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas. Report to the Alaska Board of Fisheries, 2004. Alaska Department of Fish and Game, Fishery Manuscript No. 06-03, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/FMS09-09.pdf

NOAA (National Oceanic and Atmospheric Administration). 1980. Environmental Assessment of the Alaskan Continental Shelf. Northeast Gulf of Alaska Interim Synthesis Report. https://repository.library.noaa.gov/view/noaa/2752/noaa_2752_DS1.pdf

NOAA (National Oceanic and Atmospheric Administration). 2024. Consultation on the Delegation of Management Authority for Specified Salmon Fisheries and Federal Funding to the State of Alaska to Implement the 2019 Pacific Salmon Treaty Agreement. https://www.fisheries.noaa.gov/s3//2024-10/akro-salmon-biop.pdf

NOAA (National Oceanic and Atmospheric Administration). 2024. DRAFT ENVIRONMENTAL IMPACT STATEMENT Issuance of an Incidental Take Statement under the Endangered Species Act for Salmon Fisheries in Southeast Alaska Subject to the Pacific Salmon Treaty and Funding to the State of Alaska to Implement the 2019 Pacific Salmon Treaty Agreement. https://www.fisheries.noaa.gov/s3/2024-01/NMFS-DEIS-Southeast-Alaska-Salmon-Fisheries-ITS-508-publish.pdf

NOAA (National Oceanic and Atmospheric Administration). 2024. Environmental Impact Statement for the Issuance of an Incidental Take Statement Under the Endangered Species Act for Salmon Fisheries in Southeast Alaska Subject to the Pacific Salmon Treaty and Funding to the State of Alaska. https://www.fisheries.noaa.gov/resource/document/environmental-impact-statement-issuance-incidental-take-statement-under

NOAA. 1977. Environmental Assessment of the Environmental Shelf. Annual Reports of Principal Investigators for the year ending 1977, https://www.arlis.org/docs/vol1/OCSEAP2/Annual/OCSEAP-annual-1977-v10.pdf
NOAA. 1980. Environmental Assessment of the Alaskan Continental Shelf. Northeast Gulf of Alaska Interim Synthesis Report. https://repository.library.noaa.gov/view/noaa/2752/noaa_2752_DS1.pdf

NOAA. 2013. Biological characterization: An overview of Bristol, Nushagak, Kvichak Bays; essential fish habitat, process and species assemblages. NOAA, Ak Region. Anchorage, Ak.

https://www.fisheries.noaa.gov/resource/document/biological-characterization-overview-bristol-nushagak-and-kvichak-bays-essential

NPAFC (North Pacific Anadromous Fish Commission). 2016. Pacific Salmon and Steelhead Production in a Changing Climate: Past, Present, and Future Proceedings of the 2015 NPAFC International Symposium on Pacific Salmon and Steelhead Production in a Changing Climate: Past, Present, and Future, May 17–19, 2015. Kobe, Japan. Bulletin No. 6. https://npafc.org/bulletin/

NPAFC. 2021 Annual Report for 2021. NPAFC Suite 502.West Pender St, Vancouver , B.C. VC 3B2 Canada. https://npafc.org

NPAFC. 2022. Annual Report. N. Pac. Anadr. Fish Comm. Vancouver. https://www.npafc.org/wp-content/uploads/Public-Documents/2022/AR2022.pdf

NPFMC (North Pacific Fishery Management Council). 2024. Fishery Management Plan for the Salmon Fisheries in the EEZ off Alaska. https://www.npfmc.org/wp-content/PDFdocuments/fmp/Salmon/SalmonFMP.pdf

Otis, E. O., and G. J. Hollowell. 2023. Observations of pink and Sockeye Salmon hatchery proportions in Southern District commercial harvests, Lower Cook Inlet, 2013–2017. Alaska Department of Fish and Game, Fishery Data Series No. 23-07, Anchorage. http://www.adfg.alaska.gov/FedAidPDFs/FDS23-07.pdf

Otis, E. O., G. J. Hollowell, A. W. Barclay and X. Zhang. 2020. Recovery and analysis of thermal mark hatchery salmon otoliths in Lower Cook Inlet, 2021. Alaska Department of Fish and Game Regional Operational Plan CF.2A.2020.03. http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.2A.2020.03.pdf

Otis, E. O., G. J. Hollowell, A. W. Barclay and X. Zhang. 2021. Recovery and analysis of thermal mark hatchery salmon otoliths in Lower Cook Inlet, 2021. Alaska Department of Fish and Game Regional Operational Plan CF.2A.2021.02. http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.2A.2021.02.pdf

Otis, E. O., G. J. Hollowell, A. W. Barclay and X. Zhang. 2022. Recovery and analysis of thermal mark hatchery salmon otoliths in Lower Cook Inlet, 2022. Alaska Department of Fish and Game Regional Operational Plan CF.2A.2022.06.

Otis, E. O., G. J. Hollowell, and E. G. Ford. 2018. Observations of pink salmon hatchery proportions in selected Lower Cook Inlet escapements, 2016-2017. Alaska Department of Fish and Game Special Publication 18-11. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/ws/SP18-11.pdf

Otis, E. O., J. W. Erickson, M. D. Booz, and T. McKinley. 2023. A review of escapement goals for salmon stocks in Lower Cook Inlet, Alaska, 2023. Alaska Department of Fish and Game, Fishery Manuscript No. 23-02, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS23-02.pdf

Otis, T., and G. Hollowell. 2019. Thermally marked Pink Salmon in selected Lower Cook Inlet streams, 2014-2018. Alaska Department of Fish and Wildlife to the Alaska Board of Fisheries. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/hc/or3.pdf

Ovando, D., C. Cunningham, P. Kuriyama, C. Boatright, R. Hilborn. 2022. Improving forecasts of sockeye salmon (Oncorhynchus nerka) with parametric and nonparametric models. Canadian Journal of Fisheries and Aquatic Sciences, 99(999), pp.1-13. https://doi.org/10.1139/cjfas-2021-0287

PSC (Pacific Salmon Commission). 2023. *Thirty-Eighth Annual Report 2022/2023*. (https://www.psc.org/download/31/psc-annual-reports/15459/28th-psc-annual-report-2022-23.pdf).

Piston, A. W., and T. M. Fish. 2024. Chum salmon stock status and escapement goals in Southeast Alaska through 2023. Alaska Department of Fish and Game, Special Publication No. 24-14, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP24-14.pdf

Piston, A. W., and T. M. Fish. 2024. Pink salmon stock status and escapement goals in Southeast Alaska through 2023. Alaska Department of Fish and Game, Special Publication No. 24-16, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/SP24-16.pdf

Piston, A.W., and S.C. Heinl. 2020. Chum Salmon stock status and escapement goals in Southeast Alaska through 2019. Special Publication No. 20-10. ADF&G, Anchorage, Alaska

Piston, A.W., S.C. Heinl. 2012a. Hatchery chum salmon straying in Southeast Alaska, 2011. Alaska Department of Fish and Game, Fishery Data Series No. 12-45, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/FDS12-45.pdf

Piston, A.W., S.C. Heinl. 2012b. Hatchery chum salmon straying studies in Southeast Alaska, 2008–2010. Alaska Department of Fish and Game, Fishery Manuscript Series No. 12-01, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/FMS12-01.pdf

Priest, J. T., A. W. Piston, J. V. Nichols, E. L. Jones III, P. J. Richards, J. A. Bednarski, B. W. Elliott, and S. E. Miller. 2024. Review of salmon escapement goals in Southeast Alaska, 2024. Alaska Department of Fish and Game, Fishery Manuscript No. 24-04, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMS24-04.pdf

Prucha, R., J. Leppi, S. McAfee and W. Loya. 2013.Development and application of an integrated hydrological model to study the effects of climate change on the Chutina watershed, Alaska. US FWS. Contract report by Integrated Hydro Systems and the Wilderness Society. Anchorage Ak. https://www.arlis.org/docs/vol1/D/794294243.pdf

PSC (Pacific Salmon Commission). 2023. Thirty-ninth Annual Report 2023/2024. https://www.psc.org/download/31/psc-annual-reports/18915/39th-psc-annual-report-2023-24.pdf

PSC. 2021. Thirty-sixth Annual Report of the Pacific Salmon Commission 2020/2021. Pacific Salmon

PSC. 2023. Thirty-eighth Annual Report 2022/2023. https://www.psc.org/download/31/psc-annual-reports/15508/38th-psc-annual-report-2022-23.pdf

PSC-JCTC. 2024. Annual Report of Catch and Escapement for 2023. Pacific Salmon Commission, Vancouver, BC. https://www.psc.org/reports/tcchinook-24-01

PSC-JTCC. 2023. Annual report of catch and escapement for 202. TCCHINOOK (23)-02 Pacific Salmon Commission., Vancouver, B.C. Canada. https://www.psc.org/publications/technicalreports/technical-committee-reports/chinook/

PSC-JTCS. 2022. Annual report of catch and escapement. TCCHINOOK (22)-08 Pacific Salmon Commission., Vancouver, B.C. Canada. https://www.psc.org/publications/technical-reports/technical-committee-reports/chinook/

PSC-TCDS. 1989. Information content and standards for a coastwide coded-wire tag database. PSC Report TCDS (89) 1. Vancouver, B.C. Canada. https://www.psc.org/publications/technical-reports/technical–committee-reports/data-sharing/

PSC-TCTR. 2021. Final estimates of Transboundary River salmon production, harvest and escapement and a review of joint enhancement activities in 2019. Report TCTR (21)-03 PSC. Vancouver, B.C. Canada. https://www.psc.org/publications/technical-reports/technical-committeereports/transboundary/

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/

PSMFC (Pacific States Marine Fisheries Commission). 2020. Annual Report. https://www.psmfc.org/wp-content/uploads/2022/06/PSMFC_Annual_Report_2020.pdf

Purcell MK, Powers RL, Evered J, Kerwin J, Meyers TR, Stewart B, Winton JR. 2018. Molecular testing of adult Pacific salmon and trout (Oncorhynchus spp.) for several RNA viruses demonstrates widespread distribution of piscine orthoreovirus in Alaska and Washington. J Fish Dis. 41: 347-355 https://doi.org/10.1111/jfd.12740

Quinn, T. P., H. B. Rich, Jr., D. Gosse, and N. Schtickzelle. 2012. Population dynamics and asynchrony at fine spatial scales: A case history of Sockeye Salmon population structure in Alaska. Canadian Journal of Fisheries and Aquatic Sciences 69: 297-306.

Ream, J.T., and J. Merriam. 2017. Local and Traditional Knowledge of Stikine River Chinook Salmon: A Local Perspective on a Vital Commercial, Sport, and Subsistence Fish. ADFG Division of Subsistence, Technical Paper No. 430. http://www.adfg.alaska.gov/techpap/TP430.pdf

Ro, H., J.H. Stern, A.J. Wirsing, and T.P. Quinn. (In press 2025). Stable isotopes reveal variation in consumption of Pacific salmon by brown bears, despite ready access in small streams. Journal of Fish and Wildlife Management https://meridian.allenpress.com/jfwm/pages/Editorial_Board

Romberg, W., I. Rafferty, and M. Martz. 2018. Alaska statewide sport fish harvest survey, 2018. Alaska Department of Fish and Game, Division of Sport Fish, Regional Operational Plan ROP.SF.4A.2018.07. http://www.adfg.alaska.gov/sf/Publications/index.cfm?ADFG=main.mainSearchSubmit

Rowse, M. and S. Marshall. 1988. Estimates of catch and mortality of Chinook salmon in the 1987 Southeast Alaska purse seine fishery. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J88-18, Juneau. http://www.adfg.alaska.gov/FedAidPDFs/rir.1j.1988.18.pdf

Ruggerone, G. T., and J. R. Irvine. 2018. Numbers and Biomass of Natural- and Hatchery-Origin Pink Salmon, Chum Salmon, and Sockeye Salmon in the North Pacific Ocean, 1925–2015. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 10:152–168. https://onlinelibrary.wiley.com/doi/full/10.1002/mcf2.10023

Scannell, H., J. Botz, K. Gatt, J. Morella, J. Buza, and R. Ertz. 2023. 2021 Prince William Sound area finfish management report. Alaska Department of Fish and Game, Fishery Management Report No. 23-06, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-06.pdf

Schaberg, K. L., M. B. Foster, and A. St. Saviour. 2019. Review of salmon escapement goals in the Chignik Management Area, 2018. Alaska Department of Fish and Game, Fishery Manuscript Series No. 19-02, Anchorage. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/akpen/AR7_FMS19-02.pdf

Schelle, K., K. Iverson, N. Free-Sloan and S. Carlson. 2004. Bristol Bay salmon drift gillnet fishery optimum number report. CFEC Report 04-3N. Juneau Ak. https://www.cfec.state.ak.us/RESEARCH/04_3N.htm

Schrof, S., and S. Honnald. 2003. Salmon Enhancement, Rehabilitation and Evaluation and Monitoring Efforts Conducted in the Kodiak Management Area Through 2001. ADF&G ROR No. 4K03-41. Kodiak.

Scott, T., B. Adams, and S. Wagner. 2024. An Investigation into the Homing Patterns and Water Chemistry of Crawfish and West Crawfish Inlets Related to Hatchery Chum Production. Northern Southeast Regional Aquaculture Association (NSRAA) Technical Report.

Seibel, M., A. Davis, A., J. Kelly and J. E. Clark. 1989. Observations on Chinook salmon hook and release in the 1988 Southeast Alaska troll fishery. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J89-41, Juneau. (Not available on-line)

Shedd, K.R., E.A. Lescak, C. Habicht, E.E. Knudsen, T.H. Dann, H.A. Hoyt, D.J. Prince, W.D. Templin. 2022. Reduced relative fitness in hatchery-origin pink salmon in two streams in Prince William Sound, Alaska. Evolutionary Applications, 15(3): 429-446. https://doi.org/10.1111/eva.13356

Siddon, E. 2021. Ecosystem Status Report 2021: Eastern Bering Sea, Stock Assessment and Fishery Evaluation Report, North Pacific Fishery Management Council, 1007 West Third, Suite 400, Anchorage, Alaska 99501. https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/EBSecosys.pdf

Sill, L., G. Halas, D. Koster. 2019. Copper River Chinook salmon: the intersection of commercial fisheries and the subsistence way of life in Cordova, Alaska. ADF&G Division of Subsistence, Technical Paper No. 444. Juneau. http://www.adfg.alaska.gov/techpap/TP444.pdf

Small, M. P., S. D. Rogers Olive, L. W. Seeb, J. E. Seeb, C. E. Pascal, K. I. Warheit, and W. D. Templin. 2015. Chum Salmon genetic diversity in the north-eastern Pacific Ocean assessed with single nucleotide polymorphisms (SNPs): applications to fishery management. North American Journal of Fisheries Management 35(5): 974-987. doi: 10.1080/02755947.2015.1055014

Southwick Associates Inc. and W. J. Romberg, A. E. Bingham, G. B. Jennings and R. A. Clark. 2008. Economic impacts and contributions of sport fishing in Alaska, 2007. Alaska Department of Fish and Game, Professional Paper No. 08-01, Anchorage. http://www.adfg.alaska.gov/FedAidpdfs/PP08-01.pdf

Stanbury, W. (Editor). 2025. First workshop on developing a mechanistic understanding of the impact of a changing climate on salmon abundance and distribution trends. N. Pac. Anadr. Fish Comm. Tech. Rep. 23. 92 pp. https://doi.org/10.23849/npafctr23

Stopha, M. 2012a. An evaluation of the Port Graham salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-28, Anchorage.

Stopha, M. 2012b. An evaluation of the Trail Lakes salmon hatchery for consistency with statewide policies and prescribed management practice. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-21, Anchorage.

Stopha, M. 2013a. An evaluation of the Armin F. Koernig salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-11, Anchorage.

Stopha, M. 2013b. An evaluation of the Cannery Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-06, Anchorage.

Stopha, M. 2013c. An evaluation of the Eklutna Salmon Hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-02, Anchorage.

Stopha, M. 2013d. An evaluation of the Gulkana salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-05, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2013.05.pdf

Stopha, M. 2013e. An evaluation of the Main Bay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J13-07, Anchorage.

Stopha, M. 2013f. An evaluation of the Solomon Gulch Salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report SJ13-04, Anchorage.

Stopha, M. 2013g. An evaluation of the Wally Noerenberg Hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. SJ13-10, Anchorage.

Stopha, M. 2014a. An evaluation of the Macaulay salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Regional Information Report 5J14-03, Anchorage.

Stopha, M. 2014b. An evaluation of the Sheep Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Regional Information Report 5J14-06, Anchorage.

Stopha, M. 2014c. An evaluation of the Snettisham salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J14-01, Anchorage.

Stopha, M. 2015a. An evaluation of the Haines Projects Hatchery permit for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-01, Anchorage.

Stopha, M. 2015b. An evaluation of the Hidden Falls salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-05, Anchorage.

Stopha, M. 2015c. An evaluation of the Medvejie Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-03, Anchorage.

Stopha, M. 2015d. An evaluation of the Port Armstrong salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-06, Anchorage.

Stopha, M. 2015e. An evaluation of the Sawmill Creek salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-02, Anchorage.

Stopha, M. 2015f. An evaluation of the Sheldon Jackson salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J15-07, Anchorage.

Stopha, M. 2016a. Alaska fisheries enhancement annual report 2015. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-03, Anchorage.

Stopha, M. 2016b. An evaluation of the Klawock River salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-05, Anchorage.

Stopha, M. 2016c. An evaluation of the Port St. Nicholas salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-04, Anchorage.

Stopha, M. 2016d. An evaluation of the Whitman Lake salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J16-08, Anchorage.

Stopha, M. 2017a. An evaluation of the Burnett Inlet salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J17-01, Anchorage.

Stopha, M. 2017b. An evaluation of the Neets Bay Salmon Hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J17-02, Anchorage.

Stopha, M. 2018 Alaska Salmon Fisheries Enhancement Annual Report 2017. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2018.02.pdf

Stopha, M. 2019. Alaska salmon fisheries enhancement annual report 2018. Alaska Department of Fish and Game Regional Information Report No. 5J19-01. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2019.01.pdf

Stopha, M., and J. Musslewhite. 2012. An evaluation of the Tutka Bay Lagoon salmon hatchery for consistency with statewide policies and prescribed management practices. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J12-05, Anchorage.

Tanner, T. and S. Sethi. 2014. Estimation of Chinook salmon escapement, distribution and run Timing in the Togiak River watershed using radio telemetry, Togiak National Wildlife Refuge, Alaska, 2012. Alaska Fisheries Data Series Number 2014-11, October 2014 U.S. Fish and Wildlife Service. https://www.fws.gov/alaska/sites/default/files/pdfs/fisheries/data-series/d_2014_11.pdf

Templin, B. 2024. Alaska Hatchery Interactions Research: Overview of results and products. Alaska Board of Fisheries Presentation, Cordova, Alaska. Alaska Department of Fish and Game. December 10, 2024. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/pws/RC3_Tab16_Alaska_Hatchery_Interactions_Research_Overview.pdf

Thomas, M. 2022. KPOR Otolith Collection Summary. Kodiak Regional Aquaculture Association Memorandum to T. Fairbanks and T. Dodson. December 12, 2022.

Thynes T., A. Dupuis, D. Harris, B. Meredith, A. Piston, P. Salomone. 2021. 2021 Southeast Alaska purse seine fishery management plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 1J21-09, Douglas. https://www.adfg.alaska.gov/FedAidPDFs/RIR.1J.2021.09.pdf

Thynes, T. 2024. 2023 Southeast Alaska Salmon Escapement Summary. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/southeast/meetings/2023_southeast_salmon_escapement_handout.pdf

Thynes, T., N. Zeiser, S. Forbes, T. Kowalske, B. Meredith, and A. Dupuis. 2022. 2022 Southeast Alaska drift gillnet fishery management plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 1J22-08, Douglas. https://www.adfg.alaska.gov/FedAidPDFs/RIR.1J.2022.08.pdf

Tiernan, A., T. Elison, T. Sands, J. Head, S. Vega, and G. Neufeld. 2021. 2020 Bristol Bay annual management report. Alaska Department of Fish and Game, Fishery Management Report No. 21-16, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR21-16.pdf

Tiernan, A., T. Elison, T. Sands, J. Head, S. Vega, and P. Stacey. 2023. 2022 Bristol Bay annual management report. Alaska Department of Fish and Game, Fishery Management Report No. 23-08, Anchorage. https://www.adfg.alaska.gov/FedAidPDFs/FMR23-08.pdf

Trainor, A. B.M. McDavid, L.A. Sill, L.S. Naaktgeboren. 2019. Local traditional Knowledge of the Freshwater Life Stages of Yukon River Chinook and Chum Salmon in Anvik, Huslia, Allakaket, and Fort Yukon. ADF&G Division of Subsistence, Technical Paper No. 447. Juneau. http://www.adfg.alaska.gov/techpap/TP%20447.pdf

Turner, G.E. 1988. Codes of practice and manual of procedures for consideration of introductions and transfers of marine and freshwater organisms. EIFAC/CECPI Occasional paper No. 23 44 p. http://www.fao.org/3/ae989e/ae989e00.htm

Vega, S.L., J.M. Head, T. Hamazaki, J.W. Erickson,T.R. McKinley. 2022. Review of Salmon Escapement Goals in Bristol Bay, Alaska, 2021. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2022-2023/bb/FMS22-07.pdf

Vincent-Lang, D. 2024 Hatchery Statement to BOF. RC240. 2024 Upper Cook Inlet Board of Fisheries Meeting. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2023-2024/uci/rcs/rc240_Commissioner_Vincent-Lang_Hatchery%20Statement%20to%20BOF.pdf

Vincent-Lang, D. 2025. Statement regarding the Northern Southeast Outside Summer Run Chum Salmon Stock of Concern Action Plan. RC090. 2025 Southeast Alaska Board of Fisheries Meeting. https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2024-2025/se/rcs/rc090_Commissioner_Vincent-Lang_Re_Northern_SE_Outside_Summer_Run_Chum.pdf

Volk, E.C., S.L. Schroder, J.J. Grimm. 1999. Otolith thermal marking. Fisheries Research, 43(1-3), 205-219. https://doi.org/10.1016/S0165-7836(99)00073-9

Walsh, J.C., J.E. Pendray, S.C. Godwin, K.A. Artelle, H.K. Kindsvater, R.D. Field, J.D. Reynolds, 2020. Relationships between Pacific salmon and aquatic and terrestrial ecosystems: implications for ecosystem-based management. Ecology, 101(9), e03060. https://doi.org/10.1002/ecy.3060.

Watson B, Reimer MN, Guettabi M, Haynie A. Commercial Fisheries & Local Economies. Journal of Environmental Economics and Management. January 2021. https://doi.org/10.1016/j.jeem.2021.102419

Weber, N.L. 2021. A seasonal summary of the Kodiak pink and chum salmon otolith recovery monitoring project for 2020. Kodiak Regional Aquaculture Association Report no. 21-03. 27 pp.

Weber, N.L. 2022. A seasonal summary of the Kodiak pink and chum salmon otolith recovery monitoring project for 2021. Kodiak Regional Aquaculture Association Report no. 22-03. 27 pp.

Wendler, G. , K. Galloway and M. Stuefer. 2015. On the climate and climate change of Sitka, Southeast Alaska. Theor. Appl. Climate. 1-8. https://www.researchgate.net/publication/282539585_On_the_climate_and_climate_change_of_Sitka_Southeast_Alaska

Wertheimer, A.C., Smoker, W.W., Joyce, T.L. and W.R. Heard. 2001. Comment: A review of the hatchery programs for Pink Salmon in Prince William Sound and Kodiak Island, Alaska. Transactions of the American Fisheries Society, V. 130, pp. 712-720.

Wilson, L. 2023. Alaska Salmon Fisheries Enhancement Annual Report 2022. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2023.04.pdf

Wilson, L. 2024. Alaska Salmon Fisheries Enhancement Annual Report 2023. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2024.05.pdf

Wilson, H., J. Decker, T. Sheridan, and B. Americus. 2022. Ecological Risk Assessment: Marbled and Kittlitz's Murrelet Interactions with the Alaska Salmon Gillnet Fishery. Alaska Fisheries Development Foundation, Wrangell AK.

Wilson, L. 2022. Alaska salmon fisheries enhancement annual report 2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J20-04, Juneau.

Wilson, L. 2022. Alaska salmon fisheries enhancement annual report 2021. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J22-02, Juneau. https://www.adfg.alaska.gov/FedAidPDFs/FMS22-02.pdf .

Wipfli, M.S., J.P. Hudson, D.T. Chaloner, J.P. Caouette, 1999. Influence of salmon spawner densities on stream productivity in southeast Alaska. Canadian Journal of Fisheries and Aquatic Sciences, 56(9), 1600-1611. https://doi.org/10.1139/f99-087

Woodard, GA, DE Schindler, J Ohlberger, CJ Cunningham. (2025). Body size as a leading indicator of run size and application to in-season forecasting of sockeye salmon in Bristol Bay, Alaska. Canadian Journal of Fisheries and Aquatic Sciences 82, 1-8. https://journals.scholarsportal.info/browse/0706652x/v56i0008

Wynne, K, D. Hicks and N. Munro. 1991. 1990 Salmon gillnet fisheries observer programs in Prince William Sound and South Unimak Alaska. Final report to NOAA. Saltwater Inc. Anchorage Ak. https://www.fisheries.noaa.gov/resource/document/1990-salmon-gillnet-fisheries-observer-programs-prince-william-sound-and-south

Wynne, K.M., Hicks, D.L. and N.M. Munro. 1992. 1991 marine mammal observer program for the Salmon driftnet fishery of Prince William Sound, Alaska. Final Report, May 1, 1992. By Saltwater, Inc, for NMFS. 61 pp. http://alaskafisheries.noaa.gov/protectedresources/observers/bycatch/1991pws.pdf

11 Appendices

11.1 Appendix 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 Beamesderfer (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. Beamesderfer 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. Beamesderfer 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.