

PACIFIC REGION  
FINAL

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**INTEGRATED FISHERIES  
MANAGEMENT PLAN**

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**JUNE 1, 2021 - MAY 31, 2022**

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SALMON  
NORTHERN BC



Genus *Oncorhynchus*

Canada

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This Integrated Fisheries Management Plan is intended for general purposes only. Where there is a discrepancy between the Plan and the *Fisheries Act* and Regulations, the Act and Regulations are the final authority. A description of Areas and Subareas referenced in this Plan can be found in the *Pacific Fishery Management Area Regulations*, 2007.

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A more comprehensive list of contacts can be found online at:

<https://www.pac.dfo-mpo.gc.ca/contact-eng.html>

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Pacific Salmon Commission (PSC) Office ..... (604) 684-8081

PSC Test Fisheries (Recorded, In-Season Information) ..... (604) 666-8200

Recreational Fishing: <https://www.dfo-mpo.gc.ca/fisheries-peches/recreational-recreative/index-eng.html>

Commercial Fishing: <https://www.dfo-mpo.gc.ca/fisheries-peches/commercial-commerciale/index-eng.html>

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# INDEX OF WEB-BASED INFORMATION

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## FISHERIES AND OCEANS CANADA GENERAL INFORMATION

### MAIN PAGE

<http://www.dfo-mpo.gc.ca>

Our Vision, Latest News, Current Topics

Twitter:

DFO Pacific: [@DFO Pacific](#)

En Français: [@MPO Pacifique](#)

### ACTS, ORDERS, AND REGULATIONS

<https://www.dfo-mpo.gc.ca/acts-lois/index-eng.htm>

Atlantic Fisheries Restructuring Act, Canada Shipping Act, Coastal Fisheries Protection Act, Department of Fisheries and Oceans Act, Financial Administration Act, Fisheries Act, Fisheries Development Act, Fisheries Improvements Loan Act, Fishing and Recreational Harbours Act, Freshwater Fish Marketing Act, Great Lakes Fisheries Convention Act, Oceans Act, Species at Risk Act

### REPORTS AND PUBLICATIONS

<http://www.dfo-mpo.gc.ca/reports-rapports-eng.htm>

Administration and Enforcement of the Fish Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act*, Audit and Evaluation Reports - Audit and Evaluation Directorate, Canadian Code of Conduct for Responsible Fishing Operations, Departmental Performance Reports, Fisheries Research Documents, Standing Committee's Reports and Government responses, Sustainable Development Strategy

### WAVES

<https://science-libraries.canada.ca/eng/fisheries-oceans/>

Fisheries and Oceans Canada online library catalogue

## **PACIFIC SALMON TREATY**

<http://www.psc.org>

Background information; full text of the treaty

## **PACIFIC REGION GENERAL**

### **MAIN PAGE**

<http://www.pac.dfo-mpo.gc.ca/index-eng.html>

General information, Area information, Latest news, Current topics

### **POLICIES, REPORTS AND AGREEMENTS**

<https://www.dfo-mpo.gc.ca/about-notre-sujet/publications/fisheries-peche-eng.html>

Reports and Discussion Papers, New Directions Policy Series, Agreements

### **OCEANS PROGRAM**

<http://www.pac.dfo-mpo.gc.ca/oceans/index-eng.html>

Integrated Coastal Management; Marine Protected Areas;

Areas of Interest; Canada's Ocean Strategy; Oceans Act

## **PACIFIC REGION FISHERIES MANAGEMENT**

### **MAIN PAGE**

<http://www.dfo-mpo.gc.ca/fm-gp/index-eng.htm>

Commercial Fisheries, Aboriginal Fisheries, Recreational Fisheries, Maps, Notices and Plans, International Management, Enforcement

## **ABORIGINAL FISHERIES STRATEGY**

<http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html>

or <http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/index-eng.htm>

Aboriginal Fisheries Strategy (AFS) principles and objectives; AFS agreements; Programs; Treaty Negotiations

## **AQUACULTURE MANAGEMENT**

<http://www.pac.dfo-mpo.gc.ca/aquaculture/index-eng.html>

The new federal regulatory program for aquaculture in British Columbia; Program overview and administration, public reporting, and aquaculture science

## **RECREATIONAL FISHERIES**

<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

Fishery Regulations and Notices, Fishing Information, Recreational Fishery, Policy and Management, Contacts, Current BC Tidal Waters Sport Fishing Guide and Freshwater Supplement; Rockfish Conservation Areas, Shellfish Contamination Closures; On-line Licencing

## **COMMERCIAL FISHERIES**

<http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/comm/index-eng.htm>

Links to Groundfish, Herring, Salmon, Shellfish and New and Emerging Fisheries homepages; Selective Fishing, Test Fishing Information, Fishing Areas, Canadian Tide Tables, Fishery Management Plans, Commercial Fishery Notices (openings and closures)

## **INITIATIVE TO UPDATE THE COMMERCIAL SALMON ALLOCATION FRAMEWORK**

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/saf-crrs/index-eng.html>

Links to the Departments' consultation website which provides an overview of the process to update the Commercial Salmon Allocation Framework (CSAF), including links to summary reports and submissions with recommendations.

## **FISHERIES NOTICES**

<http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?>

Want to receive fishery notices by e-mail? If you are a recreational sport fisher, processor, multiple boat owner or re-distribute fishery notices, register your name and/or company at the web-site address above. Openings and closures, updates, and other relevant information regarding your chosen fishery are sent directly to your registered email. It's quick, it's easy and it's free.

## **INTEGRATED FISHERY MANAGEMENT PLANS**

<http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/index-eng.htm>

Current Management Plans for Groundfish, Pelagics, Shellfish (Invertebrates), Minor Finfish, Salmon; sample Licence Conditions; Archived Management Plans

## **SALMON TEST FISHERY - PACIFIC REGION**

<https://www.pac.dfo-mpo.gc.ca/pacific-smon-pacifique/science/research-recherche/testfishery-pechedessai-eng.html>

Definition, description, location and target stocks

## **LICENCING**

<http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html>

Contact information; Recreational Licencing Information, Commercial Licence Types, Commercial Licence Areas, Licence Listings, Vessel Information, Vessel Directory, Licence Statistics and Application Forms

## **NATIONAL ON-LINE LICENSING SYSTEM (NOLS)**

<https://fishing-peche.dfo-mpo.gc.ca>

E-mail: [fishing-peche@dfo-mpo.gc.ca](mailto:fishing-peche@dfo-mpo.gc.ca)

(Please include your name and the DFO Region in which you are located.)

Telephone: 1-877-535-7307

Fax: 613-990-1866

TTY: 1-800-465-7735



## **SALMON**

<https://www.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/index-eng.html>

Salmon Facts; Salmon Fisheries; Enhancement and Conservation; Research and Assessment; Consultations; Policies, Reports and Agreements; Glossary of Salmon Terms

## **FRASER RIVER/BC INTERIOR AREA RESOURCE MANAGEMENT AND STOCK ASSESSMENT**

<http://www.pac.dfo-mpo.gc.ca/fm-gp/fraser/index-eng.html>

Contact information; Test fishing and survey results (Albion, creel surveys, First Nations); Fraser River Sockeye and Pink escapement updates; Important notices; Recreational fishing information

## **NORTH COAST RESOURCE MANAGEMENT**

<http://www.pac.dfo-mpo.gc.ca/fm-gp/northcoast-cotenord/index-eng.html>

First Nations fisheries, Recreational fisheries; Commercial salmon and herring fisheries; Skeena Tyee test fishery; Counting facilities; Post-season Review; Contacts

## **YUKON/TRANSBOUNDARY RIVERS AREA MAIN PAGE**

<http://www.pac.dfo-mpo.gc.ca/yukon/index-eng.html>

Fisheries Management; Recreational fisheries; Habitat; Licencing; Contacts

## **PACIFIC REGION SALMONID ENHANCEMENT PROGRAM**

### **MAIN PAGE**

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/index-eng.html>

Publications (legislation, policy, guidelines, educational resources, brochures, newsletters and bulletins, papers and abstracts, reports); GIS maps and Data (habitat inventories, spatial data holdings, land use planning maps); Community involvement (advisors and coordinators, educational materials, habitat conservation and Stewardship Program, projects, Stream Talk).

## **PACIFIC REGION POLICY AND COMMUNICATIONS**

### **MAIN PAGE**

<http://www.pac.dfo-mpo.gc.ca/index-eng.html>

Media Releases; Salmon Updates, Backgrounders, Ministers Statements, Publications; Contacts

### **CONSULTATION SECRETARIAT**

<http://www.pac.dfo-mpo.gc.ca/consultation/index-eng.html>

Consultation Calendar; Policies; National; Partnerships; Fisheries Management, Oceans, Science and Habitat and Enhancement Consultations; Current and Concluded Consultations

### **PUBLICATIONS CATALOGUE**

<http://www.pac.dfo-mpo.gc.ca/publications/index-eng.html>

Information booklets and fact sheets available through Communications branch

### **SPECIES AT RISK ACT (SARA)**

<https://www.dfo-mpo.gc.ca/species-especies/sara-lep/index-eng.html>

SARA species; SARA permits; public registry; enforcement; Stewardship projects; Consultation; Past Consultation; First Nations; Related Sites; News Releases

## **PACIFIC REGION SCIENCE**

### **MAIN PAGE**

<http://www.pac.dfo-mpo.gc.ca/science/index-eng.html>

Science divisions; Research facilities; PSARC; International Research Initiatives

# GLOSSARY AND LIST OF ACRONYMS

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A comprehensive glossary is available online at:

<http://dev-public.rhq.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/gloss-eng.html>

## LIST OF ACRONYMS USED IN THIS PLAN:

<b>ACRONYM</b>	<b>PHRASE</b>
<b>AABM</b>	Aggregate Abundance-Based Management
<b>AAROM</b>	Aboriginal Aquatic Resource and Oceans Management
<b>AHC</b>	Area Harvest Committee
<b>AFS</b>	Aboriginal Fisheries Strategy
<b>ATP</b>	Allocation Transfer Program
<b>CCTAC</b>	Canadian Commercial Total Allowable Catch
<b>CEDP</b>	Community Economic Development Program
<b>COHO ABM</b>	Coho Abundance-Based Management
<b>COSEWIC</b>	Committee for the Status of Endangered Wildlife in Canada
<b>CPUE</b>	Catch Per Unit Effort
<b>CSAP</b>	The Centre for Scientific Advice Pacific
<b>CSAS</b>	The Canadian Science Advisory Secretariat
<b>CSAF</b>	Commercial Salmon Allocation Framework
<b>CSAB</b>	Commercial Salmon Advisory Board
<b>CWT</b>	Coded Wire Tag
<b>DIDSON</b>	Dual Frequency Identification Sonar
<b>ER</b>	Exploitation Rate
<b>ESSR</b>	Excess Salmon to Spawning Requirements

## GLOSSARY AND LIST OF ACRONYMS

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<b>FNFC</b>	First Nations Fishery Council
<b>FRP</b>	Fraser River Panel
<b>FSC</b>	Food, Social and Ceremonial
<b>HG</b>	Haida Gwaii
<b>ITQ</b>	Individual Transfer Quota
<b>IHPC</b>	Integrated Harvest Planning Committee
<b>ISBM</b>	Individual Stock-Based Management
<b>LAER</b>	Low Abundance Exploitation Rates
<b>LRP</b>	Lower Reference Points
<b>MCC</b>	Marine Conservation Caucus
<b>MPA</b>	Marine Protected Area
<b>MSY</b>	Maximum Sustainable Yield
<b>MVI</b>	Mid Vancouver Island
<b>NOLS</b>	National On-line Licensing System
<b>PICFI</b>	Pacific Integrated Commercial Fisheries Initiative
<b>PFMA</b>	Pacific Fisheries Management Areas
<b>PSC</b>	Pacific Salmon Commission
<b>PST</b>	Pacific Salmon Treaty
<b>RCA</b>	Rockfish Conservation Area
<b>SARA</b>	Species at Risk Act
<b>SEG</b>	Sustainable Escapement Goal
<b>SEP</b>	Salmonid Enhancement Program
<b>SFAB</b>	Sport Fishing Advisory Board
<b>SHMF</b>	Selective Hatchery Mark Fishery

## GLOSSARY AND LIST OF ACRONYMS

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<b>TAC</b>	Total Allowable Catch
<b>TAM</b>	Total Allowable Mortality
<b>WCVI</b>	West Coast Vancouver Island
<b>WSP</b>	Wild Salmon Policy (Canada's Policy for Conservation of Wild Pacific Salmon)

# FOREWORD

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The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the Northern B.C. Pacific salmon fishery, as well as the management measures that will be used to achieve these objectives. This document also serves to communicate the basic information on the fishery and its management to Fisheries and Oceans Canada (DFO, the Department) staff, legislated co-management boards, First Nations, harvesters, and other interested parties. This IFMP provides a common understanding of the basic “rules” for the sustainable management of the fisheries resource.

This IFMP is not a legally binding instrument that can form the basis of a legal challenge. The IFMP can be modified at any time and does not fetter the Minister’s discretionary powers set out in the Fisheries Act. The Minister can, for reasons of conservation or for any other valid reasons, modify any provision of the IFMP in accordance with the powers granted pursuant to the Fisheries Act.

Where DFO is responsible for implementing obligations under land claims agreements, the IFMP will be implemented in a manner consistent with these obligations. In the event that an IFMP is inconsistent with obligations under land claims agreements, the provisions of the land claims agreements will prevail to the extent of the inconsistency.

# NEW FOR 2021/2022

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## KEY CHANGES FOR THE 2021/22 NORTHERN BC SALMON IFMP

### PACIFIC SALMON STRATEGY INITIATIVE

In April 2021, the Government of Canada released [Budget 2021](#), which includes a commitment of \$647.1 million over five years to implement a transformative [Pacific Salmon Strategy Initiative \(PSSI\)](#). The PSSI will aim to curb historic declines in key Pacific salmon stocks and rebuild the species to a sustainable level by using the funds to:

- Stabilize and conserve wild Pacific salmon populations, including through investment in research, new hatchery facilities, and habitat restoration.
- Create a Pacific Salmon Secretariat and Restoration Centre of Expertise.
- Improve management of commercial and recreational fisheries.
- Double the British Columbia Salmon Restoration and Innovation Fund with an additional \$100 million.
- Further engage with First Nations and fish harvesters.

Work through the PSSI will be categorized under four pillars including conservation and stewardship; enhanced hatchery production; harvest transformation, and; integrated management and collaboration.

As an immediate step, the Minister has announced significant Commercial salmon fishing closures for 2021 in areas with stocks of conservation concern (a list of specific fisheries is identified in Appendix 11). These closures are an initial step toward long-term conservation closures beginning in 2022, which will be considered following consultation with affected groups. The impacts from the long-term closure will be mitigated by a commercial licence retirement program and other initiatives to support transformation of the fishery.

### **PACIFIC SALMON IN 2021: RECENT ENVIRONMENTAL TRENDS SUGGEST BELOW AVERAGE SALMON PRODUCTIVITY (ADULT RECRUITS PRODUCED PER ADULT PARENTAL SPAWNER)**

Environmental and biological data from 2016-2020 suggest that 2021 salmon productivity, defined as the number of adult recruits produced per adult parental spawner, will generally be below average. Specifically:

- 1) Higher river temperatures occurred from 2016 to 2020; summer river temperatures are increasingly exceeding upper thermal tolerances for salmon in assessed systems;

- 2) BC snowpacks were anomalously low by early May in 2015, 2016, 2018 and 2019, and by early June in 2017. In general this contributed to warmer spring/summer river and lake temperatures in snow-dominated systems in those years;
- 3) Record summer droughts occurred in 2017 and 2018; lower water levels can block passage to key spawning habitat, strand salmon, and increase their exposure to predators;
- 4) Unprecedented Northeast Pacific marine heatwaves were present from late-2013 to late-2020; this has negatively affected many physical and biological ocean processes relating to salmon growth and productivity;
- 5) Northeast Pacific Ocean zooplankton community composition continued to exhibit characteristics consistent with a warmer ocean from 2016 to 2019, and contributed a higher proportion of lower quality species near the base of the salmon food web.

Salmon productivities are generally expected to be below average, although responses will vary by species and population.

## **KWINAGEESE CLOSURE**

The Kwinageese closure will not be in effect for 2021; however, this does not preclude management actions being implemented in future years in response to stock conditions.

## **NORTHERN BC COHO MANAGEMENT ACTIONS**

The Department is continuing a precautionary approach to Coho management in 2021 to address ongoing conservation concerns for Northern Coho stocks as a result of poor returns observed in recent years. Management actions to reduce overall exploitation are being implemented. For more information on Coho see Section [13.3](#).

## **SKEENA CHINOOK**

Post season evaluation of Skeena Chinook returns in 2020 were weaker than expected; subsequently a continued cautious approach is warranted. For 2021, management measures will be put in place to support conservation and promote rebuilding of Skeena Chinook, including: no targeted commercial harvest, spatial and temporal closures in freshwater recreational fisheries, and temporal retention limit reductions in ISBM and AABM marine recreational fisheries.



## **FRASER RIVER CHINOOK – CONSERVATION MEASURES**

For 2021, the Area F Chinook fishery start date is under discussion. This date will allow for passage of Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, and Summer 5<sub>2</sub> Chinook stocks to support both conservation and allocation priorities.

## **MEZIADIN LAKE RECREATIONAL TRIGGERS**

Triggers for the recreational fishery in Meziadin Lake are being implemented again in 2021 in response to recent poor returns of Meziadin Sockeye. For more information, see Section [13.5.3.5.2](#).

## **MANAGEMENT ACTIONS DURING SKEENA SOCKEYE FSC CLOSURES**

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, a number of management actions will be implemented. For descriptions of these management actions, see Section 13.5.

# **I OVERVIEW**

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## **I.1 INTRODUCTION**

The Northern BC Salmon Integrated Fisheries Management Plan (IFMP) covers the period June 1, 2021 to May 31, 2022.

This IFMP provides a broad context to the management of the Pacific salmon fishery and the interrelationships of all fishing sectors involved in this fishery. Section 2 considers stock assessment, while Sections 3 and 4 consider the shared stewardship arrangements and the social, cultural, and economic performance of the fishery. Section 5 describes the broader management issues, and the objectives to address these issues are identified in Section 6. Sections 7 and 8 describe allocation, general decision guidelines, and compliance plans. 2018 Post-season review information is outlined in Section 9. Sections 10, 11, and 12 are sections that describe the different fisheries and Section 13 of the IFMP covers off the fishing plans for each salmon species.

The Appendices in the IFMP provide information such as the fishing vessel safety, advisory board members, and maps of commercial licence areas.

## **I.2 HISTORY**

For thousands of years, the history, economy, and culture of Canada's west coast have been inextricably linked to Pacific salmon. These magnificent fish are an important part of the diet, culture, and economy of First Nations people. Since the late 1800s, salmon have supported a vibrant commercial fishing industry, vital to the establishment and well-being of many coastal communities. Salmon, particularly Chinook and Coho, also play a key role in the west coast recreational fishery.

## **I.3 TYPE OF FISHERY AND PARTICIPANTS**

This plan describes the management of First Nations, recreational, and commercial fisheries for Pacific salmon in southern BC and the factors that influence decision-making. Salmon fisheries are coordinated regionally with many management decisions occurring in area and field offices. Key to salmon management is the development and implementation of integrated fisheries management plans that meet specified objectives focusing on conservation, allocation, and obligations to First Nations and international treaties.

## I.4 LOCATION OF FISHERY

This IFMP is designed to describe the approach to fisheries in tidal and non-tidal waters from Cape Caution north to the B.C./Alaska border, including the Skeena River watershed.

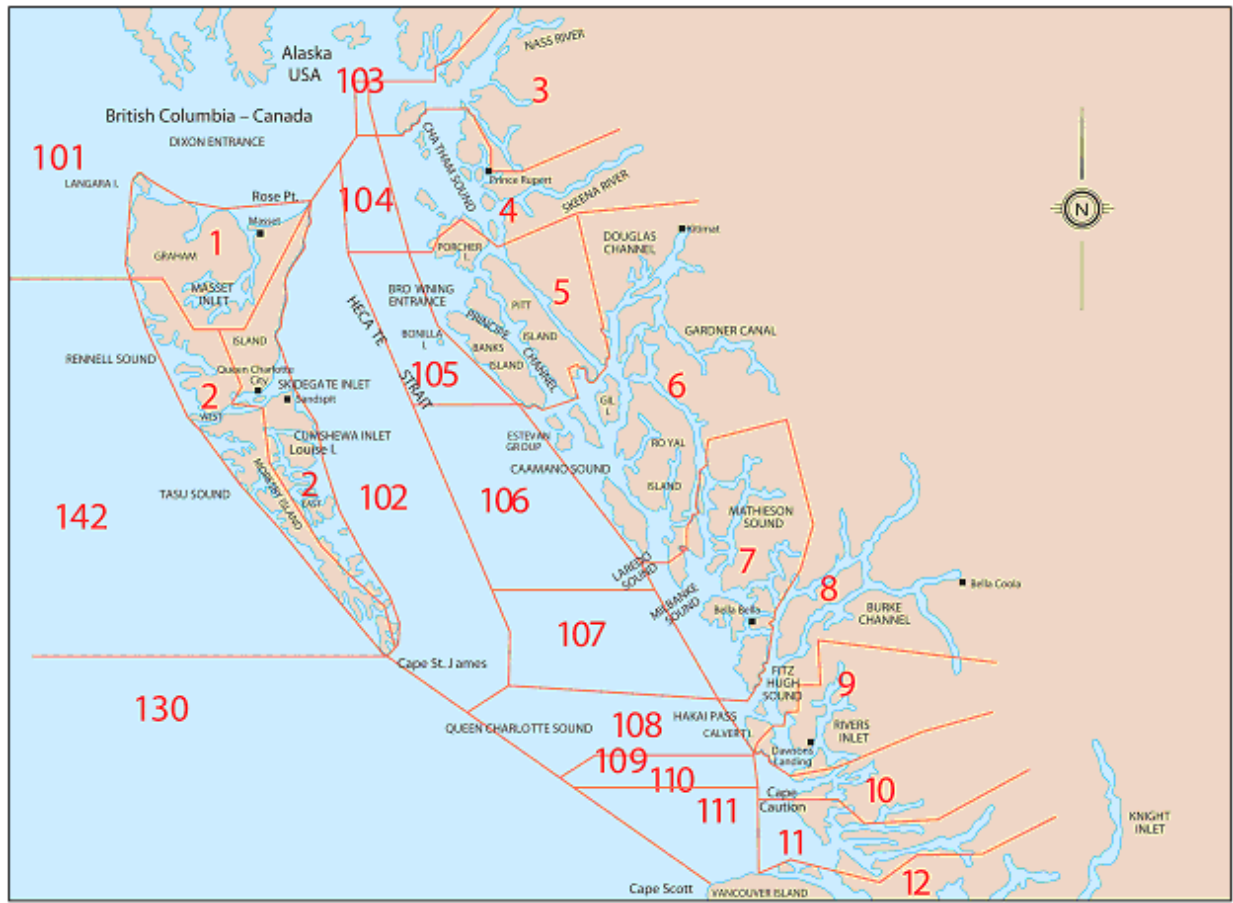


Figure I.4-1: Management Areas for Northern B.C.

## I.5 FISHERY CHARACTERISTICS

Pacific salmon species covered in the plan include Sockeye, Coho, Pink, Chum, and Chinook. Fisheries include those undertaken by First Nations as well as recreational and commercial fisheries.

In the 1990 Sparrow decision, the Supreme Court of Canada found that where an Aboriginal group has an Aboriginal right to fish for food, social, and ceremonial (FSC) purposes, it takes priority – after conservation – over other uses of the resource.

Pre-season, DFO engages in a variety of consultation and collaborative harvest planning processes with First Nations at the community level, broader tribal, or watershed levels. Fisheries are then authorized via a Communal Licence issued by the Department under the *Aboriginal Communal Fishing Licences Regulations*. These licences are typically issued to individual bands or tribal groupings, and describe the details of authorized fisheries including dates, times, methods, and locations of fishing. Licences and Aboriginal Fisheries Strategy (AFS) agreements (where applicable) include provisions that allow First Nations' designation of individuals to fish for the group and in some cases, vessels that will participate in fisheries.

Fishing techniques used in FSC fisheries are quite varied, ranging from traditional methods such as dip nets to modern commercial methods such as seine nets, fished from specialized vessels.

Separate from FSC fisheries, some First Nations have communal access to commercial opportunities as follows:

- Treaty arrangements.

- Rights-based commercial access for five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht). DFO has developed a Fishery Management Plan with the Five Nations to implement for the 2021/2022 season.

- Commercial fisheries access through communal commercial licences acquired through DFO relinquishment programs (e.g. Pacific Integrated Commercial Fisheries Initiative – PICFI, or Allocation Transfer Program – ATP). These licences are fished in a manner that is comparable to the general commercial fishery.

- Negotiated economic opportunity fisheries (Lower Fraser and West Coast of Vancouver Island only), or demonstration fisheries (select locations, to date supported through licences relinquished from the commercial salmon fleet, primarily from the ATP and PICFI programs).

- Excess Salmon to Spawning Requirements (ESSR) fisheries may also be provided that permit the sale of fish in some highly terminal areas where spawner abundance is in excess of spawning requirements.

Fisheries and Oceans Canada regulates recreational fishing for Pacific salmon in both tidal and non-tidal waters. All recreational fishers must possess a valid sport fishing licence. Tidal licences are issued by DFO and non-tidal licences are issued by the Province. Anglers wishing to retain salmon taken from either tidal or non-tidal waters must have a valid salmon

conservation stamp affixed to their licence. The proceeds from the sale of tidal Pacific Salmon Conservation stamps are used to fund salmon restoration projects supported by the non-profit Pacific Salmon Foundation. The proceeds from the sale of non-tidal Conservation Surcharge stamps directly benefit fish conservation through the Habitat Conservation Trust Foundation.

Fishing techniques used in the recreational fishery include trolling, mooching, and casting with bait, lures, and artificial flies. Boats are most commonly used, but anglers also fish from piers, shores, or beaches. Only barbless hooks may be used when fishing for salmon in British Columbia.

Commercial salmon licences are issued for three gear types: troll, seine, and gill net. Trollers employ hooks and lines, which are suspended from large poles extending from the fishing vessel. Altering the type and arrangement of lures used on lines allows various species to be targeted. Seine nets are set from fishing boats with the assistance of a small skiff. Nets are set in a circle around schools of fish. The bottom edges of the net are then drawn together into a “purse” to prevent escape of the fish. Salmon gill nets are rectangular nets that hang in the water and are set from either the stern or bow of the vessel. Fish swim headfirst into the net, entangling their gills in the mesh. Altering the mesh size and the way in which nets are suspended in the water allows nets to target certain sizes of fish. Gill-netters generally fish near coastal rivers and inlets.

Licence conditions and commercial fishing plans lay out allowable gear characteristics such as hook styles, mesh size, net dimensions, and the methods by which gear may be used.

## **1.6 GOVERNANCE**

Departmental policy development related to the management of fisheries is guided by a range of considerations that include legislated mandates, judicial guidance, and international and domestic commitments that promote biodiversity and a precautionary, ecosystem-based approach to the management of marine resources. Policies were developed with consultation from those with an interest in salmon management. While the policies themselves are not subject to annual changes, implementation details are continually refined where appropriate.

### **1.6.1 POLICY FRAMEWORK FOR THE MANAGEMENT OF PACIFIC SALMON FISHERIES**

Salmon management programs continue to be guided by the following policies: *Canada’s Policy for Conservation of Wild Pacific Salmon (WSP)*, *An Allocation Policy for Pacific Salmon*, *Pacific Fisheries Reform*, *A Policy for Selective Fishing*, *A Framework for Improved Decision Making in the Pacific Salmon Fishery*, and the Strategic Framework for Fishery Monitoring and Catch Reporting

in the Pacific Fisheries. These policies are available at:

<https://www.dfo-mpo.gc.ca/reports-rapports/regs/policies-politiques-eng.htm>

*Canada's Policy for Conservation of Wild Pacific Salmon* (the Wild Salmon Policy) sets out the vision regarding the importance and role of Pacific wild salmon as well as a strategy for their protection. More information on this can be found in Section [5.1.1](#) of this plan or at: <https://www.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/wsp-pss/policy-politique/index-eng.html>

To communicate the work the Department is doing in support of the policy, Canada's Minister of Fisheries and Oceans and the Canadian Coast Guard released the *Wild Salmon Policy 2018-2022 Implementation Plan* in October 2018. This collaboratively developed plan was consulted on broadly throughout fall 2017, and lays out nine overarching approaches to implementation and 48 specific activities. The plan is organized under three key themes: Assessment; Maintaining and Rebuilding Stocks; and Accountability. In 2021, the third annual report on progress will be released.

For a copy of the *Wild Salmon Policy*, the *Wild Salmon Policy 2018-2022 Implementation Plan*, information on what we heard during consultations and response, annual reports, and other Wild Salmon Policy related materials, please see: <https://www.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/wsp-pss/index-eng.html>

The 1999 *An Allocation Policy for Pacific Salmon*, announced in 1999, sets out principles for allocating salmon in BC among the three harvest groups (First Nations food, social and ceremonial; commercial; and recreational) and within the commercial fishery among gear types (gillnet, seine and troll). It forms the basis for general decision guidelines outlined in Section [0](#) of this plan.

Since the Salmon Allocation Policy was first adopted twenty years ago, there have been significant changes to fisheries management, policy, and Aboriginal rights. Most recently, within the 2018 BC Supreme Court *Ahousaht* decision (*Ahousaht Indian Band and Nation et al v. Canada (Attorney General)* 2018 BCSC 633), the application of the SAP (1999) was found to be an unjustified infringement of the five Nuu-chah-nulth Nations' (*Ahousaht, Ehattesaht/Chinehkint, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht*) Aboriginal rights to fish and sell fish insofar as the SAP accords priority to the recreational fishery over the Five Nations' right-based sale fishery for Chinook and Coho salmon. To the extent that the SAP applies to the Five Nations in the manner declared an unjustifiable infringement by the Court, the SAP is of no force and effect in its application to the Five Nations' exercise of their aboriginal right to fish and sell fish. DFO has responded to the court decision through the development of a Fisheries Management Plan for the Five Nations, which addresses the right to sell fish. Rather than

designing a process solely to address the Court's findings in Ahousaht, DFO has also initiated a process to review and replace the SAP (1999).

The Department has embarked on a collaborative, phased process with First Nations and stakeholders to review and update the policy. This process of updating the Salmon Allocation Policy is being conducted in a manner that is intended to respect Canada's nation-to-nation relationship with Indigenous peoples and engage stakeholders. For more information on the SAP Review process, please visit our website (<http://www.pac.dfo-mpo.gc.ca/consultation/smon/sap-prs/index-eng.html>).

Pacific Fisheries Reform, announced by the Department in April of 2005, provides a vision of a sustainable fishery where the full potential of the resource is realized, Aboriginal rights and title are respected, there is certainty and stability for all, and fishery participants share in the responsibility of management. Future treaties with First Nations are contemplated, as is the need to be adaptive and responsive to change. This policy direction provides a framework for improving the economic viability of commercial fisheries, to addressing First Nations aspirations with respect to FSC and commercial access and involvement in management.

The 'Vision for Recreational Fisheries in BC' was approved in January 2010 by DFO, the Sport Fishing Advisory Board (SFAB), and the Province of BC. Guided by this Vision, an action and implementation plan is being developed to build upon the collaborative process established by the Federal and Provincial Governments and the SFAB.

In May 1999, the Department released *A Policy for Selective Fishing in Canada's Pacific Fisheries*. Under the Department's selective fishing initiative, harvester groups have experimented with a variety of methods to reduce the impact of fisheries on non-target species, with a number of measures reaching implementation in fisheries.

The Sustainable Fisheries Framework is a toolbox of existing and new policies for DFO to sustainably manage Canadian fisheries by conserving fish stocks while supporting the industries that rely on healthy fish populations. The Sustainable Fisheries Framework provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, and inclusive manner, and provides the foundation for new conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These new policies include:

- Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas;
- Policy on New Fisheries for Forage Species;
- A Fishery Decision-Making Framework Incorporating the Precautionary Approach;
- Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework: Growing Stocks out of the Critical Zone;

- Policy on Managing Bycatch; and
- Ecological Risk Assessment Framework (ERAF) for Coldwater Corals and Sponge Dominated Communities.
- Fishery Monitoring Policy

For more information on the Sustainable Fisheries Framework and its policies, please visit: <https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/overview-cadre-eng.htm>

Work is progressing on aligning the management of Pacific Herring with the Sustainable Fisheries Framework.

### **1.6.2 FIRST NATIONS' FISHERIES**

Section 35(1) of the *Constitution Act*, recognizes and affirms the existing Aboriginal and treaty rights of the Aboriginal peoples in Canada. The Government of Canada's legal and policy frameworks identify a special obligation to provide First Nations the opportunity to harvest fish for food, social and ceremonial purposes. Treaty Agreements signed between Nations and the Government of Canada also obligate Canada to provide these opportunities.

### **1.6.3 FISHERY MONITORING AND CATCH REPORTING**

Robust fishery monitoring information is essential for stock assessment and to effectively implement management measures such as target and bycatch limits, quotas and closed areas. Fishery monitoring information is also needed to support the long-term sustainable use of fish resources for Food, Social, and Ceremonial and other Indigenous fisheries, commercial fisheries, recreational fisheries, and to support market access for Canadian fish products.

Following multi-sectoral consultations, DFO released the national Fishery Monitoring Policy in 2019, replacing the regional "Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries" (2012). The Fishery Monitoring Policy seeks to provide dependable, timely and accessible fishery information through application of a common set of procedural steps used to establish fishery monitoring requirements across fisheries. Policy principles include respecting Indigenous and Treaty rights, linkage of monitoring requirements to the degree of risk and complexity of fisheries, linkage of monitoring programs to fishery and policy objectives while accounting for cost-effectiveness and practicality of implementation, and shared accountability and responsibility between DFO, Indigenous groups and stakeholders.

To ensure consistent national application of the Fishery Monitoring Policy, further guidance is provided through the "Introduction to the Procedural Steps of Implementing the Fishery Monitoring Policy". Fisheries are first prioritized for assessment through collaboration with Indigenous groups and Stakeholders. Risk and data quality assessments are then conducted on



priority stocks and associated fisheries and monitoring programs. Next, monitoring objectives are set in alignment with the Fishery Monitoring Policy, followed by specifying monitoring requirements and then monitoring programs are operationalized. Finally, a review and evaluation of the fishery monitoring programs against the monitoring objectives will be conducted and reported on.

The Fishery Monitoring Policy is part of DFO's Sustainable Fisheries Framework and is available at:

<https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm>

The "Introduction to the Procedural Steps of Implementing the Fishery Monitoring Policy" is available at:

<https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fmp-implementation-psp-mise-en-oeuvre-eng.htm>

In cases where assessment of monitoring programs identifies a gap between the current and target level of monitoring, discussions will be held between DFO Indigenous groups and stakeholders to identify options to address the monitoring gap, and the feasibility of these options (e.g. cost, technical considerations, etc.). To support Fishery Monitoring Policy principles, a collaborative approach is required.

Where monitoring options are determined to be feasible, the monitoring and reporting regime will be revised to incorporate these options, providing resource managers with sufficient information to meet Fishery Monitoring Policy objectives. Where monitoring options are not feasible, alternative management approaches are required to reduce the risk posed by the fishery. If there is no gap between the current and target level of monitoring, the management approach will not require any change. Current status of the salmon risk assessments can be found in Appendix 8.

## **I.7 CONSULTATION ON 2021/2022**

This plan considers the results of consultations and input from First Nations, recreational and commercial harvesters and conservation organizations. Input was received directly through bilateral meetings and submissions to DFO on the proposed plan. Meetings with First Nations, Indigenous organizations and the Integrated Harvest Planning Committee (IHPC) provided opportunities for various parties to come together to discuss issues and concerns related to the management of salmon.

Any further significant changes to provisions in the IFMP will be identified to the parties prior to implementation, unless if circumstances require changes to be made without prior notification, such as the case of in season forecast updates.

Fisheries and Oceans Canada is committed to working with First Nations on planning and management of the salmon fisheries through existing and emerging bilateral and regional processes and relationships, and to achieving reconciliation with Indigenous peoples by working towards renewed nation-to-nation relationships and partnerships that contribute to reconciliation, the recognition of rights and mutual understanding, trust and respect. Fisheries and Oceans Canada also continues to consult with recreational and commercial harvesters, and conservation organizations to seek input on the IFMP and to further plan and co-ordinate fishing activities.

Further information on salmon consultations, including IHPC terms of reference, membership, and meeting dates can be found on the Salmon Consultation website at: <http://www.pac.dfo-mpo.gc.ca/consultation/smon/index-eng.html>.

### **1.8 APPROVAL PROCESS**

This plan is approved by the Regional Director General – Pacific Region on behalf of the Minister of Fisheries and Oceans Canada.

## 2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

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### 2.1 BIOLOGICAL SYNOPSIS

Pacific salmon managed by DFO include five species belonging to the genus *Oncorhynchus*: Pink (*O. gorbuscha*), Chum (*O. keta*), Sockeye (*O. nerka*), Coho (*O. kisutch*) and Chinook (*O. tshawytscha*). The native range of Pacific salmon includes the North Pacific Ocean, Bering Strait, south-western Beaufort Sea and surrounding fresh waters. They occur in an estimated 1300 - 1500 rivers and streams in BC and Yukon; notably, the Skeena River and Nass River in the north and the Fraser River in the south, collectively accounting for roughly 75% of the total salmon production in Canada.

Each Pacific salmon species has unique physical characteristics, life histories and spawning habits, with further variation observed among populations of each species. Table 2.1-1 provides a brief summary of the contrasts in life history characteristics among species of Pacific salmon (from Haig-Brown Kingfisher Creek Restoration Project, 1998-99).

Chinook salmon produce the largest adults of all the Pacific salmon species and typically live the longest (six or more years). Chinook salmon fry may go to sea soon after hatching or, after one to two years in fresh water. Chinook salmon generally mature at age three to seven years, but “jacks” and occasionally “jills”, defined as two-year-old sexually mature males and females that return to spawn, are also common among some Chinook salmon populations (as well as some Coho and Sockeye salmon populations).

Adult Coho generally return from late summer and early fall. Most populations originate from streams close to the ocean, although some journey as far as 1,500 kilometers inland. In contrast to other Pacific salmon, most Coho fry remain in freshwater for a full year after emerging from the gravel. Their age at maturity is normally three years, though a number of northern stocks may spend two years in freshwater before returning to spawn as four year olds. Similarly, approximately ten percent of Interior Fraser Coho mature as four year olds due to a two-year juvenile freshwater residency period.

Sockeye salmon generally spawn in streams with lake outlets. Young Sockeye typically spend between one and three years in their “nursery lake” before migrating to sea, although there are populations which do not require nursery lakes as part of their life history. Upon entering the ocean, Sockeye salmon move rapidly out of the estuaries and travel thousands of miles into the Gulf of Alaska and the North Pacific to feed. They generally return to their natal spawning stream at ages three to six years.

Chum salmon generally spawn in early winter in lower tributaries along the coast, rarely more than 150 kilometers inland. Fry emerge in the spring and go directly to sea. Chum generally mature in their third, fourth, or fifth year.

Pink salmon live only two years, spending the majority of their life in ocean feeding areas. Pink salmon fry migrate to the sea as soon as they emerge from the gravel. Once mature, adults leave the ocean in the late summer and early fall and usually spawn in streams not fed by lakes, short distances from their ocean-entry point.

The numbers of Pacific salmon returning to BC waters varies greatly from year to year and decade to decade, often with pronounced population cycles. For example, populations of Pink salmon usually have a dominant odd-year or even-year cycle, and a number of Sockeye salmon populations are very abundant every fourth year. This is seen most dramatically in the Fraser River, where the abundance of some populations in abundant years is many times larger than that of other years. Longer term cycles are also apparent but less regular and seem to be associated with changes in ocean conditions that affect survival during the feeding migration period.

All five Pacific salmon species are harvested in First Nations fisheries in coastal and inland areas. Coho and Chinook are the preferred species in the BC coastal mixed-stock recreational and commercial hook-and-line fisheries, and to a lesser extent, are caught by gill and seine nets. Sockeye, Pink and Chum are harvested primarily in First Nations and commercial net fisheries, but are also caught in recreational fisheries.

For more information, refer to the Fisheries and Oceans Canada Pacific Salmon Facts website at <https://www.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/facts-infos-eng.html>.

Table 2.1-1: Summary of general biological and life history characteristics for five species of Pacific salmon

Life History Characteristic	Coho <i>O. kisutch</i>	Sockeye <i>O. nerka</i>	Pink <i>O. gorbuscha</i>	Chum <i>O. keta</i>	Chinook <i>O. tsawytscha</i>
Season when eggs hatch	Spring	Spring	Spring	Spring	Spring
Length of stay in freshwater	1–2 years; 1 year is common.	1 month to 2 years	Virtually none; often straight to ocean.	Virtually none; often straight to ocean.	Ocean-type: 60-150 days Stream-type: 1-2 years
Primary rearing habitat	Stream	Lake/stream	Estuary	Estuary	Stream/Ocean
Size at ocean migration	10cm or more	Variable, 6.5 to 12cm	About 3.3cm	2.8 to 5.5cm	5 to 15cm
Ocean voyage	4–18 months	16 months to 4 years	18 months	2 to 5 years	4 months to 5 years
Age at return to freshwater	During 2nd to 4th year	During 3rd to 5th years	During 2nd year	During 3rd to 5th years	During 2nd to 6th years
Season/month of return	Late summer to January	Mid-summer to late autumn	July to September	July to October	Spring to fall; some rivers support more than one run.
Number of eggs/female	2,000–3,000	2,000–4,500	1,200–2,000	2,000–3,000	2,000-17,000 (generally 5,000-6,000)
Preferred spawning area	Small streams	Near and in lake systems.	Close to ocean	Above turbulent areas or upwellings	Very broad tolerances

**SALMON LIFE CYCLE**

The Pacific salmon life-cycle includes periods in fresh water and the marine environment, with varying durations across species and populations. For all species, life begins in freshwater, when eggs deposited into gravel beds (called *redds*) the fall prior hatch as *alevins* by mid-winter. After surviving the rest of winter living in the gravel, young *fry* emerge in spring to reside in freshwater streams and lakes from a few hours (Pink and some Chum salmon populations) up to two years (some Coho and Chinook populations). Most fry then migrate to the sea to become *smolts* (transitioning to the salt water environment) and spend one to five years in the ocean, often undertaking prolonged (and sometimes distant) ocean-feeding migrations which are thought to be population-specific ([Figure 2.1-1](#)). (Notable exceptions include some Sockeye salmon that have developed a land-locked form – called kokanee—that do not go to sea). In the ocean, Sockeye, Pink and Chum feed primarily on plankton and crustaceans such as tiny

shrimp. Chinook and Coho also eat smaller fish, such as herring. At sea, Pacific salmon species attain the following average adult weights: 1 to 3 kg for Pink; 5 to 7 kg for Chum; 3.5 to 7 kg for Coho; 2 to 4 kg for Sockeye; and 6 to 18 kg for Chinook (the largest recorded Chinook was 57.27 kg). As anadromous species, Pacific salmon migrate back into rivers and streams as adults to spawn (often to the same river and even gravel bed from which they hatched). The return migration to fresh water can occur from spring to fall (timing is species- and/or population-dependent), but spawning generally takes place through the fall and early winter. In general, Sockeye and Chinook travel the farthest upstream to spawn—some as far as 1,500 kilometres. Chum, Coho and Pink usually originate from spawning sites located closer to the ocean. A notable exception is Yukon River Chum salmon that travel 3,200 kilometres to their spawning grounds. Following courtship, spawning females release eggs that are fertilized by a spawning male; the eggs are then buried by the female to start the next generation. Both adults die after spawning. Total life spans range from two years (for Pink salmon populations) up to six or seven years (for some Sockeye and Chinook salmon populations).

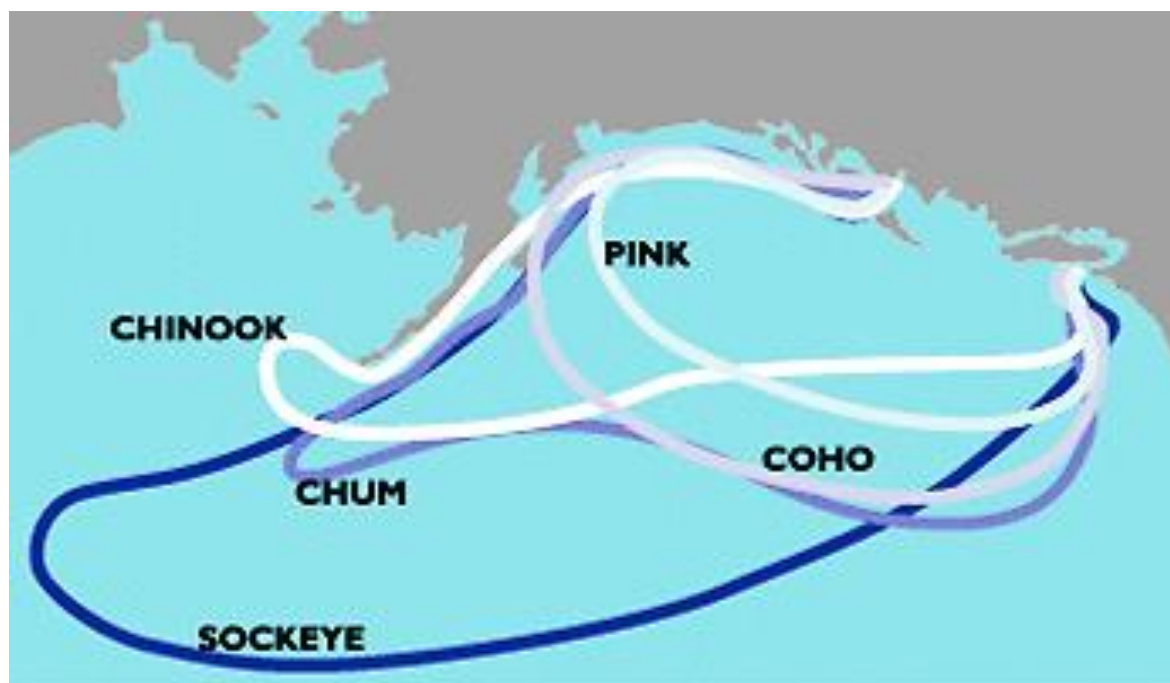


Figure 2.1-1: Generalized habitat of British Columbia Pacific salmon species in the North Pacific Ocean.

## **2.2 ECOSYSTEM INTERACTIONS**

As a consequence of their anadromous life history, salmon are sensitive to changes in both the marine and freshwater ecosystems. Salmon are an ecologically important species supporting

complex food webs in oceanic, estuarine, freshwater and terrestrial ecosystems by providing nutrients every year during their migration to the rivers and lakes to spawn.

DFO is moving away from management on a single species and moving towards an integrated ecosystem approach to science and management. Strategy 3 of the [Wild Salmon Policy](#) (WSP), Inclusion of Ecosystem Values and Monitoring, states the Department's intent to progressively incorporate ecosystem values in salmon management. The main focus of this effort will be on developing ecosystem-related indicators and science-based tools to better understand the pressures on Conservation Units (CUs) of Pacific Salmon and for integrating salmon conservation and other planning objectives. This strategy will include extraction of relevant information on environmental conditions in marine and freshwater ecosystems, in a risk-based framework.

In 2018, the Department introduced the Wild Salmon Policy Implementation Plan to provide a forward-looking blueprint for continuing to restore and maintain wild Pacific salmon populations and their habitats under the Wild Salmon Policy. The greatest challenge in implementation of the WSP is balancing the goals of maintaining and restoring healthy and diverse salmon populations and their habitats, with social and economic objectives that reflect people's values and preferences. Standardized monitoring and assessment of wild salmon populations, habitat and eventually ecosystem status will facilitate the development of comprehensive integrated strategic plans (WSP Strategy 4) that will address the goals of the WSP while addressing the needs of people. Outcomes of these plans will include biological objectives for salmon production from CUs and, where appropriate, anticipated timeframes for rebuilding, as well as management plans for fisheries and watersheds, which reflect open, transparent, and inclusive decision processes involving First Nations, communities, environmental organizations, fishers and governments.

For strategic planning and successful management of Pacific salmon, it will be essential to link variation in salmon production with changes in climate and their ecosystems. Salmon productivity in the Pacific is clearly sensitive to climate-related changes in stream, estuary and ocean conditions. Historically, warm periods in the coastal ocean have coincided with relatively low abundances of salmon, while cooler ocean periods have coincided with relatively high salmon numbers. In the past century, most Pacific salmon populations have fared best in periods having high precipitation, deep mountain snowpack, cool air and water temperatures, cool coastal ocean temperatures, and abundant north-to-south upwelling winds in spring and summer.

The Department conducts programs to monitor and study environmental conditions.

Information on these programs is available at:

<http://www.pac.dfo-mpo.gc.ca/science/index-eng.html>.

These programs include:

The Strait of Georgia Ecosystem Research Initiative

Fraser River Environmental Watch

Monitoring of physical, biological, and chemical freshwater and marine conditions

Chlorophyll and phytoplankton timing and abundance

The annual State of the Pacific Ocean Report describes changes and trends in atmospheric and oceanic conditions which have the potential to affect Pacific salmon (and other species) populations and informs science-based decision-making and DFO's management of fisheries and marine resources in the Pacific Region. It is available at:

<http://www.dfo-mpo.gc.ca/oceans/publications/index-eng.html>.

## **2.2.1 ENVIRONMENTAL CONDITIONS INFLUENCING 2021 SALMON RETURNS**

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### **Global Climate Change Context for Salmon Outlook**

The planet is warming (Figure 2.2-1). Average land-ocean temperature has risen by 1°C over the last century (IPCC 2018), and the last six years were the warmest on record (NOAA 2020a).

Global temperatures are projected to rise 1.5°C to 3.7°C above the 1850-1900 average by the end of this century. We are already approaching the 1.5°C global limit of warming that the IPCC recommends as critical if we are to avoid significant issues related to food, water, and other life support systems on the planet (IPCC 2014, 2018, UNEP 2019). Canada's warming is double the rate of the global average (Bush and Lemmen 2019).



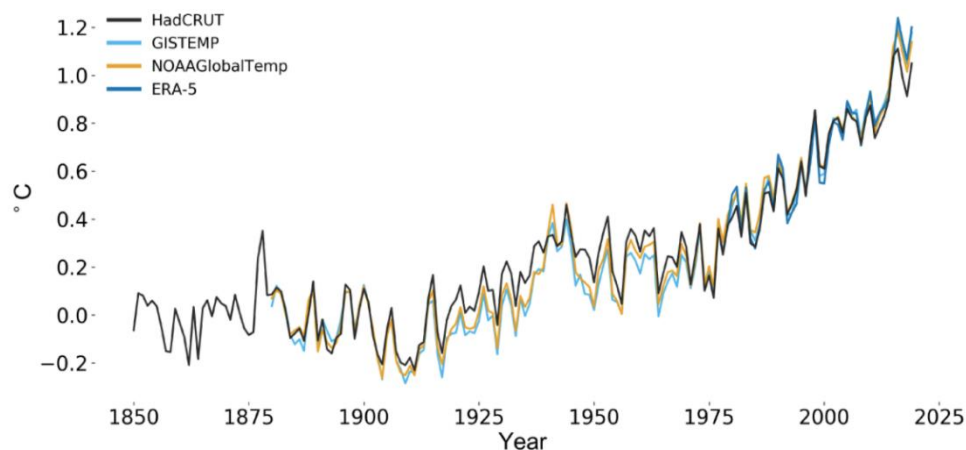


Figure 2.2-1 Global annual mean temperature difference from pre-industrial conditions (1850-1900). Canada’s temperature increases are double this global rate of warming, typical of countries occupying northern latitudes.

Source: Met Office Hadley Centre and the Climatic Research Unit at the University of East Anglia, UK (HadCRU) presented in World Meteorological Organization, 2020. WMO Statement on the State of Global Climate Change in 2019 (WMO-No. 1248), Figure 2.2-1, Page 6).

Pacific salmon productivity and growth are impacted by this global climate shift through changes in their freshwater and marine environments (Holsman et al. 2018, IPBES 2018, Chandler et al. 2018, Boldt et al. 2020, Bush and Lemmen 2019, Grant et al. 2019).

British Columbia warmed by 1.4°C between 1948 to 2016 (White et al. 2016), well above the global average. Correspondingly, river temperatures have been higher. For example, peak summer water temperatures in the Fraser River increased by greater than 1.8 °C in the forty years preceding 2010 (Patterson et al. 2011). Temperatures increasingly are exceeding upper thermal optimums for salmon in summer months, affecting upstream salmon migration, egg incubation and juvenile rearing (D. Patterson, personal communication, 2019) although exact exposures to warm temperatures vary by system and salmon population. Temperature effects on salmon have been compounded in recent years by early losses of snowpack in snow-dominated hydrological systems, and drought conditions. Increasing frequency of drought in recent years has lowered river flows, potentially blocking access to spawning habitat, stranding salmon, and increasing their exposure to predators.

Canadian North Pacific Ocean coastal sea-surface-temperatures increased linearly by 0.86°C over the past 100 years, resulting in substantial changes to ocean conditions and marine food webs recently (Chandler et al. 2018, Boldt et al. 2020). These changes in the ocean have affected physical and biological processes, most notably shifting zooplankton composition towards poorer quality prey species for salmon in these recent years.

Salmon returning in 2021 will have been exposed to varying freshwater and marine conditions during the years 2016-2020, usually reflected through warmer water temperatures. Pacific salmon exposure to environmental conditions will vary, depending on the unique characteristics of the various ecosystems they use in their lives, and their own life-histories and returning ages. Other factors can also contribute to salmon productivity including habitat alteration from natural and human activities, particularly in freshwater, hatchery contributions, disease, contaminants, predation, competition, and other local environmental conditions.

While we do not have relevant data for all species in all locations, we describe below what is known, and from available data predict that 2021 Canadian Pacific salmon productivity will generally be below average.

### **Freshwater indicators**

#### **Spawning, Egg Incubation, and Juvenile Rearing: 2016-2019**

*Overview:* Canadian Pacific salmon returning in 2021 have lived during four of the five hottest years on record (NOAA 2020a). Overall, climate conditions during the freshwater stages of returning salmon were warm and dry, though some years were more variable than others, and included lengthy winter cold snaps. Spring peak discharge occurred earlier than normal in 2016. High volume freshets in 2017 may have disrupted early season salmon migrations, while 2016 saw extremely low spring flows. River temperatures are not available for most BC/Yukon systems, but in the Fraser River system, where data are available, summer temperatures regularly exceeded upper thermal thresholds for salmon from 2016 to 2019 (DFO 2016, 2017, 2018, 2019).

*Effects of Warm Temperatures on Salmon:* Salmon have challenges migrating upstream to their spawning grounds when rivers are too warm. Summer water temperatures in the Fraser River from 2016 to 2019 were generally too warm, exceeding salmon upper thermal tolerance levels. Temperatures above 18°C can result in decreased adult salmon swimming performance, and above 20°C can increase adult mortality, adult disease, egg viability, and legacy effects that have negative impacts on juvenile condition (Tierney et al. 2009, Burt et al. 2011, Eliason et al. 2011, Sopinka et al. 2016).

High in-river spawning and incubation temperatures can have population-specific negative effects on fertilization success and embryo survival, affect timing of hatch (Whitney et al. 2014), emergence (Macdonald et al. 1998), and reduce swimming endurance and impair swimming behaviour of fry (Burt et al. 2012). For juveniles that rear in freshwater, warmer temperatures can improve juvenile growth rates when prey are not limiting (Brett 1971, Edmundson & Mazumder 2001), and also increase the length of the growing season in some areas (Schindler et

al. 2005). The exposure of a salmon population to these various temperature-related freshwater conditions will vary by system. As temperatures continue to increase from global climate change, the net effect is expected to be negative (Crozier et al. 2019).

*Temperature:* Air temperature has been warmer than average in BC and the Yukon in recent decades (Figure 2.2-2). Warmer temperatures anomalies have been even greater in the Yukon than BC, due to its more northern location (Figure 2.2-2; Bush and Lemmen 2019). Spring and summer months have been notably warmer from 2016 to 2019, with the exception of summer 2019 that was more variable and at times below average (PCIC 2020). Summer river temperatures increasingly exceeded the optimal temperature ranges of some salmon populations, particularly adult Sockeye that migrated to their upstream spawning grounds in the Fraser watershed from 2016-2018 ( DFO 2016, 2017, 2018, 2019).

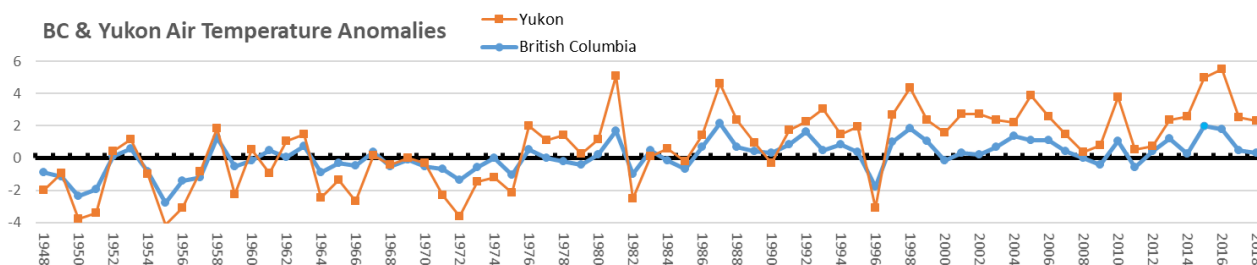


Figure 2.2-2 Canadian gridded temperature and precipitation anomalies (CANGRD) from the Government of Canada: <https://climate-change.canada.ca/climate-data/#/historical-gridded-data>. Temperatures 2016 to 2018 years coincide with the freshwater residence period of 2021 salmon returns with the exception of Pinks that also used freshwater habitats in 2019. These data are interpolated from adjusted and homogenized climate station data at a 50km resolution. Anomalies represent the departure from a mean reference period (1961-1990). Temperature anomalies are expressed as degree Celsius (C).

*Snowpack:* Recently, the onset of snowmelt has begun several weeks earlier than normal, as was the case in 2016, 2018 and 2019. In these years, most regions of BC had below-average snowpacks by the second week of May, and in 2016, extremely low snowpacks set record lows relative to the ~ 30-year time series. In 2017, the onset of snowmelt began several weeks later than normal, with extreme hot temperatures resulting in rapid snow melt in the second half of May. By June 2017, snowpacks were anomalously low for this month in northern latitudes, and were closer to average in southern latitudes of BC. Early loss of snowpack reduces the cool water inputs into rivers and lakes from snowmelt in warmer summer months.

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/river-forecast-centre/snow-survey-water-supply-bulletin>

*Spring freshet timing:* Spring freshets in various BC rivers, and ice-off in high latitude or altitude lakes, occurred several weeks earlier than normal in 2016. Warmer temperatures as well as rapid snow melt contributed to the earlier timing. Freshet was closer to normal in 2017, 2018 and 2019. While the effects of these differences in timing on juvenile salmon survival are unclear, they are indicators of large changes in salmon ecosystems in recent years.

<https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/river-forecast-centre/snow-survey-water-supply-bulletin>

*Summer drought:* Recent years hit records for summer droughts in BC; 2015, 2017, and 2018 were particularly dry years. One of the most significant droughts on record occurred in 2017, during which records were set for the driest season, with almost no rain in southern BC from June to late October, and peak drought occurring in October. In 2018, a heatwave in early spring depleted snowpacks, and lack of precipitation from July to November created extensive dry conditions from July to November. In 2019, a spring heatwave created dry conditions across the province, and drove down streamflow levels. Heavy rains in July began to relieve the drought, and by October, most of the province had returned to normal. Only 2016 was an average year for precipitation.

<https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=838d533d8062411c820eef50b08f7ebc>

## **Marine indicators**

### **Juvenile Rearing: 2017-2020**

*Overview:* Marine heatwaves continued in the Northeast Pacific Ocean from 2018-2020. Winter mixing from the winter of 2017/2018 to 2019 was generally low, resulting in lower levels of nutrient inputs into surface waters, reduced primary production, and warmer ocean temperatures (Ross and Robert, 2019 and 2020).

These factors resulted in lipid-poor southern zooplankton species, typically centred 1,000 km south of the southern British Columbia coast, dominating lower levels of the salmon food web (see Table 16-2 in Galbraith & Young 2020). Shifts in species composition were observed in waters along the West and North Coast of Vancouver Island, and broadly in the NE Pacific (Boldt et al. 2019). These southern species are considered poorer quality food for the salmon food web. In cooler years, larger lipid-rich, higher-quality boreal copepods typically dominate zooplankton composition from the coast of Oregon up to the Bering Sea and subarctic copepods that inhabit deeper areas of the subarctic Pacific and Bering Sea from North America to Asia (Galbraith & Young 2020).

*Effects of Ocean Temperature on Salmon:* Salmon metabolic demands increase with temperature. Without a concurrent increase in prey quality or quantity, salmon growth and productivity will

decrease under warming conditions (Holsman et al. 2018). In recent years Chinook body weight for a given length declined (Daly et al. 2017). Predation also can intensify in warmer ocean conditions, increasing salmon mortality (Holsman et al. 2012).

*Effects of Food Web Changes on Salmon:* Warm ocean temperatures may be harmful to salmon through their effect on zooplankton composition, a key pathway potentially linking reduced salmon productivity to temperatures in the Northeast Pacific Ocean (Mackas et al. 2007). Warmer temperatures cause shifts in the distribution of southern prey species northward, to occupy habitats previously too cold for them (Mackas et al. 2004). Zooplankton communities near the base of the food web in the Northeast Pacific Ocean shifted in warm Blob years towards a greater abundance of lipid-poor southern copepods, as these animals moved northward, and fewer lipid-rich subarctic and boreal copepods (Galbraith and Young 2020, Young et al. 2018). The warmer water species are considered to be poorer quality food for species higher up the food chain, due to their smaller size and lower fat content (Mackas et al. 2007).

*Ocean Temperatures:* Water temperatures have been warmer than average in the Northeast Pacific Ocean in recent decades, and unusually warm from 2016-2020 (Figure 2.2-3). Marine records were set in these waters throughout this period (Leising and Bograd 2020).

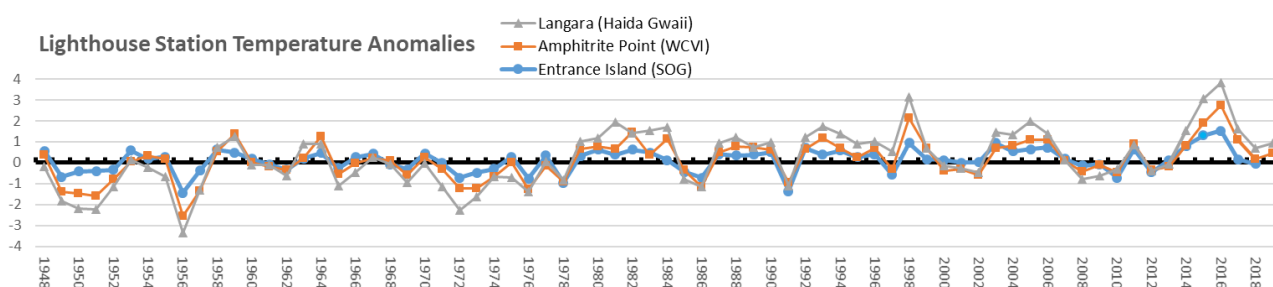


Figure 2.2-3: Annual average sea-surface-temperature anomalies from Fisheries & Oceans Canada lighthouse stations: <https://www.dfo-mpo.gc.ca/science/data-donnees/lightstations-phares/index-eng.html>. The 2018 and 2019 temperatures at the end of the time series coincided with the marine residence period of some Sockeye, Chum and Chinook salmon returning in 2021. Note there are gaps in the 2019 data points for these sites. Anomalies represent the departure from a mean reference period (1961-1990). Temperature anomalies are expressed as degree Celsius (C).

In the years prior to the marine residency of salmon returning in 2021, the notable warm Blob heat wave in the Northeast Pacific Ocean was present from the latter half of 2013 to the fall of 2016 (Bond et al. 2015), occurring in the years prior to the ocean entry timing of most of the salmon that will return in 2021. This marine heat wave was characterized by sea-surface-

temperatures (SST) that were 3-5°C above seasonal averages, and extended down to depths of 100 m (Bond et al. 2015). A strong El Niño event occurred in late 2015 to early 2016, further increasing temperatures during this period to the hottest observed throughout the 137-year time-series.

There was a return to near-average temperatures in 2017 and 2018, likely due to the cooling effect of the La Niña that persisted until the second half of 2018 (Ross and Robert 2017 and 2018). In 2017 warmer than normal temperatures persisted below 100m, then returned near normal in 2018 (Ross and Robert 2017 and 2018). New heatwaves were observed in the late summer and fall of 2018 through 2020 (Hannah et al. 2019, Leising & Bograd 2020, Ross and Robert 2020). The 2019 MHW was the third largest and longest on record, and warmer than normal subsurface temperatures were observed once more at about 100m. The 2020 marine heatwave is still present based on data available to 12 December, 2020 (Leising & Bograd 2020). At its maximum size, it was the 2<sup>nd</sup> largest on record.

*Physical oceanography:* Normal winter mixing conditions occurred in the winter-spring of 2016/17, suggesting there would have been a normal nutrient supply in the NE Pacific during this period (Ross 2017, Ross & Robert 2018). However, upwelling of nutrient rich water in the spring 2017 was average to below average, and late seasonally, resulting in average to below average productivity (Hourston and Thomson 2017). The combined timing and magnitude of upwelling nutrient rich waters in 2018 show a mixed signal for upwelling-based productivity (Hourston & Thomson 2018). Winter mixing in subsequent years was weak during the winter (Ross & Robert 2018), likely also reducing the nutrient supply in 2019 and 2020 (Ross and Robert 2020).

*Phytoplankton:* Phytoplankton composition and biomass off the west coast were largely similar to pre-Blob conditions in both 2017, 2018 and 2019 (Batten 2018, 2019, Peña and Nemcek 2018, 2019, Galbraith and Young 2020).

*Zooplankton:* The zooplankton community continued to exhibit characteristics consistent with warmer ocean temperatures from 2016 to 2019, characterized by high abundances of gelatinous taxa and low abundances of crustaceans (Batten 2018, 2019, Galbraith & Young 2018, 2019, 2020). Among those crustaceans, higher than average abundance of southern, lipid-poor, copepod species, and low abundance of lipid-rich, subarctic copepods were found in samples (Galbraith and Young 2018, 2019, 2020). However, the trend of decreasing subarctic copepods slowed in 2018, while the biomass of boreal copepods increased (Galbraith and Young 2019), indicating improvements to the quality of food near the base of the salmon food web. In 2019 boreal/subarctic zooplankton community were much like 2017-18, but still not average (Galbraith and Young 2020).

## Summary

Quantitative models predicting salmon returns are becoming increasingly uncertain, since current conditions are becoming exceptional due to climate change. Freshwater and marine temperatures have been anomalously warm in recent years, making predicting future returns using past data a challenge.

Environmental conditions that can negatively affect salmon varied from 2016-2020, depending on latitude and year, but generally included:

- Higher river, lake, and ocean temperatures
- Earlier snowmelt in snow-dominated freshwater habitats
- Summer drought
- Ocean food web changes, with higher proportions of poorer quality zooplankton at lower trophic levels

The effect of these climate-related challenges on 2021 returning salmon populations will depend on specific conditions encountered and their life-histories, with more southern BC populations and species that spend more time in freshwater showing the most impact. Environmental conditions will interact with landscape changes in freshwater that have occurred from natural events like forest fires or mountain pine beetle kills, and human activities, such as logging, agriculture, and development.

Overall, we predict below-average returns for 2021 salmon due to environmental changes from 2016-2020 related to climate change, though exceptions will occur.

## References

- Batten, S. 2018. Lower trophic levels in the Northeast Pacific. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2017. Can. Tech. Rep. Fish. Aquat. Sci. 3225. *Edited by* P.C. Chandler, S.A. King, and J.L. Boldt. pp. 65–68. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2017/index-eng.html>.
- Batten, S. 2019. Lower trophic levels in the Northeast Pacific. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2018. Can. Tech. Rep. Fish. Aquat. Sci. 3314. *Edited by* J.L. Boldt, J. Leonard, and P.C. Chandler. pp. 59–63. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Boldt, J.L., Leonard, J., and Chandler, P.C. 2019. State of the physical, biological and selected fishery resources of Pacific Canadian marine ecosystems in 2018. Can. Tech. Rep. Fish. Aquat. Sci. 3314: vii + 248. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Boldt, J.L., Javorski, A., and Chandler, P.C. (Eds.). 2020. State of the physical, biological and selected fishery resources of Pacific Canadian marine ecosystems in 2019. Can. Tech. Rep. Fish. Aquat. Sci. 3377: x+ 288p.
- Bond, N.A., Cronin, M.F., Freeland, H., and Mantua, N. 2015. Causes and impacts of the 2014 warm anomaly in the



- NE Pacific. Geophys. Res. Lett. **42**(9): 3414–3420. doi:10.1002/2015GL063306.
- Brett, J.R. 1971. Energetic responses of salmon to temperature. A study of some thermal relations in the physiology and freshwater ecology of sockeye salmon (*Oncorhynchus nerka*). Am. Zool. **11**(1): 99–113. doi:198.103.39.129.
- Burt, J.M., Hinch, S.G., and Patterson, D.A. 2011. The importance of parentage in assessing temperature effects on fish early life history: a review of the experimental literature. Rev. Fish Biol. Fish. **21**: 377–406. doi:10.1007/s11160-010-9179-1.
- Burt, J.M., Hinch, S.G., and Patterson, D.A. 2012. Developmental temperature stress and parental identity shape offspring burst swimming performance in sockeye salmon (*Oncorhynchus nerka*). Ecol. Freshw. Fish **21**(2): 176–188. doi:10.1111/j.1600-0633.2011.00535.x.
- Bush, E., and Lemmen, D.S. (Editors). 2019. Canada’s changing climate report. Government of Canada, Ottawa, ON. Available from [www.ChangingClimate.ca/CCCR2019](http://www.ChangingClimate.ca/CCCR2019).
- Crozier, L.G., McClure, M.M., Beechie, T., Bograd, S.J., Boughton, D.A., Carr, M., Cooney, T.D., Dunham, J.B., Greene, C.M., Haltuch, M.A., Hazen, E.L., Holzer, D.M., Huff, D.D., Johnson, R.C., Jordan, C.E., Kaplan, I.C., Lindley, S.T., Mantua, N.J., Moyle, P.B., Myers, J.M., Nelson, M.W., Spence, B.C., Weitkamp, L.A., Williams, T.H., and Willis-Norton, E. 2019. Climate vulnerability assessment for Pacific salmon and steelhead in the California Current Large Marine Ecosystem. PLoS One **14**(7): e0217711. doi:10.1371/journal.pone.0217711.
- Daly, E.A., Brodeur, R.D., and Auth, T.D. 2017. Anomalous ocean conditions in 2015: impacts on spring Chinook salmon and their prey field. Mar. Ecol. Prog. Ser. **566**: 169–182. doi:10.3354/meps12021.
- DFO. 2016. Fraser River environmental watch. <https://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/reports-rapports/archives-eng.html>. [Accessed Dec 10, 2020]
- DFO. 2017. Fraser River environmental watch. <https://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/reports-rapports/archives-eng.html>. [Accessed Dec 10, 2020]
- DFO. 2018. Fraser River environmental watch. Available from <https://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/reports-rapports/archives-eng.html>. [Accessed Dec 10, 2020]
- DFO. 2019. Fraser River environmental watch. Available from <https://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/reports-rapports/archives-eng.html>. [Accessed Dec 10, 2020]
- DFO. 2020. Fraser River Environmental Watch. Available from <https://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/index-eng.html>. [Accessed Dec 10, 2020]
- Edmundson, J.A., and Mazumder, A. 2001. Linking growth of juvenile sockeye salmon to habitat temperature in Alaskan lakes. Trans. Am. Fish. Soc. **130**: 644–662. doi:10.1577/1548-8659(2001)130<0644:LGOJSS>2.0.CO;2.
- Eliason, E.J., Clark, T.D., Hague, M.J., Hanson, L.M., Gallagher, Z.S., Jeffries, K.M., Gale, M.K., Patterson, D.A., Hinch, S.G., and Farrell, A.P. 2011. Differences in thermal tolerance among sockeye salmon populations. Science (80-. ). **332**(6025): 109–112. doi:10.1126/science.1199158.
- Galbraith, M., and Young, K. 2018. West Coast British Columbia zooplankton biomass anomalies 2017. In State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2017. Can. Tech. Rep. Fish. Aquat. Sci. 3266. Edited by P.C. Chandler, S.A. King, and J.L. Boldt. pp. 69–75. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2017/index-eng.html>.
- Galbraith, M., and Young, K. 2019. West Coast British Columbia zooplankton biomass anomalies 2018. In State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2018. Can. Tech. Rep. Fish. Aquat. Sci. 3314. Edited by J.L. Boldt, L. J, and P.C. Chandler. pp. 64–69. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Galbraith, M., and Young, K. 2020. West Coast British Columbia zooplankton biomass anomalies 2019. In State of the physical, biological and selected fishery resources of Pacific Canadian marine ecosystems in 2019. Can. Tech.



- Rep. Fish. Aquat. Sci. 3377. *Edited by* J.L. Boldt, L. J, and P.C. Chandler. pp. 64–69. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Grant, S.C.H., MacDonald, B.L., and Winston, M.L. 2019. State of the Canadian Pacific Salmon: Responses to Changing Climate and Habitats. *Can. Tech. Rep. Fish. Aquat. Sci.* 3332: ix + 50 pp. Available from <http://www.dfo-mpo.gc.ca/species-especes/publications/salmon-saumon/state-etat-2019/abstract-resume/index-eng.html>.
- Hannah, C., Page, S., and Ross, T. 2019. Ocean surface temperatures in 2018: another marine heat wave? *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2018. *Can. Tech. Rep. Fish. Aquat. Sci.* 3314. *Edited by* J.L. Boldt, J. Leonard, and P.C. Chandler. pp. 31–36. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Holsman, K., Hollowed, A., Shin-Ichi, I., Bograd, S., Hazen, E., King, J., Mueter, F., and Perry, R.I. 2018. Climate change impacts, vulnerabilities and adaptations: North Pacific and Pacific Arctic marine fisheries. *In* Impacts of climate change on fisheries and aquaculture: synthesis of current knowledge, adaptation and mitigation options. *Edited by* M. Barange, T. Bahri, M.C.M. Beveridge, K.L. Cochrane, S. Funge-Smith, and F. Poulain. FAO Fisheries and Aquaculture Technical Paper, No. 627. FAO, Rome. pp. 113–138. Available from <http://www.fao.org/3/i9705en/i9705en.pdf>.
- Holsman, K.K., Scheuerell, M.D., Buhle, E., and Emmett, R. 2012. Interacting effects of translocation, artificial propagation, and environmental conditions on the marine survival of Chinook salmon from the Columbia River, Washington, U.S.A. *Conserv. Biol.* 26(5): 912–922. doi:10.1111/j.1523-1739.2012.01895.x.
- Hourston, R.A.S., and Thomson, R.E. 2017. Wind-driven upwelling/downwelling along the northwest coast of North America: timing and magnitude. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2016. *Can. Tech. Rep. Fish. Aquat. Sci.* 3225. *Edited by* P.C. Chandler, S.A. King, and J.L. Boldt. pp. 21–27. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2016/index-eng.html>.
- Hourston, R.A.S., and Thomson, R.E. 2018. Wind-driven upwelling/downwelling along the Northwest coast of North America: timing and magnitude. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2017. *Can. Tech. Rep. Fish. Aquat. Sci.* 3266. *Edited by* P.C. Chandler, J.L. Boldt, and S.A. King. pp. 21–26. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2017/index-eng.html>.
- IPBES. 2018. The regional assessment report on biodiversity and ecosystem services for the Americas. *Edited By* J. Rice, C.S. Seixas, M.E. Zaccagnini, M. Bedoya-Gaitán, and N. Valderrama. Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany. 656 pp. Available from [https://www.ipbes.net/system/tdf/2018\\_americas\\_full\\_report\\_book\\_v5\\_pages\\_0.pdf?file=1&type=node&id=29404](https://www.ipbes.net/system/tdf/2018_americas_full_report_book_v5_pages_0.pdf?file=1&type=node&id=29404).
- IPCC. 2014. Climate change 2014: impacts, adaptation, and vulnerability. Part A: global and sectoral aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. *Edited By* C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. 1132 pp. Available from <https://www.ipcc.ch/report/ar5/wg2/>.
- IPCC. 2018. Summary for policymakers. *In* Global warming of 1.5°C. An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change. *Edited By* V. Masson-Delmotte, P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield. World Meteorological Organization, Geneva, Switzerland. 32 pp. Available from <http://www.ipcc.ch/report/sr15/>.
- Leising, J., and Bograd, S.J. 2020. The California Current marine heatwave tracker-an experimental tool for tracking

- marine heatwaves: California Current Project. Southwest Fisheries Science Centre. NOAA. Available from <https://www.integratedecosystemassessment.noaa.gov/regions/california-current/cc-projects-blobtracker> [Accessed December 12, 2020].
- MacDonald, B.L., Grant, S.C.H., Patterson, D.A., Robinson, K.A., Boldt, J.L., Benner, K., Neville, C.M., Pon, L., Tadey, J.A., Selbie, D.T., and Winston, M.L. 2018. State of the Salmon: informing the survival of Fraser sockeye returning in 2018 through life cycle observations. *Can. Tech. Rep. Fish. Aquat. Sci.* **3271**. Available from <https://waves-vagues.dfo-mpo.gc.ca/Library/4072511x.pdf>.
- Macdonald, J.S., Scrivener, J.C., Patterson, D.A., and Dixon-Warren, A. 1998. Temperatures in aquatic habitats: the impacts of forest harvesting and the biological consequences to sockeye salmon incubation habitats in the interior of B.C. *In* Forest-fish conference: land managment practices affecting aquatic ecosystems. Proc. Forest-Fish Conf., May 1-4, 1996, Calgary, AB. *Edited by* M.K. Brewin and D.M.A. Monita. Natural Resources Canada, Edmonton, AB. pp. 313–324.
- Mackas, D.L., Batten, S., and Trudel, M. 2007. Effects on zooplankton of a warmer ocean: recent evidence from the Northeast Pacific. *Prog. Oceanogr.* **75**(2): 223–252. doi:10.1016/j.pocean.2007.08.010.
- Mackas, D.L., Peterson, W.T., and Zamon, J.E. 2004. Comparisons of interannual biomass anomalies of zooplankton communities along the continental margins of British Columbia and Oregon. *Deep Sea Res. Part II Top. Stud. Oceanogr.* **51**(6–9): 875–896. doi:10.1016/j.dsr2.2004.05.011.
- NOAA 2020. Climate at a Glance: Global Time Series. Available from [https://www.ncdc.noaa.gov/cag/global/time-series/globe/land\\_ocean/ytd/10/1880-2020](https://www.ncdc.noaa.gov/cag/global/time-series/globe/land_ocean/ytd/10/1880-2020) [accessed 1 December 2020].
- NOAA. 2020b. Global climate report-annual 2019. Available from <https://www.ncdc.noaa.gov/sotc/global/201913> [accessed 20 February 2020].
- Patterson, D.A., Skibo, K.M., Barnes, D.P., Hills, J.A., and Macdonald, J.S. 2011. The influence of water temperature on time to surface for adult sockeye salmon carcasses and the limitations in estimating salmon carcasses in the Fraser River, British Columbia. *N. Am. J. Fish. Manag.* **27**(3): 878–884. doi:10.1577/M06-098.1.
- PCIC. 2020. Seasonal Anomaly Maps. Available from <https://www.pacificclimate.org/analysis-tools/seasonal-anomaly-maps> [accessed 1 December 2020].
- Peña, A., and Nemcek, N. 2018. Results from phytoplankton monitoring at Line P and WCVI. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2017. *Can. Tech. Rep. Fish. Aquat. Sci.* 3225. *Edited by* P.C. Chandler, S.A. King, and J.L. Boldt. pp. 55–59. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2017/index-eng.html>.
- Peña, A., and Nemcek, N. 2019. Phytoplankton in surface waters along Line P and off the west coast of Vancouver Island. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2018. *Can. Tech. Rep. Fish. Aquat. Sci.* 3314. *Edited by* J.L. Boldt, J. Leonard, and P.C. Chandler. pp. 54–58. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Ross, T. 2017. La Niña, the blob and another warmest year. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2016. *Edited by* P.C. Chandler, S.A. King, and J.L. Boldt. pp. 30–34. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2016/index-eng.html>.
- Ross, T., and Robert, M. 2018. La Niña and another warm year. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2017. *Can. Tech. Rep. Fish. Aquat. Sci.* 3225. *Edited by* P.C. Chandler, S.A. King, and J.L. Boldt. pp. 27–32. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2017/index-eng.html>.
- Ross, T., and Robert, M. 2019. Another warm, but almost normal, year in the Northeast Pacific Ocean. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2018. *Can. Tech. Rep. Fish. Aquat. Sci.* 3314. *Edited by* J.L. Boldt, J. Leonard, and P.C. Chandler. *Can. Tech. Rep. Fish. Aquat. Sci.* 3314. pp. 15–20. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2018/index-eng.html>.
- Ross, T., and Robert, M. 2020. Are Marine Heatwaves the New Normal for the Northeast Pacific Ocean? *In* State of

- the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2019. Can. Tech. Rep. Fish. Aquat. Sci. 3377. Edited by J.L. Boldt, A. Javorski, and P.C. Chandler. Available from <https://waves-vagues.dfo-mpo.gc.ca/Library/40884569.pdf>
- Schindler, D.E., Rogers, D.E., Scheuerell, M.D., and Abrey, C.A. 2005. Effect of changing climate on zooplakton and juvenile sockeye salmon growth in Southwestern Alaska. *Ecology* **86**(1): 198–209. doi:10.1890/03-0408].
- Sopinka, N.M., Middleton, C.T., Patterson, D.A., and Hinch, S.G. 2016. Does maternal captivity of wild, migratory sockeye salmon influence offspring performance? *Hydrobiologia* **779**(1): 1–10. doi:10.1007/s10750-016-2763-1.
- Tierney, K.B., Patterson, D.A., and Kennedy, C.J. 2009. The influence of maternal condition on offspring performance in sockeye salmon *Oncorhynchus nerka*. *J. Fish Biol.* **75**(6): 1244–1257. doi:10.1111/j.1095-8649.2009.02360.x.
- United Nations Environment Programme. 2019. Emissions gap report 2019. UNEP, Nairobi. doi:10.18356/ff6d1a84-en.
- White, T., Wolf, J., Anslow, F. 2016. *Indicators of Climate Change for British Columbia: 2016 Update*. Ministry of Environment, Government of British Columbia.
- Whitney, C.K., Hinch, S.G., and Patterson, D.A. 2014. Population origin and water temperature affect development timing in embryonic sockeye salmon. *Trans. Am. Fish. Soc.* **143**(5): 1316–1329. doi:10.1080/00028487.2014.935481.
- Young, K., Galbraith, M., and Perry, I. 2018. Zooplankton status and trends in the central Strait of Georgia, 2017. *In* State of the Physical, Biological and Selected Fishery Resources of Pacific Canadian Marine Ecosystems in 2017. Can. Tech. Rep. Fish. Aquat. Sci. 3225. Edited by P.C. Chandler, S. King, and J. Boldt. pp. 180–184. Available from <https://dfo-mpo.gc.ca/oceans/publications/soto-rceo/2017/index-eng.html>.

## **2.3 INDIGENOUS KNOWLEDGE SYSTEMS (IKS)**

As defined herein, Indigenous Knowledge Systems (IKS) are cumulative and gathered over generations by First Nation, Métis or Inuit individuals and communities, which encompass regional, local and spiritual connections to ecosystems and all forms of plant and animal life. Indigenous Knowledge (IK) has also been referred to, at times, as Aboriginal Traditional Knowledge (ATK) and Traditional Ecological Knowledge (TEK). IK is holistic and viewed in terms of the interconnectedness of whole systems.

Indigenous Knowledge is needed to inform and fill knowledge gaps related to the health of salmon stocks and to aid decision making related to development and resource use. The Government of Canada and the scientific community acknowledge the need to access and incorporate IK in meaningful and respectful ways. The challenge for resource managers is how to engage knowledge holders and how to ensure that the information can be accessed and considered in a mutually acceptable manner, by both knowledge holders, and the broader community of First Nations, stakeholders, managers, and policy makers involved in the fisheries.

The Wild Salmon Policy (2005) and Wild Salmon Policy Implementation Plan (2018) both acknowledge the importance of integrating IKS and Traditional Ecological Knowledge (TEK) into the strategic planning process. The Department is exploring best practices to develop an

approach for incorporating IKS into WSP integrated planning. The Department may identify potential partnerships with First Nations organizations to develop an approach for integrating IKS into WSP, particularly in planning initiatives.

The *Species at Risk Act* makes a special reference to the inclusion of Traditional Knowledge in the recovery of species at risk. The Department has developed an operational guidance document for SARA practitioners (Guidance on Considering Traditional Knowledge in Species at Risk Implementation, 2011). Aboriginal groups have participated in the development and implementation of Interior Fraser River Coho and Cultus Lake Sockeye salmon species recovery strategies. The Department utilized Indigenous knowledge about traditional fisheries, and the historical distribution and relative abundance of salmon in local watersheds in the selection of index streams for escapement monitoring of Interior Fraser Coho (Decker and Irvine 2013), and also for determining historical abundance ranges of Kitwanga and Morice Lake Sockeye.

In 2019, the *Fisheries Act* was amended to include provisions for the where the Minister may, or shall consider provided Indigenous Knowledge in making decisions pertaining to fisheries, fish and fish habitat, as well as provisions for the additional protection of that knowledge when shared in confidence. The Department is working to develop a process to improve how DFO receives and provides the knowledge to the Minister for their consideration. This will be an iterative process done in collaboration with First Nations, Indigenous groups and knowledge holders, to ensure the protection of the knowledge provided.

## **2.4 STOCK ASSESSMENT**

Salmon stock assessment is primarily concerned with providing sound scientific information to inform activities relating to the conservation and management of salmon resources. Stock assessment describes the past and present state of salmon stocks and may provide forecasts of future states. Stock assessment programs contribute information to the fisheries management process, from the initial setting of objectives (and policies) to providing expert advice in the implementation of management plans. Stock assessment information also supports First Nations and Treaty obligations, integrated ocean management planning, development of marine protected areas, protection and recovery of species at risk, and international Treaty obligations and negotiations.

Historically, stock assessment has primarily focused on population dynamics of individual exploited stocks, as well as biological and population processes such as growth, reproduction, recruitment and mortality. As DFO moves to implementation of an ecosystem approach, populations must be considered in a broader context and all activities impacting status, not just fishing, must be considered.

In the Pacific Region, salmon stock assessment advice is provided through the Salmon Assessment Section within each Area (Yukon and Transboundary, North Coast, South Coast and Fraser and Interior Area), in conjunction with core Salmon Stock Assessment staff in the Stock Assessment and Research Division of Science Branch. External partners and clients play an increasing role in delivery of stock assessment activities. Some First Nations, recreational and commercial harvesters contribute directly through data collection and reporting. First Nations and community groups conduct field data collection projects. Universities and non-government organizations (NGOs) are active in analytical and peer review processes. Stock assessment staff collaborate with other regional, national and international organizations and conduct numerous cooperative and/or joint programs.

The Salmon Stock Assessment Framework is shaped by the WSP Strategy 1 which specifies requirements for standardized monitoring, status & management predicated on benchmarks. Strategy 1 identifies three elements:

- WSP Strategy 1 provides a standardized process for organizing Pacific salmon into Conservation Units (CUs), groups of wild salmon living in an area that are sufficiently isolated from other wild salmon such that the area is unlikely to be recolonized naturally in an acceptable period of time if they are extirpated. Scientists have grouped the greater than 9,600 Pacific salmon stocks into just over 450 discreet Conservation Units.
- DFO has developed criteria to assess CUs and identified a range of metrics for setting upper and lower CU benchmarks of status, dependent on data quality and availability (Holt et al. 2009; Holt et al. 2018). For each metric, lower and upper benchmarks will delimit three status zones of a CU. Management actions will be determined based on a CUs biological status relative to these benchmarks. Management will be focused on conservation measures for CUs in the red zone (i.e. below the lower benchmark), shift to cautionary management in the amber zone (between the lower and upper benchmark), and emphasizes sustainable use in the green zone (i.e., above the upper benchmark).
- A key requirement of the WSP is ongoing monitoring and assessment of the status of CUs. Monitoring wild salmon status in a cost-effective manner poses a challenge. It is not practical or cost effective to monitor all salmon demes. (A deme, as defined in the WSP, is a term for a local population of organisms of one species that actively interbreed with one another and share a distinct gene pool.) When groups of CUs are exposed to common threats, the approach will be to monitor a subset of these units. Annually, assessment monitoring plans are updated by the Salmon Assessment Coordinating Committee (SACC) based on CU status determination

and risks. The CU status will generally determine the frequency and intensity of the assessment effort. For example, when a CU falls within the Red Zone, ongoing annual assessment of its status including fishery and habitat impacts may be required. The SACC is developing a database that describes benchmarks, status, major risk factors, resource management objectives, and assessment requirements. Assessment procedures will build on existing programs and local partnerships.

The vast number of stocks and the complex life cycle of salmon present substantial assessment and management challenges. Stock assessment activities are largely project-based and required on an ongoing basis because populations are dynamic and subject to shifts in productivity and abundance in response to environmental, biological, and human-induced factors. Responsible management requires continual updating of assessment information and advice. Scientists use a variety of techniques to generate estimates and forecasts of abundance (e.g., enumeration of juvenile “recruits”, females or adults on the spawning grounds, tagging and mark recapture studies, etc.). For most species, several methods may be used to generate the estimates and forecasts of abundance.

## **2.5 SCIENCE INFORMATION SOURCES**

The Canadian Science Advisory Secretariat (CSAS) serves as the primary departmental forum for peer review and evaluation of scientific research and literature, including TEK, relating to Pacific salmon. CSAS fosters national standards of excellence and coordinates the peer review of scientific assessments and advice for the DFO in the Pacific region. This review body allows for participation by outside experts, First Nations, fisheries stakeholders and the public. CSAS also coordinates communication of the results of the scientific review and advisory processes.

Additional information about CSAS, the peer review process and meeting schedule, as well as reports on the status of salmon, environmental and ecosystem overviews prior to 2014, and existing research documents are available from CSAS web site:

<http://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm>

DFO is continuing to implement WSP Strategy 1.2, determination of biological benchmarks and assess status. Benchmarks for Fraser Sockeye Conservation Units were developed in 2010 ([Grant et al. 2011](#)), initial status assessed in 2011 ([Grant and Pestal 2013](#)) and updated in June 2017 ([DFO 2018a](#)) through CSAS Regional Peer Review (RPR) processes. DFO completed a CSAS RPR process of WSP benchmarks and status assessment for Southern BC Chinook in February 2014 ([DFO 2016](#)). An assessment of WSP benchmarks and status assessment for Interior Fraser Coho was completed in November 2014 ([DFO 2015a](#)). Additionally, results are available from review of a habitat-based approach to determine benchmarks for Strait of

Georgia and Lower Fraser River Coho Conservation Units ([DFO 2015b](#)). Finally, a process for evaluating biological benchmarks for data-limited populations (Conservation Units) of Pacific salmon with a focus on Chum Salmon in Southern BC was reviewed in a July 12-13, 2017 CSAS RPR process ([Holt et al. 2018](#)).

Other recent research projects and Science advice processes include:

- estimates of a biologically-based spawning goal and biological benchmarks for the Canadian-origin Taku River Coho stock aggregate ([DFO 2015c](#));
- an evaluation and update of biologically-based targets for enhanced contributions to Chinook populations ([DFO 2018b](#));
- review of a proposed framework for determination of Pacific Salmon Commission reference points for status determination and associated allowable exploitation rates for select Canadian southern Coho Salmon management units ([DFO 2018c](#));
- Science information to support Chinook Salmon management measures in 2018 ([DFO 2018d](#)); and
- development of a framework for reviewing and approving revisions to Wild Salmon Policy Conservation Units (October 2018; [http://www.dfo-mpo.gc.ca/csas-sccs/Schedule-Horraire/2018/10\\_25-26-eng.html](http://www.dfo-mpo.gc.ca/csas-sccs/Schedule-Horraire/2018/10_25-26-eng.html)).

## **ANNUALLY, DFO PROVIDES A QUALITATIVE OUTLOOK OF STATUS FOR SALMON MANAGEMENT, THE SALMON OUTLOOK, FOR PLANNING PURPOSES PRIOR TO FORMAL FORECASTS OF ABUNDANCE. THE SALMON OUTLOOK FOR THE CURRENT YEAR IS AVAILABLE IN APPENDIX 10: 2021 SALMON OUTLOOK**

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### **Purpose**

The purpose of this document is to provide an 'Outlook' of expected abundance of salmon in 2021 to inform the harvest planning process.

The Outlook provides either an expected abundance for those stocks with statistical forecasts or a categorical abundance expectation based expert opinion.

### **Changes to the outlook**

For 2021, changes have been made to the Outlook document in order to:

- I. Align CU groupings with stock management units (SMUs) to better inform decision-making consistent with *Fishery Act* and IFMP requirements.
- II. For those SMUs with statistical forecasts, consolidate and report them in the Outlook Document.
- III. For those SMUs without statistical forecasts, standardize the interpretation of SMU status in relation to outlook categories;
- IV. Remove language regarding fishery consequences.
- V. Add information on SMU ‘stock trajectories’ and biological benchmarks and management references (where defined) for additional context. (In Progress)

It is hoped these changes will result in a document that provides more useful and relevant information to inform decision-making.

### **Background**

#### **Stock Management Units**

For the 2021 Outlook, ‘Stock Management Units’ (SMUs) replace ‘Outlook Units’ (OUs). This change has been made because many OUs did not correspond well with stock aggregates used to inform development of Integrated Fisheries Management Plans (IFMPs) for salmon. Refinement is also required for implementation of the fisheries-related revisions to the Fishery Act.

For salmon, the working definition of a ‘stock management unit’ (SMU) is a ‘group of one or more conservation units (CUs) that are managed together with the objective of achieving a joint status’, meaning harvest control rules would apply to the aggregate, at least in a coarse sense. Use of SMUs does not preclude considerations related to conserving CU-level diversity, but rather is a practical aggregation of CUs for harvest planning and reporting purposes. That is, it is the scale at which harvest management plans, or better, management and assessment procedures, are developed in Integrated Fisheries Management Plans (IFMPs). In many cases, elements of the Precautionary Approach are implemented at finer scales of organization within a SMU.

#### **Biological and Management References**



The purpose of a stock forecast or outlook is to provide information to harvest managers to potentially adjust harvest plans according to the expected stock abundance. Ideally in that regard, the status of the stock management unit (or sub-unit) is assessed against specified limits and targets and pre-defined harvest strategies (or harvest control rules) are in place that define the actions required to meet targets and avoid limits.

Therefore, where biological benchmarks and/or limit reference points are defined for CUs or SMUs, respectively, they are noted in the Outlook/Forecast tables below. Similarly, if management targets are in place they are identified. Lack of these references is a gap and work is on-going to develop methods and complete the analyses to define these references. The summary below describes how these biological and management references are applied and interpreted.

**WSP Lower Biological Benchmarks and Limit Reference Points (LRPs)**

For implementation of the Wild Salmon Policy, the status of salmon Conservation Units (CU) is assessed against ‘biological benchmarks’. The lower biological benchmark allows for substantial buffer between it and the level of abundance at which the stock would be considered at risk of extinction and is generally estimated as SGEN. The upper biological benchmark delineates the ‘amber’ from ‘green’ WSP status zone and is generally estimated as .80 SMSY. For more data-limited systems (i.e. where it is not possible to numerically estimate stock-recruit parameters), proxies for lower and upper biological benchmarks may be applied. For example, the lower and upper biological benchmarks are estimated as .25 and .60 percentiles of the long-term observed spawning abundance.

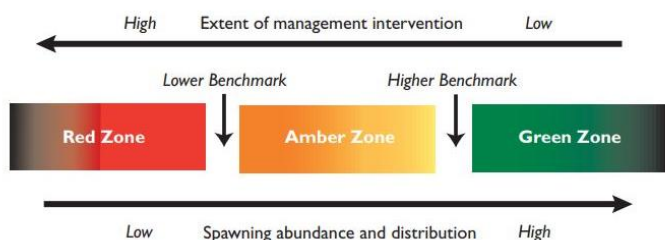


Figure 13.5-17. Benchmarks and biological status zones for CU assessments.

Under DFO’s Precautionary Approach (PA), the stock management unit (SMU) limit reference point (LRP) is a biologically-defined reference that delineates the ‘critical zone’ from the ‘cautious zone’ for harvest management. It represents the status below which serious harm is occurring to the stock. There may also be resultant impacts to the ecosystem, associated species and a long-term loss of harvest opportunities.

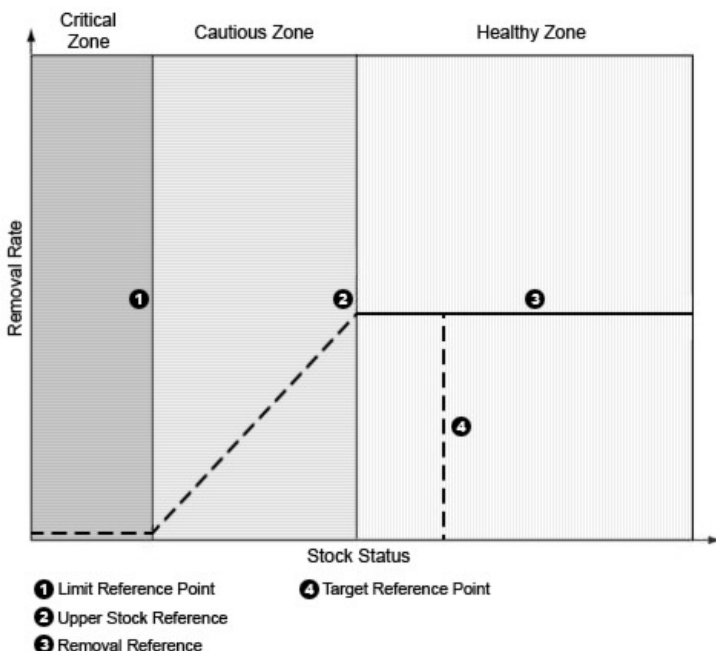


Figure 13.5-18. Schematic of a generalized harvest strategy under DFO’s PA.

Given the intent is similar between the WSP and DFO’s PA, it is practical to equate the SMU LRPs with lower biological benchmarks at the CU level. However, the WSP recognizes that serious harm to species occurs when CUs are depleted or lost. Therefore, to be consistent with the WSP, LRPs at the SMU scale should consider CU-scale biodiversity. Methodological approaches for defining LRPs are being developed to ensure CU-level biodiversity is taken into account and for both data-rich and data-limited assessment systems.

**Management Targets and Operational Control Points**

While management targets or operational control points are often informed by biological benchmarks and stock-recruit reference points, they also take into account other objectives such as maximizing sustainable harvest, avoiding over-fishing, maintaining stable access and opportunity, allocation objectives such as how catch is distributed among harvesters, etc. As such, they are tightly linked to the harvest strategy and fishery management measures.

In some cases, the management target may be a simple trigger such as when a ‘surplus-to-escapement-target’ harvest control rule is in place. In other cases, there may be multiple management targets (or operational control points) used to adjust the harvest control rule at different levels of abundance.

Note that an SMU can be below its management target (and therefore subject to some level of harvest restriction as per the harvest control strategy), but well above levels that represent a

serious conservation concern (i.e. the LRP or LBB). In other situations, an SMU may be well above its target but subject to harvest restrictions because the stock rears or co-migrates in mixed-stock fishing areas with other SMUs (or CUs) that are near or below their LRP (or LBB).

**Stock outlooks**

**Categorical stock outlooks**

For the ‘Preliminary Outlook’ and for those SMUs for which statistical forecasts are not produced, either because the SMU is not intensively managed and/or is more data limited, categorical ‘outlooks’ are assigned. These outlooks are based on expert opinion qualified with information from monitoring programs. For each stock grouping an outlook of expected spawning abundance is assigned based on a scale of 1 to 4.

For CUs or SMUs with references in place (i.e. either lower (LBB) and upper biological benchmarks (UPP) and/or lower reference points (LRP) and upper stock references (USR) and Target Reference Point (TRP)), these references are used to assign Outlook category. For more data-limited CUs or SMUs (i.e. those without defined stock or management references), expected spawning abundance is compared to average or median abundance based on available information.

SMUs for which insufficient data area available to determine an Outlook are noted as ‘Data Deficient’.

Outlook Category	CUs or SMUs with references		Data Limited CUs or SMUs	
	Wild Salmon Policy (CU Level)	Precautionary Approach (SMU Level)	Category Definition	Expected spawning abundance
1	Red Zone (i.e. below the LBB)	Critical Zone (i.e. below the LRP)	Well below average	<25 <sup>th</sup> percentile
2	Amber Zone (i.e. below the LBB, below the UPP)	Cautious Zone (i.e. above the LRP below the USR)	Below Average	25 to 40 <sup>th</sup> percentile
3	Green Zone (i.e. above the UBB)	Healthy Zone (i.e. above the USR)	Near Average	40 to 60 <sup>th</sup> percentile

**APPENDIX 9: CATCH MONITORING AND REPORTING RISK ASSESSMENTS FOR PACIFIC SALMON**

Outlook Category	CUs or SMUs with references		Data Limited CUs or SMUs	
	Wild Salmon Policy (CU Level)	Precautionary Approach (SMU Level)	Category Definition	Expected spawning abundance
4	Green Zone (i.e. at or above the TRP)	Healthy Zone (at or above the TRP)	Abundant	>60 <sup>th</sup> percentile
Data Deficient			Insufficient information	Unknown

## YUKON RIVER AND TRANSBOUNDARY

### YUKON RIVER

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Forecast /Outlook
<b>YUKON CHINOOK</b>	Aggregate includes 9 CUs	<b>51,000</b> (ESC. AVG. 2005+)		<b>48,750</b> (42,500 – 55,000) Escapement Target (S <sub>MSY</sub> )	<b>57,000 (80% CI; 42,000 – 77,000)</b>
	Porcupine Aggregate 3 CUs	Data Deficient (Mainstem as indicator)		N/A	
	The spawning escapement of Canadian-origin Yukon River mainstem Chinook salmon in 2020 was below average, at 31,000. The current spawning escapement goal endorsed by the U.S./Canada Yukon River Panel for Mainstem Chinook is 42,500-55,000 Chinook salmon and has been met only 50% of the time over the last decade. Five and six year-old fish dominate returns. Recent total production observed in Canadian-origin Yukon River Chinook salmon stocks is well below past years: averaging around 71,000 over the last ten years compared to 150,000 in the 1980s and 1990s. Assessment of Porcupine Chinook continues (limited data).				
<b>YUKON COHO</b>	Porcupine CU	<b>4000</b> (ESC. 5-year AVG)			<b>Data Deficient</b>
	Very little is known about Coho Salmon stock status within Canadian portions of the Yukon River drainage. Data from the U.S. portion of the drainage suggest returns to the drainage in the last five years have been near the long term average; however, no assessment programs are currently undertaken in Canada and the current stock status is unknown. It is known that coho salmon primarily return as 4-year-olds and overlap in run timing with fall chum salmon.				
<b>YUKON CHUM</b>	Mainstem – includes 5 CUs	<b>182,000</b> (ESC. AVG. 2006+)		<b>87,000</b> (70,000 - 104,000) Escapement Target (S <sub>MSY</sub> )	<b>135,000 – 190,500</b>
	The spawning escapement of Canadian-origin Yukon River mainstem Chum salmon in 2020 was among the lowest on record, at 23,500. Runs are typically dominated by four year-old fish, followed by five year-old fish; much lower-than-expected returns of four year-old fish in 2020 contributed to the poor run. The current mainstem spawning escapement goal endorsed by the Yukon River Panel is 70,000 – 104,000 Chum salmon, which has been met every year in the past decade except 2020.				
	Porcupine – includes 2 CUs	<b>46,000</b> (ESC. 1972 – 2020 AVG) <b>22,000</b> (ESC. 5-year AVG)		<b>35,500</b> (22,000 - 49,000) Escapement Target (S <sub>MSY</sub> )	<b>1-2</b>
The spawning escapement of Fishing Branch River Chum salmon in 2020 was also historically low, at 4,795. The current spawning escapement goal for the Porcupine River (as assessed at the Fishing Branch River) endorsed by					

	the U.S./Canada Yukon River Panel is 22,000-49,000 Chum salmon. Returns over the last five years have been well below expected and the minimum escapement goal was not achieved in three of the last five years.	
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## TRANSBOUNDARY AREA

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
ALSEK SOCKEYE	Alsek	<b>96,000</b> (ESC. 10-year Avg.)		<b>29,700</b> (esc. Goal range 24,000 – 33,500)	<b>40,000</b>
	Klukshu	<b>13,000</b> (ESC. 10-year Avg.)		<b>9,700</b> (esc. Goal range 7,500 – 11,000)	<b>10,000</b>
	Based on brood year escapements below the MSY target range and stock-recruitment relations from historical records, a below average, but within the escapement goal range run is expected. This aggregate stock is dominated by lake and river type age 5 fish. 2021 Outlook Category is 2.				
ALSEK CHINOOK	Alsek	<b>5,400</b> (ESC. 10-year Avg.)		<b>4,700</b> (esc. Goal range 3,500 – 5,300)	<b>4,000</b>
	Klukshu	<b>1,500</b> (ESC. 10-year Avg.)		<b>1,000</b> (esc. Goal range 800 – 1,200)	<b>1,000</b>
	Based on brood year escapements that were both above and below average but near the MSY target range and recent sibling survival data, an average run within the escapement goal range is expected. Alsek Chinook are stream type dominated by 5- and 6-year olds.				
ALSEK COHO	Alsek CU				<b>2</b>
	Only a partial weir count is carried out. Brood year counts were slightly below average. Run is dominated by 4 year olds				
STIKINE SOCKEYE	Tahltan	<b>67,000:</b> <b>38,000</b> (wild) <b>28,000</b> (enhanced) (ESC. 10-year Avg.)		<b>24,000</b> (18,000 to 30,000) Escapement Target (S <sub>MSY</sub> )	<b>28,000:</b> <b>9,000</b> (wild) <b>19,000</b> (enh.)
	Mainstem	<b>41,000</b> (ESC. 10-year Avg.)		<b>30,000</b> (20,000 to 40,000) Escapement Target (S <sub>MSY</sub> )	<b>28,000</b>
	Based on a combination of primary brood year smolt counts and sibling-based predictions, a below average run is anticipated for 2021 but above escapement goals. Recent poor marine survival may influence this. This is an aggregate stock of lake and river type 5 year olds.				
STIKINE CHINOOK	Aggregate includes 2 CUs	<b>18,500</b> (ESC. 10-year Avg.)		<b>17,400</b> (14,000 - 28,000) Escapement Target (S <sub>MSY</sub> )	<b>9,900</b> (5,400-14,200)
	2021 run is forecast to be well below the 10-year average of 19,200 and below the escapement goal range of 14,000 – 28,000. The anticipated run				

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	size does not provide for directed fisheries. Stikine Chinook are stream type dominated by 5- and 6-year olds.				
<b>STIKINE COHO</b>	Stikine CU				<b>Data Deficient</b>
	Reliable brood year escapement data are limited and ancillary observations are sometimes contradictory.				
<b>TAKU SOCKEYE</b>	Aggregate includes 4 CUs	<b>144,000</b> (ESC. 10-year Avg.)		<b>58,000</b> (Esc. Goal Range 40,000 - 75,000)	<b>140,000</b>
	Enhanced (Tatsamenie)	<b>8000</b> (ESC. 10-year Avg.)	n/a		<b>6000</b>
	Enhanced (Trapper)				<b>300</b>
	Based on stock-recruitment data, the 2021 run is expected to be near the 10 year average of 154,100 but well over the management objective of 58,000. This is an aggregate stock of lake and river type 5 year olds.				
<b>TAKU CHINOOK</b>	Aggregate includes 3 CUs	<b>17,400</b> (ESC. 10-year Avg.)		<b>25,500</b> (19,000 - 36,000) Escapement Target (S <sub>MSY</sub> )	<b>10,300</b> (6,100 to 14,500)
	2021 is expected to again be well below the 10-year average of 19,400 and well below the escapement goal range of 19,000-36,000. The anticipated run size does not provide for directed fisheries. Taku chinook are stream type dominated by 5 and 6 year olds.				
<b>TAKU COHO</b>	Aggregate includes 3 CUs	<b>97,000</b> (ESC. 10-year Avg.)		<b>70,000</b> (50,000 - 90,000) Escapement Target (S <sub>MSY</sub> )	<b>94,000</b>
	Based on preliminary smolt abundance in 2020 combined with recent smolt-to-adult survival rates, an average run above the management target of 70,000 is expected for 2021. Run is dominated by 3 year olds.				
<b>TRANSBOUNDARY CHUM</b>	Taku Chum CU				<b>Data Deficient</b>



**NORTH COAST AREA****HAIDA GWAI**

<b>Stock Management Unit</b>	<b>Conservation Unit / Sub-Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>2021 Outlook</b>
<b>HAIDA GWAI SOCKEYE</b>	Aggregate includes 10 CUs	1990-present avg. spawners ~ 25000	None	Under development for several CUs	<b>2</b> (low to average)
	Low to average returns for systems that were surveyed in 2020 (Copper, Yakoun, Awun, Naden, total count for 4 biggest systems was ~15K).				
<b>HAIDA GWAI PINK – ODD</b>	Aggregate includes 6 CUs (even and odd year)				<b>n/a</b>
	Haida Gwaii stocks are primarily even year stocks with little to no returns in odd years.				
<b>HAIDA GWAI CHINOOK</b>	Aggregate includes 2 CUs				<b>Data Deficient</b>
	No recent assessments of Yakoun Chinook.				
<b>HAIDA GWAI COHO</b>	Aggregate includes 3 CUs				<b>Data Deficient</b>
	Limited assessments since 2002. Returns to enumeration sites such as Tlell and Deena have been generally good over the past decade, with weaker than average escapement observed at Tlell and the Deena in 2020.				
<b>HAIDA GWAI CHUM</b>	Aggregate includes 5 CUs				<b>Data Deficient</b>
	Haida Gwaii Chum stocks have been consistent over the past decade with poor productivity and returns in Area 2E and moderate productivity in Area 2W. Chum returns to Tasu Sound have generally had good productivity with returns achieving management targets in most years over the past decade. Terminal fishing opportunities in Tasu Sound dependent on good marine survival.				

**SKEENA AND NASS RIVERS**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
<b>NASS SOCKEYE</b>	<b>Aggregate includes 7 CUs</b>	<b>261,790</b> (Avg. ESC, 1982+)		250,000 (Escapement Target)	<b>Model 1 (5-yr Avg): 328,000</b> (181,000 to 596,000)  <b>Model 2 (Sibling): 386,000</b> (177,000 to 861,000)  Terminal RTC
	2020 was the lowest return to the Nass since 1992, and below average returns expected for 2021. Forecast TRTC range from 177-861K.				
<b>SKEENA SOCKEYE</b>	<b>Aggregate (wild and hatchery)</b>	<b>2,584,000</b> (Avg. Return 1973+)	<b>Under review</b>	<b>Under review, esc target is 1,050,000, 400,000 lower operational control point</b>	<b>Model 1 (5-yr Avg): 1,258,913</b> (679,966 to 2,300,799)  <b>Model 2 (Sibling): 1,696,972</b> (796,679 to 3,614,662)
	Skeena – Wild Aggregate includes 30 CUs	Variable	Under review	Included in Skeena aggregate, under review	
	Overall, expecting a low to average return in 2021. Return rates for Skeena - Wild are more variable than Babine Lake – Enhanced. Extremely poor returns for lower Skeena sockeye CUs, average returns for some middle and upper Skeena systems, poor for others. Generally poor abundance is forecast in 2020 for wild age-4 Sockeye based on poor age-3 returns in 2020. Stronger age-5 returns expected in 2020 based on higher than expected age-4 returns in 2020. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components.				
	Babine Lake - Enhanced		Under review	Spawning channel capacity = 470,000	
Overall, expecting a moderate return in 2021 unless age-4 Sockeye return stronger than expected. Low age-4 returns expected in 2021 based on very low age-3 returns in 2020. Stronger abundance forecast in 2021 for age-5 Sockeye based on modest age-4 returns in 2020.					
<b>MAINLAND COASTAL SOCKEYE</b>	Areas 3 to 6				<b>2</b>
	Very low escapements relative to average for all coastal and lower Skeena sockeye systems, and for Area 6 sockeye systems				
<b>NASS PINK</b>	Aggregate includes 5 CUs				<b>2</b>
	The Nass pink return is expected to be below average (2). The brood year return was below 25% but better emergence conditions may lead to a slight increase.				
<b>SKEENA PINK</b>	Aggregate includes 3 CUs				<b>1 to 2</b>

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	The Skeena pink return is expected to be “well below average” (1) to “below average” (2). The brood year return was below 25% but better emergence conditions may lead to a slight increase				
<b>NASS CHINOOK</b>		<b>31,000</b> (TRTC 1994-2020)		15,000 (ESC target)	<b>32,000</b> (18,000 to 56,000) Terminal RTC
	The 2021 return is uncertain after record low escapements in 2017. Preliminary forecast is for 24,000 return to Canada (Nisga’a Fish & Wildlife). There is generally low productivity among stream-type stocks in the north-west				
<b>SKEENA CHINOOK</b>	Aggregate includes 12 CUs	<b>72,000</b> (GSI mark-recapture based on KLM Petersen estimates 1984-2020)			<b>2</b>
	Kitsumkalum Indicator Stock	13,200 (KLM Petersen mark-recapture 1984-2020)			
	Below average returns are expected for both summer and spring timed Skeena Chinook. The 2021 return is highly uncertain after record low escapements in 2017 and 2020. There is generally low productivity among stream-type stocks in the north-west				
<b>NASS COHO</b>	Aggregate includes 3 CUs				<b>1-2</b>
	Total escapement is expected to be below average in 2021. The 2020 run size was well below average with low productivity and marine survival evident in the preceding years.				
<b>SKEENA COHO</b>	Aggregate includes 4 CUs				<b>1-2</b>
	Lower productivity over previous years is forecasted based on low returns in 2020 for both interior and coastal coho populations and continuance of lower marine survivals.				
<b>SKEENA - NASS CHUM</b>	Nass CU	<b>13,632</b> (1950-Present)	none	Under Review. MEG is 72,000	<b>2</b>
	Below average (2). Some very low returns in dominant brood year but better ocean conditions in recent years.				
	Skeena CU Aggregate includes 2 CUs				<b>1</b>
	Well below average (1). All brood returns have been at or below 25% (note: data limited)				

## CENTRAL COAST

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>MAINLAND COASTAL SOCKEYE</b>	Areas 7 and 8				<b>Variable – Data deficient, 1, 2</b>
	Most systems in areas 7 and 8 are data deficient. Average returns relative to recent period (2000+) for systems that were surveyed in Area 8 (Atnarko, Koeeye, Kadjudis, Namu). Atnarko sockeye returns are well below historic and population is in recovery.				
<b>RIVERS / SMITH SOCKEYE</b>	Rivers – Aggregate includes 2 CUs (Wannock River and Owikeno Lake)	272,000 (Avg. ESC, 2000+)	Under development	None	<b>2</b>
	2020 return to Rivers Inlet based on DIDSON-ARIS estimate was lower than in recent years. Low to average returns are expected in Areas 9 and 10. Docee Fence (Area 10/Smith Inlet/Long Lake) sockeye is not operational, no escapement information for this system available since 2017.				
	Smith – Aggregate includes x CUs	62,000 (Avg. ESC, 2000+)			<b>Data Deficient</b>
<b>CENTRAL COAST PINK</b>	Area 6	821,999 (odd year)		MEG - 1,447,000	<b>2</b>
	Area 7	288,232 (odd year)		MEG – 444,720	<b>1</b>
	Area 8	908,042 (odd year)		MEG – 1,520,400	<b>1</b>
	Area 9	174,250		MEG – 342,450	<b>1</b>
	Area 10			MEG – 65,600	<b>Data deficient</b>
	Low returns are expected in Area 7 and average to above average returns in Area 8. The odd year Bella Coola/Atnarko stock exceeded escapement target in 2017. Odd year returns are expected to be above average if marine survival is good.				
<b>CENTRAL COAST CHINOOK</b>	Atnarko Indicator Stock	<b>15,500</b> (Maximum likelihood model 1990-2020)		<b>5009 (Atnarko wild) Escapement Target (SMSY)</b>	<b>2</b>
	These stocks are generally depressed and this pattern is expected to continue or worsen given generally low productivity among stocks in the north-west. Assessments are of poor quality.				
	Areas 7 and 8 –				<b>3 / Data Deficient</b>
	2021 Bella Coola returns are expected to be below average based on returns in recent years. Other assessments are of poor quality.				
Areas 9 and 10 –					

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Stock Management Unit</b>	<b>Conservation Unit / Sub-Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>2021 Outlook</b>
	Aggregate includes 5 CUs				<b>3 / 2 / Data Deficient</b>
	Wannock River Chinook returns are expected to be average. The spring-run stocks including the Owikeno tributary stocks and Chuckwalla/Kilbella stocks are expected to be below average based on recent trends; however, assessments are of poor quality or are no longer conducted.				
<b>CENTRAL COAST COHO</b>	Areas 5 and 6 – Aggregate includes 4 CUs				<b>2 (Low)</b>
	Lower productivity over previous years is forecasted based on low Area 6 returns and continuance of lower marine survivals.				
	Areas 7 to 10 – Aggregate includes 4 CUs				<b>2 (Low)</b>
	Lower productivity over previous years is forecasted based on low returns in 2020 for both interior and coastal coho populations and continuance of lower marine survivals. However, there is very little data to review to develop an overall assessment.				
<b>CENTRAL COAST CHUM</b>	Area 5	17,480		MEG – 22,000	<b>1</b>
	Area 6	165,409		MEG – 134,000	<b>1 – 2</b>
	Area 7	196,659		MEG – 311,950	<b>1</b>
	Area 8	162,000			<b>3</b>
	Area 9	30,981		MEG – 150,700	<b>1 (data limited)</b>
	Area 10	17,807			<b>1 – 2 (data limited)</b>
	Wild brood year escapements were generally good in Area 8 but low in other areas. Returns of enhanced stocks remain dependent upon variable ocean survivals				

**SOUTH COAST AREA****WEST COAST VANCOUVER ISLAND**

Stock Management Unit	Conservation Unit /Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
<b>WCVI - BARKLEY SOCKEYE</b>	<b>Somass Aggregate (GCL + SPL)</b>	<b>740,000</b> (Avg. Run Size 1977+)		<b>170,000</b> Run Size – lower operational control point	<b>350,000</b>
	Great Central Lake CU	400,000 (Avg. Run Size 1977+)	29,290 LBB		<b>3</b>
	Sproat Lake CU	340,000 (Avg. Run Size 1977+)	41,350 LBB		<b>3</b>
	For the 2021 return, the two main contributing brood years are 2016 and 2017 and the two main contributing smolt years are 2018 and 2019. Brood abundance was above average in 2016 and low in 2017. Smolt abundance was high in 2018 and low in 2019. Based on ocean indicators, marine survival rates for the 2018 and 2019 smolt years appear to be low. Given the considerations above, expectations are for a moderate Somass Sockeye return. The low returns in the last two years were mostly attributed to poor freshwater and marine survival despite the large returns of 2015 and 2016.				
	Henderson Lake CU	34,000 (Avg. Run Size 1978+)	5000 LBB	9% max. harvest rate at run sizes <15,000	<b>&lt;15,000</b>
	For the 2021 return, the two main contributing brood years are 2016 and 2017 and the two main contributing smolt years are 2018 and 2019. Brood abundances were moderate in both 2016 and 2017. Smolt abundance continues to be low. Based on ocean indicators, marine survival rates for the 2018 and 2019 smolt years may be low. The key factors influencing this outlook are the low spawner abundances in the main contributing brood years (9,700 Sockeye in 2016; 22,000 Sockeye in 2017; Table 4) for the 2021 return, as well as low marine survival rates experienced by these two brood years. Therefore, expectations are for a continued low Henderson sockeye return in 2021.				
<b>WCVI - OTHER SOCKEYE</b>	22 CUs are associated with this stock management unit.				<b>Data Deficient</b>
	Assessment data are not available to forecast others systems. However, WCVI populations tend to covary. Therefore, expectations are for low-to-moderate returns based on the outlooks for Somass and Henderson.				
<b>WCVI PINK</b>	3 CUs are associated with this stock management unit.				<b>Data Deficient</b>

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Stock Management Unit</b>	<b>Conservation Unit /Sub-Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>2021 FORECAST/ OUTLOOK</b>
	Since the collapse of WCVI pinks in the mid-1960s there has been negligible catch and only opportunistic assessment of returns during assessment of other species. The available data suggest WCVI pink salmon populations continue to persist at very low relative to historic levels with high variability.				
<b>WCVI CHINOOK</b>	Southwest Vancouver Island CU			10 – 15% maximum exploitation rate in key 'pre-terminal' CDN fisheries	<b>1</b>
	Nootka and Kyuquot CU				
	Northwest Vancouver Island CU				
	Recent year escapements of WCVI Chinook natural populations remain low. There has been improvement in Kyuquot (NWVI wild indicators) in recent years. Less improvement in Clayoquot (SWVI wild indicators) which remains the biggest concern; and specifically improvement is almost all in the Bedwell where low level enhancement seems to be resulting in improved returns. Survival rates of natural production is thought to be less than half that of hatchery production; similarly productivity remains relatively low. WCVI wild Chinook remain a stock of concern.				
	Somass/Robertson (Hatchery)	68,000 (Avg terminal run 1995-2020)	n/a	39M eggs (spawner target is adjusted for expected age/sex composition)	<b>133,000</b> (98,000-167,000)
	Conuma Hatchery	37,000 (Avg terminal run 1995-2020)	n/a	10,000 ESC target but varies to ensure escapement of eggs associated with an average 10,000 escapement.	<b>33,000</b> (19,000-35,000)
	Nitinat Hatchery	25,000 (Avg terminal run 1995-2010)	n/a	10,000 ESC including brood stock	<b>27,000</b> (18,000-35,000)
	WCVI Other Hatchery Supplemented (e.g. Burman R, Sarita R.)	Varies by individual river; see local plans for details.	Work is underway to develop lower bench marks (C. Holt lead).	Varies by individual river; see local plans for details.	<b>(3)</b> <b>43,000</b> (28,000-56,000)
Overall returns in 2021 will likely be similar to 2020 which was higher than average abundance in the SWVI and near average abundance in NWVI. Observed returns of earlier age classes suggest an above average marine survival rate for the 2016 brood year (age 5 in 2021), above average survival the 2017 brood year (age 4 in 2021) and maybe average survival for the 2018 brood year (age 3 in 2021). Age 3 returns were higher than expected in most WCVI areas in 2020; over 50% in the Somass return and also high % males in					

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Stock Management Unit</b>	<b>Conservation Unit /Sub-Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>2021 FORECAST/ OUTLOOK</b>
	Conuma and Nitinat. This suggests a potential for an above average return of eggs in 2021 (means lower escapement goals in the harvest – hatchery directed systems).				
<b>WCVI COHO</b>	3 CUs are associated with this stock management unit.				<b>3</b>
	Information to forecast Coho returns is limited. Therefore, there is considerable uncertainty in this assessment. 2020 had a poor return along most of the WCVI; for example, escapement through Stamp Falls was in the bottom 20% of all returns since 2000. For 2021, most of the return will originate from the 2018 brood year that went to sea in 2020. Robertson Hatchery coho jacks were higher than average in 2020 suggesting improvement in 2021 with average returns expected. For most WCVI areas, Coho spawning populations have been relatively stable.				
<b>WCVI CHUM</b>	Area 23 (Barkley) – Southwest Vancouver Island CU	<b>69,000</b> (Avg. Return, 1995+)		48,000 Run size – lower operational control point, 15% max harvest rate	<b>38,000</b> (6,000-70,000)
	Area 24 (Clayoquot) – Southwest Vancouver Island CU	<b>57,000</b> (Avg. Return, 1995+)		42,000 Run size – lower operational control point, 15% max harvest rate	<b>23,000</b> (13,000-33,000)
	Area 25 (Nootka) – Southwest Vancouver Island CU	<b>41,000</b> (Avg. Return, 1995+)		26,000 Run size – lower operational control point, 20% max harvest rate	<b>14,000</b> (5,000-24,000)
	Area 25 (Esperanza Inlet) – Southwest Vancouver Island Cu	<b>49,000</b> (Avg. Return, 1995+)		24,000 Run size – lower operational control point, 15% max harvest rate	<b>82,000</b> (25,000-139,000)
	Area 26 (Kyuquot) – Southwest Vancouver Island CU	<b>60,000</b> (Avg. Return, 1995+)		25,000 Run size – lower operational control point, 15% max harvest rate	<b>46,000</b> (15,000-76,000)
	Area 27 (Quatsino Sound) – Northwest Vancouver Island CU				<b>Data Limited</b>
	Area 25 (Conuma Hatchery) – Southwest	<b>88,000</b> (Avg. Return, 1995+)			<b>22,000</b> (12,000 to 32,000)



## 2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Stock Management Unit	Conservation Unit /Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	Vancouver Island CU				
	Nitinat Hatchery	<b>491,000</b> (Avg. Return, 1995+)	n/a	225,000 Run size – lower operational control point	<b>163,000</b> (23,000 to 303,000)
	<p>Recent returns of WCVI Chum have been depressed in most areas relative to average abundances. Returns of WCVI Chum in 2021 will likely be below average to average in most areas. Brood years 2016, 2017 and 2018 will contribute to the 2021 return as age 5, 4 and 3, respectively. The 2016 brood year had an above average return in most areas and we expect an above average contribution of age 5s in 2021. The 2017 and 2018 brood year returns were below average abundances, and the 2018 and 2019 sea entry years resulted in below average to average survival. This will limit both the age 3 and 4 (dominant age class) contributions to the 2021 return. The recent stock status of wild WCVI Chum has generally been poor with spawning abundance for wild indicator stocks frequently below upper biological benchmarks. In addition, hatchery production has declined in recent years; particularly for the Conuma hatchery in PFMA 25 (Tlupana Inlet).</p>				

### EAST COAST VANCOUVER ISLAND/MAINLAND INLETS

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>ECVI / MAINLAND SOCKEYE</b>	Nimkish	60,000 median spawners			<b>2</b>
	<p>Sockeye returns to this system in 2020 were well below average. For the 2021 return, the two main contributing brood years are 2016 and 2017 and the two main contributing smolt years are 2018 and 2019. Brood abundance was above average in 2016 and below average in 2017. Based on ocean indicators, marine survival rates for the 2018 and 2019 smolt years appear to be low (poor returns of local pink and coho stocks that out-migrated in 2018 and 2019). Given the considerations above, expectations are for a below average Nimkish Sockeye return. Brood years contributing to the 2021 return were 2016 (74K) and 2017 (30K).</p>				
	Area 16 (Sakinaw)	<b>117</b> (Avg. Return, 1995+)	2,440	4,470	<b>1</b>
	<p>Of the 33,442 smolts that left Sakinaw Lake in 2018 a total of 85 adult Sockeye returned in 2020. Marine survival continues to be extremely low; for the 2018 ocean entry year, the smolt-to-adult survival improved to 0.14% for hatchery-origin and 0.31% for natural-origin smolts. Smolt production increased to 75,823 in 2019 although just over 1,000 were from natural production. If marine survival is near the 4-year average, a total of 47 adults are expected; 2 natural origin and 45 from captive brood fry releases. 2021</p>				

2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
	escapement could increase to 111 fish if marine survival is consistent between 2018 and 2019 ocean entry years.				
	Other (Areas 11 to 13)	Heydon: 2,600 median spawners Quaste: 2,200 median spawners			<b>2</b>
	Expectations for other populations such as Quaste, Heydon and Phillips are similar to Nimpkish.				
<b>ECVI / MAINLAND PINK</b>	Areas 11 to 13 - Odd	Reconstructed Median Returns Southern Fjords (Even): 1.6 million Southern Fjords (Odd): 613K Nahwitti (Odd): 12K			<b>1</b> (NEVI and Area 12 Mainland Inlets)
	Georgia Strait - Odd	Strait of Georgia (Odd): 536K Strait of Georgia (Even): 142K			<b>3</b> (Southern portion of area on ECVI)
	<p><b>Even Year:</b> 2020 saw varied returns throughout South Coast with poor returns in Northern Vancouver Island and generally improved/strong returns to the systems from Adam River south to Campbell River on the Island. Very poor (well below average) returns to Area 12 Mainland Inlets and very strong recovery and returns observed on the Philips River in Area 13 Mainland Inlets. In river return timing of pinks was much earlier than normal in many systems (i.e. Quinsam)</p> <p><b>Odd Year:</b> In 2019, returns were similar to what was observed in 2020, with very poor escapements in Northern Vancouver Island and across to the Mainland and much better returns to the lower portions of Area 12 and into 13 on the Island. It is anticipated that we will likely see a similar distribution of abundance as the last 2 years. Expectations for 2021 are well below average returns to NEVI and Mainland Inlets and average returns to the Southern Portions of the area on ECVI. Pink fry outmigration numbers from Quinsam in 2020 (~15 million) was the third largest abundance since 1997 and should convert to strong returns in 2021.</p> <p>Historically, Pink returns to this area have been highly variable and expectations continue to be highly uncertain.</p>				
<b>MAINLAND INLET CHINOOK</b>	This aggregate includes 4 CUs				<b>Data Deficient</b>
	Includes Homathko and Klinaklini				
<b>UPPER GEORGIA</b>	Quinsam River Fall Run	<b>9850</b> (AVG. Terminal			<b>3</b>

2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>STRAIT CHINOOK</b>		Run Index, 1979+)			
	2020 saw above average escapements to most systems monitored on Northern Vancouver Island. Hatchery returns at Quinsam were well above average, and other systems such as Nimpkish, Adam and the Salmon all showed signs of improving escapements. Expectations in 2021 are for continued improved escapements especially if Chinook harvest regulations to reduce impacts on Early timed Fraser Chinook continue.				
<b>MIDDLE GEORGIA STRAIT CHINOOK</b>	Puntledge and Big Qualicum Rivers Fall Run Enhanced	<b>14,385</b> (AVG. Terminal Run Index, 1995+)	7,193		<b>3</b>
	Following a strong return of 17,000 in 2019, just under 10,000 fish returned to the Puntledge River in 2020. Returns to the Big Qualicum River were above the four year average of 6,980 at 12,235. Stable production levels and modest survivals for several hatchery indicators suggest average to above average returns are likely for 2021.				
<b>LOWER GEORGIA STRAIT CHINOOK</b>	Cowichan River Fall Run Unenhanced (<20% hatchery origin)	<b>6,826</b> (AVG. Terminal Run Index, 1982+)	3,413	<b>6500 (Cowichan) Escapement Target (S<sub>MSY</sub>)</b>	<b>2</b>
	Adult Chinook returns to the Cowichan River in 2020 exceeded the target escapement of 6,500 naturally spawning adults for the fifth consecutive year. The number of jacks in the population was high; similar to observations in 2017 which produced strong returns of three year olds in 2018 and four year olds in 2019. The 2021 outlook is for average to above average returns but this may be altered depending on final escapement estimates and age composition. Wild production continues to drive the escapement with the proportion of hatchery fish in the population estimated at 10% for all age classes in 2020.  A similar rebuilding trend has not been observed in the Nanaimo River where counts remain low and stable (<5,000). 2021 escapement is expected to remain low and stable.				
<b>GEORGIA STRAIT SPRING AND SUMMER CHINOOK</b>	Nanaimo and Puntledge Summer Enhanced	<b>1,712</b> AVG. Terminal Run Index, 2004+)			<b>2</b>
	Several surveys of spring/summer Chinook holding areas in the Nanaimo River were conducted producing a count of 583 fish in 2020 which was up from 267 in 2019. Puntledge summer Chinook were below the 4-year average of 820 fish at just over 400. Most of the reduction can be attributed to reduced smolt releases in preceding years. Rebuilding efforts for these				

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Stock Management Unit</b>	<b>Conservation Unit / Sub-Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>2021 Outlook</b>
	populations are continuing. At these levels, rebuilding will take several generations even with improved survival				
<b>JOHNSTONE STRAIT / MAINLAND INLET COHO</b>	Area 12				<b>2</b>
	Returns showing some improvement– but still below long term average escapements in many systems surveyed. Keogh- preliminary escapement (874) is an improvement over the previous 4 years but lower than the long term average. Estimated escapement has steadily increased from that observed in 2016 (230), despite relatively stable but high juvenile recruitment, indicating improving marine survival. The return in 2020 stems from an above average smolt abundance of 72K. 2020 out migration was also strong (87K). Expectations in 2021 are for this improved survival to continue but still below average returns. The Area 12 forecast for 2021 is 31% higher than the brood returns in 2018. Coho abundance in this region can be characterized as ‘well below average’.				
<b>JOHNSTONE STRAIT / MAINLAND INLET COHO</b>	Area 13 - North				<b>2</b>
	Hatchery indicators for this outlook unit are Quinsam and Big Qualicum. Both systems saw average, or slightly better than average returns. General observations to date suggest better than forecasted returns across the area. Village Bay Creek on Quadra Island is being monitored by video and has observed higher than expected numbers of Coho through the fence. The wild indicator is Black Creek (included below in the Georgia Strait OU). The Area 13 forecast is 9% higher than the 2018 observed indices. Coho abundance in this region can be characterized as ‘well below average’				
<b>STRAIT OF GEORGIA COHO</b>	Quinsam				<b>2</b>
	Big Qualicum				
	Black Creek				
	Hatchery indicators for this Outlook Unit are the Quinsam and Big Qualicum rivers.2020 adult returns to the Big Qualicum are well above the four year average of 8,600 at over 22,300. An unplanned reduction in smolt output in 2018 produced a low return of 2,600 fish in 2019. Production levels are back to normal and 2021 returns are expected to be average to above average. The wild indicator is Black Creek. 2020 estimate of 1,935 adults through fence is an improvement over the 2017 brood year (1,333 adults). 2020 escapement is below the long-term average but was expected based on poor marine forecasts and below average smolt production in 2019 (~40K). Fewer jacks returned in 2020 than seen in recent years (1,690) but still making up a large proportion of the total return. Improvement to marine survival are evident from 2019 to 2020 and it is anticipated that will continue. Smolt production in 2020 (83.1K) is significantly above the long-term average which be contributing to the 2021 return. The 2021 forecast for the three indicators is for a continuation of the low marine survival levels seen in recent years.				
	Johnstone Strait Area and Mainland Inlets				<b>2</b>

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Stock Management Unit</b>	<b>Conservation Unit / Sub-Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>2021 Outlook</b>
<b>INNER SOUTH COAST CHUM - Non-Fraser</b>	(Areas 11 to 13)				
	<p>Summer run Chum Salmon stocks in 2020 appear to have done poorly relative to recent years and remained below average throughout the area. This will likely continue through 2021.</p> <p>Fall run Chum returns in 2020 are still being assessed; however, abundance appears to be below average in most systems surveyed. Productivity of these stocks has declined over the last 4 years and has been attributed to poor marine conditions for salmon. There is some indication that survivals have been better in the Southern range of the distribution of Inside Southern Chum.</p> <p>For the 2021 return, below average parental brood abundances in both 2017 and 2018 and a 4 year decline in Chum productivity will likely mean below average return of fall Chum in 2021. Recovery initiatives continue for the Nimpkish Chum Stock within this area.</p> <p>Expect variability in Chum returns.</p>				
	Jervis/Narrows Inlet (Brittian, Deserted, Skwawka, Tzoonie, Vancouver)	<b>51,151</b> (Avg. Return, 2004+)		85,000	<b>12,200</b> (Like Last Year)
	Mid-Vancouver Island (Puntledge, Big Qualicum, Little Qualicum)	<b>225,697</b> (Avg. Return, 1995+)		230,000	<b>23,400</b> (Like Last Year)
	Nanaimo River	<b>61,288</b> (Avg. Return, 2004+)		40,000	<b>43,800</b> (Like Last Year)
	Cowichan River	<b>177,032</b> (Avg. Return, 2006+)		160,000	<b>157,000</b> (Like Last Year)
	Goldstream River	<b>27,070</b> (Avg. Return, 2000+)		15,000	<b>22,300</b> (Like Last Year)
	<p>Preliminary escapement data for 2020 suggest well below target escapements for systems in mid to northern Georgia Strait and Jervis/Narrows Inlet. Returns to Nanaimo, Cowichan and Goldstream were near or slightly above target.</p> <p>For 2021, abundance is expected to follow a similar pattern with stocks in the southern part of Georgia Strait such as Cowichan, Nanaimo, and Goldstream forecast near escapement targets. Mid-Island systems (Puntledge, Little</p>				

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
	Qualicum, Big Qualicum) are expected to remain well below target levels. Jervis/Narrows Inlet stocks are forecast to be below target abundance.				

**LOWER AND INTERIOR FRASER AREA**

**FRASER SOCKEYE SALMON**

Quantitative forecasts for Fraser Sockeye stocks are produced annually. The 2021 forecasts were presented to the Fraser River Panel at the Pacific Salmon Treaty meeting in February.

To generate outlooks specific to each Outlook Unit, the brood year escapement was compared to the abundance-based benchmarks calculated for the recent Wild Salmon Policy re-evaluation where available and the recent median escapement (or cycle line escapement for cyclic stocks). Where stock recruitment data exists for non-cyclic stocks, the lower abundance-based benchmark is calculated using the Ricker model and corresponds to  $S_{GEN}$ , while the upper abundance-based benchmark is 80% of  $S_{MSY}$ .

**AVERAGE AGGREGATE RETURN (ALL CYCLES, ALL STOCKS): 7,812,200**

**AGGREGATE FRASER SOCKEYE FORECAST 2021 (ALL STOCKS): 1,259,000 (299,000 to 5,231,000)**

**Stock management Unit: EARLY STUART**

**Average aggregate return (all cycles): 286,600**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>Early Stuart</b> (CU: <i>Takla-Trembleur-EStu</i> ) - Cyclical: Yes	31,600			WSP – RED COSEWIC – END	<b>18,000</b> (8000 – 47,000)
Below average returns are expected for this CU. The brood-year effective total spawners (ETS; 12,870) was below the WSP lower benchmark for ETS (97,682). Brood-year effective female spawners (EFS; 7,136) was below the long-term cycle line average EFS (95,066) and below the recent cycle line average EFS (29,958). This stock was heavily impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.					

Stock management Unit: EARLY SUMMER

Average aggregate return (all cycles): 516,000

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST / OUTLOOK
<b>LOWER FRASER</b>					
<u>Upper Pitt River</u> (CU: Pitt-ES) - Cyclical: No	83,900	10,627 LBB		WSP – Green COSEWIC – NAR	<b>40,000</b> (14,000 – 108,000)
<p>Moderate-to-good returns are expected for this CU. Historically, the five-year-old component has contributed substantially to this population, especially for this cycle line. Both the 2017 and 2016 brood-year effective total spawners (ETS; 23,612 and 35,329, respectively) were above the WSP lower benchmark ETS (10,627); the 2017 ETS were below the upper benchmark (26,845) while the 2016 ETS were above the upper benchmark.</p> <p>As well, the 2017 and 2016 brood-year effective female spawners (EFS; 13,297 and 18,401, respectively) were both above the recent average EFS (11,546). Relative to the long-term EFS (13,445), the 2017 brood-year EFS were barely below average while the 2016 brood-year EFS were above average.</p> <p>Note these comparisons include the Upper Pitt River spawning channel escapements to be consistent with Grant et al (2020).</p>					
<u>Chilliwack</u> (CU: Chilliwack-ES) - Cyclical: Yes*				WSP – AM/GR COSEWIC – NAR	<b>10,000</b> (4,000 – 44,000)
<p>*While this stock exhibits cyclical returns, limited data preclude cycle-specific benchmarks (Grant et al 2020). Historically, the five-year-old component has contributed a considerable amount of the population for this cycle line. The uncertainty in both the age structure and relevant benchmarks for comparison is reflected in the outlook status.</p> <p>Moderate to below-average returns are expected for this CU. The four-year-old (2017) effective total spawners (ETS; 6,525) was below the WSP lower benchmark (8,000), but the five-year-old (2016) ETS (52,761) was above the WSP upper (16,000) benchmark. Likewise, the 2017 effective female spawners (EFS; 2,536) was below both the long-term (5,147) and recent (3,074) average EFS, while the 2016 EFS (30,138) was above both long-term and recent averages.</p> <p>Given that 2020 (i.e., the 2016 cycle line) was the dominant return, this CU is expected to have a sub-dominant return in 2021.</p>					
<u>Nahatlatch River</u> (CU: Nahatlatch-ES) - Cyclical: No	1400 (median esc)			WSP – Amber COSEWIC – SC	<b>8,000</b> (2,000 – 32,000)
<b>SOUTH THOMPSON</b>					
(CU: Shuswap-ES)				WSP – Amber COSEWIC – NAR	

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST / OUTLOOK
Two populations represent this CU, but they share one set of benchmarks. - Cyclical: Yes & Yes	Collectively, below-average returns are expected for this CU given that both the Scotch Creek effective total spawners (ETS; 4,859) and the Seymour River ETS (3,160) together were below the WSP lower benchmark (40,035). Scotch Creek brood-year effective female spawners (EFS; 2,356) was also below the long-term average (2,999) and the recent average EFS (4,666) for this cycle line. Seymour River brood-year EFS (1,675) was also below the long-term (3,693) and recent average EFS (5,210) for this cycle line.				<b>6,000</b> (1,000 – 19,000)
Misc. (ESHU)					
<b>MID AND UPPER FRASER</b>					
(CU: Anderson-Seton-ES) - Cyclical: No		3700 LBB		WSP – AM/GR COSEWIC – NAR	<b>2</b>
	Moderate-to-below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 5,942) was above the WSP lower benchmark for ETS (3,662), while the brood-year effective female spawners (EFS; 3,204) was below the long-term (4,340) and recent average EFS (6,230). It is important to note that these comparisons include the Gates Spawning Channel, but as of January 2020 the channel operations are discontinued which may influence interpretation of these trends moving forward.				
(CU: Nadina-Francois-ES) - Cyclical: No	77,500	21,694 LBB		WSP – AM/GR COSEWIC – NAR	<b>19,000</b> (6000 – 68,000)
	Moderate returns are expected for this CU. Historically, the five-year old component has contributed moderately to this cycle line. While the 2017 effective total spawners (ETS; 4,429) were below the WSP lower benchmark (21,694), the 2016 ETS (25,589) were above it (but below the upper benchmark of 68,273). Likewise, the four-year-old (2017) effective female spawners (EFS; 2,323) was below both the long-term (9,439) and recent average EFS (14,646). However, the five-year-old (2016) EFS (16,110) was above both long-term and recent mean EFS. These comparisons include the Nadina spawning channel escapement estimates to be consistent with Grant et al (2020).				
CU: Bowron-ES) - Cyclical: No	68,700	5200 LBB		WSP – RED COSEWIC – END	<b>400</b> (100 – 1000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 244) was below the WSP lower benchmark for ETS (5,249). The brood-year effective female spawners (EFS; 122) was also below the long-term (3,998) and recent average EFS (2,137). This stock was heavily impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.				
Taseko-ES	250 (median esc)			WSP – RED COSEWIC – END	<b>100</b> (30 – 300)
	Reliable return data are not available for this CU, thus no WSP benchmarks are available (see Appendix). Low returns are typically expected for this CU. Brood-				



**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST / OUTLOOK
	<p>year effective female spawners (EFS; 10) was below the long-term average EFS (1,215) and below the recent average EFS (158). Limited sample size precludes statements about the age structure of sockeye in Taseko Lake. This stock was heavily impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.</p>				

Stock management Unit: **SUMMER RUN**

Average aggregate return (all cycles): **3,953,500**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>Harrison River</b> (CU: <i>Harrison (River-Type)-S</i> ) - Cyclical: No	138,400	39,900 LBB		WSP – Green COSEWIC – NAR	<b>21,000</b> (3000 – 120,000)
	Low-to-moderate returns are expected for this CU. Historically, this population can have a considerable three-year-old component. The four-year-old (2017) effective total spawners (ETS; 48,953) was above the WSP lower benchmark for ETS (38,928), while the three-year-old (2018) ETS (14,998) was below it. The 2017 effective female spawners (EFS; 29,391) was below both the long-term (29,934) and recent average EFS (90,120), as was the 2018 EFS (8,171).				
<b>Raft River</b> (CU: <i>Kamloops-ES</i> ) - Cyclical: No	29,800	5000 LBB		WSP – Amber COSEWIC – SC	<b>8000</b> (2000 – 31,000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 3,933) was below the WSP lower benchmark for ETS (4,958). Brood-year effective female spawners (EFS; 2,269) was also below the long-term (4,288) and recent average EFS (6,072). This population occasionally has a five-year-old component, but it is variable and inconsistent, thus was not considered.				
<b>Quesnel</b> (CU: <i>Quesnel-S</i> ) - Cyclical: Yes	1,369,900	172,300 LBB		WSP – RED/AM COSEWIC – END	<b>285,000</b> (69,000 – 1,425,000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 105,880) was below the WSP lower benchmark for ETS (180,491). Brood-year effective female spawners (EFS; 59,636) was also below the long-term (443,226) and recent average EFS (177,775). These comparisons include the Horsefly River spawning channel escapements. This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.				
<b>Stellako River</b> (CU: <i>Francois-Fraser-S</i> ) - Cyclical: No	463,300	24,400 LBB		WSP – AM/GR COSEWIC – SC	<b>68,000</b> (21,000 – 229,000)
	Good returns are expected for this CU. Brood-year effective total spawners (ETS; 89,387) was above the WSP lower benchmark for ETS (24,256) but below the upper benchmark (122,612). However, brood-year effective female spawners (EFS; 49,425) was below the long-term (55,446) and recent average EFS (88,305). This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.				
<b>Chilko</b> (CUs: <i>Chilko-S and Chilko-ES</i> ) - Cyclical: No	1,435,000	64,220 LBB		WSP – Green COSEWIC – NAR	<b>311,000</b> (71,000 – 1,366,000)
	Good to above-average returns are expected for this CU. Brood-year effective total spawners (ETS; 356,268) was above the WSP lower benchmark (64,220) and above the upper benchmark (353,863) for ETS. However, brood-year effective female spawners (EFS; 212,956) was below the long-term (223,927)				

## 2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

	and recent average EFS (343,492). The smolt brood returning as adults in 2021 was the 5th highest on record, with 62.6 million smolts recorded leaving Chilko Lake in the spring of 2019. These comparisons include the historical Chilko River spawning channel escapement. This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.			
<b>Late Stuart</b> <i>(CU: Takla-Trembleur-Stuart-S)</i> - Cyclical: Yes	526,000	103,300 LBB		WSP – RED/AM COSEWIC – END
	Moderate to below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 142,409) was above the WSP lower benchmark for ETS (112,600), but below the upper benchmark (622,626). However, brood-year effective female spawners (EFS; 80,081) was below the long-term (220,413) and recent average EFS (89,712) for this cycle-line. These comparisons include the historical Chilko River spawning channel escapement. This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.			<b>285,000</b> (62,000 – 1,241,000)

### Stock management Unit: LATE RUN

Average aggregate return (all cycles): 3,056,100

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>Cultus Lake</b> <i>(CU: Cultus-L)</i> - Cyclical: No	31,600			WSP – RED COSEWIC – END	<b>900</b> (200 – 4000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 421) was below the WSP lower benchmark for ETS (15,454). Brood-year effective female spawners (EFS; 274) was below the long-term (841) and recent average EFS (450). The smolt brood returning as adults in 2021 was composed of 7070 marked (hatchery-origin) and 4796 unmarked (lake-origin) individuals which is extremely low relative to past outmigration.				
<b>Portage Creek</b> <i>(CU: Seton-L)</i> - Cyclical: No	39,600	2,200 LBB		WSP – RED COSEWIC – END	<b>2000</b> (400 – 9000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 1,033) was below the WSP lower benchmark for ETS (2,193). Brood-year effective female spawners (EFS; 441) was below the long-term (4,022) and recent average EFS (3,202).				
<b>South Thompson</b> <i>(CU: Shuswap-L)</i> - Cyclical: Yes	2,320,200	429,400 LBB		WSP – AM/GR COSEWIC – NAR	<b>35,000</b> (8000– 149,000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 13,767) was far below the cycle-specific WSP lower benchmark for ETS (713,769). Brood-year effective female spawners (EFS; 8,445) was below the long-term (9,185) and recent average EFS (32,098). These comparisons include the historical Adams River spawning channel escapements.				

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Conservation Unit</b>	<b>Average Return (all cycles)</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>WSP / COSEWIC STATUS</b>	<b>2021 FORECAST/ OUTLOOK</b>
<b>Birkenhead River</b> <i>(CU: Lillooet-Harrison-L)</i> - Cyclical: No	335,000	15,700 LBB		WSP – Amber COSEWIC – SC	<b>22,000</b> (5000 – 95,000)
Moderate returns are expected for this CU. Historically, this population has a considerable five-year-old component. Both the 2017 and 2016 brood-year effective total spawners (ETS; 17,668 and 27,564) were above the WSP lower benchmark (15,685) but below the upper benchmark (81,023). However, both the 2017 and 2016 brood-year effective female spawners (EFS; 9,900 and 13,474) were below the long-term (40,822) and recent average EFS (17,418).					
<b>Weaver Creek</b> <i>(CU: Harrison (U/S)-L)</i> - Cyclical: No	329,700	10,700 LBB		WSP – AM/GR COSEWIC – SC	<b>74,000</b> (23,000 – 235,000)
Moderate returns are expected for this CU. Brood-year effective total spawners (EFS; 28,855) was above the WSP lower benchmark (10,731), but below the upper benchmark (84,597). Brood-year effective female spawners (EFS; 14,382) was below the long-term average EFS (21,081) but above the recent average EFS (6,514). These comparisons include the Weaver Creek spawning channel escapements to be consistent with Grant et al (2020).					
<b>Big Silver Creek</b> <i>(CU: Harrison (D/S)-L)</i> - Cyclical: No				WSP – AM/GR COSEWIC – SC	<b>3</b>
Reliable return data are not available for this CU, thus no WSP benchmarks are available. Moderate to good returns are expected for this population. Brood-year effective female spawners (EFS; 3,072) was above the long-term (1,668) and recent average EFS (2,844).					
<b>Widgeon Slough</b> <i>(CU: Widgeon (River-Type))</i> - Cyclical: No				WSP – RED COSEWIC – END	<b>1</b>
Reliable return data are not available for this CU, thus no WSP benchmarks are available (see Appendix). Below average returns are expected for this CU. The 2017 effective female spawners (EFS; 83) was below the long-term average EFS (324) and the recent average EFS (94). This population may have contribution from the 3-year-old component, but this is uncertain due to small population and sample sizes over time. For reference, the 2018 EFS (68) was below the long-term average EFS and below the recent average EFS.					

FRASER PINK

Conservation Unit	Average Return	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
Fraser - Odd only (CU: Fraser River)	11,500,000				<p><b>3,009,000</b> (p50)</p>
<p>Since juvenile enumeration did not take place in Spring 2020, the only information we have to assess stock status comes from escapement and return in 2019. Escapement in 2019 (8,307,419) was above historical average (6,187,390). 2019 returns (8,858,203) were below historical average (11,492,861), owing to exceptionally low escapement in 2017 (3,392,159). While Fraser Pink salmon do not have associated Wild Salmon Policy benchmarks, and have not been assessed by COSEWIC, there is an escapement target of 6,000,000 when returns are above 7,059,000. When returns are below 7,059,000, exploitation rate declines with decreasing return abundance linearly from 15% to 0%. When returns are above 20,000,000 there is an exploitation rate cap of 70%. These fisheries reference points supply some insight into stock status. 2019 returns and escapements satisfied both the “lower” reference point of 7.059 million, and the escapement goal of 6,000,000. It should be noted that Pink salmon enumeration methods (used both for escapement and returns) have changed substantially over time, and therefore historical values may not be comparable to recent estimates of escapement and return. Therefore, stock status should be approached with caution.</p>					

## FRASER CHINOOK

Stock Management Unit	Conservation Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>SPRING RUN 4<sub>2</sub> CHINOOK SALMON</b>	<b>Aggregate SMU</b>	<b>16,511</b> (Terminal Run, 1979+)		<b>22,146</b> Escapement Target ( $S_{MSY}$ )		<b>9,138</b> (3,386 to 17,650) Terminal Run
	CK-17 Lower Thompson	<b>6360</b> (ESC, 5yr Avg.)	4613		WSP – Red COSEWIC – END.	
	CK-16 South Thompson-Bessette Creek	<b>66</b> (ESC, 5yr Avg.)	222		WSP – Red	
	Expectations are for continued depressed abundance due to low parental escapements in 2017, ongoing unfavourable marine and freshwater survival conditions and low productivity. The 2020 escapement estimate was below the parent brood escapement in 2016, and for those systems that escapement estimates are available, escapement was below the recent average. (2019 Outlook Category was 1)					
<b>SPRING RUN 5<sub>2</sub> CHINOOK SALMON</b>	<b>Aggregate SMU</b>	<b>36,985</b> (Terminal Run, 1979+)		<b>42,165</b> Escapement Target ( $S_{MSY}$ )		<b>17,588</b> (10,637 to 25,372) Terminal Run
	CK-04 Lower Fraser	<b>278</b> (ESC, 5yr Avg.)	347		COSEWIC – Special Concern	
	CK-08 Middle Fraser- Fraser Canyon	<b>24</b> (ESC, 5yr Avg.)	230		WSP – Data D. COSEWIC – END	
	CK-10 Middle Fraser	<b>2339</b> (ESC, 5yr Avg.)	5327		WSP – Red COSEWIC – Threat.	
	CK-12 Upper Fraser	<b>162</b> (ESC, 5yr Avg.)	5277		WSP – Red COSEWIC – END	
	CK-18 North Thompson	<b>8387</b> (ESC, 5yr Avg.)	935		WSP – Red COSEWIC – END	
	Expectations are for continued low abundance related to depressed parental escapements and continuing unfavourable marine and freshwater survival					

2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Stock Management Unit	Conservation Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
	conditions and low productivity. The 2020 escapement estimate was below parental brood escapements in 2015 and similar to the recent average. (2019 Outlook Category was 1)					
<b>SUMMER RUN 5<sub>2</sub> CHINOOK SALMON</b>	<b>Aggregate SMU</b>	<b>36,732</b> (Terminal Run, 1979+)		<b>23,567</b> Escapement Target (S <sub>MSY</sub> )		<b>14,490</b> (8,514 to 20,176) ~Cont'~ Terminal Run
	CK-05 Lower Fraser – Upper Pitt	<b>60</b> (ESC, 5yr Avg.)	256		WSP – Data D. COSEWIC – END	
	CK-06 Lower Fraser	<b>63</b> (ESC, 5yr Avg.)	325		WSP – Data D. COSEWIC – Threat.	
	CK-09 Middle Fraser - Portage	<b>68</b> (ESC, 5yr Avg.)	346		WSP – Red COSEWIC – END	
	CK-11 Middle Fraser	<b>9147</b> (ESC, 5yr Avg.)	5871		WSP – Amber COSEWIC – Threat.	
	CK-14 South Thompson	<b>875</b> (ESC, 5yr Avg.)	964		WSP – Amber	
	CK-19 North Thompson	<b>1907</b> (ESC, 5yr Avg.)	1829		WSP – Red COSEWIC – END	
	Expectations are for continued overall low abundance related to low parental escapements, low marine and freshwater survival, and low productivity. The 2020 escapement estimate was below parental brood escapements in 2015 and below the recent average. (2019 Outlook Category was 1).					
<b>SUMMER RUN 4<sub>1</sub> CHINOOK SALMON</b>		<b>93,242</b> (Terminal Run, 1977+)		<b>120,322</b> Escapement Target (S <sub>MSY</sub> )		<b>108,611</b> (61,523 to 161,376) Terminal Run
	CK-13 South Thompson	<b>97,611</b> (ESC, 5yr Avg.)	23,469		WSP – Green COSEWIC – Not at Risk	

**2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE**

<b>Stock Management Unit</b>	<b>Conservation Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>WSP / COSEWIC STATUS</b>	<b>2021 FORECAST/ OUTLOOK</b>
	CK-15 Shuswap River	<b>23,185</b> (ESC, 5yr Avg.)	2,096		COSEWIC – Not at Risk	
	CK-07 Maria Slough	<b>343</b> (ESC, 5yr Avg.)	15		Not assessed.	<b>1</b>
	Expectations are for the prefishery abundance to exceed spawner escapement objective at the Lower Shuswap indicator stock. The 2020 escapement estimate was above the parental brood escapement in 2016 and above the recent average for all locations except for Maria Slough where abundance was extremely low. (2019 Outlook Category was 1/4).					
<b>FALL RUN 4<sub>1</sub> CHINOOK SALMON</b>	<b>Aggregate</b>	<b>131,822</b> (Terminal Run, 1977+)				
	(P)Hatchery Exclusion-Lower Fraser River	<b>26,600</b> (ESC, 1975+)	n/a (hatchery stock)		Not assessed.	<b>39,593</b> (esc.)
	CK::Lower Fraser River-fall timing (white) - Harrison	<b>83,600</b> (ESC, 1975+)	<b>15,318</b>	<b>75,100</b> Escapement Target (S <sub>MSY</sub> )	WSP – Green COSEWIC – Threat.	<b>35,150</b> (esc.)
	The 2020 Harrison (natural) preliminary escapement estimate was similar to the parental brood escapement in 2016, and below the recent average and escapement goal. The 2020 Chilliwack (hatchery) escapement estimate was 35,795 adult spawners which was also similar to the 2016 brood estimate of 34,586 spawners. Current marine conditions and stock productivity appear to be unfavourable, with escapement estimates only meeting the escapement objective for the Harrison River once in the past 9 years. Chilliwack hatchery production, marine survival, and recent fishery exploitation are expected to return sufficient abundance to achieve hatchery production objectives.					



FRASER COHO

STOCK MANAGEMENT UNIT	Conservation Unit / Sub Unit	Average Return	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST /OUTLOOK
Interior Fraser Coho	Interior Fraser – Aggregate includes 5 CUs	34,727 (esc. 1998 – 2019)				43,882 (36,969 to 52,087)
		The preliminary estimate of the 2020 pre-fishery abundance for the Interior Fraser Aggregate was 81,100, 107% higher than the 2020 forecast and 60% higher than the 2019 pre-fishery abundance of 50,850. The 2021 forecast of pre-fishery abundance for the Interior Fraser Aggregate is 43,882 Coho with an 80% forecast range of 36,969 – 52,087. (2019 Outlook Category was 1)				
Lower Fraser Coho	Lower Fraser – Aggregate includes 3 CU					1
		The observed 2020 marine survival from the Inch Creek Hatchery indicator was 7.9% which was higher than the previous year (+85%) and was much higher than the forecast level (+297%). There was a substantial increase in the FW Terminal fishery in the Nicomen/Norrish Rivers, possibly due to Covid-19 travel restrictions. The retrospective analysis showed that the best performing model has remained the NPGO climate index. The 2021 forecast for marine survival for this indicator is 2.3%, a decrease (-71%) from the observed level in 2020. (2019 Outlook Category was 1)				

FRASER CHUM

Stock Management Unit	Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 OUTLOOK
Inner South Coast Chum - Fraser	Lower Fraser CU			There is a management goal of 800,000 wild spawners.		2
		<p>Fraser River Chum Salmon spawning escapement in 2017 fell below the 800,000 goal for the first time since 2010. Returns in 2021 will be dominated by 4 year old brood from the 2017 escapement (660,000 spawners). With the exception of the unusually high escapement in 2016 (1.98 mil spawners), spawning escapement has trended down since the 2012 return. Spawning escapement in 2019 was estimated at 300,000 Chum; this is the lowest recorded escapement in over 20 years.</p> <p>The October 22, 2020 in-season estimate of the Fraser Chum terminal return was 1.08 million fish with an 80% probability the terminal return would be between 0.70 and 1.7mil Chum. Escapement assessments in 2020 are currently underway but early indications are the terminal return will be close to the lower end of the range. An estimate of the 2020 spawning escapement will be available by April 2021</p>				

HOWE SOUND / BURRARD INLET

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
PINK	Part of the Southern Fjords odd and even CUs				Data Deficient
CHINOOK	Part of the South Coast – Southern Fjords CU				Data Deficient
	Some years with good information for the Indian River.				
Strait of Georgia Coho	Howe Sound – Burrard Inlet CU				Data Deficient

## 2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

<b>INNER SOUTH COAST CHUM – Non-Fraser</b>	Howe Sound – Burrard Inlet CU				<b>Data Deficient</b>
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### BOUNDARY BAY

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>CHINOOK</b>	Part of the South Coast – Southern Fjords CU				<b>Data Deficient</b>
	Data available from the Little Campbell fence program.2020 return was about 650 fish.				
<b>COHO</b>	Boundary Bay CU				<b>Data Deficient</b>
<b>INNER SOUTH COAST CHUM – Non-Fraser</b>	Boundary Bay CU				<b>Data Deficient</b>

### OKANAGAN

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 Outlook
<b>OKANAGAN SOCKEYE</b>	Osoyoos			58,730 adults at Wells Dam or 29,365 as peak counts in the terminal index area		77,000 – 94,000 (esc)
	The 2017 brood year (BY) escapement of 4,287 (peak live plus dead terminal count) achieved <15% of the current Canadian domestic target for this CU (29,365 as peak live plus dead in the terminal index area). Returns of Okanagan Sockeye adults to the Columbia and Okanagan rivers in 2021 will be derived from smolt cohorts from brood years 2016-2018 that migrated seaward in spring 2018 (returning as 5-year-olds), 2019 (returning as 4-year-olds) and 2020 (returning as 3-year olds). Although year-specific smolt-to-adult survival values for these specific cohorts are not available as yet, Okanagan Sockeye marine survival variations are known to be similar to Barkley Sound sockeye in that above- and below-average survivals occur in association with either cold-ocean (La Niña) or warm ocean (El Niño) events, respectively. Examination of the association between historic smolt-to-adult return (SAR) variations and NOAA Fisheries “stop-light” ocean condition indicators (including the Oceanic Niño Index (ONI)) suggests that the					

	2018 and 2020 (but not 2019) sea-entry smolts were likely to have experienced a modest improvement in survival rates, relative to the low (<2%) SAR applied to 2015-2017 smolt out-migration years. Applying a 3.6% SAR to smolt cohorts for the 2018 and 2020 sea-entry years, and 2% SAR to the 2019 sea-entry year, yields an estimate of approximately 258,000 adults contributing to the 2021-2023 return years. Allocation of this production to specific return years based on average age-at-return values for Okanagan Sockeye suggests a total return in 2021 of 77,000 age-4 and age-5 Okanagan wild-origin fish, which typically comprise 91% of adult returns. Production of hatchery-origin fish from Skaha Lake may increase these returns by 10-20% for an overall maximum return of 94,000 adult Sockeye of Okanagan origin in 2021.					
<b>OKANAGAN CHINOOK</b>	Okanagan Summer	<b>27 (esc. 2009- 2019)</b>	1000		COSEWIC - END	1
	Expectations for 2021 are for continued depressed abundance related to low parental escapements, low marine and freshwater survival, low productivity, and low hatchery production. The COSEWIC identified the status as endangered (2017).					

The number of salmon returning to spawn in a river, called “escapement”, has long been an important stock assessment measure of abundance. Salmon escapement data are now available from the Government of Canada Open Data portal at:

<http://open.canada.ca/data/en/dataset/c48669a3-045b-400d-b730-48aafe8c5ee6>

## 2.6 PRECAUTIONARY APPROACH

Generally, science advice to fisheries management considers data quality and incorporates uncertainty (i.e. stock status forecasts presented as a statistical distribution rather than point estimate). WSP benchmarks of biological status will inform the development of a precautionary approach to management of salmon resources. Decisions on recovery and fisheries objectives will be made as part of the Strategic Planning Process described under WSP Strategy 4. To date benchmarks have been reviewed for Southern BC Chinook; Interior Fraser River, Georgia Strait Mainland, East Vancouver Island Coho; and Fraser Sockeye CUs. Until benchmarks are determined for each CU, DFO must rely on indicators of status and existing species- and stock-specific constraints established for escapement goals and harvest rates by domestic and international (e.g. Pacific Salmon Treaty) processes.

## 2.7 RESEARCH

An overview of the science & research in the Pacific region is available on the regional website: <http://www.pac.dfo-mpo.gc.ca/science/index-eng.html>

Current research projects on salmon and environmental and human induced factors affecting their status include:

- Climate change impacts on Pacific salmon are being investigated by multiple sectors within DFO and in collaboration with external partners: university, other organizations and agencies. In 2011, DFO implemented a science-based climate change program focused on adaptation in decisions and activities to consider the vulnerabilities, risks, impacts, and opportunities associated with a changing climate.  
<https://www.dfo-mpo.gc.ca/science/oceanography-oceanographie/index-eng.html>
- An example of this work is the Aquatic Climate Change Adaptation Services Program (ACCASP) which has an emphasis on the development of new science knowledge to support the development of adaptation tools and strategies that will enable the integration of climate change considerations into the delivery of the Department's programs and policies. More information on this program is available at:  
<http://www.dfo-mpo.gc.ca/science/rp-pr/accasp-psaccma/index-eng.html>
- State of Salmon Program (SOS): this program integrates information on Pacific salmon (abundance, productivity, size, fecundity, run timing, etc.) and their freshwater and marine ecosystems (water temperatures, river discharge, ocean upwelling, etc.) to understand the state of Pacific salmon, and the factors that contribute to these states. Collaboration across DFO Science, DFO Areas, and other Sectors is foundational to this program.
- Salmon in Regional Ecosystems (SIRE) program investigates the mechanisms controlling recruitment variations and changes in productive capacity of salmon stocks within freshwater and/or marine ecosystems.
- On-going research related to improving forecasting ability for salmon stocks and CUs is being conducted by DFO Stock Assessment and the Fisheries & Oceanography Working Group. The annual State of the Pacific Ocean Reports was published by the Canadian Science Advisory Secretariat (CSAS) until 2012. Recent reports are available at:  
<http://www.dfo-mpo.gc.ca/oceans/publications/index-eng.html>.
- The Fraser River Environmental Watch program provides scientific advice on the impact of different environmental factors on the migration success of Pacific salmon in fresh water.  
<http://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/index-eng.html>
- DFO scientists in collaboration with other organizations including the North Pacific Anadromous Fisheries Commission (NPAFC), the Pacific Salmon Commission

(PSC), and the Pacific Salmon Foundation (PSF) are studying salmon production, distribution and survival in the North Pacific Ocean including the Salish Sea, and developing leading indicators of salmon returns.

- Annual juvenile salmon surveys monitor the distribution, migration, and survival of salmon in their freshwater and early marine life history.
- On-going collaborative research between DFO and aquaculture industry to investigate the interactions between wild and cultured salmon through the Program for [Aquaculture Regulatory Research](#) (PARR) and [Aquaculture Collaborative Research and Development Program](#) (ACRDP)
- Research carried out in the freshwater and marine environments is being considered to provide a biological context as Supplementary Information for the forecast of Fraser River Sockeye.  
[http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2016/2016\\_047-eng.html](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2016/2016_047-eng.html)
- On-going development of quantitative tools to inform rebuilding plans for depleted (red-status) CUs given climate/oceanographic change and variability and constraints from mixed-CU fisheries.

Added Reference:

Holt, C.A., Davis, B, Dobson, D., Godbout, L., Luedke, W., Tadey, J., Van Will, P.  
Evaluating Benchmarks of Biological Status for Data-limited Populations (Conservation Units) of Pacific Salmon, Focusing on Chum Salmon in Southern BC. Can. Sci. Advis. Sec. Res. Doc. 2018/11

## **3 STEWARDSHIP, CO-MANAGEMENT, CONSULTATION AND ADVISORY BOARDS**

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Stewardship refers to the care, supervision or management of something, especially the careful and responsible management of something entrusted to one's care.<sup>1</sup>

<sup>1</sup>As defined in the Atlantic Fisheries Policy Review (AFPR):

<https://www.dfo-mpo.gc.ca/reports-rapports/regs/afpr-rppa/framework-cadre-eng.htm#toc6>

### **3.1 PACIFIC SALMON TREATY**

In March 1985, the United States and Canada agreed to co-operate in the management, research and enhancement of Pacific salmon stocks of mutual concern by ratifying the Pacific Salmon Treaty (PST). The PST includes several “fishing chapters” contained in Annex IV which set out the specific conservation and harvest sharing (allocation) arrangements for migratory salmon stocks subject to the Treaty. These chapters are critical to the functioning of the Treaty and are periodically renegotiated by the Parties, normally on a 10-year cycle. The bilateral Pacific Salmon Commission (PSC), established under the Pacific Salmon Treaty, consists of four Commissioners and four Alternates from each country, supported by several bilateral panels and technical committees. The PSC provides regulatory and policy advice as well as recommendations to the Governments of Canada and the United States (U.S.) with respect to interception salmon fisheries. Under the terms of the Treaty, the responsibility for in-season management of all species rests with the Parties to the agreement. One exception is the in-season management of Fraser River Sockeye and Pink salmon which is specifically delegated to the Fraser River Panel with support from the Pacific Salmon Commission Secretariat staff.

Coded-wire tag (CWT) data are essential to the management of Chinook and Coho salmon stocks under the Pacific Salmon Treaty. On August 13, 1985, the United States and Canada entered into a Memorandum of Understanding in which “the Parties agree to maintain a coded-wire tagging and recapture program designed to provide statistically reliable data for stock assessments and fishery evaluations”. Both countries recognize the importance of the coded-wire tag program to provide the data required to evaluate the effectiveness of bilateral conservation and fishing agreements. In addition, alternatives to CWT data have been explored by the PSC, including the feasibility of parentage-based genetic tagging.

In August 2018, the PSC recommended new provisions, under Annex IV of the PST, to the Governments of Canada and the U.S. for review and ratification. Both governments agreed to the provisional application of the new agreements as of January 1, 2019 while the ratification process was completed. Effective May 3, 2019, the Annex IV amendments came fully into force

through the exchange of diplomatic notes between Canada and the U.S., and will remain in place for 10 years.

The renewed chapters are: Chapter 1 (Transboundary Rivers), Chapter 2 (Northern British Columbia and Southeast Alaska), Chapter 3 (Chinook), Chapter 5 (Coho) and Chapter 6 (Chum). Chapter 7 (General Obligations) does not have an expiry date; however, the PSC recommended minor updates to “Attachment E” containing general provisions on salmon habitat.

Chapter 4 (Fraser River Sockeye and Pink) expired on December 31, 2019. The negotiating team, made up of Canadian and U.S. representatives on the PSC’s Fraser River Panel, met regularly between November 2018 and February 2019 to discuss proposed amendments to Chapter 4. In February 2019, agreement-in-principle was reached and the proposed amendments were referred to the Governments of Canada and the U.S. for review and ratification. Both governments agreed to the provisional application of the amendments as of January 1, 2020 while the ratification process is completed. The new amendments are expected to come into force in Spring 2021 and will remain in place for 9 years, bringing Chapter 4 into alignment with the five other fishing Chapters under the PST.

In addition to direct involvement and representation in the PSC process, the Department consulted extensively with First Nations and stakeholders leading up to, and throughout, the negotiations. Moving forward, DFO will continue to schedule consultation sessions and meetings, as needed, to identify, discuss, and help mitigate potential concerns regarding the agreement.

Key elements from the renewed chapters, under Annex IV, are identified, below:

**Chapter 2 (Northern Boundary):** Covers marine fisheries for sockeye, pink and chum stocks in Northern B.C. and Southeast Alaska, including the Nass and Skeena rivers. The new chapter includes a joint technical review of escapement goals for Nass River and Skeena River sockeye, new management measures in Alaska to reduce harvest impacts on Canadian Nass and Skeena sockeye in years of low abundance, a joint technical review of the impacts of the Alaskan District 4 pink salmon fishery on Skeena and Nass sockeye abundances, and a joint review of the effectiveness of the new chapter after five years (to inform a decision by the Commission as to whether further changes may be required for the balance of the regime). This chapter along with Chapter 3 (Chinook) and Chapter 5 (Coho), govern fisheries covered in the North Coast Salmon Integrated Fisheries Management Plan.

**Chapter 3 (Chinook salmon):** Provides a framework for bilateral conservation and coordination of chinook fisheries coastwide from Oregon to Alaska. In response to conservation concerns for chinook in both countries, several changes were made to the chapter, including targeted harvest



reductions in both Canadian and U.S. fisheries, adoption of a new metric to manage and evaluate performance in specific Canadian and U.S. individual stock-based management or “inside” fisheries (the calendar year exploitation rate), a renewed commitment (and investment) in the coastwide stock assessment program for chinook (including the Coded-Wire Tag program), a 10-year Catch and Escapement Indicator Improvement program to provide more robust and timely information for managing chinook, and enhanced fishery monitoring.

The harvest reductions are:

- For the U.S., up to a 7.5 per cent reduction in the Southeast Alaska aggregate abundance-based management or “outside, mixed-stock” fishery, as well as reductions of up to 15 per cent from 2009-2015 harvest levels for individual stocks in Washington and Oregon individual stock-based management fisheries.
- For Canada, up to a 12.5 per cent reduction in the West Coast Vancouver Island aggregate abundance-based management fishery and reductions of up to 12.5 per cent from 2009-2015 levels in Canadian individual stock-based management fisheries.

**Chapter 4 (Fraser River Sockeye and Pink Salmon):** The 2019 amendments are largely operational in nature designed to ensure the long-term sustainability of Fraser River Sockeye and Pink salmon stocks while supporting an economically viable fishing industry on both sides of the Canada-U.S. border. Key adjustments to the Chapter allow for the Panel to make management decisions considering sub-components of the four Fraser River Sockeye management groups, which provides greater flexibility to address stock-specific conservation or harvest objectives; the maintenance of Canada’s share of Fraser River Sockeye and Pink salmon; and the ability of the Panel to consider both the Sockeye and Pink salmon Total Allowable Catch throughout the season for best use of the fisheries resource. Other changes include new language that enables Canada to identify concerns, if they arise, regarding incidental catches of Fraser River Sockeye in Alaska as well as updates to how the Aboriginal Fisheries Exemption is distributed across the Sockeye management groups. 2019 was the final year under the previous 2014 arrangement with changes to Chapter 4 language provisionally applied starting January 1, 2020 until formal ratification is completed by the countries (expected Spring 2021).

**Chapter 5 (Coho Salmon, Southern BC and Washington State):** Addresses two geographically defined groupings of Coho salmon stocks originating from British Columbia, Washington and Oregon. For northern-origin stocks (those originating from waters between Cape Caution (in north-central British Columbia) and Cape Suckling (in southeast Alaska), the Northern Panel’s Technical Committee (Coho sub-Committee) has been tasked with developing a state of knowledge report which describes the current status and recent trends in spawning, production and harvest. This technical report is to be presented to the Northern Panel and Commissioners

in advance of the 2021 fishing season to inform the Parties with respect to future management actions or recommended conservation measures. For southern-origin stocks (those origination from Treaty-area waters south of Cape Caution), proposed changes to the chapter include the amalgamation of two southern Canadian Coho management units into a single Strait of Georgia management unit, commitment to develop a new status-based management approach for southern Canadian management units (i.e., classification of Canadian Coho management units as low, moderate or abundant), and improvements in the stock assessment used to determine the status of southern-origin Coho stocks subject to the Treaty.

**Chapter 6 (Chum Salmon, Southern BC and Washington State):** Covers Chum salmon stocks in Southern B.C. and Washington. The revised chapter includes new management thresholds (“break points”) for Canadian (Fraser River) Chum stocks, lower U.S. catch ceilings in years of moderate abundance for Fraser Chum with higher catch ceilings in years of high abundance, and new requirements related to stock assessment and escapement monitoring to inform decision-making.

## 3.2 SHARED STEWARDSHIP

In the context of fisheries management, stewardship is often considered in terms of “shared stewardship”, whereby First Nations, fishery participants and other interests are effectively involved in fisheries management decision-making processes at appropriate levels, contributing specialized knowledge and experience, and sharing in accountability for outcomes.

Moving toward shared stewardship is a strategic priority for DFO. This is reflected in a number of policies and initiatives, including the *Wild Salmon Policy* (WSP), the Resource Management Sustainable Fisheries Framework (SFF), Pacific Fisheries Reform, Aboriginal Aquatic Resource and Oceans Management (AAROM) Program, and the Aboriginal Fisheries Strategy (AFS).

DFO is advancing shared stewardship by promoting collaboration, participatory decision making and shared responsibility and accountability with resource users and others. Essentially, shared stewardship means that those involved in fisheries management work cooperatively; in inclusive, transparent and stable processes, to achieve conservation and management goals.

## 3.3 SALMONID ENHANCEMENT PROGRAM

The Salmonid Enhancement Program (SEP) produces Pacific salmon at enhancement facilities, restores habitat, and undertakes projects that include public participation by local communities and First Nations in fisheries and watershed stewardship activities. Enhanced salmon enable economic, social and cultural harvest opportunities for commercial, recreational and First

Nations harvesters, support vulnerable stock rebuilding, and contribute to Canada's stock assessment commitments under the Pacific Salmon Treaty with the United States. Projects with community partners include stewardship activities and the development of integrated local and area watershed plans. SEP also support school education and public awareness projects.

With respect to projects that undertake fish culture, about 150 projects release fish annually from sites throughout British Columbia and the Yukon. Projects range in size from spawning channels releasing nearly 100 million juveniles annually to school classroom incubators releasing fewer than one hundred juveniles. SEP enhances Chinook, Coho, Chum, Pink, and Sockeye salmon, as well as small numbers of steelhead and cutthroat trout. Project types include hatcheries, fishways, spawning and rearing channels, habitat improvements, flow control works, lake fertilization, and small classroom incubators. Projects are operated by SEP staff or contracted with some SEP support to First Nations and community and volunteer groups.

The program is delivered through three components:

- Major Operations (OPS) SEP facilities that rebuild stocks, support assessment and provide harvest opportunities through hatcheries and spawning channels;
- The Community Involvement Program (CIP), which includes:
  - The Community Economic Development Program (CEDP) that operates contracted SEP facility operations with local community groups;
  - First Nations, and Public Involvement Program projects that are divided into designated (DPI – Designated Public Involvement) and non-designated (PIP – Public Involvement Program) categories. The latter are smaller projects that focus on outreach, stewardship and educational activities, and do not produce large numbers of fish;
  - The Resource Restoration Unit, which supports habitat improvements, effectiveness monitoring, watershed planning, and partnerships related to habitat initiatives.
- SEP Planning and Assessment (SPA) that reviews data, analyses returns and incorporates these details into a draft production planning along with major operation facility information.

SEP facilities are subject to the *Pacific Aquaculture Regulations* (PAR) under the *Fisheries Act*. PAR licences for all SEP facilities include a production plan, which is developed within a formal integrated planning process. Production planning meetings involve SEP, Science, and Fisheries

Management, and external consultation and involvement is achieved through the IFMP process. The production planning cycle establishes maximum numbers of eggs to be collected and juveniles to be released for each enhanced system, using strategies that will produce the number of adults desired to meet specific objectives while considering species interactions, effects on existing stocks, harvest, habitat capacity, project capacity and overall conservation unit (CU) objectives. SEP priorities are established annually based on the national and regional priorities using a consistent approach across the program.

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), Public Involvement Projects (Public, and Designated Public Involvement (PIP, and DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). There are two datasets available at the link below:

- Post-Season Production from the 2019 brood year (i.e. 2020 releases, and #'s on hand for 2021 release)
- Draft SEP Production Plan, which include proposed targets for the 2021 brood year. The Production Plan dataset is preliminary, and the final version will be available upon the final publication of the IFMP in July 2021.

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/ifmp-pgip-eng.html>

Significant production adjustment proposals for 2021 are incorporated into the *Enhancement Information* in each Species Overview of the Section 13 Fishing Plans.

## 3.4 REBUILDING PLANS

Amendments to the *Fisheries Act* (Bill C-68) were passed into legislation in 2019 and include new authorities to amend the *Fishery (General) Regulations* and requirements to maintain major fish stocks at sustainable levels, and develop and implement rebuilding plans for stocks that have declined to their critical zone. The proposed regulatory amendments draw upon the 2013 Guidance for the development of rebuilding plans under the Precautionary Approach Framework: Growing stocks out of the critical zone.

Information on the regulatory proposal regarding fish stocks and rebuilding plans is available at:

<http://www.dfo-mpo.gc.ca/fisheries-peches/consultation/consult-maj-pri-eng.html>

The regulatory proposal was consulted on from December 2018 to March 2019 with pre-publication of the regulation in Canada Gazette Part 1 on January 2, 2021 to February 2,

2021 to provide further opportunity for feedback on the proposed regulation. We anticipate that the regulation will come into effect in spring 2021.

WCVI Chinook, Haida Gwaii Herring and Bocaccio, Inside Yelloweye and Outside Yelloweye Rockfish are major stocks proposed to be prescribed in the regulatory amendment (Proposed list of major stocks for Batch 1), but as a result of the Commissioner of the Environment and Sustainable Development report, *Sustaining Canada's Major Fish Stocks—Fisheries and Oceans Canada*, DFO has already committed to developing rebuilding plans for these stocks by the end of the 2020/21 fiscal year. Rebuilding plans for Bocaccio, Inside and Outside Yelloweye Rockfish and Haida Gwaii Herring have been completed, or are anticipated to be completed by the end of 2020/21; but a delay in the completion of the WCVI Chinook rebuilding plan is anticipated.

## 3.5 CONSULTATION

In Pacific Region, DFO consults with and engages First Nations and other interests through a wide range of processes. For salmon, the focal point for DFO's engagement with First Nations, the harvest sectors and environmental interests is around the development and implementation of the annual IFMP.

The Crown has a legal duty to consult and if appropriate, accommodate, when the Crown contemplates conduct that might adversely impact section 35 rights (established or potential) (Source: *Aboriginal Consultation and Accommodation: Interim Guidelines for Federal Officials to Fulfill the Legal Duty to Consult*, February 2008). In addition to the legal duty, consultation supports good governance, sound policy and effective decision making.

In addition, Canada is committed to implementing the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and recognizes the right of Indigenous peoples to participate in decision-making in matters that affect their rights through their own representative institutions and the need to consult and cooperate in good faith with the aim of securing their free, prior, and informed consent.

Consultation and engagement with First Nations takes place at a number of levels and through a variety of processes. A significant amount of consultation and dialogue takes place through direct, bilateral meetings between DFO and First Nations at a local level. This can include specific engagement on the draft IFMP or other issues during the pre-season, in-season or post-season. In addition to consultations at the local level, DFO works with First Nations at the aggregate or watershed level.

For Treaty Nations, consistent with the Cabinet Directive on the Federal Approach to Modern Treaty Implementation, DFO consults on a broad suite of fish and fishery related items,

including shared stewardship arrangements, through formal processes such as Joint Fisheries Committees.

## 3.6 CO-MANAGEMENT AGREEMENTS

In 2019, the Government of Canada entered into two reconciliation agreements with north coast First Nations that lay the foundation for incremental development and implementation of new arrangements for fisheries and collaborative fisheries governance.

*Coastal First Nations Fisheries Resource Reconciliation Agreement between Canada and Metlakatla, Gitxaala, Gitga'at, Kitasoo/Xai-Xais, Nuxalk, Heiltsuk, Wuikinuxv, and Haida Nations*

*Heiltsuk and Canada Hailcistut Incremental House Post Agreement*

As DFO and these Nations develop and implement these new arrangements, they will also develop engagement processes with neighbouring First Nations and stakeholders (e.g. commercial and recreational sectors).

## 3.7 ADVISORY COMMITTEES AND BOARDS

### 3.7.1 SALMON COORDINATING COMMITTEE

The First Nations Salmon Coordinating Committee (SCC) facilitates dialogue between First Nations and DFO. First Nations representatives from 13 geographical areas within the Pacific Region meet with DFO resource management to discuss priority issues among BC First Nations as they relate to salmon. SCC priorities include advancing Indigenous fisheries; building First Nations capacity and fisheries governance; and advising on salmon conservation and rebuilding, and the sustainability of pacific salmon fisheries concerns.

### 3.7.2 INTEGRATED HARVEST PLANNING COMMITTEE

At a broad, Province-wide level, the Integrated Harvest Planning Committee (IHPC) was developed to bring together First Nations, commercial and recreational harvesters, and environmental interests to review and provide input on the IFMP, as well as co-ordinate fishing plans and (where possible) resolve potential issues between the sectors. The IHPC also meets post-season to review information regarding stocks and fisheries and implementation of the IFMP. The current IHPC advisory membership list is located in [Appendix 5](#).

In addition to integrated dialogue through the IHPC, the Department also works directly with the commercial and recreational sectors, largely through the Commercial Salmon Advisory

Board (CSAB) and Sport Fishing Advisory Board (SFAB), respectively. The Department also consults with the Pacific Marine Conservation Caucus, an umbrella group representing nine core environment groups (<http://www.mccpacific.org/>).

#### **3.7.3 COMMERCIAL SALMON ADVISORY BOARD**

The Commercial Salmon Advisory Board (CSAB) consists of two representatives from each Area Harvest Committee (AHC A-H), as well as representatives from the Native Brotherhood of BC (2), the processing sector (2), and the UFAWU (2). The CSAB serves as the consultative body on issues that affect commercial salmon fisheries. Two representatives from each area are nominated to sit on the DFO Integrated Harvest Planning Committee. The current CSAB members list is available at: <https://www.pac.dfo-mpo.gc.ca/consultation/smon/csab-ccpcs/membs-eng.html>

##### **3.7.3.1 AREA HARVEST COMMITTEES**

Area Harvest Committees (AHC) consist of representatives nominated and elected by salmon licence eligibility holders. Elections are normally held every year where half of the board will be up for re-election. AHCs provide pre-season and in-season advice and recommendations on fishing related matters to DFO as appropriate to the area and gear type. Two representatives from the AHC are elected to represent the interests of the specific area and gear type on the CSAB. The current AHC members list is available at: <https://www.pac.dfo-mpo.gc.ca/consultation/smon/csab-ccpcs/ahc-ces-membs-eng.html>

#### **3.7.4 SPORT FISHING ADVISORY BOARD**

The Sport Fishing Advisory Board has been an advisory body to Fisheries and Oceans Canada (DFO) on recreational issues since 1964. The Board's role is to provide advice and make recommendations to DFO on matters affecting tidal waters fisheries and non-tidal anadromous fisheries and in tidal waters on matters affecting all species and forms of recreational fishing. A terms of reference for this board is available at:

<https://www.pac.dfo-mpo.gc.ca/consultation/smon/sfab-ccps/index-eng.html>

### **3.8 WHALE, TURTLE AND BASKING SHARK INCIDENT AND SIGHT REPORTS**

#### **3.8.1 INCIDENT REPORTING**

**Marine Mammal Incident Reporting Hotline**

The Department is responsible for assisting marine mammals and sea turtles in distress. If your vessel strikes a whale, or if you observe an entangled, sick, injured, distressed, or dead marine mammal in B.C. waters, please contact the B.C. Marine Mammal Response Network Incident Reporting Hotline immediately:

**1-800-465-4336 OR VHF CHANNEL 16**

**What to report:**

- Your name and contact information
- Date and time of incident
- Location: Latitude/Longitude coordinates, landmarks
- Species
- Animal alive/dead (animal condition)
- Nature of injury and supporting details (if possible)
- Pictures/Video taken



### 3.8.2 SIGHTING REPORTING

The Department appreciates your assistance in tracking the sightings of live cetaceans (whales, dolphins and porpoises), sea turtles and Basking Sharks. While there are many whale species found in Pacific Canadian waters, sightings of Basking Shark and Leatherback Sea Turtles are infrequent. The collection of sighting data is useful to scientists in determining population size and species distribution and aids in recovery efforts under the *Species at Risk Act* (SARA).

To report whale or turtle sightings, contact the BC Cetacean Sightings Network:

Toll free: 1.866.I.SAW.ONE (1-866-472-9663)

Email: [sightings@ocean.org](mailto:sightings@ocean.org)

Website: <http://wildwhales.org/>

App: WhaleReport

To report Basking Shark sightings contact the Basking Shark Sightings Network:

Toll free: 1-877-50-SHARK (1-877-507-4275)

Email: [BaskingShark@dfo-mpo.gc.ca](mailto:BaskingShark@dfo-mpo.gc.ca),

Website: [www.pac.dfo-mpo.gc.ca/SharkSightings](http://www.pac.dfo-mpo.gc.ca/SharkSightings)



## 4 ECONOMIC, SOCIAL AND CULTURAL IMPORTANCE

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The intent of this section is to provide a socio-economic overview of the salmon fisheries in British Columbia using available information. In future years, information on the social and cultural context of the various fisheries can be added, where available. This summary addresses salmon in the context of the Aboriginal food, social, and ceremonial fishery, the recreational fishery, and commercial fishery (harvest, processing and export activity including that generated by the Aboriginal communal commercial fishery). This section does not provide measures of economic value (i.e. consumer and producer surplus). DFO recognizes the unique values of each of the fisheries described here. The overview provided in this profile is intended to help build a common understanding of the socio-economic dimensions of each fishery rather than compare the fisheries. Where possible this summary highlights information specific to the North Coast.

### 4.1 ABORIGINAL FISHERY

*Fisheries and Oceans Canada recognizes that the following section does not reflect Indigenous perspectives on the economic, social and cultural importance of salmon fisheries to First Nations, and is considering a process for the inclusion of Indigenous perspectives for future Integrated Fisheries Management Plans for salmon.*

Section 35(1) of the Constitution Act, recognizes and affirms the existing Aboriginal and treaty rights of the Aboriginal peoples in Canada, however it does not specify the nature or content of the rights that are protected. In 1990, the Supreme Court of Canada issued a landmark ruling in the Sparrow decision. This decision found that the Musqueam First Nation has an Aboriginal right to fish for FSC purposes. The Supreme Court found that where an Aboriginal group has a right to fish for FSC purposes, it takes priority, after conservation, over other uses of the resource. The Supreme Court also indicated the importance of consulting with Aboriginal groups when their fishing rights might be affected.

The Aboriginal Fisheries Strategy (AFS) was implemented in 1992 to address several objectives related to First Nations and their access to the resource. These included:

- To provide a framework for the management of fishing by Aboriginal groups for food, social and ceremonial purposes.

- To provide Aboriginal groups with an opportunity to participate in the management of fisheries, thereby improving conservation, management and enhancement of the resource.
- To contribute to the economic self-sufficiency of Aboriginal communities.
- To provide a foundation for the development of self-government agreements and treaties.
- To improve the fisheries management skills and capacity of Aboriginal groups.

In the region in 2020/21, there were approximately 85 AFS agreements. AFS fisheries agreements may identify the amounts of species including salmon that may be fished for FSC purposes, terms and conditions that will be included in the communal fishing licence and fisheries management arrangements. Additional information on AFS implementation for FSC, including harvest target amounts for North Coast are provided in Section 10.2.

Fisheries chapters in modern First Nation treaties may articulate a treaty fishing right for FSC purposes that are protected under Section 35 of the Constitution Act, 1982. Negotiated through a side agreement, some modern treaty First Nations have been provided commercial access either through the general commercial fishery or a Harvest Agreement. While this commercial access may be referenced in the treaty, it is not protected under the Constitution Act.

Four modern treaties (Nisga'a Final Agreement, Tsawwassen First Nation Final Agreement (TFA), Maa-nulth First Nations Final Agreement (MNA), and Tla'amin Nation Final Agreement) have been ratified in British Columbia. For information on Nisga'a fisheries please see Section 10.4.

Five Nuu-chah-nulth First Nations located on the west coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) – have an aboriginal right to fish for any species, with the exception of Geoduck, within their court-defined fishing territories and to sell that fish. For further information please see Section 1.6.2

## 4.2 RECREATIONAL FISHERY

Recreational fishing for salmon occurs to provide food for personal use, as a leisure activity, or as a combination of the two. These activities provide non-quantifiable benefits to the individual participants as well as contribute directly and indirectly to the economy through fishery related expenditures. This section focuses on economic activity rather than the economic benefits to individual anglers or businesses. Catch levels in the recreational fishery are managed using area specific openings and retention levels.

In the most recent Survey of Recreational Fishing in Canada (2015), tidal water recreational fishing led to more than \$600 million dollars (2020\$) in expenditures and major purchases in British Columbia. Recreational fishing effort directed toward salmon accounted for an estimated 64% of all angler expenditures, or \$383 million.<sup>1</sup> Of these, \$294 million was spent in Southern BC (Johnstone Strait, Georgia Strait, Barkley Sound, and West Coast Vancouver Island).

However, due to conservation related fishery management measures, the 2019 fishing season experienced significant restrictions which would have lowered participation, catches, and expenditures. In addition to these conservation related management measures, the 2020 season was also significantly impacted by travel restrictions and a downturn in the economy related to the coronavirus pandemic. Even if BC residents were less likely to be impacted by travel restrictions, it would be reasonable to expect a reduction in their anglings days, distance they traveled to fish, and in their total investments and purchases. BC residents make up the large majority of active anglers as well as days fished and are responsible for the lion share of the expenditures generated by the sector. However, anglers from outside BC spend more on fishing trip packages and make up an important client base for lodges and charter operations.

In order to fish for salmon an angler needs either a tidal or a freshwater licence. In addition, in order to keep salmon, the licence must have a Pacific Salmon Conservation (PSF) Stamp. The number of licences and stamps that can be sold is not restricted and is one way to highlight the level of participation of angler groups in the fishery. Licence data show that the total number of licences and salmon stamps sold was relatively stable from 2001 to 2008 (Figure 4.2-1, below). Starting in 2008, there were consecutive drops in sales of licences to non-residents (i.e. anglers that did not reside in BC). Some of the drop was made up by increased sales to residents and the number of licences sold was relatively steady at the lower level until 2013/14. Sharp increases in the sale of licences to both residents and non-residents in the 2014/15 season resulted in one of the largest annual licence sales in at least 14 years. More recent counts of licences sold are not yet available, but will be impacted by management restrictions put in place due to conservation related fishery management measures in 2019 and 2020, with 2020 also being impacted due to COVID-19 travel restrictions.

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<sup>1</sup> DFO Internal Analysis; note that values paid for final goods (such as angler expenditures on fishing trips) should not be considered measures of economic impact of a sector.

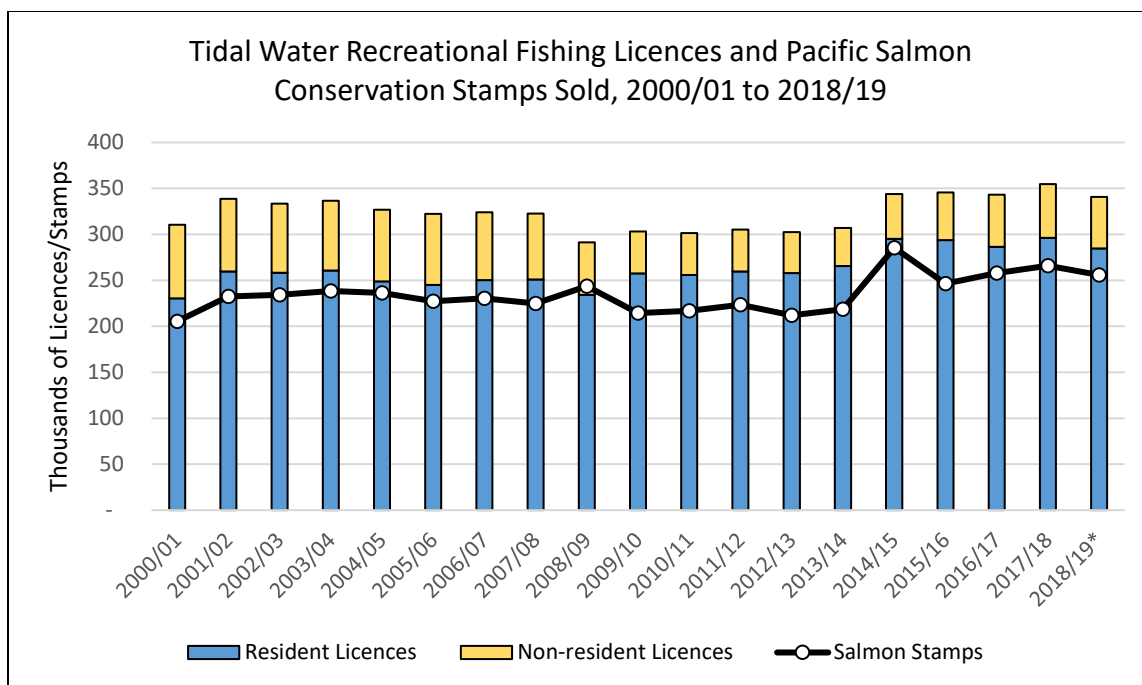


Figure 4.2-1: Tidal Water Recreational Fishing Licences and Pacific Salmon Conservation Stamps Sold, 2000/01 to 2018/19

Source: DFO. [www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/Stats/99tocurrent-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/Stats/99tocurrent-eng.html)

These restrictions will affect participation in the recreational fishery and also the expenditures and economic impacts generated by the sector. The Survey of Recreational Fishing in Canada provides an estimate of individual expenditures and investment for recreational fishing. This information is used when estimating the direct and indirect contribution of recreational fishing to the economy (e.g. GDP, employment). The survey is administered every 5 years, but it is reasonable to expect highlighted trends to be fairly constant from year to year, barring any significant changes in fishing opportunities, like those we have seen in the last two years. Historically, the combined tidal and freshwater fisheries of BC were the second largest recreational fisheries in Canada in terms of direct and package expenditures, and third largest in terms of investments (DFO 2015). While resident anglers have the largest expenditures, recreational fishing by non-residents also contributes to the provincial economy. In 2015, non-resident direct expenditures (including fishing packages) and investments totaled \$159 million (2020\$). This number understates the contribution of non-resident tidal water anglers to the overall economy, however, as it only includes expenditures directly attributable to their fishing

experience<sup>2</sup>. Fishing opportunities in BC's tidal waters draw Canadian and international tourists to the province: of 47,269 non-resident anglers surveyed in 2010, 40% reported that they would not have come to British Columbia at all if there had been no opportunities for tidal water angling<sup>3</sup>. A further 19% would have shortened their stay in the province.

Recreational salmon catch has fluctuated over the years. On average, from 2015-2018, 828 thousand pieces of salmon were caught coastwide in BC<sup>4</sup>. This number fell slightly in 2019 by 3% to 806 thousand, and preliminary estimates show that it fell by 47% in 2020, to 427 thousand pieces caught. It is clear that COVID-19 travel restrictions have severely impacted the recreational salmon fishing sector this past year, and these affects may continue to be seen in the 2021 fishing season as well. Although catch numbers have fallen in the past two years, the proportion of species caught has remained fairly the same. From 2015-2020, more than half of the recreational catch can be attributed to Chinook (54%), followed by Coho (30%), Pink (9%), Sockeye (7%), and Chum (1%).

Figure 4.2-2 shows the tidal recreational expenditures for all recreational fishing species by resident and non-resident anglers from 2000 to 2015, adjusted to reflect constant 2020 dollars. Though recreational fishing continues to be important to the BC economy, the rate of growth overall has slowed and now declined in the last few years: total expenditures and investments grew by nearly 15% from 2000 to 2005, but by only 1% from 2005 to 2010. From 2010 to 2015, total expenditures and investments in the tidal recreational fishing industry decreased by 26%. This slowdown is due mainly to a drop in visits (and therefore expenditures) to BC by non-resident anglers, particularly other (i.e. international) non-resident anglers whose total expenditures in BC dropped by 48% between 2005 and 2010, and dropped again by 12% between 2010 and 2015. Expenditure on fishing packages by resident anglers increased considerably from 2000-2010; in real terms, it increased by 139% in that time period. However, in the following 5 years, expenditures on fishing packages by resident anglers decreased by 21%, as total expenditures by residents fell by 32%. Nonetheless, BC residents are still the primary consumers of fishing trip packages in the province.

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<sup>2</sup> The British Columbia's Fisheries and Aquaculture Sector (BC Stats 2013) report, which calculates direct and indirect economic activity, indicates that non-resident participants in recreational tidal water fishing also spend money on, for example, shopping, cultural events and attractions (such as museums and the theatre), and sightseeing at locations other than where they go fishing.

<sup>3</sup> This can be further broken down into Canadian non-residents and international non-residents. Opportunities for tidal water recreational fishing are more important to international visitors: 47% of them reported they would not have come to BC had there not been tidal water fishing opportunities, while 32% of Canadian visitors would not have come.

<sup>4</sup> Post Season Review, multiple years

B.C. Tidal Water Recreational Fishing Expenditures for all Species by Angler Type (2020\$)				
2000				
	Direct Expenses	Packages	Investments	Total
Resident	\$ 154,727,355	\$ 24,885,069	\$ 278,846,736	\$ 458,459,160
CDN Non-Resident	\$ 33,801,797	\$ 28,955,880	\$ 34,442,854	\$ 97,200,531
Other non-resident	\$ 73,060,080	\$ 60,000,461	\$ 17,249,129	\$ 150,309,670
Total	\$ 261,589,231	\$ 113,841,411	\$ 330,538,720	\$ 705,969,361
2005				
	Direct Expenses	Packages	Investments	Total
Resident	\$ 188,239,452	\$ 51,428,029	\$ 318,097,398	\$ 557,764,879
CDN Non-Resident	\$ 41,245,404	\$ 48,113,193	\$ 15,116,119	\$ 104,474,716
Other non-resident	\$ 59,263,191	\$ 79,138,810	\$ 9,875,269	\$ 148,277,270
Total	\$ 288,748,047	\$ 178,680,031	\$ 343,088,786	\$ 810,516,864
2010				
	Direct Expenses	Packages	Investments	Total
Resident	\$ 227,634,455	\$ 59,569,112	\$ 364,375,049	\$ 651,578,616
CDN Non-Resident	\$ 36,428,664	\$ 30,475,085	\$ 21,461,464	\$ 88,365,213
Other non-resident	\$ 37,208,810	\$ 34,255,185	\$ 5,780,209	\$ 77,244,204
Total	\$ 301,271,929	\$ 124,299,382	\$ 391,616,723	\$ 817,188,034
2015				
	Direct Expenses	Packages	Investments	Total
Resident	\$ 196,069,764	\$ 46,954,789	\$ 199,577,259	\$ 442,601,812
CDN Non-Resident	\$ 42,825,731	\$ 35,624,179	\$ 12,186,101	\$ 90,636,011
Other non-resident	\$ 38,444,833	\$ 28,292,831	\$ 1,516,747	\$ 68,254,411
Total	\$ 277,340,328	\$ 110,871,799	\$ 213,280,108	\$ 601,492,234

Figure 4.2-2: Tidal Water Recreational Fishing Direct and Package Expenditures and Investments for all species, in constant (2020) dollars

Source: Survey of Recreational Fishing in Canada (DFO, multiple years)

The last two years (2019 and 2020) can be expected to have accentuated the trend in declining expenditures by international anglers, given salmon management restrictions and especially COVID-19 travel restrictions. Salmon accounts for roughly 67% of expenditures on fishing trip packages and 64% of total expenditures overall in the tidal recreational fishing industry in British Columbia (DFO 2015) (Figure 4.2-3, below). Given the restrictions highlighted above, participation, expenditures, and economic impacts from the recreational fishing sector will have been significantly impacted. Travel restrictions, impacting both Canadian non-BC residents and foreign (non-Canadian) anglers, will certainly have led to much lower expenditures for the sector.

Additional information on the history and vision for recreational fisheries can be found in the document "Vision for Recreational Fisheries in BC": <http://www.pac.dfo-mpo.gc.ca/consultation/smon/sfab-ccps/docs/rec-vision-eng.pdf>

### 3 SHARED STEWARDSHIP ARRANGEMENTS

	2015 North Coast Salmon Tidal Rec. Expenditures (2020\$)			
	Direct Expenditures	Packages	Investments	Total
Residents	\$ 13,746,467	\$ 17,445,155	\$ 12,821,442	\$ 44,013,065
Canadian non-resident	\$ 7,622,006	\$ 16,259,779	\$ 3,735,238	\$ 27,617,023
Other non-resident	\$ 5,540,964	\$ 11,680,487	\$ 137,401	\$ 17,358,853
<b>Total</b>	<b>\$ 26,909,438</b>	<b>\$ 45,385,422</b>	<b>\$ 16,694,081</b>	<b>\$ 88,988,941</b>

	2015 South Coast Salmon Tidal Rec. Expenditures (2020\$)			
	Direct Expenditures	Packages	Investments	Total
Residents	\$ 104,885,553	\$ 13,888,187	\$ 116,795,121	\$ 235,568,862
Canadian non-resident	\$ 20,231,973	\$ 7,047,390	\$ 2,704,342	\$ 29,983,705
Other non-resident	\$ 19,889,793	\$ 7,968,018	\$ 538,529	\$ 28,396,339
<b>Total</b>	<b>\$ 145,007,320</b>	<b>\$ 28,903,595</b>	<b>\$ 120,037,992</b>	<b>\$ 293,948,906</b>

Figure 4.2-3: Tidal Water Recreational Fishing Direct and Package Expenditures and Investments for Salmon North Coast and South Coast, in constant (2020) dollars

Source: Survey of Recreational Fishing in Canada (DFO, 2015)

#### 4.2.1 HARVEST SECTOR

In BC, the salmon fishery is a limited access fishery, mostly managed as a competitive fishery<sup>5</sup>; however, several parts of the fishery are operated under individual quotas. Since 2005, five areas using seine, troll or gill net gear have participated in demonstration fisheries with alternative implementations of individual quotas or pooling arrangements. In addition, there have been several commercial First Nations economic opportunity and demonstration fisheries. Commercially-harvested salmon supports BC's seafood processing sector, much of which is ultimately exported, bringing new money into the province.

Between 2013 and 2020, salmon contributed an average of 17% of the landed value and 14% of the total volume of BC wild caught seafood (DFO Official Catch, 2013-2020). The real value, in 2020 constant dollars (2019\$), ranged from a high of \$127.8 million in 2014 to a low of \$17.9 million in 2019 (Figure 4.2-3, below).

Due to conservation related fishery management measures, the 2019 fishing season was the worst on record and saw salmon commercial landed value at roughly 25% of the previous 4 year average (2015-2018). All areas were impacted but areas B, E, and H were most restricted with no (or virtually no) catch. Many vessels elected not to take part in the fishery. In fact, the number of active vessels in 2019 fell from 924 in 2018 (a high return/high participation year) to 601, a decrease of 35%.

Participation in the commercial fishery in 2020 saw a small increase to 631 active vessels. The number remained low due to conservation related fishery management measures continuing from 2019 into 2020, along with health and safety restrictions delaying the start of the fishing season due to the coronavirus pandemic. Although the number of active vessels only increased by 30 from the previous year, preliminary landing estimates show a 77% increase from 2019 to 2020. However, landed value only rebounded slightly in 2020, increasing by 16% to \$20.8 million. This was the result of majority of 2020 landings being Pink salmon, which is the lowest valued salmon in terms of price per kg, and the total landings of the other four salmon species remaining nearly the same as the previous year. In most years, Pink salmon accounts for an average of 18% of total salmon catch. However, in 2013 and 2020, Pink made up 63% and 61% of salmon catch, respectively, contributing to a low landed value total for each year. Conservation concerns are expected to continue into future years, negatively impacting the returns to the commercial fleet.

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<sup>5</sup> Other names for this style of fishery include derby and Olympic style fishery



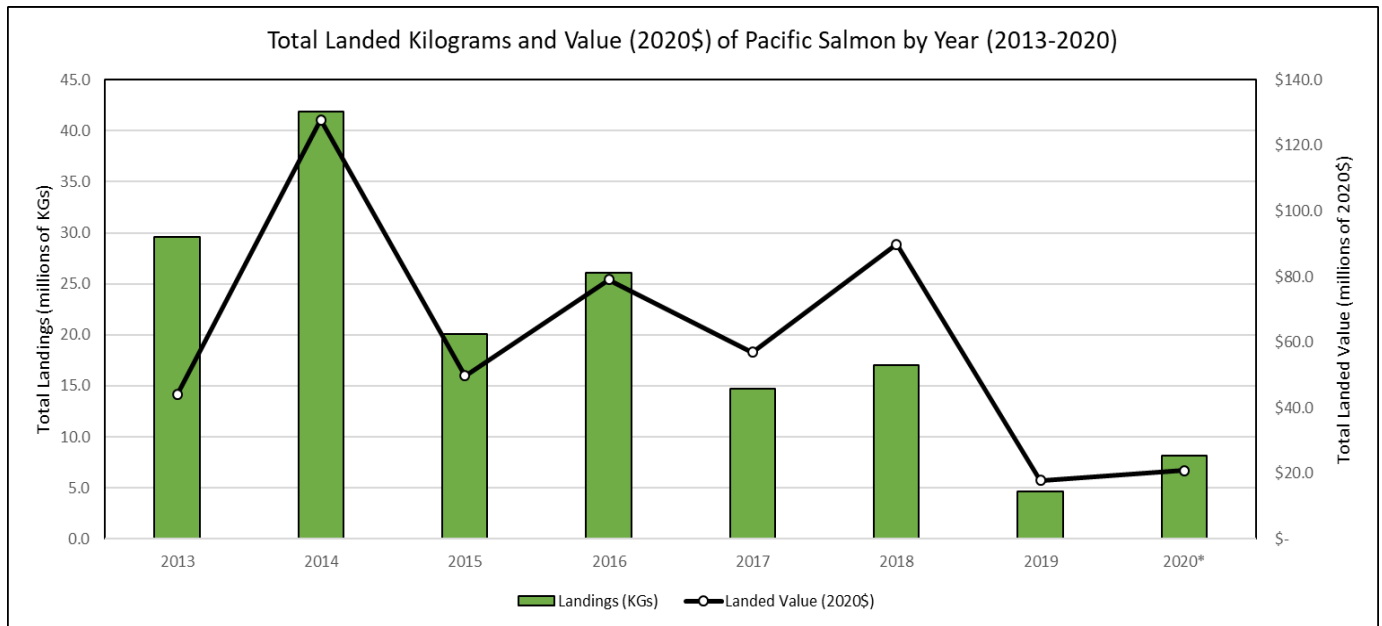


Figure 4.2-3: Total Landed Kilograms and Value (2020\$) of Pacific Salmon by Year (2013-2020\*)

Source: DFO Official Catch matched to the best available price from sales slips.

\*Estimates for 2020 are to be treated as preliminary

**Note:** Salmon landed value estimates may differ slightly from other sources due to varying price estimates. Prices used here are “best available” based on matching criteria using date, gear and area.

Chinook and Chum make up the majority of the landed value in most years, with the exception being years when there is a high return of Sockeye (see Figure 4.3-2 below).

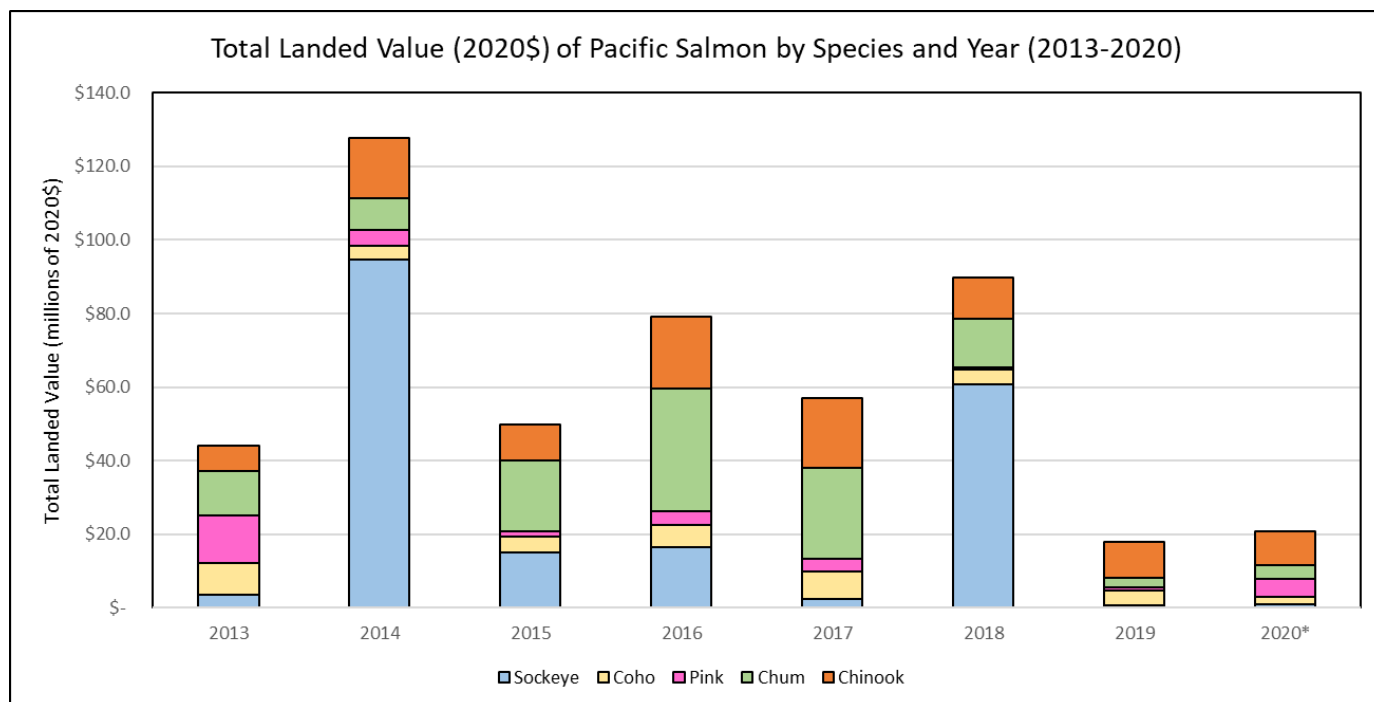


Figure 4.2-4: Total Landed Value (2020\$) of Pacific Salmon by Species by Year (2013-2020\*)

Source: DFO Official Catch matched to the best available price from sales slips.

\*Estimates for 2020 are to be treated as preliminary

**Note:** Salmon landed value estimates may differ slightly from other sources due to varying price estimates. Prices used here are “best available” based on matching criteria using date, gear and area.

Figure 4.3-3 and Figure 4.3-4 (below) present landings (kilograms) and landed value (2020\$) of Pacific Salmon by licence area from 2016-2020. For the most part, the graphs coincide with one another; higher landings result in higher landed value. However, salmon licence areas A and F show quite the opposite story: licence area A has higher landings each year (except for 2019) compared to licence area F, but area F has higher landed values. This is the result of majority of catch in area A being Pink Salmon (60%), which has the lowest value in terms of price per kg, and area F landing primarily Coho (44%) and Chinook (38%), which have the third highest and highest value in terms of price per kg in the North Coast, respectively.

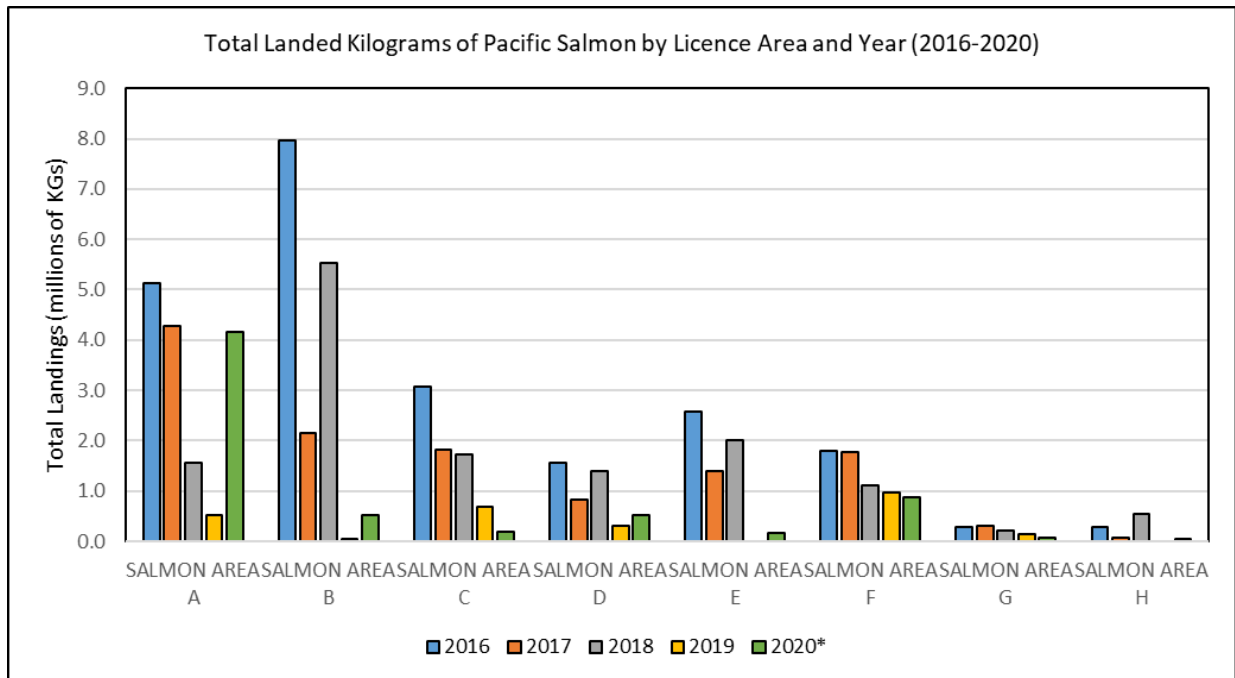


Figure 4.2-3: Total Landed Kilograms of Pacific Salmon by Licence Area by Year (2016-2020\*)

Source: DFO Official Catch matched to the best available price from sales slips.

\*Estimates for 2020 are to be treated as preliminary

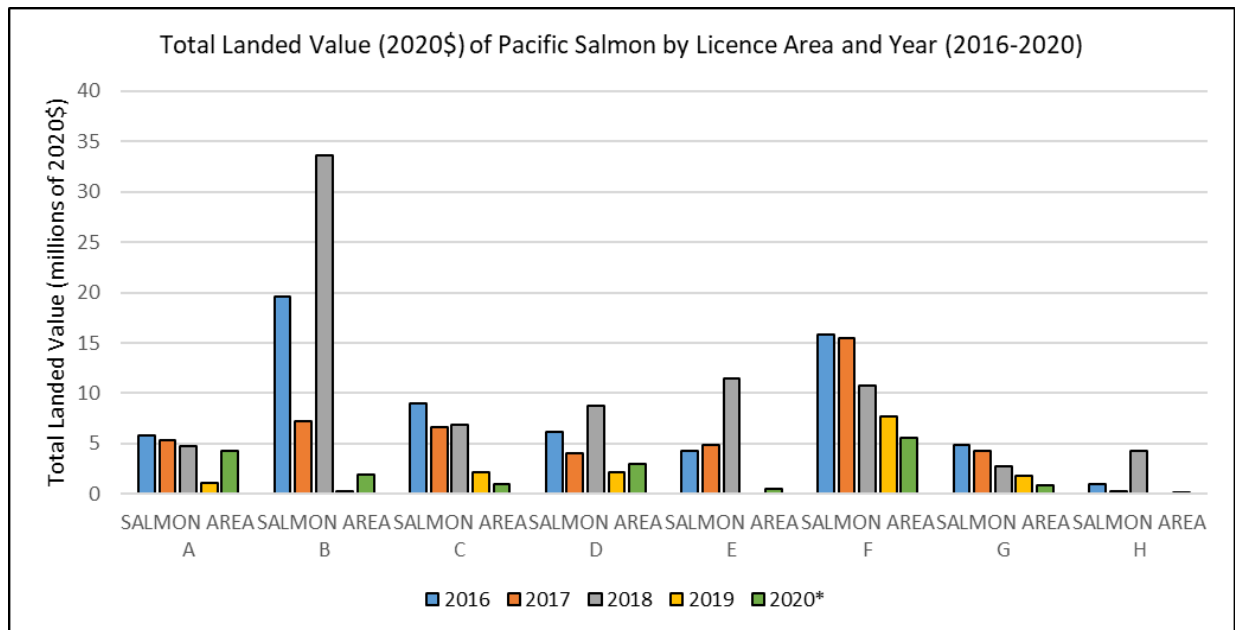


Figure 4.2-4: Total Landed Value (2020\$) of Pacific Salmon by Licence Area by Year (2016-2020\*)

Source: DFO Official Catch matched to the best available price from sales slips.

\*Estimates for 2020 are to be treated as preliminary

Between 2013 and 2020, the South Coast fishery was responsible for an average of 51% (with the North Coast representing 49%) of the total volume of salmon landings and 53% (47%) of the total landed value. The record Fraser River Sockeye run in 2014 meant that the South Coast accounted for 71% and 78% of the landed volume and value in that year, respectively. With another Sockeye boom in 2018, the South Coast again accounted for 71% and 74% of the landed volume and value, respectively. In non-Sockeye bump years, the North Coast catches more salmon than the South Coast, but the South coast has secured most of the benefits of the large salmon runs in years like 2014 and 2018.

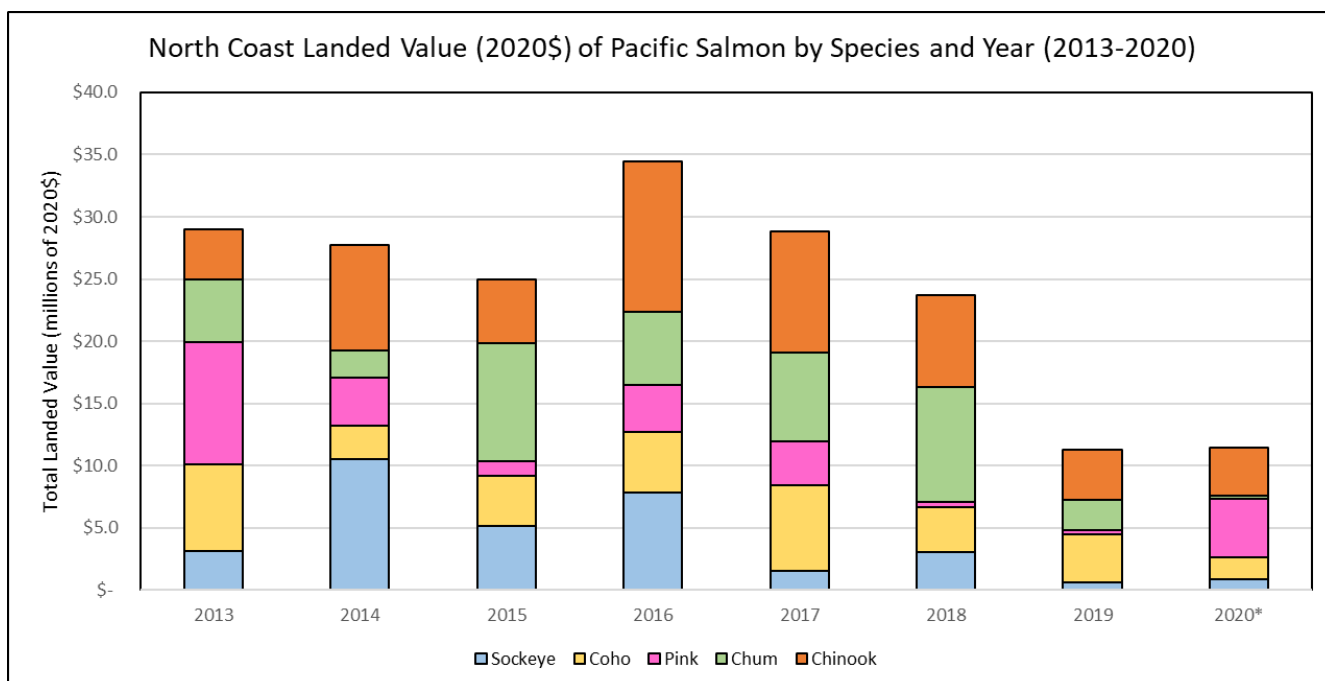


Figure 4.2-5: North Coast salmon value by species, 2013-2020\* (in 2020\$)

Source: DFO Official Catch matched to best available price from sales slips.

\*Estimates for 2020 are to be treated as preliminary

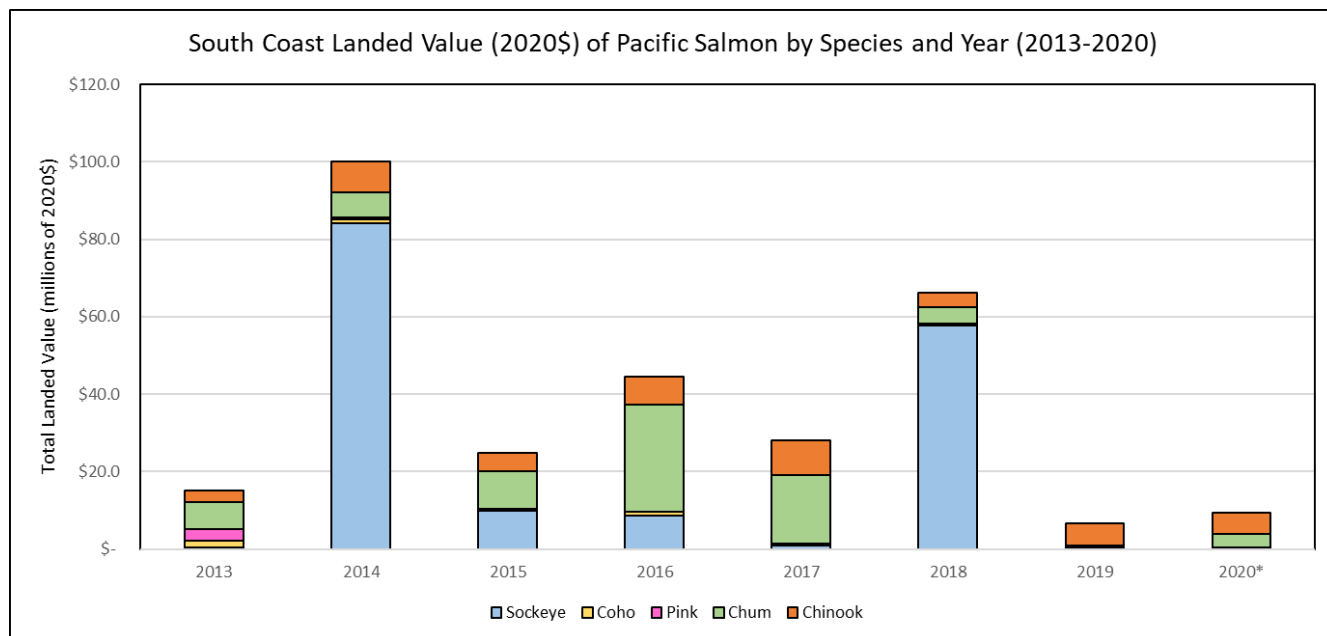


Figure 4.2-6: South Coast salmon value by species, 2013-2020\* (in 2020\$)

Source: DFO Official Catch matched to best available price from sales slips.

\*Estimates for 2020 are to be treated as preliminary

**Note:** Salmon landed value estimates may differ slightly from other sources due to varying price estimates. Prices used here are “best available” based on matching criteria using date, gear and area.

Salmon licence values declined steadily from 2005 to 2010, reflecting poor returns to the fleets (Nelson, various years). Seine licences have recovered somewhat since then, while gillnet and troll licences have been steady with troll showing improvements in 2014. License values are a reflection of expected future financial returns but also of speculation. The value of a seine licence remained constant from 2015-2018 (\$422K) and increased by 26% to \$530K in 2019 (Castlemain, various years). Gillnet licence values steadily increased from 2015-2018 (\$54K to \$69K), but fell back to \$56K in 2019. Troll licence values experienced a similar trend to gillnet, increasing from 2015-2018 (\$125K to \$199K), and falling in 2019 to \$167K. The salmon fleet’s financial performance is best reviewed over several years, given the fisheries significant annual swing in harvest. For the seine fishery, the percentage of revenue attributed to the diversified fleet fell from 17% to 15%, when comparing the 2016-2019 average to the 2020 year<sup>6</sup>. For the gillnet fishery, the percentage of revenue attributed to the diversified fleet also fell from 14% to 10% in comparing 2016-2019 average to the 2020 year. For the troll fishery, the percentage of

<sup>6</sup> DFO Fleet Diversification Table Tool

revenue attributed to the troll diversified fleet also decreased from 51% to 47% in comparing the 2016-2019 average to the 2020 year. The cost structure of salmon fleets in BC is available through various reports (Nelson, 2009 & 2011 as well as Gislason 2011).

The Department's general approach is that Aboriginal commercial harvest opportunities are managed using the same harvest decision guidelines as the commercial fishery. Aboriginal commercial harvest opportunities may be implemented with different times, areas, gears and regulations consistent with the overall management approach for the commercial fishery. The landings and value attributable to Aboriginal commercial harvest are included in the values reported for the commercial sector above and this includes inland fisheries. Participation in the commercial salmon fishery provides socio-economic benefits to Aboriginal communities and individuals from fishery revenues and employment-generated income.

Five Nuu-chah-nulth First Nations located on the west coast of Vancouver Island - Ahousaht, Ehatesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht (the Five Nations) – have an aboriginal right to fish for any species, with the exception of Geoduck, within their court-defined fishing territories and to sell that fish.

Aboriginal participation within the commercial salmon fishery occurs under four licence categories (A, A-I, N, and F). An Aboriginal vessel owner may elect to pay a reduced fee for a category A licence; thereafter only an Aboriginal may own the vessel. Since 2005, an average of 14% of commercial licences in the North Coast have been reduced fee licences, while the coast-wide average is 11%. Licence categories N and F provide similar fishing privileges as A licence eligibilities, but are non-transferable and are intended to be held permanently for the benefit of the recipient First Nations communities. Both licence categories allow Aboriginal communities to designate vessels and individual fish harvesters to carry out the fishing. The Northern Native Fishing Corporation holds 254 gillnet licences (Category N), of which 61 are in the South Coast.

Since 1994, DFO has acquired a total of 492 commercial salmon fishing licence eligibilities through a voluntary relinquishment process. Once acquired by DFO, licence eligibilities are converted to communal commercial (category F) licence eligibilities and used to support various Aboriginal programs and initiatives including the Aboriginal Fisheries Strategy (AFS, see section 10.3), the Allocation Transfer Program (ATP), the Pacific Integrated Commercial Fisheries Initiative (PICFI), First Nations Inland Demonstration Fisheries projects, Economic Opportunity Fishery arrangements and treaties. As of January 2021, 144 communal commercial salmon licence eligibilities were issued to First Nations under the AFS and ATP, 45 were issued under PICFI, 257 were used to offset First Nations demonstration fisheries projects and Economic Opportunity fishery arrangements with First Nations in the lower Fraser, Somass, Skeena and Nass Rivers, and 33 were used for treaties or other contingencies.

Tsawwassen and Maa-nulth First Nations Treaties came into effect on April 3, 2009 and April 1, 2011, respectively. Most recently, the Tla'amin First Nations Treaty came into effect on April 5, 2016.

#### 4.2.2 PROCESSING SECTOR

Wild salmon accounts for an average of 22% of the total wholesale value from the processing of wild caught seafood in BC (SYIR, 2014-2019). Although more recent estimates are not yet available from the provincial government, the reduction in salmon landings experienced in 2020 will have affected the overall processed value and economic impacts of salmon from BC.

The latest study on linkages between seafood harvesting and processing prepared by GS Gislason & Associates in August 2017 allows estimation of the total labour wages in salmon processing sector in 2016, per salmon species. Between 2015-2018, Chum accounted for nearly half of processing sector wages (49%), followed by Sockeye (30%), Pink (10%), Chinook (6%) and Coho (5%). In 2019, processing sector wages were down 80% compared to the previous 4-year average. Chum still accounted for most of the processing sector wages (28%), followed by Chinook (25%), Pink (24%), Coho (18%), and Sockeye (5%). In 2020, processing sector wages increased by 61%, although they still remain at only one-third of the 2015-2018 average. Applying the Gislason & Associates (2017) estimations to 2020 DFO logbook information, processing of salmon species delivered about \$2.0M (Pink), \$0.8M (Chum), \$0.6M (Chinook), \$0.3M (Coho), and \$0.2M (Sockeye) in processing sector labour wages (Figure 4.2-7).

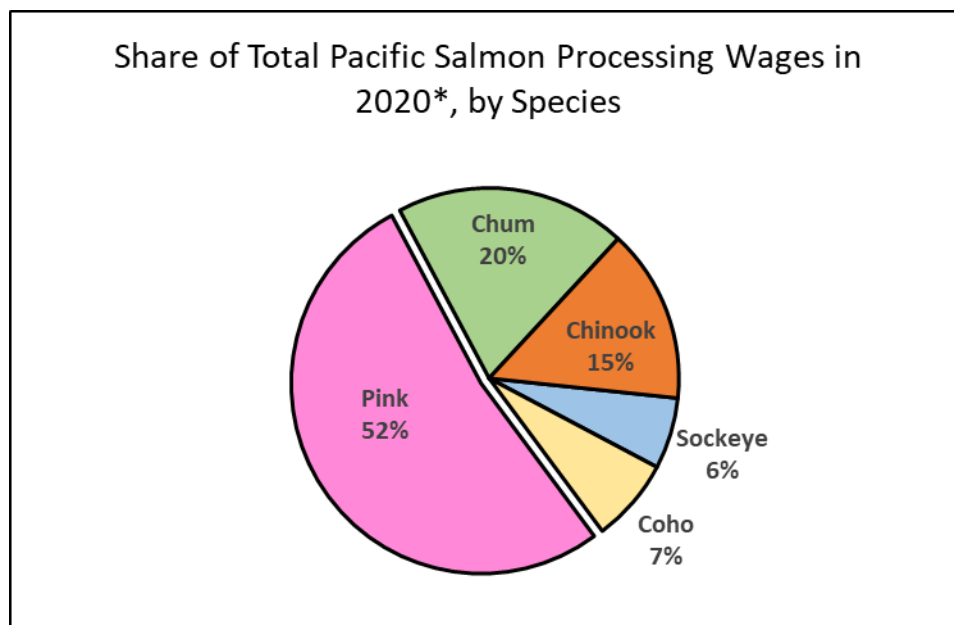


Figure 4.2-7: Share of the total value of processing sector wages in 2020 (per salmon species)  
 [Source: GS Gislason and Associates (2017), DFO Official Catch  
 \*Estimates for 2020 are to be treated as preliminary]

While Pink was the most processed salmon species by volume and total value of processing sector labour wages among all BC wild salmon in 2020, Sockeye remains the most labour



intensive species in processing with a labour intensity of about 34 hours per metric tonne (MT) (GSGislason & Associates, 2017).

The GSGislason 2017 study also indicates that salmon processing is frequently pursued in a different region than the area where landings are loaded off the fishing vessels. While Chinook landings occur mostly on the North Coast, its processing happens mainly in the Lower Mainland (about 65% of all processed Chinook). Similarly, landings of Coho also happen mainly on the North Coast (80%), but its processing is pursued mainly in the Lower Mainland (74%). Pink salmon is landed mainly in the North Coast (about 60%) and is processed in the North Coast and Lower Mainland (45% and 40%, respectively). Chum landings (63%) and processing (75%) occurs mostly in Lower Mainland. Sockeye landings and processing occurs mostly on Vancouver Island (58% and 55%, respectively) (GSGislason & Associates, 2017).

## 4.3 EXPORT MARKET

The province of British Columbia benefits from strong seafood exports that in 2020 were valued at about \$1.3 billion, a 7% decrease when compared to 2019.<sup>7</sup> This total value was realized via a combination of seafood that was supplied by domestic wild harvest and aquaculture (Statistics Canada EXIM Database). Chinook, Pink, and Chum salmon were among the most widely exported wild salmon species in 2020 (by volume). They constituted 34%, 30% and 16% of the total volume of wild salmon exports from BC, respectively. In 2020, Chum was shipped to 13 countries, down from 23 countries the previous year, with the US and France being the biggest importers of this salmon species (by value). Pink salmon was exported to 14 countries, with China and the US constituting the most significant importers (by value), and Sockeye was also exported to 14 countries, with the US and Hong Kong being the biggest Sockeye importers (by value).

Notwithstanding the above, salmon exports in the last couple of years have been affected by the lower harvest levels. The value of all wild caught salmon exports from 2010-2020 averaged \$127M annually (in 2020\$). However, 2019 and 2020 set two consecutive records for the lowest salmon export value. Over the last decade, on average, Chinook (spring) accounted for about 34% of the value; Sockeye for 30%; Chum for 15%; Pink for 13%; Coho for about 6%, and 1% originated from the sale of unspecified salmon. (See Figure 4.4-1 below).

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<sup>7</sup> Statistics Canada EXIM Database; value in nominal terms.

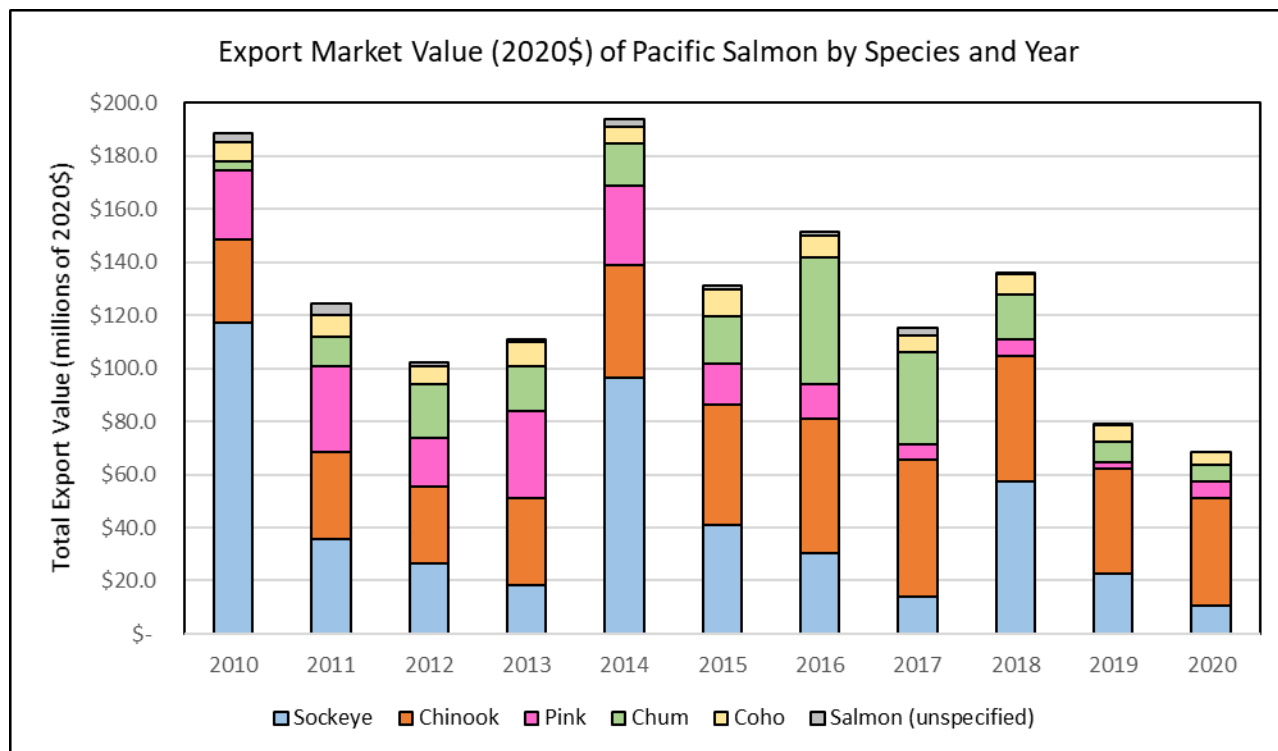


Figure 4.3-1: Total value of wild salmon exports (in 2020 constant dollars), 2010-2020\*

Source: Statistics Canada EXIM database accessed on June 7, 2021.

\*Estimates for 2020 are to be treated as preliminary

**Note:** this total includes all exports of wild Pacific salmon and exports of all farmed Pacific salmon. There might be slight differences in total export value when comparing exports in previous versions/previous years of IFMP due to changing products definitions in EXIM data. In this data only Pacific salmon was included.

Overall, during the five-year period (2016 to 2020), BC exported wild salmon to 55 countries. The US accounted for about 60% of the total export value in that period, followed by Japan (13%) and China (6%). The United Kingdom and France were the fourth biggest individual importers of BC wild salmon in that period (3%). For more details, please refer to Figure 4.3-2 below.

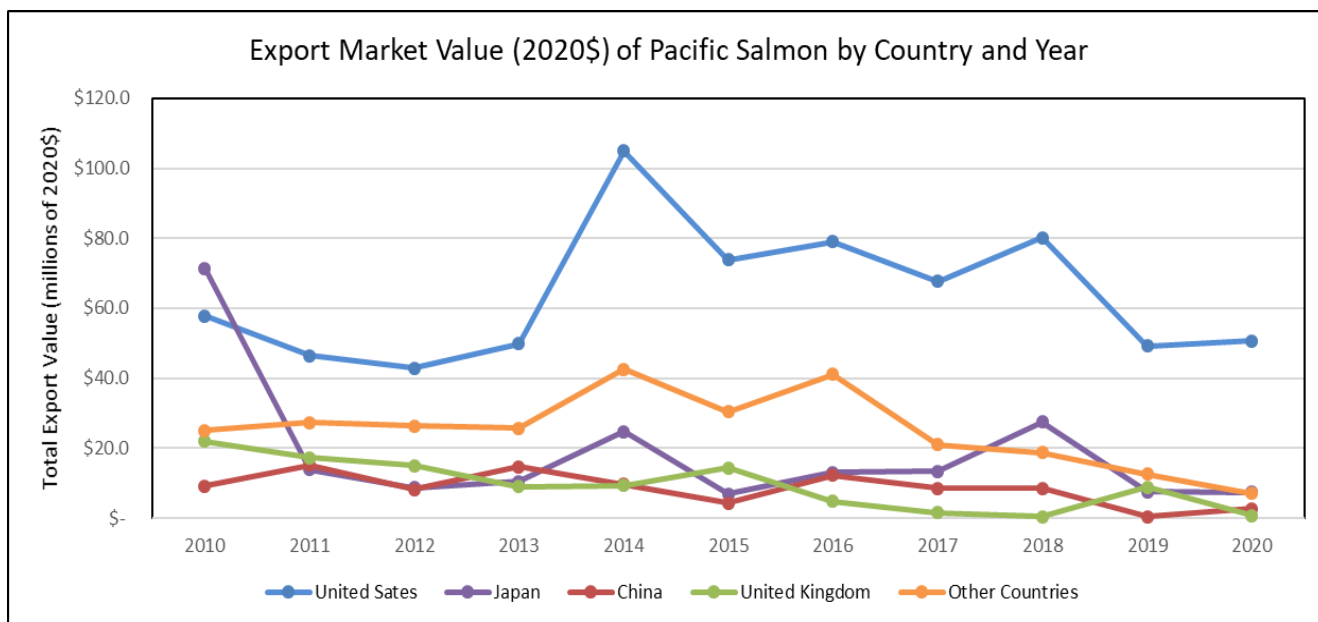


Figure 4.3-2 Total value of wild salmon exports from BC per main importers, 2010-2020\* (in 2020\$)

Source: Statistics Canada EXIM database accessed on June 7, 2021.  
 \*Estimates for 2020 are to be treated as preliminary

Figure 4.3-3 below shows the proportions of Pacific Salmon exported by value (in 2020\$) by destination country in 2020. In 2020, approximately \$68.7M worth of wild and farmed Pacific salmon was exported from BC. The export value has been decreasing over the past 5 years, falling by 55% since 2016, and experiencing a decrease of 13% from 2019. Of the total \$68.7M, about 74% of the total export value of Pacific salmon is attributable to the United States (\$50.8m), 11% to Japan (\$7.4m), 4% to China (\$2.7m), 1% to the United Kingdom (\$0.7m), and the remaining 10% to all other countries (\$7.1m).

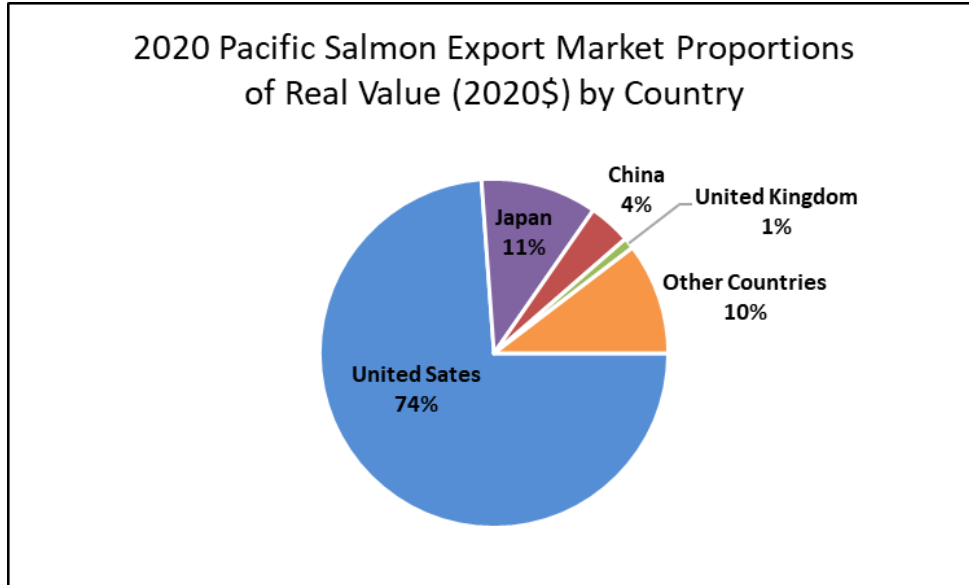


Figure 4.3-3 Proportions of total value of wild salmon exports from BC by main destination countries in 2020\* (in 2020\$)

Source: Statistics Canada EXIM database accessed on June 7, 2021.  
\*Estimates for 2020 are to be treated as preliminary

#### REFERENCES:

- BC Ministry of Agriculture (BCMOA). 2016, 2017. Sector Snapshot: B.C. Seafood – 2016, 2017. <http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles>
- BC Ministry of Environment (BCMOE). Various years. British Columbia Seafood Industry Year in Review. <http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles>
- BC Stats. 2013. British Columbia’s Fisheries and Aquaculture Sector, 2012 Edition. <http://www.bcstats.gov.bc.ca/StatisticsBySubject/BusinessIndustry/FisheriesAquacultureHuntingTrapping.aspx>
- Castlemain. Various Years. Analysis of Commercial Fishing Licence, Quota, and Vessel Values.
- Fisheries and Oceans Canada (DFO). Various years. Survey of Recreational Fishing in Canada. <http://www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm>
- Gislason, G. 2011. The British Columbia Salmon Fleet Financial Profile 2009. <http://waves-vagues.dfo-mpo.gc.ca/Library/343812.pdf>
- Gislason, G and Associates. 2017. Linkages between seafood harvesting and processing, pp.1-7.
- Nelson, Stuart. Various Years. West Coast Fishing Fleet: Analysis of Commercial Fishing Licence, Quota, and Vessel Values. <http://waves-vagues.dfo-mpo.gc.ca/waves-vagues/>
- Nelson, Stuart. 2009. Pacific Commercial Fishing Fleet: Financial Profiles for 2007. <http://www.dfo-mpo.gc.ca/Library/343814.pdf>
- Nelson, Stuart. 2011. Pacific Commercial Fishing Fleet: Financial Profiles for 2009. <http://www.dfo-mpo.gc.ca/Library/343762.pdf>

## 5 MANAGEMENT ISSUES

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### 5.1 CONSERVATION

Given the importance of Pacific salmon to the culture and socio-economic fabric of Canada, conservation of these stocks is of utmost importance. In order to achieve this, specific actions are taken to not only ensure protection of fish stocks, but also freshwater and marine habitats. Protecting a broad range of stocks is the most prudent way of maintaining biodiversity and genetic integrity.

Management of a natural resource like salmon has a number of inherent risks. Uncertain forecasting, environmental and biological variability as well as changes in harvester behavior all add risks that can threaten conservation. Accordingly, management actions will be precautionary and risks will be specifically evaluated where possible.

#### 5.1.1 WILD SALMON POLICY

*Canada's Policy for Conservation of Wild Pacific Salmon* (the Wild Salmon Policy) sets out the vision regarding the importance and role of Pacific wild salmon as well as a strategy for their protection. More information on this can be found at:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/wsp-pss/index-eng.html>

To communicate the work the Department is doing in support of the policy, Canada's Minister of Fisheries and Oceans and the Canadian Coast Guard released the *Wild Salmon Policy 2018-2022 Implementation Plan* in October 2018. This collaboratively developed plan was consulted on broadly throughout fall 2017, and lays out nine overarching approaches to implementation and 48 specific activities. The plan is organized under three key themes: Assessment; Maintaining and Rebuilding Stocks; and Accountability. In 2021, the third annual report on progress will be released.

For a copy of the *Wild Salmon Policy*, the *Wild Salmon Policy 2018-2022 Implementation Plan*, information on what we heard during consultations and response, annual reports, and other Wild Salmon Policy related materials, please see: <https://www.pac.dfo-mpo.gc.ca/fm-gp/salmon-saumon/wsp-pss/index-eng.html>

#### 5.1.2 SPECIES AT RISK ACT

SARA came into force in 2003. The purposes of the *Act* are "to prevent wildlife species from being extirpated or becoming extinct, and to provide for the recovery of a wildlife species that

are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened”.

To view the list of endangered, threatened and special concern species currently listed under Schedule 1 of SARA, please visit: <http://dfo-mpo.gc.ca/species-especies/sara-lep/identify-eng.html>.

In addition to the existing prohibitions under the *Fisheries Act*, it is illegal to kill, harm, harass, capture, take, possess, collect, buy, sell or trade any SARA-listed extirpated, endangered or threatened animal or any part or derivative of an individual. These prohibitions apply unless a person is authorized, by a permit, licence or other similar document issued in accordance with SARA, to engage in an activity affecting the listed species, any part of its critical habitat, or the residences of its individuals. These prohibitions do not apply to species listed as special concern.

## **5.2 PROTECTION OF MARINE AND NON-TIDAL HABITAT**

### **5.2.1 OCEANS ACT AND MARINE HABITAT INITIATIVES**

In 1997, the Government of Canada enacted the *Oceans Act*. This legislation provides a foundation for an integrated and balanced national oceans policy framework which includes provisions for the designation of Marine Protected Areas (MPAs); and is supported by regional management and implementation strategies. In 2002, Canada’s Oceans Strategy was released to provide the policy framework and strategic approach for modern oceans management in estuarine, coastal, and marine ecosystems. As set out in the *Oceans Act*, the strategy is based on the three principles of sustainable development, integrated management, and the precautionary approach.

In May of 2019, Bill C-55 received Royal Assent—amending both the *Oceans Act* and the *Canada Petroleum Resources Act*. The amendments allow for interim protections for conservation through the use of a ministerial order, require the precautionary principle be applied when deciding to establish any *Oceans Act* MPA, and strengthen enforcement powers and fines to align with current provisions in other legislation, such as the *Environmental Enforcement Act*.

In Pacific Region, DFO manages three MPAs: Scaun Kinghlas – Bowie Seamount MPA, Endeavour Hydrothermal Vents MPA, and Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA. In addition, DFO has initiated marine spatial planning processes that cover much of Canada’s Pacific Ocean waters.

For more information on the *Oceans Act*, marine spatial planning, MPAs and Canada’s Ocean Strategy, please visit:



## 5.2.2 NON-TIDAL HABITAT PROTECTION AND RESTORATION

On June 21, 2019, Bill C-68 received Royal Assent resulting in an amended *Fisheries Act* which included enhanced Fish and Fish Habitat Protection Provisions as well as Fish Stocks Provisions. This amendment establishes the requirements for rebuilding plans of stocks of which includes habitat restoration. DFO programs support habitat restoration across the Pacific Region that are carried out by government, community groups and Indigenous peoples. DFO Restoration Biologists and Engineers directly support over a 100 habitat restoration projects annually to target habitats supporting stocks of concerns.

## 5.3 CONSERVATION OF SPECIES THAT MAY BE AFFECTED BY SALMON FISHERIES

### 5.3.1 ROCKFISH

2020/2021: The management objective for Bocaccio and inshore rockfish species (which include Yelloweye, Quillback, Copper, China, and Tiger) is to continue conservation strategies that will ensure stock rebuilding over time. **These inshore rockfish species are currently non-retention in the commercial salmon troll fisheries.**

In 2002, an inshore rockfish conservation strategy was established with initial measures introduced for recreational and commercial fisheries. The strategy addresses four areas under the fisheries management and stock assessment regime:

- a) Protect a part of inshore rockfish populations from harvest through the use of rockfish conservation areas.
- b) Collect information on total fishery mortalities through improved catch monitoring programs.
- c) Reduce harvests to levels that are less than the estimates of natural mortality (i.e. less than two percent).
- d) Improve the ability to assess the status of inshore rockfish populations and monitor changes in abundance.

### 5.3.1.1 ROCKFISH CONSERVATION AREAS

There are 162 Rockfish Conservation Areas (RCAs) in British Columbia, covering roughly 4,350km<sup>2</sup> of the Canadian Pacific Coast. These areas are closed to a range of recreational and commercial fisheries to protect inshore rockfish and their habitat.

DFO is currently undertaking a multi-year review of the conservation effectiveness of RCAs, including meeting the national criteria and standards for marine refuges to better conserve sensitive areas and contribute towards Canada's Marine Conservation Targets (MCT). To meet these standards, the risks to inshore rockfish, their habitat, and benthic communities will need to be avoided or mitigated. Peer-reviewed science advice also recommends that boundary changes to some RCAs will improve their spatial design by better capturing rockfish habitat features. RCAs in the Northern Shelf Bioregion have been selected for the first phase of engagement to align with the MPA network planning process in that area. Workshops with First Nations and stakeholders and online consultations were held in 2019. A summary of what we heard is available online at: <https://www.pac.dfo-mpo.gc.ca/consultation/ground-fond/rca-acs/2020-heard-entendu-eng.html#6>. There will be more opportunities to provide feedback on Rockfish Conservation Areas in the Northern Shelf Bioregion in the near future. We're also planning to review Rockfish Conservation Areas in other regions of British Columbia at a later date.

Further information on RCAs and the boundary proposals are available online at: <http://dfo-mpo.gc.ca/rockfish-conservation> or for further information on this, please contact [DFO.RCA-ACS.MPO@dfo-mpo.gc.ca](mailto:DFO.RCA-ACS.MPO@dfo-mpo.gc.ca).

### 5.3.1.2 ROCKFISH REBUILDING PLANS

Fisheries and Oceans Canada (DFO) has developed "A Fisheries Decision-Making Framework Incorporating the Precautionary Approach" (PA Framework) under the auspices of the Sustainable Fisheries Framework. It outlines the departmental methodology for applying the precautionary approach (PA) to Canadian fisheries. A key component of the PA Framework requires that when a stock has reached or fallen below a limit reference point (LRP), a rebuilding plan must be in place with the aim of having a high probability of the stock growing above the LRP within a reasonable timeframe.

The purpose of rebuilding plans is to identify the main objectives and requirements for any species below an LRP (i.e., in the "critical zone" of the PA Framework), as well as the management measures that will be used to achieve these objectives. The Integrated Fisheries Management Plan for Groundfish outlines rebuilding plans for groundfish species that (a) have been identified by peer reviewed stock assessments as currently in the critical zone under the

PA framework and (b) are not covered by other management planning tools for depleted species, such as *Species At Risk Act*-listed species that require a recovery plan or management plan.

The primary objective of any rebuilding plan, outlined in the PA Framework, is to:

Promote stock growth out of the critical zone ( $B > 0.4 B_{msy}$ ) by ensuring removals from all fishing sources are kept to the lowest possible level until the stock has cleared this zone. There will be no tolerance for preventable decline. This objective remains the same whether the stock is declining, stable, or increasing.

More information on the Bocaccio and Yelloweye Rockfish Rebuilding Plans is available in Appendix 9 of the Groundfish IFMP, which will be linked in the final salmon IFMP once available.

### **5.3.2 GLASS SPONGE REEFS**

#### **Strait of Georgia and Howe Sound Glass Sponge Reef Marine Refuges:**

Effective April 1st, 2019 all commercial, recreational and Indigenous food, social and ceremonial (FSC) bottom-contact fishing activities for prawn, shrimp, crab and groundfish, as well as the use of downrigger gear for recreational salmon trolling (restricted via Condition of Licence) are prohibited within portions of Subareas 28-2 and 28-4 to protect nine Howe Sound glass sponge reefs, as marine refuges. This includes prohibition of the following fishing activities:

- prawn and crab by trap
- shrimp and groundfish by trawl
- groundfish by hook and line
- use of downrigger gear in recreational salmon trolling

These eight closures are in addition to the nine areas closed to all commercial, recreational and Indigenous FSC bottom-contact fishing activities in the Strait of Georgia and Howe Sound, established in 2015. In 2019, nine remaining areas in Howe Sound were ground-truthed to assess their ecological significance. The presence of five new live glass sponge reefs has been confirmed. A sixth site within an existing reef complex where only dead reef habitat was observed may have recovery potential. Consultations are underway on restrictions to all commercial, recreational and Indigenous FSC bottom-contact fishing activities, and the use of downrigger gear for recreational salmon troll in these reefs, with new management measures anticipated in-season in Spring 2021.

For further information on this, please contact Lindsay Klopp at [Lindsay.Klopp@dfo-mpo.gc.ca](mailto:Lindsay.Klopp@dfo-mpo.gc.ca).

Current closure locations and more information are available at:

<https://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html>

### **5.3.3 MARINE MAMMALS**

In order to address the conservation concerns with marine mammals, it is important that measures are taken to reduce the harm to and mortality of marine mammals resulting from primary threats they face, including those that may be associated with fishing activity, as well as to improve data quality of any interactions. As such, commercial fishing licenses have been amended to include a Condition of License for Marine Mammals that specify mitigation measures and new reporting requirements. This includes mandatory reporting of all interactions with marine mammals, requirement for minimum approach distances to marine mammals as set out under the *Marine Mammal Regulations* (see Section 5.7), prohibition of encirclement of marine mammals in purse seine fisheries, and prohibition against the lethal removal of nuisance seals.

### **5.3.4 SEABIRDS**

Environment Canada is looking for your help to measure gill net fishing's impact on local seabird populations.

Populations of a number of seabird species around the world have declined in recent years; seabird bycatch is a part of the reason.

Seabird bycatch has been reported in all types of fisheries in BC and in fisheries in Alaska and Washington State. However, the number of local seabirds getting entangled in gill nets as a result of the BC salmon gill net fishery is not well known.

Environment Canada wants to know how, when and where gill net fishing may impact local seabirds and to find ways to reduce impacts. Environment Canada, with Fisheries and Oceans Canada, fishermen, First Nations, non-government organizations, and other coastal communities, have a program to answer these questions. Without this information, it will be difficult to determine if there is a significant impact. Should impacts be determined this information helps support solutions that benefit both the fishery and healthy bird populations.

To help us, we would like to be informed about any dead birds found or reported in gill nets and/or found floating dead on fishing grounds. Please report all incidents to our 24-hour reporting line: 1-866-431-BIRD (2473).

For additional information, please contact:

Laurie Wilson  
Wildlife Biologist, Environment Canada  
Canadian Wildlife Service, Delta, BC  
Telephone: (604) 862-8817  
Email: [laurie.wilson@canada.ca](mailto:laurie.wilson@canada.ca)

### **5.3.5 SHARKS**

Out of the fourteen shark species in Canadian Pacific waters, three species are listed under SARA. The Basking Shark (*Cetorhinus maximus*) is listed as Endangered, and the Bluntnose Sixgill Shark (*Hexanchus griseus*) and Tope Shark (*Galeorhinus galeus*) are listed as species of Special Concern. The primary threats to shark species have been identified as bycatch and entanglement. In order to address the conservation concerns with shark species, it is important that measures are taken to reduce the mortality of sharks resulting from these primary threats. As such, commercial fishing licences have been amended to include a Condition of Licence for Basking Sharks that specify mitigation measures in accordance with SARA permit requirements.

Additionally, two 'Code of Conduct for Shark Encounters' documents have been developed to reduce the mortality of Basking Shark, as well as other Canadian Pacific shark species such as Bluntnose Sixgill and Tope Shark resulting from entanglement and bycatch in commercial, aquaculture and recreational fisheries. These guidelines include boat handling procedures during visual encounters with Basking Sharks as well as best practices for handling Canadian Pacific shark species during entanglement encounters.

These documents have been posted online and can be found at the following URL links:

Code of conduct for sharks:

<https://www.dfo-mpo.gc.ca/species-especes/publications/sharks/coc/coc-sharks/index-eng.html>

Code of conduct for Basking Sharks:

<https://www.dfo-mpo.gc.ca/species-especes/publications/sharks/coc/coc-basking/index-eng.html>

### **5.3.6 SARA LISTED SPECIES**

The Committee on the Status of Endangered Wildlife Species in Canada (COSEWIC) was formed in 1977 to provide Canadians with a single, scientifically sound classification of wildlife species at risk of extinction. COSEWIC began its assessments in 1978 and has met each year since then to assess wildlife species.

The *Species at Risk Act* (SARA) came into force in 2003. Within the Act, COSEWIC was established as an independent body of experts responsible for identifying and assessing wildlife species considered as being at risk. This is the first step towards protecting wildlife species which are potentially at risk. Subsequent steps include COSEWIC reporting its results to the Canadian government and the public, and the Minister of the Environment's official response to the assessment results. Wildlife species that have been designated by COSEWIC may then be listed under Schedule 1 of SARA and receive legal protection and recovery or management plans.

For a full list of species identified and assessed by COSEWIC, please visit:

<http://cosewic.ca/index.php/en-ca/>.

The purposes of SARA are “to prevent wildlife species from being extirpated or becoming extinct, and to provide for the recovery of a wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.” More information on SARA can be found at: <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/species-list.html>

In addition to the existing prohibitions under the *Fisheries Act*, if a species is listed under SARA it is illegal to kill, harm, harass, capture, take, possess, collect, buy, sell or trade any listed extirpated, endangered or threatened animal or any part or derivative of an individual. These prohibitions apply unless a person is authorized, by a permit, licence or other similar document issued in accordance with SARA, to engage in an activity affecting the listed species or the residences of its individuals. These prohibitions do not apply to species listed as special concern.

**To view the list of endangered, threatened and special concern species currently listed under Schedule 1 of SARA, please visit: <http://dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html>**

In the Pacific Region, the following SARA-listed species may be encountered by salmon fisheries:

## **BIRDS**

- [Ancient Murrelet](#) – Special Concern
- [Marbled Murrelet](#) – Threatened
- [Black-footed Albatross](#) – Special Concern
- [Short-tailed Albatross](#) – Threatened
- [Pink-footed Shearwater](#) – Threatened

## FISH

- [Basking Shark, Pacific population](#) – Endangered
- [Bluntnose Sixgill Shark](#) – Special Concern
- [Green Sturgeon](#) – Special Concern
- [Longspine Thornyhead](#) – Special Concern
- [Rougheye Rockfish Types I & II](#) – Special Concern
- [Tope Shark](#) – Special Concern
- [White Sturgeon](#) – Upper Columbia River population – Endangered
- [White Sturgeon](#) – Upper Fraser River population – Endangered
- [White Sturgeon](#) – Nechako River Population – Endangered
- [White Sturgeon](#) – Upper Kootenay River population – Endangered
- Yelloweye Rockfish, Pacific Ocean [inside](#) waters and [outside waters](#) populations – Special Concern

## MAMMALS

- [Blue Whale, Pacific population](#) – Endangered
- [Fin Whale, Pacific population](#) – Threatened
- [Grey Whale – Eastern North Pacific Population](#) – Special Concern
- [Harbour Porpoise, Pacific Ocean population](#) – Special Concern
- [Humpback Whale, North Pacific population](#) – Special Concern
- Killer Whale, Northeast Pacific – [northern resident population](#) – Threatened
- Killer Whale, Northeast Pacific – [southern resident population](#) – Endangered
- Killer Whale, Northeast Pacific – [offshore population](#) – Threatened
- Killer Whale, Northeast Pacific – [transient population](#) – Threatened
- [North Pacific Right Whale](#) – Endangered
- [Sea Otter](#) – Special Concern
- [Sei Whale, Pacific population](#) – Endangered
- [Steller Sea Lion](#) – Special Concern

## REPTILES

- [Leatherback Sea Turtle](#) – Endangered

Marine or anadromous species assessed by COSEWIC that are currently under consideration for listing under SARA include:

## FISH

- [Bocaccio](#) – assessed as Endangered
- [Canary Rockfish](#) – assessed as Threatened
- [Darkblotched Rockfish](#) – assessed as Special Concern
- [Eulachon](#) – Fraser River Designatable Unit – assessed as Endangered
- [Eulachon](#) – Central Pacific Coast Designatable Unit – assessed as Endangered
- [Eulachon](#) – Nass/Skeena Rivers Designatable Unit – assessed as Special Concern
- [North Pacific Spiny Dogfish](#) – assessed as Special Concern
- [Salmon, Chinook](#) (Okanagan population) – assessed as Endangered
- [Salmon, Coho](#) (Interior Fraser population) – assessed as Threatened
- [Salmon, Sockeye](#) (Sakinaw population) – assessed as Endangered
- Salmon, Sockeye (15 Fraser River Designatable Units; DU) – assessed as Endangered (8 DUs), Threatened (2 DUs), Special Concern (5 DUs)
- Salmon, Chinook (Southern BC Designatable Units)- assessed as Endangered (8 DUs), Threatened (4 DUs),Special Concern (1 DU)
- Salmon, Chinook (Southern BC *hatchery enhanced* Designatable Units) – assessed as Endangered (4 DUs), Threatened (3 DUs), Special Concern (1 DU)
- Interior Fraser Steelhead ([Chilcotin](#) & [Thompson](#) populations) – assessed as Endangered (2 DUs)
- [Quillback Rockfish](#) – assessed as Threatened
- [White Sturgeon](#)- Lower Fraser River Designatable Unit- Threatened

## MAMMALS

- [Northern Fur Seal](#) – Threatened
- [Grey Whale, Pacific Coast Feeding Group population](#) – Endangered (reclassification from Special Concern, single Pacific population)
- [Grey Whale, Western Pacific population](#) –Endangered

### 5.3.6.1 SALMON AND STEELHEAD SARA LISTING PROCESSES

Over 60 salmon and two anadromous trout designatable units (DUs) have been recently, or will soon be, assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). COSEWIC's submission of its assessments to the Government of Canada, via its annual report, initiates the process to determine whether or not to list a species under the *Species at Risk Act* (SARA). For regular (non-emergency) processes, the Governor in Council (Cabinet) may, on the recommendation of the Minister of Environment and Climate Change, add the species to the List of Wildlife Species at Risk; decide not to add the species to the List; or refer



the matter back to COSEWIC. To inform the recommendation and final listing decision, DFO prepares the following regional information: a Recovery Potential Assessment (science advice); management scenarios (outlining measures to potentially be taken if the species is, or is not listed); Indigenous Cultural Significance information; a Cost-Benefit Analysis; and, consultations with First Nations, stakeholders, and the general public. More details on timelines and opportunities for engagement will be provided at a later date.

Species	COSEWIC Assessment	# of DUs*	COSEWIC Assessment Date	COSEWIC Annual Report Date
Sakinaw Sockeye	EN	1	April 2016	Oct 2016
Interior Fraser Coho	TH	1	November 2016	Oct 2017
Okanagan Chinook	EN	1	April 2017	Oct 2017
Fraser Sockeye (Group I)	8 EN, 2 TH, 5 SC, 9 NAR	24	November 2017	Oct 2018
Southern BC Chinook (Group I)	8 EN, 4 TH, 1 SC, 2 DD, 1 NAR	16	November 2018	Oct 2019
Interior Fraser Steelhead (Thompson & Chilcotin) – Regular Assessment	2 EN	2	November 2020	Expected Fall 2021
Southern BC Chinook (Group II)	4 EN, 3 TH, 1 SC, 2 DD, 2 NAR	12	November 2020	Expected Fall 2021
Fraser Sockeye (Group II)	Assessment not yet performed	7	Expected November 2021	Expected Fall 2022

EN – Endangered; TH- Threatened; SC- Special Concern; DD- Data Deficient; NAR – Not at Risk

\*DU refers to “designatable unit” or population.

Further information on the SARA listing process can be found at:

<http://www.dfo-mpo.gc.ca/species-especes/publications/sara-lep/policy-politique/index-eng.html>

This IFMP identifies specific conservation objectives for other salmon stocks, found in Section 6, Fishery Management Objectives for Stocks of Concern.

## 5.4 DEPREDATION

Depredation (the removal of fish from fishing gear) by Killer Whales has been reported by groundfish longline, salmon troll, and recreational harvesters in B.C.

Depredation is a learned behaviour that can spread throughout whale social groups and once established is impossible to eliminate. It is critical that B.C. harvesters do not encourage this learning by allowing whales to associate obtaining fish with fishing activity; encouraging this behaviour will quickly lead to significant losses for harvesters.

The most important approach to prevent this from spreading is by NOT feeding whales directly or indirectly and not hauling gear in the vicinity of Killer Whales. It is prohibited to approach marine mammals to feed or attempt to feed them under s. 7 of the *Marine Mammal Regulations*. Typically Killer Whales pass quickly through an area allowing fishing to resume. It is also recommended that you advise other fish harvesters in the area if you encounter depredation. Additional tips on avoiding depredation events can be found in the DFO Marine Mammal Bulletin #2. DFO link:

<http://www.pac.dfo-mpo.gc.ca/publications/marinemammals/depredation-4-2010-eng.pdf>

If you experience depredation by whales, please report the incident by email at [DFO.ORR-ONS.MPO@dfo-mpo.gc.ca](mailto:DFO.ORR-ONS.MPO@dfo-mpo.gc.ca) or by calling 1-800-465-4336. Reporting all incidents will assist DFO and fish harvesters in understanding this problem and help in developing strategies to avoid it.

## **5.5 RESIDENT KILLER WHALE**

Two distinct populations of Resident Killer Whales, known as the Northern and Southern

Residents, occupy the waters off the west coast of British Columbia. Northern Resident Killer Whales are listed as Threatened and Southern Resident Killer Whales are listed as Endangered on Schedule 1 of the *Species at Risk Act*. Broad strategies for recovery are identified in the *Recovery Strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada*, which was finalized in March 2008, and amended in 2011 and 2018. The Recovery Strategy also identifies key threats to Resident Killer Whales as (1) reduced prey availability, (2) physical and acoustic disturbance, and (3) environmental contaminants. It can be viewed at:

[https://sararegistry.gc.ca/virtual\\_sara/files/plans/Rs-ResidentKillerWhale-v00-2018dec-Eng.pdf](https://sararegistry.gc.ca/virtual_sara/files/plans/Rs-ResidentKillerWhale-v00-2018dec-Eng.pdf).

Critical habitat and its associated features, functions, and attributes have been identified for both populations in the Recovery Strategy, and are protected from destruction through Critical Habitat Orders made under SARA sections 58(4) and (5). The update to the Recovery Strategy for Resident Killer Whales in 2018 resulted in the identification and protection of two additional areas of critical habitat: the waters on the continental shelf off southwestern Vancouver Island, including Swiftsure and La Pérouse Banks (important for both Northern and Southern Resident Killer Whales), and the waters of west Dixon Entrance, along the north coast of Graham Island from Langara to Rose Spit (important for Northern Resident Killer Whales). The [Action Plan for Northern and Southern Resident Killer Whale \(Orcinus orca\) in Canada \(DFO 2017\)](#) supports the

strategic direction set out in the Recovery Strategy, and outlines measures that provide the best chance of achieving the population and distribution objectives for the species, including the measures to be taken to address the threats and monitor the recovery of the species.

The *Marine Mammal Regulations* under the *Fisheries Act* and prohibitions under SARA specifically prohibit the disturbance and harm of Killer Whales. Non-compliance may lead to charges under the *Marine Mammal Regulations* and/or SARA.

Guidelines for marine mammal viewing have also been developed. To avoid disturbing Killer Whales and other marine mammals, fish harvesters are advised to follow the *Be Whale Wise (BWW): Marine Wildlife Guidelines for Boaters, Paddlers and Viewers*, which are available from local Fishery Offices or on-line at:

<https://www.bewhalewise.org/marine-wildlife-guidelines/>.

### **Key Threat: Reduced Prey Availability**

Northern and Southern Resident Killer Whales are dietary specialists and feed primarily on salmon. The seasonal distribution and movement patterns of Resident Killer Whales are strongly associated with the availability of their preferred prey, Chinook salmon (*Oncorhynchus tshawytscha*), and secondarily, Chum salmon (*O. keta*) during summer and fall. There is less known about the winter and spring diet and winter distribution of Resident Killer Whales, but recent and ongoing research will further our understanding and provide more information about the principal threats facing the population.

DFO and other researchers continue to advance new scientific information and analyses regarding the ecology of Resident Killer Whales. Much of this new information focuses on their feeding habits and preference for Chinook salmon, particularly in the Salish Sea with southern BC Chinook stocks experiencing poor returns in recent years.

### **Key Threat: Environmental Contaminants:**

There are numerous chemical and biological pollutants that may directly or indirectly impact Resident Killer Whales, ranging from persistent organic pollutants to antibiotic resistant bacteria and exotic species. Recent studies indicate Resident Killer Whales have high levels of some contaminants with males having the highest levels, including polychlorinated biphenyls (PCBs) and certain fire-retardant persistent organic pollutants which have been banned in Canada. Canadian and U.S. researchers continue to monitor the health of the Resident Killer Whale populations.

### **Key Threat: Physical and Acoustic Disturbance:**

All cetaceans, including Resident Killer Whales, have been subjected to increasing amounts of disturbance from vessels, aircraft and anthropogenic noise in recent years. This includes chronic noise from shipping, and acute noise from industrial activities such as dredging, pile driving, and construction, as well as seismic testing, military sonar, and other vessel use of low and mid-frequency sonars. The means by which physical and/or acoustic disturbance can affect Resident Killer Whales at both the individual and population level is not well understood, and research is ongoing to determine the short and longer-term impacts of disturbance to individuals and their populations.

## **5.6 U.S. MARINE MAMMAL PROTECTION ACT PROVISIONS**

In 2016, the U.S. published new regulations (80 FR 54390) pursuant to the *Marine Mammal Protection Act* which focus on the reduction of marine mammal bycatch in foreign commercial fishing operations. Under these regulations, harvesting nations intending to continue to export fish and fish products to the USA after January 1, 2023, must apply to the U.S. National Oceanic and Atmospheric Administration (NOAA) for a comparability finding for each of its commercial fisheries listed in the US List of Foreign Fisheries. The harvesting nation must demonstrate: 1) the prohibition of intentional mortality or serious injury of marine mammals in the course of commercial fishing operations; and 2) the implementation of a regulatory program comparable in effectiveness to the US, including mandatory reporting of marine mammal bycatch, monitoring programs and management/mitigation measures where appropriate.

Depending on information provided, foreign commercial fisheries that export fish and fish products to the United States can be classified as either “export” or “exempt” based on the frequency and likelihood of incidental mortality and serious injury of marine mammals. On October 8, 2020, the 2020 US List of Foreign Fisheries was published on the [NOAA public registry](#). For the Pacific Region, all Salmon Gillnet fisheries are classified as *Export* (LOFF pg.97), all Salmon Trolling Line fisheries are classified as *Exempt* (LOFF pg.31), and all Salmon Purse Seine fisheries are classified as *Exempt* (LOFF pg.48).

DFO will continue to share information about the U.S. *Marine Mammal Protection Act* Import Provisions and the process for ensuring continued access to US markets. Further information can be found on the [NOAA website](#), or by contacting the Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Lee Harber, Marine Mammal Advisor; Lee.Harber@dfo-mpo.gc.ca).

## 5.7 MARINE MAMMAL REGULATIONS REQUIREMENTS TO MAINTAIN DISTANCE

On June 22, 2018 the amended *Marine Mammal Regulations* came into force. These amendments include requirements for boats to maintain a minimum approach distance of 100 m for whales, dolphins or porpoises, 200m when whales, dolphins or porpoises are in a resting position or with a calf, and 200m from all Killer Whales in Pacific Canadian waters except when in the southern BC coastal waters between Campbell River and just north of Ucluelet where vessels must maintain a 400 minimum approach distance from all Killer Whales.

Please note that the 400m approach distance is in effect until May 31, 2022. There is an exception for Authorized Vessels under the Interim Order as per the *Canada Shipping Act, 2001*, to approach non-Southern Resident Killer Whales up to 200m [as indicated on the water by the purple AV flag]).



The amended regulations also provide clarification on what it means to disturb a marine mammal, including feeding, swimming or interacting with them; moving them (or enticing/causing them to move); separating a marine mammal from its group or going between them and a calf; trapping marine mammals between a vessel and the shore, or between boats; and tagging or marking them.

As per the recent amendments, accidental contact between a vehicle or fishing gear and a marine mammal must be [reported](#).

Further information regarding the [Marine Mammal Regulations](#) can be obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Paul Cottrell, Marine Mammal Coordinator; Paul.Cottrell@dfo-mpo.gc.ca).

## 5.8 AQUACULTURE MANAGEMENT

### REGULATORY REGIME:

In December 2010 the *Pacific Aquaculture Regulations* (PAR) came into effect, giving DFO the authority to govern the management and regulation of aquaculture activities at marine finfish, shellfish, freshwater/land-based and enhancement facilities. The *Aquaculture Activities Regulations* (AAR), which came into force in 2015, further clarify conditions under which

aquaculture operators may treat their fish for disease and parasites, as well as deposit organic matter.

DFO also administers the provisions of the *Fishery (General) Regulations* (FGRs) including sections 54 to 57 in regard to licencing introductions and transfers of fish. These provisions include requirements relating to disease. All aquaculture operators must be authorized under the FGRs to bring fish onto the farm site, whether it is on land or in the marine environment. After fish are introduced to the farm site, fish health is addressed through conditions of licence under the PARs throughout the rearing process. The Framework on the Transfer of Live Fish developed in 2019 provides further guidance related to licencing under the FGRs. This is nested under the Framework for Aquaculture Risk Management.

As part of adaptive management, DFO Aquaculture Management continues to refine management approaches. The marine finfish aquaculture conditions were amended in March 2020 to improve sea lice management. Ongoing review and improvements to licence conditions are underway for the planned 2022 licence re-issuance. DFO Aquaculture Management is also exploring an Area-based Aquaculture Management approach, with a goal of managing aquaculture in a way that ensures environmental, social, and economic factors are considered.

In response to 2019 mandate commitments, DFO is developing a responsible plan to transition from open net-pen salmon farming in coastal British Columbia waters by 2025 and is working to introduce Canada's first-ever Aquaculture Act.

The Province of British Columbia continues to have authority over land tenures and workplace safety related to aquaculture in BC. New applications, amendments and related referrals are coordinated through FrontCounter BC. More information is available on the BC Government's website: <http://www.frontcounterbc.gov.bc.ca>.

DFO requires comprehensive environmental monitoring to be undertaken by the marine finfish industry, and the department also conducts additional monitoring, audits, and investigations (where warranted) to verify information submitted by licence holders and to obtain samples for analysis. Public reporting on the environmental performance of the aquaculture sector in BC is undertaken to ensure the transparency and accountability of the industry. Associated reporting can be found on this DFO web page: <http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/index-eng.html>.

Within the BC Aquaculture Regulatory Program there is a Compliance and Enforcement Unit, dedicated to aquaculture compliance, as well as an Aquaculture Environmental Operations Unit, which monitors the activities of industry on an ongoing basis. The Program provides oversight and works to ensure the orderly management of the industry, including planning and licensing, linkages with national and regional policy, as well as consultation and



communications. Contact information for staff with responsibilities related to aquaculture management within DFO can be found in the [Department Contacts](#) section of this plan.

## **INTEGRATED MANAGEMENT OF AQUACULTURE PLANS:**

Integrated Management of Aquaculture Plans (IMAPs) provide an overview of each aquaculture sector and associated management and regulation. IMAPs are available on the DFO Consultations web pages: <http://www.pac.dfo-mpo.gc.ca/aquaculture/regs-eng.html>.

IMAPs complement IFMPs and the two are reviewed periodically to ensure consistency of management approaches.

More information on IMAPs is available through: [IMAPS@dfo-mpo.gc.ca](mailto:IMAPS@dfo-mpo.gc.ca).

## **5.9 FISHING VESSEL SAFETY**

Commercial fishing is recognized as a very dangerous activity. Concerns over fishing related injuries and deaths have prompted DFO to proactively work with Transport Canada and WorkSafe B.C. to ensure coordinated approaches to improving fishermen's safety. See Appendix 2 for more information.

## **5.10 CATCH MONITORING**

Effective fishery monitoring and catch reporting programs are important to support fishery planning by First Nations, stakeholders, all levels of government and to meet Canada's international and other reporting obligations on fisheries. Further, timely and accurate information on harvest and harvesting practices is essential to properly assess the status of fish stocks and to support resource management for the conservation and the long term sustainability of fish resources.

Risk assessments are performed using an Excel-based tool that provides a consistent approach to a structured conversation regarding ecological risk and other resource management considerations. Draft risk assessments will be initially completed by DFO, then presented to harvesters for review, comment, and revision through existing advisory processes established for fisheries management purposes. Where no advisory process exists, engagement will occur through alternative means.

Should the risk assessment indicate a gap between the current level and target level of monitoring identified through the risk assessment, options to address the monitoring gap are to be identified through discussion between DFO and harvesters. The feasibility of these options (e.g. cost, technical considerations) is also to be considered through these discussions. The

Strategic Framework directs that monitoring and reporting programs are both cost-effective and tailor-made for a fishery. As such, a collaborative approach is required.

Where monitoring options are determined to be feasible, the current monitoring and reporting program is to be revised to incorporate these options so the program provides sufficient information to resource managers to manage the ecological risk of the fishery effectively. Where monitoring options are not feasible, alternative management approaches are required to reduce the ecological risk posed by the fishery. If there is no gap between the current and target level of monitoring, then the management approach would not require any change.

Appendix 8 outlines the initial draft Catch Monitoring and Reporting Risk Assessments for Pacific Salmon completed to date, which are required under the current *Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries*.



## 6 FISHERY MANAGEMENT OBJECTIVES FOR STOCKS OF CONCERN

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### 6.1 RIVERS AND SMITH INLET SOCKEYE

**The objective for Rivers and Smith Inlet Sockeye salmon is to allow rebuilding of these stocks to consistently reach escapement goals and achieve a sustainable stock that will support harvest.**

For Smith Inlet Sockeye, the Docee Fence has historically provided an accurate in-season estimate of returns that was used to inform management decisions for potential fisheries. Unfortunately, the fence has not been in operation since 2017. Without the Docee Fence, assessing the strength of returns of Sockeye to Smith Inlet will be challenging. New methods for determining in-season run strength based on alternate indicators will need to be developed in order to implement commercial Sockeye opportunities.

For Rivers Inlet Sockeye, commercial openings are unlikely until a clear trend towards higher productivity and consistently better escapements is established and documented by the annual surveys of spawning adults. Currently, there is not an established in-season assessment tool to estimate run size in this area.

Updated upper and lower biological escapement targets for Rivers Inlet Sockeye are under development and a process is underway to review the available information, and identify data gaps and associated uncertainties, with the final steps including a full science review of the updated benchmarks through the Canadian Science Advice Secretariat (CSAS) and establishment of updated Management Reference Points.

### 6.2 SKEENA RIVER SOCKEYE

**The objective for Skeena River Sockeye is to maintain sustainable stocks consistent with the WSP and support FSC, commercial, and recreational harvests.**

Over the past four years, the Skeena First Nations Technical Committee (SFNTC) has provided recommendations to guide management of First Nations FSC fisheries in the Skeena. The Skeena Sockeye abundance (Total Return to Canada TRTC) trigger level for First Nations Section 35(1) fisheries closures will be maintained at 400,000. Technical work by the SFNTC has identified that the total aggregate escapement of 600,000 Skeena Sockeye is required to meet the interim lower biological benchmark of 240,000 for wild Skeena Sockeye stocks. As proposed in previous SFNTC fishing plans, Skeena First Nations may choose to close or curtail First Nations section 35(1) FSC Sockeye fisheries anytime if the in-season TRTC estimate is below 600,000.

A review of biological benchmarks for all Skeena Sockeye CUs will be done as a part of the obligations resulting from the updates to Chapter 2 of the Pacific Salmon Treaty. This work will further inform both updated biological benchmarks for individual Sockeye CUs as well as Management Reference Points for the Skeena Sockeye aggregate.

For commercial fisheries, harvest rates will be based on an abundance-based formula that accounts for the forecasted aggregate Skeena Sockeye return to Canada and the status of Skeena Sockeye stocks where information is available.

### 6.3 NASS RIVER SOCKEYE

The objective for Nass Sockeye is to maintain sustainable stocks that will meet WSP objectives and support FSC and Treaty harvests, as well as commercial and recreational harvests. In particular, management objectives to reduce harvest impacts on weak stocks such as Kwinageese and Damdochax Sockeye will remain until improvements are observed. Nass Sockeye will be managed to achieve an aggregate spawning escapement target of 200,000.

Returns in excess of the escapement target are harvested in FSC, Nisga'a Treaty, recreational, and commercial harvest opportunities. Management measures will be in place to reduce impacts to specific stocks of concern.

### 6.4 NORTH COAST CHUM

**The objective for wild north coast Chum is to rebuild weak wild stocks while providing opportunities to harvest surplus stocks.**

North Coast wild Chum stocks remain depressed and management actions in Areas 3 to 6 will continue to be taken to maintain low fishery impacts. Specific Chum rebuilding plans have been developed for Skeena and Nass stocks. Please see [Appendix 7](#) and [Appendix 8](#) for more details.

### 6.5 SKEENA AND NASS CHINOOK

**The objective for Skeena and Nass Chinook is to promote Chinook conservation and support rebuilding.**

Most Skeena and Nass River Chinook conservation units (CUs) experienced declines in abundance in 2016 and 2017, followed by increases in 2018, and weaker escapements in 2019 and 2020. A precautionary approach to management will be implemented for the 2021 season, with a focus on Skeena Chinook to address concerns for the longer term decline in overall abundance of these stocks, and uncertain environmental conditions. The Department is proposing management actions similar to those taken in 2018, including continued

precautionary measures in commercial troll fisheries, temporal and spatial closures, and quota reductions in the recreational fishery. Please see Section 13 for more details.

### 6.6 NORTHERN COHO

**The objective for Northern Coho is to reduce exploitation in domestic fisheries to promote Coho conservation and support rebuilding.**

Returns of Northern Coho in 2018 were the second lowest recorded since the mid 1990's. While preliminary estimates of escapement in 2020 showed modest improvement for some CUs, there is still broad concern for most of the Coho CUs across the North Coast. Reduced survival rates, productivity, and uncertain marine conditions are all potential causes for the persistent poor survival.

In 2019 and 2020, reductions to Coho exploitation were implemented in Northern commercial and recreational fisheries, and the results of these management measures are being assessed. Preliminary results suggest a continued precautionary approach for the 2021 fishing season. The details of these management actions will be determined through consultations with First Nations and stakeholder groups. Please see Section 13 for more details.

### 6.7 WEST COAST OF VANCOUVER ISLAND (WCVI) CHINOOK

**The objective for West Coast of Vancouver Island (WCVI) Chinook is to manage Canadian ocean fisheries (specified below) to an exploitation rate of 10%. The objective for North Coast Chinook is to manage in accordance with the allocation policy, and to manage the northern troll fishery to a WCVI Chinook exploitation rate of 3.2%.**

For the past two decades WCVI wild Chinook have experienced poor marine survival rates and low spawner levels despite improved returns of enhanced stocks in recent years. WCVI wild Chinook continue to be stocks of concern.

Management actions will continue to be required consistent with the exploitation rate objective. For purposes of calculating the WCVI exploitation rate for North Coast Chinook fisheries, all WCVI Chinook caught and kept in Canadian fisheries are assumed to be returning in the present year. Fisheries that this limit applies to are the northern troll, Haida Gwaii recreational, WCVI troll and WCVI recreational. The exploitation rate is measured by Coded Wire Tag (CWT) data gathered from these fisheries. The exploitation rate limit includes Chinook caught and kept, as well as an estimate of fishing related mortalities.

DFO will manage commercial troll fisheries in the North Coast to a 3.2% exploitation rate ceiling on total WCVI Chinook return to Canada. The harvest rate of WCVI Chinook in the Area

F troll fishery is calculated based on 3.2% of the total WCVI return to Canada and is used as an in-season proxy for exploitation rate. The in-season harvest rate will be estimated using the mean effort-harvest rate relationship developed from historical DNA analysis. The fishery will be further constrained by remaining closed during the first half of June and parts of August as these periods are known to have higher proportions of WCVI Chinook in the total catch. DNA analysis and coded-wire tag analysis of catch will be used to assess the 3.2% exploitation rate objective post season.

Chinook will be managed as per Annex IV provisions of the 2019 PST agreement. The harvest reductions are:

- For the U.S., up to a 7.5 per cent reduction in the Southeast Alaska aggregate abundance-based management or “outside, mixed-stock” fishery, as well as reductions of up to 15 per cent from 2009-2015 harvest levels for individual stocks in Washington and Oregon individual stock-based management fisheries.
- For Canada, up to a 12.5 per cent reduction in the West Coast Vancouver Island aggregate abundance-based management fishery and reductions of up to 12.5 per cent from 2009-2015 levels in Canadian individual stock-based management fisheries.

### **6.8 SKEENA STEELHEAD**

DFO and the province of B.C. have renewed discussions on a joint approach to the management of Steelhead returning to the Skeena watershed consistent with the 1999 fisheries management protocol between the federal and provincial governments. This work is intended to specify clear management objectives, management responses and mechanisms for technical support, management planning, communication and dispute resolution. Work on this approach will include consultations with First Nations and stakeholders.

## 7 GENERAL DECISION GUIDELINES, ACCESS AND ALLOCATION

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The Minister can — for reasons of conservation or for any other valid reasons — modify access, allocations, and sharing arrangements as outlined in this IFMP in accordance with the powers granted pursuant to the *Fisheries Act*.

### 7.1 ACCESS AND ALLOCATION OBJECTIVES

#### 7.1.1 INTERNATIONAL OBJECTIVES

**The objective is to manage Canadian treaty fisheries to ensure that obligations within the Pacific Salmon Treaty (PST) are achieved. As of January 1, 2019, treaty fisheries were managed in accordance with new amendments under the PST, which were being provisionally applied until the treaty formally entered into force as of May 3, 2019.**

Details can be found at the Pacific Salmon Commission (PSC) website at:

<https://www.psc.org/>.

Review of the performance of the PST provisions occurs annually at two bilateral meetings of the Northern Panel of the PSC and those results are published post-season.

#### 7.1.2 DOMESTIC ALLOCATION OBJECTIVES

**The objective is to manage fisheries in a manner that is consistent with the constitutional protection provided to existing aboriginal and treaty rights and An Allocation Policy for Pacific Salmon.**

*An Allocation Policy for Pacific Salmon* can be found on-line at:

<https://waves-vagues.dfo-mpo.gc.ca/Library/240366.pdf>

*An Allocation Policy for Pacific Salmon* sets out principals for allocation between the recreational and commercial sectors and also identifies sharing arrangements for commercial fisheries. An explanation of some of the features of Allocation planning is set out in Section [7.2](#).

An update on the review of the Salmon Allocation Policy can be found in Section [1.6.1](#).

### 7.2 ALLOCATION GUIDELINES

Allocation decisions are made in accordance with *An Allocation Policy for Pacific Salmon*:

<https://waves-vagues.dfo-mpo.gc.ca/Library/240366.pdf>

An update on the review of the Salmon Allocation Policy can be found in Section 1.6.1.

Table 7.2-1: Allocation guidelines

	Low Abundance		High Abundance		
<b>First Nations FSC</b>	Non-retention / closed	Bycatch Retention	Directed	Directed	Directed
<b>Recreational</b>	Non-retention / closed	Non-retention	Bycatch Retention	Directed	Directed
<b>Commercial</b>	Non-retention / closed	Non-retention	Bycatch Retention	Bycatch Retention	Directed

*NOTE: This table describes conceptually how First Nations, recreational and commercial fisheries might be undertaken across a range of returns. It does not imply that specific management actions for all stocks exactly follow these guidelines, but rather is an attempt to depict the broad approach.*

The allocation guidelines above refer to target stocks. The application of *An Allocation Policy for Pacific Salmon* on non-target stocks is case specific. The inadvertent harvest of different species is referred to as *bycatch*. The inadvertent harvest of stocks of concern within the same species (i.e. Cultus Lake Sockeye when harvesting Summer Run Sockeye) is referred to as *incidental harvest*. Both *bycatch* and *incidental harvest* are factored into the calculation of exploitation rates on various stocks, and therefore, fishing plans are designed to be consistent with existing policies and to keep exploitation rates on stocks of concern within the limits described in the fishery management objectives.

The Department does not allocate bycatch or portions of the acceptable exploitation rate on stocks of concern. The Department considers a number of fishing plan options and attempts to address a range of objectives including minimizing bycatch and incidental catch.

### 7.2.1 FIRST NATIONS – FOOD, SOCIAL, AND CEREMONIAL (FSC) AND TREATY DOMESTIC HARVEST

*An Allocation Policy for Pacific Salmon* provides that after requirements for conservation, the first priority in salmon allocation is to treaty rights for harvest opportunities for domestic purposes (consistent with Treaty Final Agreements) and for FSC for harvest opportunities (under communal FSC licences issued to First Nations). The Department has announced plans to review *An Allocation Policy for Pacific Salmon*; further details can be found in Section 1.6.1.

While these opportunities will be provided on a priority basis, it does not necessarily mean that fishery targets for First Nations will be fully achieved before other fisheries can proceed. For example, many First Nations conduct their FSC fisheries in terminal areas while other fisheries are undertaken in marine or approach areas. The general guideline is that fishing plans must adequately provide for the First Nations' FSC and/or domestic Treaty harvests that will occur further along the migration route over a reasonable range of potential run sizes.

### 7.2.2 RIGHT-BASED SALE ACCESS

Within the 2018 BC Supreme Court Ahousaht decision, the application of *An Allocation Policy for Pacific Salmon* (SAP) was found to be an unjustified infringement of the five Nuu-chah-nulth Nations' (Ahousaht, Ehattesaht/Chinekint, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht) Aboriginal rights to fish and sell fish insofar as it accorded priority to the recreational fishery over the Five Nations' right-based sale fishery for Chinook and Coho salmon. To the extent that the SAP applies to the Five Nations in the manner declared an unjustifiable infringement by the Court, the SAP is of no force and effect in its application to the Five Nations' exercise of their aboriginal right to fish and sell fish. DFO has responded to the court decision through the development of a Multi-species Fisheries Management Plan (FMP) for the Five Nations, which addresses the right to sell fish. Rather than designing a process limited to addressing the Court's findings in Ahousaht, DFO has initiated a comprehensive process to review and replace the SAP (1999). For further information see the 2021/22 FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/40953798.pdf>.

### 7.2.3 TEST FISHERIES

DFO uses a range of methodologies to determine in-season stock abundance and composition. Test fisheries play an essential role in providing information to support in-season abundance estimation, driving determination of TACs and ensuring that conservation objectives are met in fisheries management. From 2007 to 2012, \$58 million (Larocque Relief Funding) was provided to support the test fishery programs. In 2012, an amendment to the *Fisheries Act* granted the Minister the authority to allocate fish for financing purposes. To implement this authority, DFO adopted a two-track approach.

Track one included a transition where feasible for existing projects previously funded by Larocque relief funding to the new use-of-fish authority for a period starting April 1, 2013 pending completion of Track two.

Track two included the development of a national policy framework to provide a standardized, rigorous and transparent process for all existing and new project evaluations and approvals.

The draft National Policy for Allocating Fish for Financing Purposes has been implemented since 2013 and the Policy has recently been finalized.

While an objective of the use-of-fish arrangements is for fish revenues to address program costs, in a number of cases since 2013, low salmon stock abundance has curtailed test fish revenues, and alternative funding arrangements to support programs have been pursued.

There is one project proposed for the North Coast for 2021; the Tyee Test Fishery in Area 4 (Skeena River Gillnet), which the North Coast Skeena First Nations Stewardship Society will continue to administer the test fishery via a collaborative agreement with the Department.

Salmon Test Fisheries - Pacific Region Webpage:

<https://www.pac.dfo-mpo.gc.ca/pacific-smon-pacifique/science/research-recherche/testfishery-pechedessai-eng.html>

DFO will work in close collaboration with resource users to ensure that the fisheries data collections necessary to set TACs and ensure conservation will continue to be undertaken.

### 7.2.4 RECREATIONAL FISHERIES

Recreational fisheries are managed to maintain opportunity wherever stock status allows and to allow fisheries to be managed in a predictable manner, where possible. Under *An Allocation Policy for Pacific Salmon*, after FSC fisheries, the recreational sector has priority to directed fisheries for Chinook and Coho salmon. For Sockeye, Pink, and Chum salmon, the policy states that recreational harvesters be provided predictable and stable fishing opportunities.

Recreational harvest of Sockeye, Pink, and Chum will be limited to a maximum of 5% of the combined recreational and commercial harvest of each species on a coast-wide basis averaged over a rolling five-year period.

If stock abundance information suggests that conservation objectives cannot be attained, closures or non-retention regulations will generally be applied. In some cases, recreational fisheries with a non-retention restriction in place may remain open provided the recreational fishery is not directed on any stocks of concern, nor is the impact on any stocks of concern significant in accordance with the *Selective Fishing Policy*.

Prior to a directed commercial fishery on specific Chinook and Coho stocks, the fishing plan will provide for full daily and possession limits for the recreational sector on those stocks. Decision guidelines may also identify considerations for changing the area of the fishery, modifying dates, or changing daily limits.



### 7.2.5 COMMERCIAL FISHERIES

Commercial fisheries are managed to optimize the economic performance of the fisheries, to provide certainty to participate where possible and to optimize harvest opportunities. However, stocks of concern will continue to constrain opportunities in many fisheries resulting in less than optimal opportunities.

*An Allocation Policy for Pacific Salmon* provides for a commercial harvest of Sockeye, Pink, and Chum of at least 95% of the combined recreational and commercial harvest of each species on a coast-wide basis over time. Commercial harvest of Chinook and Coho salmon will occur when abundance permits and First Nations and recreational priorities are considered to have been addressed.

Please see Section 13– Species Specific Salmon Fishing Plans for the commercial allocation plan with shares by species, fleet, and fishery production area. The ability to achieve allocations is often limited by conservation constraints and other factors. Low impact fisheries (limited number of vessels) often occur prior to those having a higher impact (full fleet), particularly at low run sizes, at the start of the run when run sizes are uncertain or when stocks of concern have peaked but continue to migrate through an area. Appendix 6 provides further information on updates to commercial sharing arrangements.

When one commercial gear type is unlikely to achieve its allocation, the usual approach will be that the same gear type, but in a different area, will be provided opportunities to harvest the uncaught balance.

Allocation targets are not catch targets for each sector. While the Department will usually plan and implement fisheries to harvest fish in accordance with allocation targets, opportunities may be provided that are inconsistent with the allocation targets.

### 7.2.6 FIRST NATIONS ECONOMIC OPPORTUNITY AND CSAF AND INLAND DEMONSTRATION FISHERIES

The Allocation Transfer Program (ATP) facilitates the voluntary retirement of commercial licences and the issuance of licences to eligible First Nation groups in a manner that does not add to the existing fishing effort on the resource, thereby providing First Nation groups with employment, income, and increasing participation in commercial fisheries as part of relationship-building with the Department. First Nations' economic opportunities are managed under the same allocation guidelines as commercial fisheries under *An Allocation Policy for Pacific Salmon*.

Since 1994–95, when the ATP was first launched and including PICFI, 502 commercial licences have been relinquished for First Nation groups. For a more detailed description of First Nations' commercial fishing opportunities please refer to Section 13 – Species Specific Salmon Fishing Plans.

### **7.2.7 EXCESS SALMON TO SPAWNING REQUIREMENTS FISHERIES**

Salmon fisheries are managed with the objective of reaching escapement targets or harvesting a certain proportion of the run. Uncertain forecasts, unanticipated differences in in-season run size estimates, and mixed-stock concerns can result in escapement to terminal areas that are in excess of their required habitat or hatchery spawning capacity. In these cases, Excess Salmon to Spawning Requirements (ESSR) fisheries may occur.

The Department will attempt, wherever practical, to eliminate or minimize ESSRs by harvesting in the FSC, recreational, and commercial fisheries. It is not the intention of the Department to establish new ESSR fisheries to displace existing fisheries.

First priority will be to use identified surpluses to meet outstanding FSC requirements, which cannot be met through approved FSC fisheries. This may be done under a communal licence. As a second priority, the local band or Tribal Council may be offered the opportunity to harvest all or part of the surplus under an ESSR licence, which authorizes the sale of the surplus.

## **7.3 GENERAL DECISION GUIDELINES**

The following comprehensive decision guidelines outline management responses that will be invoked under a range of in-season circumstances, and the general rationale to be applied in making management decisions.

Decision guidelines are meant to capture general management approaches with the intention of working towards multi-year management plans.

Specific fishing plans are described in Section 13 – Species Specific Salmon Fishing Plans.

### **7.3.1 PRE-SEASON PLANNING**

Development of decision guidelines is part of the pre-season planning process. Development is guided by relevant departmental policies, scientific advice, consultation with First Nations, commercial and recreational harvesters, and other interests, and the experience of fishery managers and stock assessment staff.

Pre-season decisions include the development of escapement targets, exploitation rate limits, sector allocations, and enforcement objectives.

### 7.3.2 IN-SEASON DECISIONS

In-season decision points vary from fishery to fishery depending on type, availability, and quality of in-season information; and the established advisory, consultation, and decision-making processes. Decisions include opening and closing of fisheries, level of effort deemed acceptable, gear type restrictions, deployment of special projects, etc.

Where possible, in-season decisions will be consistent with guidelines established pre-season; however, the implementation and applicability of decision guidelines and pre-season plans can be influenced in-season by a number of factors. These include unanticipated differences between pre-season forecasts and in-season run size estimates, unexpected differences in the strength and timing of co-migrating stocks, unusual migratory conditions, and the availability and timeliness of in-season information.

### 7.3.3 SELECTIVE FISHERIES

Selective fishing is defined as the ability to avoid non-target fish, invertebrates, seabirds, and marine mammals or — if encountered — to release them alive and unharmed (see *Policy for Selective Fishing in Canada's Pacific Fisheries*). Selective fishing technology and practices will be adopted where appropriate in all fisheries in the Pacific Region and there will be attempts to continually improve harvesting gear and related practices.

### 7.3.4 POST-RELEASE MORTALITY RATES USED TO ACCESS FRIMS

The salmon conservation and fisheries management measures in this IFMP are based on many considerations, including estimates of the mortality rates of salmon that are released from the various types of fishing gear that are used in commercial, recreational, and First Nations fisheries. Post-release mortality rates can vary substantially and depend on many factors, including the location of the fishery, the unique characteristics of each type of fishing gear and method, and the species of salmon that is captured and released. In April 2001 DFO announced revisions to the post-release mortality rates that had been used by DFO in previous years. The mortality rates applied by DFO to each gear type and fishery prior to 2001, and the revised rates announced by DFO in 2001 with some more recent revisions are summarized in [Table 7.3-1](#). The revised rates reflected the results of additional research on post-release mortality rates that were available at that time. DFO has generally continued to use these post-release mortality rates each year in the development of annual fishing plans including this salmon IFMP.

DFO will review the post-release mortality rates currently used for salmon fisheries in Canadian waters and update [Table 7.3-1](#) as new information becomes available. Since 2001 additional research has been conducted on post-release mortality rates of salmon, and

additional fishing methods and gear types have been implemented (e.g. beach seining, recreational catch, and release study for Fraser Sockeye salmon) in some salmon fisheries. The pre-2001 post-release mortality rates are included for historical comparison indicating which fisheries rates have changed. The 2001 post-release mortality rates currently applied by DFO for salmon fisheries, in some cases, are not the same as the rates that are currently applied by the bi-lateral Chinook Technical Committee under the Pacific Salmon Treaty. The results from the DFO review of mortality rates will be used to inform any additional revisions to the post-release mortality rates that are required to address these issues in the development of salmon IFMPs in future years.

For post-season assessments of Chinook salmon, DFO uses the exploitation rates developed by the Pacific salmon Commission Chinook Technical Committee, which employs the mortality rates reported by the PSC (2007).

Table 7.3-1: Post-Release Mortality Rates

Fishery	Pre 2001 Post-Release Rates (for historical comparison)	Post 2001-Release Rates
<b>First Nations Fisheries</b>	Note: When using the same gear and methods noted below the same mortality rates were applied.	Various – Depending on gear used and fishery Gill net – 60% same as commercial below Beach seine – 5% for Sockeye and Coho in-river Fraser Modified Shallow Seine- 10% for Sockeye and Coho in-river Fraser Tooth Tangle net – 3.5” mesh is 10% Sockeye and 15% Coho Fishwheel - 5% for Sockeye and Coho in-river Fraser
<b>Recreational troll gear – Sockeye, Coho, Pink and Chum</b>	10%	10% except 3% for Sockeye in-river Fraser
<b>Recreational Troll gear – Chinook</b>	15%	15%

<b>Fishery</b>	<b>Pre 2001 Post-Release Rates (for historical comparison)</b>	<b>Post 2001-Release Rates</b>
<b>Recreational mooching gear – Coho and Chinook</b>	10% for Coho; 15% for Chinook	10% for Coho in South Coast areas; 15% for Chinook in all areas
<b>Commercial gill net (South Coast)</b>	60% to 70%	60% with provision for rates as low as 40% where selective techniques warrant
<b>Commercial seine – South Coast (Areas 11 to 29)</b>	15% to 25%	25% Johnstone Strait; 50%* Area 20 – Coho; 25% all areas for Sockeye
<b>Commercial troll – All Areas</b>	26%	10% Sockeye, 15% Coho and Chinook
<b>Commercial tooth tangle net 3.5" mesh</b>	n/a	10% Sockeye, 15% Coho

\*Recent work by researchers from Carleton University, the University of British Columbia, and the Area B Harvest Committee has been undertaken in 2012 and 2013 to re-evaluate the release mortality rates for Coho caught using purse seine gear in Area 20. Results to-date indicates that short-term release mortality rates are less than the current 70% estimate. For the 2021 fishery, the Department will use a 50% release mortality estimate for planning purposes subject to at-sea-observer coverage to assess Coho encounter rates and fish condition during any commercial fishery openings.

## 8 COMPLIANCE PLAN

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### 8.1 COMPLIANCE AND ENFORCEMENT OBJECTIVES

#### CONSERVATION AND PROTECTION PROGRAM DESCRIPTION

Conservation and Protection (C&P) is mandated to protect fisheries, waterways, aquatic ecosystems and resources from unlawful exploitation and interference. Fishery officers provide compliance promotion and enforcement services in support of legislation, regulations and management measures implemented to achieve the conservation and sustainable use of Canada's aquatic resources, the protection of species at risk, fish habitat and oceans.

In carrying out activities associated with the compliance and enforcement of Pacific salmon fisheries, outlined in this management plan, C&P will utilize intelligence-led and principle-based approaches and practices consistent with the *Three Pillars of the C&P National Compliance Framework* and the *DFO Compliance Model*:

- VI. Voluntary **compliance promotion** through education, stewardship and stakeholder engagement;
- VII. Intelligence-led **monitoring, control and surveillance** activities;
- VIII. Management of **major cases /special investigations** in relation to complex compliance issues.

### 8.2 REGIONAL COMPLIANCE PROGRAM DELIVERY

C&P utilizes a broad scope of activities to deliver compliance and enforcement services within Pacific Region salmon fisheries. The main activities of C&P include:

Prioritizing compliance and enforcement measures that support DFO management objectives which aim to sustain the salmon stocks and fisheries;

Developing and maintaining positive relationships with First Nations communities, recreational groups and commercial interests through dialogue, education and shared stewardship;

Ensuring the development and supporting of a fishery officer complement that is skilled, well-equipped, well-informed, safe and effective;

Ensuring that salmon fisheries participants are aware of their obligations to comply with licence conditions;

- Inspecting fish processors, cold storage facilities, restaurants and retail outlets to verify compliant product;
- Conducting high-profile fishery officer presence during patrols by vehicle, vessel and aircraft to detect and deter violations;
- Maintaining a violation reporting 24-hour hotline to facilitate the reporting of violations;
- Supporting traceability initiatives within the salmon fishery for enhanced accountability, e.g., monitoring and verifying salmon catches and offloads to ensure accurate and timely catch reporting and accounting, including coverage of dual-fishing opportunities;
- Collecting and utilizing intelligence to identify and target repeat and more serious offenders for enforcement effort, including laundering and illegal sales of salmon;
- Utilization of enhanced surveillance techniques, technology and covert surveillance techniques as a means to detect violations and gather evidence in salmon fisheries-of-concern;
- Responding to the most serious habitat violations identified by the DFO Fish and Fish Habitat Protection Program;
- Continue to utilize restorative justice forums to reduce harm to fisheries, species-at-risk, and fisheries habitat.

### 8.3 CONSULTATION

Education, information and shared stewardship activities are the foundation for achieving voluntary compliance. C&P fishery officers regularly participate in consultations with resource users and the general public. C&P participates in all levels of the advisory process and is committed to including local fishery officers to provide users and the community-at-large with specific information related to compliance and enforcement perspectives. C&P will continue to meet with individual First Nations at the local level through the First Nations Liaison Program and with First Nations planning committee meetings where many First Nations gather.

## **8.4 COMPLIANCE STRATEGY**

Salmon fishery compliance and enforcement continues to be a significant priority for C&P. Concurrent to the salmon season, compliance and enforcement attention may be required to address violations related to fisheries habitat, shellfish harvest in contaminated areas, Whale initiative/response and the protection of species at risk. In order to balance multiple program demands, C&P applies a risk-based integrated work planning process at the Regional and Area levels. This process identifies priorities so that resources are allocated to the areas of greatest need.



## 9 PERFORMANCE/EVALUATION CRITERIA

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This section is intended to outline measurable indicators to determine whether or not those management issues outlined in the IFMP are being addressed. These indicators may include those specifically developed for the IFMP, as well as from existing evaluation processes.

Potential performance indicators will be required for assessing conservation and fishery sustainability; WSP objectives; domestic and international objectives; First Nations, commercial and recreational objectives; allocation objectives; enhancement objectives, as well as other indicators of interest.

The Department intends to work collaboratively with First Nations and stakeholders to review existing and/or develop new performance indicators that should be included as part of the performance/evaluation criteria.

The results of the previous year's annual review (e.g. 2020 season) follow below:

### 9.1 2020/2021 POST SEASON REVIEW FOR STOCKS OF CONCERN

NOTE: The objectives shown in **bold** below is the wording from the 2020/21 Integrated Fisheries Management Plan.

#### 9.1.1 RIVERS AND SMITH INLET SOCKEYE

**2020/2021: The objective for Rivers and Smith Inlets Sockeye salmon is to continue allowing rebuilding of these stocks to reach escapement goals and achieve a sustainable stock that will support harvest.**

There have been no commercial or recreational fisheries targeting River Inlet Sockeye for many years. Escapements, with the exception of 2011 and 2016, have fallen short of target levels and thus commercial and recreational fisheries remain unlikely until a trend towards consistently higher productivity has been established. This trend will be established from the adult spawner survey and a process is underway to establish updated biological benchmarks for Rivers Inlet Sockeye and associated Management Reference Points. The Docee Fence has not operated since 2017 and consequently the strength of returns to Smith Inlet were unknown. Commercial salmon fishing opportunities are not anticipated within Smith Inlet in 2021. There is interest in seeking alternate in-season methods to determine run strength in order to realize potential commercial harvest opportunities.

### 9.1.2 SKEENA RIVER SOCKEYE

**2020/2021: The objective for Skeena River Sockeye is to maintain sustainable stocks consistent with the WSP and support FSC, commercial, and recreational harvests.**

The preliminary post-season estimate of the Skeena Sockeye total return for 2020 was 1,611,326 (1,531,326 estimated total return to Canada).

As a result of a combination of factors such as run timing, the in-season estimate generated from the Tyeë test fishery was lower than the final observed escapements. In 2020, there were two Skeena Sockeye directed commercial gill net fisheries with a final catch of 22,807.

Demonstration fisheries harvested 3,090 pieces. While there were sufficient fish in Babine Lake to conduct an ESSR fishery, due to concerns of safety related to COVID-19, the fishery did not proceed in 2020. The recreational fishery started the season closed; however, the fishery was opened on August 5 based on escapement estimates at Tyeë. The preliminary Skeena Sockeye FSC catch estimate for 2020 is 161,375 pieces.

### 9.1.3 NASS RIVER SOCKEYE

**2020/21: The objective for Nass Sockeye is to maintain sustainable stocks that will meet WSP objectives and support FSC and Treaty harvests, as well as commercial and recreational harvests.**

Nisga'a Fisheries Program assessment activities continued providing DFO and Nisga'a stock assessment managers with valuable information (e.g., run size and Nisga'a catch) required to successfully manage the Nisga'a fishery and assess Nass area stocks.

The preliminary post-season estimate of the Nass Sockeye total return for 2020 was 303,220 and the Total Return to Canada estimate was 266,220.

In-season stock assessment information indicated that the return of Nass Sockeye was insufficient to support commercial fisheries in 2020, including Nass River Inland Demonstration fisheries. The one Pink targeted seine opening had no Sockeye retention. There was no recreational fishery for Nass Sockeye in 2020.

First Nations FSC fisheries for Nass Sockeye were open in the marine approaches and the Nass River for the duration of the season. The preliminary Nass Sockeye FSC catch estimate for 2020 is 10,000.

No individual sale fisheries were conducted in 2020 and the Nisga'a food, social, and ceremonial fishery was closed for 17 days from July 13-29 due to low observed returns of Nass

Sockeye and Chinook at the Nass fish wheels. There were 39,388 Sockeye harvested under the Nisga'a Treaty.

#### 9.1.4 NORTH COAST CHUM

**2020/2021: The objective for wild north coast Chum is to rebuild weak wild runs, while providing opportunities to harvest surplus stocks.**

Chum stock status remained a concern in 2020. There were no commercial net fisheries that targeted wild Chum from Areas 3 to 6 in 2020. Retention of Chum was permitted in the single Pink targeted seine fishery on July 6, and 1,751 fish were retained. Preliminary estimates indicate that exploitation rates have remained below the 10% rebuilding exploitation rate objective.

#### 9.1.5 WCVI CHINOOK

**2020/2021: The objective for West Coast of Vancouver Island (WCVI) Chinook is to manage Catch Year Exploitation Rate (CYER) in specified Canadian ocean fisheries (see below) to an exploitation rate of 10%. The objective for North Coast fisheries is to manage in accordance with the allocation policy, and to manage the northern troll fishery to a WCVI Chinook exploitation rate limit of 3.2%.**

The Catch Year Exploitation Rates (CYER) are based on analysis of Estimated Coded-Wire-Tags (CWT) within the Pacific Salmon Commission process. Annual results are available on [www.psc.org](http://www.psc.org) under the Chinook Technical Committee publications. With respect to 2020 CYER in Canadian fisheries of the indicator stock Robertson Creek Hatchery, the total in the specified Canadian ocean fisheries (AABM fisheries, including all WCVI sport outside Barkley Sound) was 5.7% including 2.2% in the northern BC troll fishery, 1.5% in the Haida Gwaii recreational fishery, 1.6% in the WCVI recreational fishery, and 0.3% in the WCVI troll fishery.

Post season estimates of coastwide exploitation of WCVI origin Chinook using DNA are expected to be available in the near future. The total Area F Troll Chinook catch in 2020 was 30,096 pieces which contained 2,771 WCVI Chinook estimated from DNA analysis of the catch. The post-season reconstructed WCVI Chinook return to Canada in 2020 was estimated at 241,000 Chinook salmon.

#### 9.1.6 INSHORE ROCKFISH

**2020/2021: The management objective for Bocaccio and inshore rockfish species (which include Yelloweye, Quillback, Copper, China, and Tiger) is to continue conservation**

**strategies that will ensure stock rebuilding over time. These species are currently non-retention in the commercial salmon troll fisheries.**

Based on science information, the Department implemented stepped reductions of total Bocaccio harvest from the estimated total catch mortality of 137 metric tonnes (MT) in 2013 to a mortality cap of 75 MT over 3 years (2013-14 to 2015-16). Through the process of regular evaluation of the rebuilding plan, science advice on stock status and rebuilding strategies for Bocaccio was peer-reviewed in autumn 2019. More information on the Bocaccio Rebuilding Plan is available in Appendix 9 of the Groundfish IFMP, which will be linked in the final salmon IFMP once available. The Department has also implemented stepped reductions of total Yelloweye Rockfish (outside population) harvest from the estimated total catch mortality of 287 MT in 2014 to a mortality cap of 100 MT over 3 years (2016/17 to 2018/19). Through the process of regular evaluation of the rebuilding plan, science advice on stock status and rebuilding strategies for Yelloweye Rockfish outside population was peer-reviewed in autumn 2019. More information on the Bocaccio Rebuilding Plan is available in Appendix 9 of the Groundfish IFMP, which will be linked in the final salmon IFMP once available. The Department is working collaboratively with all fishing interests to achieve rockfish conservation and rebuilding. For the salmon troll, recreational, and FSC fisheries, the current emphasis is on increasing awareness, given the limited data available on catch. Current work with these fisheries is focused on:

- Improving rockfish identification among fishers, technicians, guides, lodges, creel surveyors, and other catch monitors; and
- Improving fishery monitoring and catch reporting of rockfish by species.

## **9.2 2020/2021 POST SEASON REVIEW FOR ACCESS AND ALLOCATION OBJECTIVES**

### **9.2.1 INTERNATIONAL OBJECTIVES**

**The objective was to manage Canadian treaty fisheries to ensure that obligations within the Pacific Salmon Treaty (PST) are achieved.**

Review and performance of the PST provisions for Sockeye, Coho, Chum and Chinook salmon occur annually at bilateral meetings. Results of the meetings are published in the annual post-season reports available from the Pacific Salmon Commission (PSC). More information is available on the PSC website at:

<http://www.psc.org/index.htm>

## **9.2.2 DOMESTIC ALLOCATION OBJECTIVES**

**The objective was to manage fisheries in a manner that is consistent with the Allocation Policy for Pacific Salmon and the Pacific Salmon Commercial Allocation Implementation Plan.**

Fisheries were generally conducted in a manner consistent with the Allocation Policy for Pacific Salmon. Post-season reviews were conducted to provide information on stock status, catches and other fishery information.

### **9.2.1 FIRST NATIONS OBJECTIVES**

**The objective was to manage fisheries to ensure that, after conservation needs are met, First Nations' food, social and ceremonial requirements and treaty obligations to First Nations have first priority in salmon allocations in accordance with the Allocation Policy for Pacific Salmon.**

In 2020, Nass sockeye returns were much lower than the pre-season forecast, consequently Nisga'a Lisims Government closed Sockeye targeted treaty fisheries a period of time starting July 12. While treaty fisheries did re-open late July, due to poor returns there were no commercial gill net opportunities for Nass Sockeye. The Meziadin fishery recreational trigger was not reached and recreational fishing in the mainstem Nass River was closed for Sockeye July 1, 2020. Marine angling for Sockeye in Area 3 remained closed the duration of the 2020 season.

Lower than expected Nass Chinook returns also resulted in Nisga'a Lisims Government closing Chinook targeted treaty fisheries on July 7 for the remainder of the season. Recreational angling for Chinook on the Nass River was also closed July 15, 2020 for conservation concerns.

## **9.2.2 RECREATIONAL AND COMMERCIAL OBJECTIVES**

**The objective was to manage fisheries for sustainable benefits consistent with established policies.**

The primary objective in the recreational fishery to maintain the expectation and opportunity to catch fish in a stable manner was achieved. In the commercial fishery, harvest opportunities were planned based on the identification of commercial surpluses and based on the commercial allocation plan.

### **9.3 2020/2021 POST SEASON REVIEW OF COMPLIANCE MANAGEMENT OBJECTIVES**

Fishery officers carry out inspections on vessels, buying stations, processors, transporters, cold storage facilities, brokers, restaurants and retailers. In-season and future compliance and enforcement activities are adjusted, in consideration of the outcomes of the inspections program. The annual post-season review of the inspection program further informs C&P about the successes of the program and where to align resources to provide the greatest value to Canadians.

## 10 NORTHERN BC FIRST NATIONS FISHERIES

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### 10.1 FISHERY MONITORING AND CATCH REPORTING INITIATIVES

The *Strategic Framework for Fisheries Monitoring and Catch Reporting in Pacific Fisheries* is being applied to all fisheries across the region including First Nations FSC fisheries. Work includes assessing the ecological risk of fisheries as they are currently managed and ensuring monitoring and reporting programs provide sufficient information to appropriately manage for those risks. The First Nations Fishery Council (FNFC) and other area aggregate groups have assisted in engagement to communicate the requirements of the Framework and importance of improving catch information. In addition, a significant focus has been on the development of integrated and coordinated data management and data entry systems within DFO and First Nations Band offices.

#### 10.1.1 ABORIGINAL HARVEST MANAGEMENT SYSTEM

Since the year 2000, Fisheries and Oceans Canada have been working with First Nations groups to design and develop electronic recording and reporting systems for First Nations FSC catch data, to improve the efficiency and accuracy of reporting FSC catch and other fishing information used by Aboriginal fishery managers and the Department. The software has incorporated recommendations from numerous First Nations members and is based on their reporting requirements within their communities and those required by the Department. The application also has a harvester designation system, allowing First Nations to track FSC effort and harvest as well as other fishing information for their members.

The initiative first utilized a Microsoft Access database used by interested First Nations groups within the Pacific Region, including the BC Interior area, South Coast, and the Central Coast. In the late 2000s, approximately 34 First Nations groups employed this software application with different success rates, with a few sending FSC data to DFO's Regional catch database. In 2010, work started on compiling all aspects of the 34 current MS Access databases into one system called the Aboriginal Harvest Management System (AHMS) that could be customizable for each Nation's needs. Since 2010, new Nations have been brought onboard each year, bringing the total to 16 First Nation's currently using AHMS throughout the Region, with 6 First Nations still using MS Access databases in 2018. FSC data is now being maintained by DFO within KREST (the Kept and Released Estimation Survey Tool).

For more information please contact Aleta Rushton at 250-230-1227.

### **10.1.2 CHINOOK AND COHO CODED WIRE TAG (CWT SAMPLING)**

CWT target sample rates are established by the Department to meet bilateral Pacific Salmon Treaty standards. The minimum required sample rates are 20% of the estimated catch of the fishery to recover a minimum quantity of CWTs from indicator stocks. CWT sampling programs in First Nations fisheries are comparable in overall design to CWT sampling in commercial and recreational fisheries but may be different in some aspects to recognize the differences in First Nations economic or demonstration fisheries and FSC fisheries, to recognize regional differences in priorities for CWT sampling, and to integrate sampling into First Nations catch monitoring programs.

In economic and demonstration fisheries, sampling for CWTs is a mandatory catch monitoring requirement in Chinook and Coho retention fisheries that intercept CWT indicator stocks.

Where needed, the Department will:

- Count the landed Chinook and Coho catch by adipose fin-clip status of randomly selected landings or at fish processing plants using designated observers and sample the landed catch to collect snouts from fish that contain CWTs, or
- Work with First Nations catch monitoring programs to establish comparable requirements.

In FSC fisheries, the success in achieving the 20% target sample rate relies on CWT sampling that is integrated into the catch monitoring program or on individual submissions of Chinook or Coho heads to catch monitors or to First Nations Salmon Head Depots. Sample rates may also be known as submission rates in these fisheries. Essential requirements for the “submission-style” sampling for CWTs are:

- Submission of heads from hatchery-marked (adipose fin-clipped) Chinook and Coho. With mass marking, not all hatchery-marked Chinook and Coho contain a CWT, but the missing adipose fin is the only external clue to identify the possibility of an internal CWT.
- Completed head label(s) attached to each head with required catch information including location caught and date caught. For salmon caught together (same date and location), one label may be placed in a sealed bag with multiple heads.
- Provision of catch information (number of hatchery marked kept Chinook and Coho) to monitoring programs.

First Nations Salmon Head Depots with head labels exist in communities where submission-style programs are established. Servicing and maintenance of First Nations Salmon Head



Depots will be delivered by Department employees. In submission-style programs, information about the origin of their fish will be provided to individuals and First Nations when CWT dissection results are available.

For additional information or locations of First Nations Salmon Head Depots:

Salmon Head Recovery Program

Telephone: 1-866-483-9994 (toll-free)

### **10.1.3 FISHERY MONITORING AND CATCH REPORTING RISK ASSESSMENT TOOL**

The Department finalized the “Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries” (the Framework) in the spring of 2012. The Framework directs that an ecological risk assessment be undertaken for all fisheries to determine the level of monitoring required to provide information necessary to manage for the ecosystem risks posed by a fishery, while allowing for final monitoring and reporting programs to reflect the fishery's unique characteristics.

Risk assessments are performed using an Excel-based tool that provides for a consistent approach to a structured conversation regarding ecological risk and other resource management considerations. For salmon, the draft risk assessments are planned to be initially completed by DFO, then presented to harvesters for review, comment, and revision through existing advisory processes established for fisheries management purposes.

Should the risk assessment indicate a gap between the current level and target level of monitoring identified through the risk assessment, options to address the monitoring gap are to be identified through discussion between DFO and harvesters. The feasibility of these options (e.g. cost, technical considerations etc.) is also to be considered through these discussions. The Strategic Framework directs that monitoring and reporting programs must be both cost-effective and tailor-made for a fishery; as such, a collaborative approach is required.

Where monitoring options are determined to be feasible, the current monitoring and reporting program is to be revised to incorporate these options so the program provides sufficient information to resource managers to manage the ecological risk of the fishery effectively. Where monitoring options are not feasible, alternative management approaches are required to reduce the ecological risk posed by the fishery. If there is no gap between the current and target level of monitoring, then the management approach would not require any change.

As of January 2019, the Department is in the process of gathering feedback on and will subsequently be finalizing a draft national Fishery Monitoring Policy. This national Policy—an evolution of the existing Strategic Framework—looks to bring consistency in the development, delivery and evaluation of monitoring programs for all federally-managed wild fisheries in Canada, and will ultimately supersede the existing Pacific Framework.

More information on the Pacific Framework and risk assessment is available on the internet at:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework-monitoring-cadre-surveillance-eng.html>

## **10.2 COMMUNAL LICENCE HARVEST TARGET AMOUNTS**

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings and describe the details of the FSC fishery including the dates, times, methods, locations of harvest. Communal licences for Northern Coastal First Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion.

Fisheries and Oceans Canada seeks to provide for the effective management and regulation of First Nations fisheries through the negotiation of mutually acceptable and time-limited Fisheries Agreements, frequently referred to as AFS agreements. Where agreement is reached, agreed-to fisheries provisions form the basis of the communal licence issued by DFO. Where agreement cannot be reached, Fisheries and Oceans Canada will nonetheless issue an Aboriginal communal fishing licence to the group based on DFO's best understanding of the group's Aboriginal fishery.

Target harvest amounts for communal licences in Northern BC are outlined in [Table 10.2-1](#) below. Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Where requests are put forward by First Nations for changes in FSC access arrangement, these are evaluated against a common set of criteria. FSC access should reflect some balance between the diversity and abundance of resources that are locally available, community needs and preferences, and operational management considerations. The department's operational approach and criteria can be found online at:

<http://www.pac.dfo-mpo.gc.ca/consultation/fn-pn/fnfc-2014/docs/aboriginal-fishing-peches-autochtones-eng.pdf>

Table 10.2-1: Communal Licence Harvest Target Amounts

	Areas 1 & 2	Areas 3 to 6 North	Areas 6 South to 10	Total
<b>Sockeye</b>	20,000	209,250	50,000	279,250
<b>Coho</b>	5,000	8,650	8,470	22,120
<b>Pink</b>	2,500	32,425	13,270	48,195
<b>Chum</b>	2,500	4,975	12,520	19,995
<b>Chinook</b>	3,000	15,860	7,970	26,830
<b>Total Salmon</b>	33,000	271,160	92,230	396,390

### 10.3 ABORIGINAL COMMERCIAL FISHING OPPORTUNITIES

The AFS was implemented to address several objectives related to First Nations and their access to the resource. One of these objectives was to contribute to the economic self-sufficiency of Aboriginal communities. An integral component of the AFS is the Allocation Transfer Program (ATP). This Program facilitates the voluntary retirement of commercial licences and the issuance of licences to eligible Aboriginal groups in a manner that does not add to the existing fishing effort on the resource, thereby providing Aboriginal groups with much needed employment and income, and increasing participation in commercial fisheries as part of relationship-building with the Department. Since 1994-95, when the ATP was first launched and including PICFI, 481 commercial licences have been relinquished for Aboriginal groups.

Discussions regarding demonstration fisheries that will provide commercial opportunities for First Nations and allow for experimentation and testing of inland fisheries are on-going with First Nations and stakeholders through the Commercial Salmon Allocation Framework process. For 2021, as in previous years, the focus with First Nations will be on experimenting mainly in terminal areas on abundant stocks. These fisheries will be conducted separately from FSC fisheries, using the same harvest decision guidelines as the commercial fishery and fish harvested will be off-set with licences voluntarily relinquished from the commercial fishery.

## 10.4 TREATY FISHERIES

### NISGA'A FISHERIES

The Nisga'a Treaty came into effect on May 11, 2000. Under the treaty an Annual Fishing Plan (NAFP) is developed by the Joint Fisheries Management Committee (JFMC) and governed by the terms of the Nisga'a Final Agreement and the Nisga'a Harvest Agreement. The NAFP defines the escapement goals required to guide management decisions for Nass salmon stocks, calculates Nisga'a allocations for each salmon species and provides the general regulatory requirements for catches of each salmon species. The Annual Fishing Plan remains in effect until replaced the following year. The fishing plan applies to persons who harvest fish, other than Steelhead, in Nisga'a fisheries.

More information on this Treaty can be found at:

Nisga'a Final Agreement

[https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/99002\\_00](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/99002_00)

More information on the Treaty process can be found at:

<https://www.rcaanc-cirnac.gc.ca/eng/1100100028568/1529354090684>

Refer to Section [13](#) – Species Specific Salmon Fishing Plans for the specific domestic and commercial allocations.

## II NORTHERN BC RECREATIONAL FISHERIES

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Recreational fisheries are managed to maintain opportunity wherever stock status allows and to allow fisheries to be managed in a predictable manner, wherever possible.

### II.1 RECREATIONAL VISION

In May 2018, the Sports Fish Advisory Board created '*Vision 2021 - A Strategic 10-point framework to grow Canada's recreational fishing sector on the Pacific coast*'. It serves as a framework for developing initiatives and actions to support achievement of a collective vision for the recreational fishery in BC. The recreational fisheries Vision 2021 document is available from the A/Regional Recreational Fisheries Coordinator Greg Hornby (250) 286-5886.

### II.2 LICENCING

Tidal Waters Sport Fishing licences may be purchased for a 1, 3, 5 day, or annual period. Fees depend on licence duration, age (senior, adult, juvenile), and residency status. Licences for juveniles (ages 15 and under) are free. Check for applicable fees and purchase your licence online via the National Recreational Licensing System: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/application-eng.html>

#### II.2.1 INFORMATION ON OPENINGS AND CLOSURES

Recreational fishing opportunities for salmon are regulated by the *British Columbia Sport Fishing Regulations, 1996* made under the *Fisheries Act*. The regulations are detailed in the online *British Columbia Sport Fishing Guide*: <http://www.bcsportfishingguide.ca>. As there are frequent in-season changes, especially for salmon, you are advised to check the online *British Columbia Sport Fishing Guide* for restrictions in the intended area of fishing before going on your trip. In addition to finding detailed information on tidal and freshwater salmon sport fishing regulations in the *British Columbia Sport Fishing Guide*, fishers must also make sure to reference the 'Conditions of Licence', as printed to their Tidal Waters Sport Fishing Licence, which includes other mandatory licence requirements, such as catch recording, provision of information, gear requirements, and species restrictions such as and catch and size limits.

##### 11.2.1.1 FISHERY NOTICES

To sign up to have recreational Fishery Notices sent directly to your email, there is a link to subscribe to Fishery Notices on the left hand side of the *British Columbia Sport Fishing Guide* web page. Fishery Notices include important alerts to in-season changes for areas and species,

fishery openings and closures, as well as timely health advisories for e.g. marine biotoxins or fuel spills.

### 11.2.1.2 FISHINGBC APP

The Sport Fishing Institute of BC has recently developed the 'FishingBC App', a free app you may optionally download to your mobile device if you wish to receive up-to-date sport fishing regulation details for tidal waters in the Pacific region. In addition, it offers varied functionality in multiple languages to assist not only with regulations data, but also with species identification and catch recording.

## 11.3 CATCH MONITORING

The SFAB has been working with DFO on initiatives to strengthen fishery monitoring and catch reporting in the recreational fishery. To this end, a plan has been developed to meet the objectives of the *Strategic Framework for Fishery Monitoring and Catch Reporting in Pacific Fisheries* (2012)(Appendix 8). Following multi-sectoral consultations, DFO released the national *Fishery Monitoring Policy* in 2019, replacing the regional Strategic Framework. A phased approach to implementation of the national *Fishery Monitoring Policy* will result in a transition period from the Strategic Framework to the national policy. For more information on the new national *Fishery Monitoring Policy*, please see Section 1.6.3. The requirement to report catch is a condition of the Tidal Waters Sport Fishing Licence. Licence holders must report information on their recreational fishing activity and catch or provide biological samples to DFO representatives when requested.

### 11.3.1 CREEL SURVEYS

The Department collects information used to estimate boat based angling harvest of finfish in marine waters and salmon in fresh waters throughout BC using a variety of methods. Recreational harvesters may be requested by a Fishery Officer or designated DFO representative, such as a creel interviewer, to provide mandatory catch and effort information or biological samples either on the water or at the dock. Approximately 20,000 such interviews and sampling events are conducted annually. Creel surveys for boat based angling in marine waters are the main source of recreational catch and effort information in the highest risk fisheries.

### 11.3.2 INTERNET RECREATIONAL CATCH AND EFFORT (IREC)

This requirement also includes responding to email requests through the monthly Internet Recreational Effort and Catch - iREC – survey, which started in 2012. Fishers are randomly

selected for the iREC survey and advised at time of licence purchase, and have their iREC survey online access code printed to their licence. Learn more about the iREC survey at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/irec/index-eng.html>

This survey is based on approximately 30,000 responses and provides monthly estimates of effort and catch for areas, months, and fishing methods not covered by the marine creel surveys, which cover only boat based angling. The methods covered by the iREC survey include angling, trapping, beach collecting, and diving for all sport caught species. The iREC survey methodology was peer reviewed and approved by the Canadian Science Advisory Secretariat (CSAS). Efforts are now underway to implement use of iREC results in months and areas not covered by creel surveys, starting with critical species such as halibut and Chinook salmon.

### **11.3.3 INTERNET ANNUAL RECREATIONAL CATCH (IARC)**

A separate online survey - the Internet Annual Recreational Catch (iARC) survey – is held at the end of the season to ask licence holders to provide the catch records as written on their licences for Chinook, lingcod, and halibut. Approximately 7000 responses form the basis for estimating annual catch of these species. Information on this survey is available at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/irec/iarc-eng.html>

### **11.3.4 LOGBOOKS**

Finally, the Department is continuing to work with identified groups - sport fishing guides, fishing lodges, associations – with the assistance of the Sport Fishing Institute of BC to implement logbooks in areas of highest risk or areas conducive to reporting through the use of logbooks. The latter includes areas such as the Central Coast, Kyuquot Sound, Port Hardy, and parts of PFMA 13 where there are concentrations of lodges and guided effort.

The development of an improved catch monitoring regime, including reporting standards, will continue to be a priority in the management of recreational fisheries. The Department continues to work with the Sport Fishing Institute of BC, and identified groups - sport fishing guides, fishing lodges, and associations - to develop a Recreational Electronic Logbook (Rec E-Log) as a tool to collect catch and other fishing information and to report this information to the Department.

### **11.3.5 CHINOOK AND COHO CODED WIRE TAG (CWT) SAMPLING**

Essential requirements for the sampling for CWTs in recreational fisheries are:

- Submission of heads from hatchery-marked (adipose fin-clipped) Chinook and Coho. With mass marking, not all hatchery-marked Chinook and Coho contain a CWT, but the missing adipose fin is the only external clue to identify the possibility of an internal CWT.
- Completed DFO-supplied head label(s) attached to each head with required catch information including location caught and date caught. For salmon caught together (same date and location), one label may be placed in a sealed bag with multiple heads.
- Provision of catch information (number of hatchery marked kept Chinook and Coho) to DFO catch monitoring programs.

CWT target sample rates are established by the Department to meet bilateral Pacific Salmon Treaty standards. The minimum required sample rates in recreational fisheries are 20% of the estimated hatchery-marked catch to recover a minimum quantity of CWTs from indicator stocks. It is not cost effective or possible to acquire this quota through direct sampling of recreational fisheries due to the wide distribution of the fishery throughout the year and throughout the province. Instead, the success in achieving the 20% sample rate relies on submissions by anglers to a network of Salmon Head Depots. Because of the reliance on fisher-provided samples, sample rates are also known as submission rates in recreational fisheries.

Salmon Head Depots exist at more than 250 locations in BC and are situated at marinas, tackle stores, fishing lodges, and hatcheries. Depot operators provide head labels and store the heads in freezers or buckets containing a brine solution. Servicing and maintenance of Salmon Head Depots will be delivered by a federal government contractor or by Department employees. Information about the origin of their fish will be provided to anglers, guides and depots, when CWT dissection results are available.

While the majority of CWTs are collected from submissions to Salmon Head Depots, recreational harvesters are also required as a condition of the Tidal Waters Sport Fishing Licence to provide biological samples (salmon heads) to Department representatives when requested.

For additional information or locations of Salmon Head Depots:

Salmon Head Recovery Program

Phone: 1-866-483-9994 (toll-free)

Search: DFO Salmon Head Recovery



## 12 NORTHERN BC COMMERCIAL FISHERIES

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Details regarding specific commercial fisheries are contained in the Section 13 - Species Specific Salmon Fishing Plans.

### 12.1 LICENSING

#### 12.1.1 NATIONAL ONLINE LICENSING SYSTEM (NOLS) CLIENT SUPPORT - LICENSING SERVICES

All Fish harvesters/Licence Holders/vessel owners are now required to use the National Online Licensing System (NOLS) to view, pay for and print their commercial fishing licences, licence conditions and/or receipts.

Training materials, including step-by-step guides and a detailed user training manual, are available online (<http://www.dfo-mpo.gc.ca/FM-GP/SDC-CPS/licence-permis-eng.htm>) to guide users of the system in completing their licensing transactions. The Department also provides client support and assistance on how to use the system via e-mail at [fishing-peche@dfo-mpo.gc.ca](mailto:fishing-peche@dfo-mpo.gc.ca) or by calling toll-free at 1-877-535-7307. Telephone support is available Monday to Friday (excluding holidays) from (07:00 AM to 19:00 PM Eastern).

For more information on how to register and use the system, visit the Department's website at the website address above, or contact our client support.

#### 12.1.2 LICENCE CATEGORY

A salmon licence, category A, NAG or FA, is required to commercially harvest salmon. Salmon, category A, licence eligibilities are limited entry and vessel based. Category FA and NAG licence eligibilities are party based and must be designated to a registered commercial fishing vessel that meets established length restrictions. Category NAG licence eligibilities are held by the Northern Native Fishing Corporation (NNFC). Category FA is communal commercial licence eligibilities, category FA, an aboriginal group is the licence eligibility holder.

Vessels authorized to fish under the authority of a salmon licence are also permitted to catch and retain species described in Schedule II, Part 2 of the *Pacific Fishery Regulations, 1993*, transport species caught by other vessels, and be designated to fish under the authority of a category Z licence.

### 12.1.3 LICENCE CATEGORY BACKGROUND

Salmon has been a limited entry vessel based fishery since 1969. In 1996 under the Pacific Salmon Revitalisation Plan, area and gear selection were introduced in the salmon fishery. Salmon licensed vessel owners selected a gear and area for each licence eligibility. Gear selections were seine, gill net or troll. Gear selection was permanent.

Area selections for seine were area A or B; for gill net, areas C, D or E; and, for troll, areas F, G or H. A vessel may hold only one licence eligibility per area. Area licensing has been a feature of salmon management for the past 10 years with area selections processes in 1996, 2000, 2006 and 2007. Initial area selection was for a four year period.

Licence Stacking was also introduced in 1996 as a method to decrease the number of vessels actively participating in the fishery while allow vessel owners to fish in more than one area or with more than one gear.

### 12.1.4 LICENCE RENEWAL

Renewal of a Category A licence and payment of the licence renewal fees must be done on an annual basis to retain the privilege to be issued the licence in the future, regardless of whether or not fishing is carried out. Those category A licenses not renewed by March 31, 2022 will cease and licence issuance requests will be unable to be considered in future.

Salmon licence renewal fees are available at full fee and reduced rates. Annual licence renewal fees are based on the length of the vessel. Reduced fee eligibilities must be held on vessels owned by aboriginal individuals.

In accordance with the *Service Fees Act*, annual licence renewal fees will be adjusted by the annual rate of inflation determined by the Consumer Price Index (CPI) published by Statistics Canada.

The commercial Salmon (Categories AG, AT, and AS) licence renewal fees may be found on the following link: <https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/fees-frais-21-22-eng.html>

There is no annual licence renewal fee for communal commercial category FAG, FAT, and FAS licences.

### 12.1.5 LICENCE ISSUANCE

Upon the Department receiving the required payment, and information, the salmon licence will be issued and notification will be sent via email to advise vessel owners/licence holders that a

change has been made to the vessel owners/licence holder's online account. The salmon licence documents, licence conditions and receipt will be available to be printed at that time.

Prior to annual licence issuance of a communal commercial licence, licence eligibility holders are required to annually designate the fishing vessel to hold the licence. This must be done by navigating to the 'Submit a Request' menu selection within the National Online Licensing System (NOLS). Full instructions are available at: <https://www.dfo-mpo.gc.ca/fisheries-peches/sdc-cps/products-produits/user-manual-utilisateurs-sec1-eng.html>.

Prior to annual application of a salmon licence, vessel owner(s)/licence eligibility holders are required to:

- Meet any Ministerial conditions placed on the licence eligibility
- Ensure any conditions of the previous year's licence are met, such as:
  - Catch reporting requirements (i.e. all trips are closed), and that all harvest logs are submitted. Submit a nil report if no fishing occurred. For further information contact the Commercial Salmon Catch Monitoring Unit at [cscmu-usccs@dfo-mpo.gc.ca](mailto:cscmu-usccs@dfo-mpo.gc.ca); and
  - Submission of all fish slips (for further information contact the Regional Data Unit at (604) 666-2716).
- the designated vessel's overall length does not exceed the maximum vessel length of the category FAG, FAT, FAS licence eligibility

### CLEARANCE

Copies of the Nil Reports and Statutory Declarations may be found under 'Additional Licensing Services Forms' on the licensing webpage located at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html>.

### LICENCE DOCUMENTS

Salmon licence documents are valid from the date of issue to March 31, 2022.

Replacements for lost or destroyed licence documents may be obtained by reprinting the licence documents through the National Online Licensing System.

For further licencing information see:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html>

## DESIGNATION OF HARVESTERS TO FISH A COMMUNAL COMMERCIAL LICENCE

Under the *Aboriginal Communal Fishing Licence Regulations*, every person working on a vessel that is only fishing under authority of a Communal Commercial Licence, must be designated by the First Nation that holds the licence. The designation must be made in writing and include the person's name and reference the Communal Commercial Licence.

First Nations licence holders interested in obtaining an example template to use to designate their fish harvesters may contact a DFO Resource Manager or Pacific Fishery Licensing Unit office.

## VESSEL REPLACEMENT (CATEGORY A ONLY)

The owner(s) of a category A licensed Salmon vessel may make an application to replace the commercial fishing vessel. Both the replacement vessel and the vessel being replaced must have a survey on file with the Pacific Fishery Licence Unit (PFLU) or submitted with the vessel replacement application. Vessels must be surveyed according to the Department guidelines.

Communal commercial licenses are not eligible for vessel replacement as the licence eligibility is party-based.

A salmon licence eligibility may not be split from other vessel based licence eligibilities.

Replacement vessels for salmon licence eligibilities where no stacking is involved remain at exact overall length or smaller of the existing vessel.

Temporary vessel replacement (e.g. total loss of vessel) requests are not eligible for any of the salmon stacking allowances.

## STACKING

Processing of salmon licence eligibility stacking applications ends May 31. Stacking applications are not accepted from June 01 to November 30, annually.

A salmon licence may not be split from other licence eligibilities.

Different gear and area licence eligibilities may be combined on one vessel. That is, one vessel may have a salmon gill net licence eligibility and a salmon troll licence eligibility. Multiple licence eligibilities of the same gear may be stacked on one vessel, as each licence eligibility will have a different area. A vessel may not hold more than one licence eligibility for the same area.

For the purpose of stacking licenses, a single salmon licence eligibility may be stacked to a vessel that is up to 30% longer in overall length than the overall length of the vessel from which the licence eligibility is being removed.

Salmon licence eligibilities that are married to other licence categories (or another salmon licence) may be stacked, but the additional 30% in overall length is not applicable and the salmon stacking cannot result in the stacking of other licence categories, except where permitted for that licence category.

An area change request may only be made at the time of submission of an application for licence stacking and the area change may only be made for the licence eligibility that is being stacked. The owner of the receiving vessel must make the request by completion of the applicable section on the form.

Reduced fee category A licence eligibilities may be stacked with either another reduced fee licence eligibility or a full fee licence eligibility, but the receiving vessel must be owned by an aboriginal person.

Category N licence eligibilities may be stacked with any category A licence eligibility, full fee or reduced fee, or another category N licence eligibility, in compliance with all stacking rules except that they will not be tied to the other salmon licence eligibility. Stacking a category N licence eligibility does not result in a change of licence area for the category N licence eligibility.

Category F licence eligibilities may be stacked with any category A or category N licence eligibility or another category F licence eligibility, in compliance with all stacking rules except that they will not be tied to the other salmon licence eligibility. Stacking deadline dates may vary for category F licence eligibilities due to the sign off dates of communal or contribution agreements. Stacking a category F licence eligibility does not result in a change of licence area for the category F licence eligibility.

Please visit the Salmon licence page for further information at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/fisheries-peches/licence-permis-eng.html>

## 12.2 OPENINGS AND CLOSURES

Due to uncertainty of both timing and size of returning salmon runs, many commercial openings are not confirmed until a few days prior to the actual opening. Also, the management plan for any area may change in-season. Fishing Areas and Subareas (or portions thereof), provisions for extensions, opening patterns, and the duration of the fishing season can all be

adjusted based on factors such as weak stock concerns, target stock abundance, fishing effort, rate of gear selectivity, domestic allocations, and other factors.

This fishing plan is designed to minimize the incidental harvest and bycatch of a range of stocks of concern (see Section 6 – Management Objectives for Stocks of Concern). Fisheries that occur on the South Coast may be required to release all non-target species to the water with the least harm, depending on local stock concerns.

Under circumstances where there appears to be an abundance of fish that could support a commercial fishery and that fishery is not specifically addressed in the IFMP, DFO will address requests to fish as identified below:

1. Attempt to verify the abundance using available observations and information of the salmon species and to determine whether or not it could provide a fishing opportunity consistent with conservation objectives and Allocation priorities for First Nations FSC and recreational fisheries. DFO will consult with local First Nations regarding any interests or concerns they may have.
2. If 1 is addressed and there appears to be adequate numbers of fish to support some level of a commercial fishery; then a precautionary approach will be taken and information requirements will be discussed and agreed upon. Initially, a limited number of vessels may be licenced, and independent catch verification will be required with timely reporting of harvest data.
3. Regular dialogue between harvesters, DFO, and others – as appropriate – will take place throughout the fishery including whether the scope of the fishery could be increased and other relevant parameters.

DFO continues to encourage the development of demonstration fisheries that promote biologically sustainable and economically viable fisheries. Fishery managers are working with fleet advisors to develop demonstration fisheries that experiment with meeting a range of objectives including matching fleet size to the available harvest, pacing fisheries to maximize value of the harvest, and developing more cooperative fishing arrangements between harvesters.

In addition to existing demonstration fisheries reviewed and approved prior to 2016; the collaborative work of the Department, FNFC, SCC, and CSAB through the initiative to update the CSAF has resulted in a common assessment process to review and develop flexible harvest arrangements (CSAF Demonstration fisheries). Additional detail on CSAF demonstration fisheries proposed for this season and information on other related work is outlined in Appendix 6: Updates to the Commercial Salmon Allocation Framework.

## 12.3 LICENCE CONDITIONS

### 12.3.1 TRANSPORTING

Please see Part III of the commercial conditions of licence for transporting of salmon for additional details and information.

Transporting conditions for the salmon fisheries include a requirement to submit fish slips for all fish transferred to any commercial vessel transporting salmon; the requirement to maintain a salmon transfer log on board the vessel receiving fish; and a phone-in hail requirement to the DFO Fishery Manager.

The requirement to submit fish slips is currently in place for commercial salmon licence eligibility holders and has previously been a provincial requirement for transport (packer) vessels. It is a federal requirement for transport (packer) vessels to submit fish slips as a condition of licence.

The phone-in hail will alert DFO fishery managers prior to an opening that the vessel is active for transporting salmon in a fishery and will provide managers a better understanding of the fishing effort during an opening. After each opening, there is a requirement to phone the DFO Fishery Manager with information on where the transport (packer) vessel received fish, approximate amount of fish, total number of landings, and the time and location of the final offload. No service provider is needed to deliver on this requirement currently.

The salmon transfer log will identify when, where, and from whom fish were received. This transfer log will be required to be on board the vessel and produced for examination when requested by a representative of DFO. The completed transfer log must also be submitted to the Regional Data Unit at the end of the calendar year. No service provider is needed to deliver on this requirement currently. This condition will complement the existing fish slip program and support improved enforcement of unreported harvests and unauthorized sales in the commercial salmon fishery.

A copy of the salmon transfer log template is available on DFO website at:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/forms/smon-trans-log-journal-eng.html>

### 12.3.2 NON-RETENTION SPECIES

All opening announcements will contain the species that will be allowed to be retained, and those which must be released to the water with the least possible harm. The fishing season will begin with the following non-retention rules in place:

Species	Non-retention fisheries
Steelhead	All commercial fisheries
Chum	Troll, seine and gill net in Areas 4 and 5
Coho	All commercial net fisheries
Chinook	All commercial net fisheries

In-season management actions may take place to include other non-retention species or allow retention of some species that show in-season strength.

**12.3.3 RETENTION OF LINGCOD BY SALMON TROLL**

To help meet the conservation and sustainability objectives under groundfish integration, an individual transferable quota (ITQ) management system has been established for the lingcod fishery.

Implementation of an integrated commercial groundfish fishery has monitoring and reporting requirements for those wishing to retain Lingcod while salmon trolling. As in previous years, all vessels wishing to retain any amount of lingcod must have their fish validated through the established Dockside Monitoring Program. In addition to this, any vessel wishing to land lingcod must hold or acquire sufficient quota to cover catch.

Requirements include the following (less than 500 lbs. of lingcod per trip):

Vessel must have or acquire sufficient lingcod to cover catch.

Transportation requirement — All lingcod must be transported by the licenced vessel either directly to land or to a fish pen.

In addition to submitting Start Fishing and End Fishing Reports to the designated salmon service provider, the vessel master must report to the designated groundfish hail service provider to create Hail-in and Hail-out Reports. The vessel master must adhere to specific dates, times and port locations when landing groundfish catch.

Landing requirements — The landing of any fish of any species is not permitted unless a designated observer is present to authorize the commencement of weight verification.



Vessels wishing to retain and land **more than 500 lbs.** per trip of lingcod must, in addition to all of the above, meet the electronic monitoring requirements described in the Groundfish Integrated Fisheries Management Plan.

#### 12.3.4 RETENTION OF FREEZER TROLL CHINOOK AND COHO HEADS

These requirements apply to all troll licences, unless the license is listed in a fisheries notice that identifies the troll licenses that are exempted from retaining salmon heads during the fishing season.

**Head Retention:** Troll vessel masters that are freezing their catch at sea must retain all heads from Chinook and Coho. Recognizing that vessels may have space limitations for retaining heads, the Department allows the alternative of retaining only the portion of the head likely to contain the CWT, referred to as the 'snout'. At a minimum, the portion of each head retained must include the upper portion of the head extending from the tip of the snout to a cut travelling from the top of the head, passing 1 centimeter behind the eye, and ending at the back corner of the mouth.

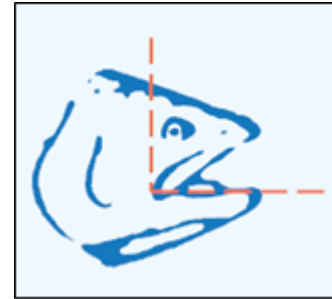


Figure 12.3-1: Fish Head CWT Portion

**Head Storage:** Heads must be stored in Salmon Head Recovery Program bags with labels. Bags and labels are available free of charge from the Department. Heads must be kept frozen until delivery and each bag must contain only the heads from a single week of fishing (where weeks run from Sunday to Saturday). All bags must be labelled completely and securely closed. Bags and labels can be obtained in three ways:

- i) Pick them up at DFO offices announced via fishery notice,
- ii) Contact DFO toll-free at 1-866-483-9994 to make arrangements for shipping, or
- iii) Obtain them from CWT samplers at fish landing stations.

**Head Delivery:** The vessel master shall ensure that all bags containing heads are offloaded at the first designated fish landing station at which Chinook or Coho catch is offloaded.

In accordance with the conditions of the Area G troll license, all vessels that freeze their catch at sea are required to bring all Chinook and Coho heads (or snouts) to the dock for submission, unless the license is listed in a fisheries notice listing the Area G troll licenses that are exempted during the fishing season. The small number of vessels in Area G that freeze their catch at sea has led to the requirement that 100% of the Area G troll fleet retain salmon heads. If the number of vessels that freeze their catch at sea increases significantly, the Department may introduce exemptions by releasing a fisheries notice.

For complete head retention requirements, vessel masters freezing their catch at sea should refer to their conditions of license.

### 12.3.5 CHINOOK AND COHO CODED WIRE TAG (CWT) SAMPLING

Fisheries and Oceans Canada uses independent designated dockside monitoring program observers (CWT samplers) who are federally-contracted to the DFO Mark Recovery Program to sample the entire catch from randomly selected vessels at fish landing stations or processors. CWT target sample rates are established by the Department to meet bilateral Pacific Salmon Treaty standards for statistically reliable data. The minimum required sample rate is 20% of the estimated catch in all Chinook or Coho retention fisheries that intercept CWT indicator stocks. CWT target sampling rates may be adjusted in-season for high abundance or to meet additional CWT program requirements to recover a minimum quantity of CWTs from indicator stocks.

Sampling for CWTs is a mandatory catch monitoring requirement for commercial salmon fisheries. Conforming to the *Fishery (General) Regulations*, when requested, the master or owner of fishing vessels and the owner or any person who has the care, charge or control of a fish landing station must permit access to the catch and provide CWT samplers with assistance that is reasonably necessary to enable them to perform their duties according to DFO-approved sampling protocols including:

- iv) Making the fish readily accessible to the CWT samplers;
- v) Providing samplers with a suitable work area; and
- vi) Permitting CWT samplers to remove the head from the fish free of charge

In the past, Chinook and Coho were checked for a missing adipose fin to indicate that it had a CWT. Due to mass marking, it is necessary to use electronic equipment such as handheld wands or tube detectors to recover CWTs in most fisheries. Because detection rates may be affected by sampling technique, it is important to ensure CWT samplers are given adequate time and opportunity to sample the entire catch of each vessel selected. Incomplete or unrepresentative sampling of CWTs in fisheries is a serious concern because it generates unknown bias in stock identification for fisheries management, stock assessment, hatchery assessment, and implementation of Pacific Salmon Treaty management regimes.

For more information, please contact Kathryn Fraser at 250-756-7371 or Erik Grundmann at (250) 756-7374.

### 12.3.6 COMMERCIAL HARVEST LOGS AND IN-SEASON REPORTING

A mandatory harvest log and in-season reporting program for catch information is required in all commercial fisheries. Harvest logs are a record of fishing activities and are required to be kept under the conditions of licence and can be administered through either a hard copy (paper) logbook version or an electronic (E-Log) version, unless otherwise specified. Commercial salmon harvesters are required to maintain a harvest log of all harvest operations and are responsible for any associated financial costs.

To facilitate reporting of catch information, the Commercial Salmon Advisory Board (CSAB) has identified the following service provider for the paper logbook program for 2021:

**Paper logbook Program:**

Archipelago Marine Research Ltd. (AMR)  
525 Head Street  
Victoria, BC  
V9A 5S1

Telephone: (250) 383-4535

Fax: (250) 383-0103

Toll Free: 1-877-280-3474

Website: <http://www.archipelago.ca>

Email: [SalmonRegistration@archipelago.ca](mailto:SalmonRegistration@archipelago.ca)

Harvesters may also meet their reporting licence conditions through the E-log Program. The service provider for the E-log Program in 2021 is:

**E-log Program:**

M.C. Wright and Associates Ltd.

Telephone: (250) 753-1055

Website: <http://www.mcwrightonline.com>

Email: [support@mcwrightonline.com](mailto:support@mcwrightonline.com)

To make arrangements for their 2021 harvest log requirement, harvesters are required to enlist the services of one of these identified service providers. Sample logbook pages are provided in Appendix 1.

Harvesters can continue to use their existing E-logs as long as software changes are not required to meet licence conditions. If software changes are required to meet licence conditions, harvesters can select to use a paper logbook or arrange to pay for any associated costs for software updates with a service provider.

The Department has been working with the Canadian Pacific Sustainable Fisheries Society to address conditions set out in the Marine Stewardship Council action plan for the continued certification of BC Pink, Chum and Sockeye salmon fisheries. Several conditions within the action plan identify the need for improved reporting of catch, particularly in reference to Endangered, Threatened and Protected species. The harvest logs have been updated and include additional materials for identifying groundfish, seabirds, Sturgeon and marine mammals at the species level. Harvesters are encouraged to provide the correct identification of all catch to the species level in the harvest logs and when submitting catch reports to the service provider.

### 12.4 CATCH MONITORING

Since 2011, the Department has been working with the Commercial Salmon Advisory Board as part of a Catch Monitoring Working Group to review catch monitoring requirements consistent with the *Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries* (2012). A set of minimum requirements has been developed for commercial salmon catch monitoring programs. Minimum catch monitoring requirements identified by DFO and the Commercial Salmon Advisory Board Catch Monitoring Working Group (CSAB CMWG) include:

- Independent verification of fishery specific effort
- Independent verification of landed catch
- Independent verification of at-sea releases
- Fishery specific minimum biological sampling standards
- Independent verification of compliance with fishery rules

Following multi-sectoral consultations, DFO released the national *Fishery Monitoring Policy* in 2019 (available at: <http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm>), replacing the regional *Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries*. The national *Fishery Monitoring Policy* seeks to provide dependable, timely and accessible fishery information through application of a common set of procedural steps used to establish fishery monitoring requirements across fisheries. A phased approach to implementation of the national *Fishery Monitoring Policy* will result in a transition period from the Strategic Framework to the national policy.

Appendix 8 provides further information on the national Fishery Monitoring Policy, risk assessment tools, and steps for implementation.

## **12.5 COMMERCIAL SALMON ALLOCATION IMPLEMENTATION PLAN**

This section describes the commercial salmon allocation implementation plan. An overview of the process to update the CSAF initiated in 2013, with principles and guidelines approved in 2015 and an evaluation framework for assessing CSAF demonstration fishery proposals implemented in 2016. For background information on the CSAF initiative please see:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/saf-crrs/index-eng.html>

### **COMMERCIAL ALLOCATION IMPLEMENTATION PLAN FOR THE 2015 – CURRENT PERIOD**

Shares recommended by the CSAB were intended to apply for a 5 year period (2015 through 2019 seasons) with provision for a review after year 4 (2018 season) to determine if adjustments should be made to any sharing arrangements in subsequent years. For 2021, the sharing arrangements outlined in this IFMP are expected to remain in effect for the current fishing season. Consideration of changes to the commercial allocation implementation plan may be considered in the future based on advice for the Commercial Salmon Advisory Board and any changes will be consulted on in advance of the fishing season through the IFMP process.

The sharing arrangements described in this plan are intended to guide fishing arrangements at the local level and are not fixed entitlements. Application of these sharing arrangements is subject to meeting all conservation objectives, First Nations obligations, international commitments, deliverability and manageability constraints and other management considerations.

Although best efforts will be made to achieve these allocation targets/shares, no guarantees are offered that allocations will actually be achieved in any given year. The achievement of these shares will depend upon the ability to fish selectively and the conservation needs of the resource. In the event that allocations are not achieved, no compensatory adjustments will be made to future allocations.

As in previous years, there will be no directed commercial fisheries for Fraser River Sockeye or Fraser River Pink salmon in the north (i.e. area licence categories A, C and F and First Nations economic fisheries).

The tables below provide a complete list of allocation shares by gear type, species and production area for fisheries starting in 2015 for a period of 5 years with a review planned following the 4th year. Three new productions were approved in 2015 to clarify sharing arrangements associated with the Pacific Salmon Treaty for troll harvests of AABM Chinook

and AB line Pink fisheries. For 2021, the sharing arrangements outlined in this IFMP are expected to remain in effect for the current fishing season.

**SOCKEYE**

Description	Areas	Seine A	Gill Net C	Troll F
Skeena/Nass	1, 3 to 5, 101 to 105	25%	75%	*
Central Coast	6 to 8	80% <sup>a</sup>	20% <sup>b</sup>	*
Rivers/Smiths Inlets	9 to 10	5%	95%	<sup>c</sup>

Notes on Sockeye allocation (north):

\* bycatch provisions

<sup>a</sup> share reflects current Sockeye bycatch during Pink directed fisheries

<sup>b</sup> potential for re-negotiation of sharing arrangements in event of a future directed Sockeye fishery

<sup>c</sup> potential for future re-negotiation

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Local	23	60.0%	40.0%	0.0%	0.0% <sup>c</sup>	0.0%
South -Fraser	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0.0% <sup>d</sup>	4.8%
South-Fraser – Large return year (eg. 2010, 2014, 2018)	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0% <sup>d</sup>	4.8%

Notes on Sockeye allocation (south):

<sup>c</sup> potential for future re-negotiation

<sup>d</sup> a 1% share to occur in large Fraser River return years only. A 1% reduction will be proportionately applied across other fleets in those years

**PINK**

Description	Areas	Seine A	Gill Net C	Troll F
North	1, 2E, 2W (even), 3 to 5, 101 to 105	75.5%	22.5% <sup>a</sup>	2.0%
Central	6 to 10	95.0%	5.0% <sup>b</sup>	*

Notes on Pink allocations (north):

\* bycatch provision

<sup>a</sup> Skeena sharing 75% seine: 25% gill net

<sup>b</sup> potential for future re-negotiation

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
Fraser	11 to 20, 29, 121, 123 to 127	82.5%	4.0%*	3.0%*	0.5% <sup>c</sup>	10.0%
Mainland	12 to 13 (mainland inlets only)	73.0%	9.0%	0.0%	0.0%	18.0%

Notes on Pink allocations (south):

\* Pink bycatch provision required for fisheries on more abundant species

<sup>c</sup> potential for future re-negotiation. Pink bycatch required for fisheries on more abundant species

<<NEW PRODUCTION AREA STARTED IN 2015>>

Description	Area	Troll F
A-B line Pink troll fishery	101	100%

**CHUM**

Description	Areas	Seine A	Gill Net C	Troll F
North	1, 2E, 2W, 101 to 111, 130, 142	54.0%	43.0%	3.0%
North	3 to 5	55.0% <sup>b</sup>	45.0% <sup>b</sup>	*
Central	6 to 10	45.0% <sup>c</sup>	55.0%	*

Notes on Chum allocations (north):

<sup>b</sup> recent Chum non-retention; fishery allows bycatch of Chum only

<sup>c</sup> currently Chum non-retention

\* bycatch provision

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Inside	11 to 19, 28 to 29	63.0%	19.2%	12.0%	0.0%	5.8%
Nitinat	21 to 22	65.5%	0.0%	34.5%	*	0.0%
South Outside	23 to 27	0.0% <sup>d</sup>	98.0%	0.0%	2.0%	0.0%

Notes on Chum allocations (south):

\* bycatch provision

<sup>d</sup> potential for future re-negotiation if Chum populations re-build

Commercial allocation sharing arrangements in Johnstone Strait are; seine Area B – 77 percent; gill net Area D – 17 percent; and troll Area H – 6 percent.

**COHO**

Description	Areas	Seine A	Gill Net C	Troll F
North	1 to 10, 101 to 111, 130, 142	12.5%	6.5%	81.0%

Notes on Coho allocations (north):



## 12 SOUTHERN BC COMMERCIAL FISHERIES

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Inside	11 to 20, 29	TBD	TBD	TBD	TBD	TBD
South Outside	21 to 27, 121 to 127	9.5%	9.5%	1.0%	80.0% <sup>a</sup>	0.0%

Notes on Coho allocations (south):

<sup>TBD</sup> currently no directed fisheries in this area. Will be reviewed should future directed opportunity develop.

Principles to be drafted regarding how to distribute impacts.

<sup>a</sup> Coho taken primarily in offshore fisheries

## CHINOOK

Description	Areas	Seine A	Gill Net C	Troll F
Northern BC AABM Chinook	1, 2E, 2W, 101-105, 130, 142	*	*	100.0% <sup>a</sup>
Central	6 to 10	*	100.0% <sup>b</sup>	* <sup>c</sup>

### << NEW PRODUCTION AREA STARTED IN 2015 >>

Description	Areas	Seine A	Gill Net C	Troll F
North-Inside	3 to 5	*	100.0% <sup>d</sup>	*

Notes on Chinook allocations (north):

\* bycatch provisions

<sup>a</sup> Northern BC AABM Chinook harvest

<sup>b</sup> near-terminal fisheries (primarily hatchery origin)

<sup>c</sup> review potential re-entry of troll into Production Areas 6 + 7. Bycatch provisions

<sup>d</sup> bycatch provision and near-terminal directed fisheries (e.g. Skeena)

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South- Inside	11 to 20, 29	1.0% <sup>e</sup>	3.0%	90.0% <sup>f</sup>	0.0%	6.0%
South - WCVI AABM Chinook	21, 23 to 27, 121 to 127	*	*	0.0%	100.0% <sup>g</sup>	0.0%

## &lt;&lt; NEW PRODUCTION AREA STARTED IN 2015 &gt;&gt;

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South- WCVI Inside	21 to 27	5.0% <sup>h</sup>	75.0% <sup>i</sup>	5.0% <sup>i</sup>	15.0% <sup>j</sup>	0.0%

Notes on Chinook allocations (south):

<sup>e</sup> subject review pending completion of southern BC Chinook initiative

<sup>f</sup> directed Fraser Chinook fishery

<sup>g</sup> this is WCVI AABM Chinook fishery

<sup>h</sup> Area 23 sharing arrangement currently 33.3% seine: 66.7% gill net. May need to review

<sup>l</sup> Area 25 fishery (potential for future review. 75% fishery to Area D (e.g. Conuma Bay fishery); potential 5% to Area E if future surplus at Nitinat; otherwise default to Area D)

<sup>j</sup> winter troll fishery

## 12.6 CONSERVATION MEASURES

### 12.6.1 SELEVTIVE FISHING

The Department will work with Area Harvest Committee representatives to implement selective fishing measures to avoid non-target fish or, if encountered, to release them alive and unharmed. These measures include but are not limited to: the use of troll plugs, Alaska twist gill nets, maximum gill net set time and net length, gill net mesh size, gill net depth, seine bunt mesh size, brailing and sorting for seine vessels, and revival tanks.

### 12.6.2 ROBSON BIGHT

DFO will once again be seeking the co-operation of harvesters in minimizing fishing activities in Robson Bight. This is part of a long-term management plan to afford protection to the killer whale populations that frequent this area during periods from mid-May to early October. Fish harvesters are requested not to moor in the Robson Bight area. See Section 5 – Southern Resident Killer Whales for more information. Information on this management initiative can also be obtained from Department charter patrol vessels on the grounds and from Fisheries and Oceans Canada offices.

### 12.6.3 ROCKFISH CONSERVATION MEASURES IN SALMON TROLL

#### BOCACCIO

Bocaccio was recommended as “threatened” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2006. Following consultation and review, the Government of

Canada decided not to add Bocaccio to the list of wildlife species at risk. COSEWIC reassessed Bocaccio in November 2013 and recommended it as “endangered”: <https://species-registry.canada.ca/index-en.html#/species/740-315>.

Based on updated science information and DFO’s policy document “Guidance for the Development of Rebuilding Plans under the Precautionary Approach Framework”, the Department set out a rebuilding plan in 2013 for stepped reductions of total Bocaccio harvest to a target level of 75 tonnes over 3 years (2013-14 to 2015-16). The rebuilding plan accounts for First Nations’ priority access for food, social, and ceremonial purposes. Through the process of regular evaluation of the rebuilding plan, science advice on stock status and rebuilding strategies for Bocaccio was peer-reviewed in autumn 2019. Based on updated science information, the 2021/22 mortality cap for Bocaccio will be increased to 500 t, in the same proportion as the 2013 mortality cap. The Bocaccio mortality cap for the salmon troll fishery is 24 tonnes and is subject to daily limits specifically for Bocaccio (please refer to Conditions of Licence for details).

More information on the Bocaccio Rebuilding Plan is available in Appendix 9 of the Groundfish IFMP, which will be linked in the final salmon IFMP once available.

### **YELLOWEYE ROCKFISH**

Yelloweye Rockfish (Outside and Inside populations) was recommended as “threatened” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 2020: <https://species-registry.canada.ca/index-en.html#/species/1023-707>.

In 2015 the Department set out a plan for stepped reductions of total Yelloweye outside population harvest from the estimated total catch mortality of 287 MT in 2014 to a mortality cap of 100 MT over 3 years (2016-17 to 2018-19). Through the process of regular evaluation of the rebuilding plan, science advice on stock status and rebuilding strategies for Yelloweye Rockfish outside population was peer-reviewed in autumn 2019 (Outside population) and spring 2020 (Inside population). Based on updated science information, the 2021/22 mortality cap for Yelloweye Rockfish outside population will be increased to 217 t. Based on updated science information, the 2021/22 mortality cap for Yelloweye Rockfish inside population will remain at 15 t.

Additional information is available in Appendix 9 of the Groundfish IFMP, which will be linked in the final salmon IFMP once available.

## 12.7 COMMERCIAL DEMONSTRATION FISHERIES

The Department has conducted extensive consultations with the commercial salmon industry and First Nations concerning fisheries reform and renewal. Changes in the fishery will be designed to improve biological and economic performance of the fishery.

In an ever-changing environment such as resource conservation, a group may want to explore special harvesting initiatives or new management approaches to develop flexible fisheries with greater harvester control that improve product quality, increase value to the fleet and have better catch monitoring and compliance with catch limits.

The Department is interested in continuing to explore innovative ways to access TAC more efficiently, to increase market value of the product, or to access TAC that may be unavailable due to conservation concerns or that a full fleet fishery is unable to access.

To contribute to the Pacific Fisheries Reform vision, the Department will consider demonstration projects that support alternative management strategies that:

- Maintains or improves management control and conservation performance in the fishery;
- Promotes the use of clearly defined shares to improve manageability and industry viability; and
- Increases the ability of harvesters to work cooperatively to harvest available surpluses and to take on greater responsibility for control and monitoring of their fishery.

Details regarding demonstration fisheries that the department is considering are contained in Section 13 - Species Specific Salmon Fishing Plans.

In addition to existing demonstration fisheries within Section 13, additional opportunities to demonstrate flexible harvest arrangements were initiated in 2016 in support of updates to the Commercial Salmon Allocation Framework (CSAF). Guidelines and principles associated with work to update the CSAF as well as CSAF demonstration fishery proposals received for consideration in 2021 are included in [Appendix 6](#).

### 12.7.1 **TRANSFER GUIDELINES FOR THE TEMPORARY TRANSFER OF COMMERCIAL SALMON SHARES**

In consideration of discussions with the First Nations SCC, the CSAB and any feedback received, these guidelines will be reviewed and may be updated annually. **For 2021 there are no proposed updates and the transfer guidelines have remained unchanged since 2017.**

These guidelines address the transfer of commercial salmon shares between the following groups:

- a) Area A-H Fishery participants with a defined percentage share of the commercial TAC
- b) Area A-H fleets or portions of fleets or individual licences
- c) Marine Demonstration Fishery participants
- d) In-river Demonstration Fishery participants
- e) First Nations with one or more Area A-H licences
- f) First Nations entities who are signatories to current arrangements or area provided communal licences allowing sale that provides a defined commercial share of salmon for the given year including;
  - Economic Opportunity agreements
  - Harvest Agreements
  - Demonstration Fisheries

Transfers of harvest shares may occur when there is a formal arrangement outlining possibilities as defined by the Guiding Principles and Operational Considerations below, (approved by DFO) between the original share-holders and the recipient. Requests can include transfer from downstream to upstream locations, and vice versa. These arrangements should identify mechanisms pre-season that will be used for transfers to ensure proper management and accounting of shares (Actual transfers may occur in-season; e.g. between ITQ fishery participants using established transfer request processes). For transfers of commercial licences, arrangements will need to be made in advance of the fishery opening for which the transfer is intended to apply to ensure appropriate allocations associated with the licence can be set aside.

In-season proposals to transfer uncaught commercial Total Allowable Catch (TAC) allocations between the above groups will reviewed and DFO will determine whether to allow the transfer of some or all of the uncaught TAC.

Requests for temporary transfers of commercial salmon shares will be reviewed with consideration to the following general principles and the operational considerations identified below.

A) Guiding Principles for Temporary Transfer of Salmon Shares:

- 1) Result in similar or better management control and/or conservation performance in the fishery (both for target and bycatch species/stocks)
- 2) Consistent with conservation measures and allocation approaches (if any) for stocks of concern, including bycatch species/stocks;
- 3) Respect existing aboriginal and treaty rights and the priority of Food, Social and Ceremonial access.
- 4) Consistent with international obligations;
- 5) Consistent with objectives and management measures outlined in Salmon Integrated Fishery Management Plans;
- 6) Respect the Common property nature of the fisheries resource: subject to Principle 3, access to the resource does not imply ownership of the resource or any portion of the resource, and is not conferred irrevocably to individuals.
- 7) Support opportunities to utilize Canadian commercial total allowable catch while respecting conservation requirements.
- 8) First Nations commercial fisheries and Area A-H commercial fisheries conducted in tidal waters will be managed under common and transparent rules for each gear type. For example, First Nations commercial troll fisheries conducted in tidal waters where Area F licences are permitted to operate will be managed in accordance with the same rules as the Area F commercial fishery for those tidal waters.
- 9) First Nations commercial fisheries conducted in non-tidal waters will be managed under transparent rules that are consistent with the rules used to manage marine commercial fisheries that target similar stocks associated with that production area.
- 10) Affordable to implement i.e. would not result in any substantive incremental costs to DFO in areas such as monitoring stock assessment and enforcement.

B) Operational Considerations Regarding Requests for Temporary Transfers:

- 1) Transfers of commercial salmon allocation shares will only occur when there is a Canadian commercial Total Allowable Catch (TAC) (i.e. commercial harvestable surplus) identified for the target stock or species which is available for harvest.
- 2) Transfers of commercial salmon shares between parties will only be considered for commercial fisheries and commercial participants with a clearly defined percentage share of the Canadian commercial total allowable catch.
- 3) In most cases, transfers will be based on a percentage share of the available commercial TAC. Alternate approaches for calculating transfer shares may be considered.
- 4) In-season transfers may occur if pre-season plans outline possibilities. For share transfers between Area A-H commercial fisheries, individual salmon shareholders or groups of salmon shareholders; the mechanism (e.g. tracking, management and accounting of shares) for facilitating transfers needs to be described and agreed upon by all parties to the arrangement and DFO pre-season. Individual commercial licence holders or groups of commercial licence holders will not be permitted to make their own allocation transfer arrangements unless these are part of a pre-season plan approved by the Department.
- 5) DFO will not be responsible for leading or facilitating the negotiation of transfer arrangements between parties.
- 6) For commercial salmon licences held by the Department, individual licence allocations will be based on an equal percentage allocation of the commercial TAC for all licences in that commercial licence area (i.e. Areas A to H).
- 7) If, despite the best efforts of any commercial harvest group, it becomes apparent that it will be unable to harvest its share, and no mechanisms are in place that would permit the transfer of the share to another commercial harvest group, the Department may consider transfers of uncaught commercial harvest shares to any other commercial harvest group already holding a clearly defined percentage share of the Canadian commercial total allowable catch, on a case by case basis, assuming that harvest can occur using fishing methods, times and locations permitted for that commercial harvest group.
- 8) Transfers of commercial salmon allocations must consider shares of all stocks that will be harvested in the recipient area.

- a) Allocations transferred inland will be reduced proportionately to reflect the reduced stock composition in the more terminal harvest location (e.g. Area F troll licence shares allocated to the Kamloops Lake inland demo fishery will be only for the proportion of Thompson Chinook encountered in the marine commercial troll fishery). Alternative approaches may be considered in specific circumstances (e.g. allocation may not be proportionally reduced if harvest of an allocation in a terminal area reduces impact on stocks of conservation concern). DFO will document the rationale for its decision and make it publicly available.
  - b) For co-migrating stocks or management units of concern or where little or no Commercial TAC has been identified, transfers will need to consider and/or mitigate potential impacts. For example: access to a harvest share of Fraser Pink salmon might require the fishing group or individuals to have some Sockeye remaining in their harvest share of co-migrating Fraser Sockeye.
  - c) For co-migrating stocks/species or management units of concern where exploitation rate caps or some other limit on mortalities have been defined (e.g. Interior Fraser River Coho), the parties to the transfer arrangements are responsible for demonstrating that the transfer arrangement will be neutral or of benefit to the stock or management unit of concern (i.e. same or lower impact in the new fishing area). Limiting stocks/species will only be transferred to the extent needed to harvest the target stock transfer amount with residual amounts being available for the use by all other commercial harvest groups with a share of the targeted stocks.
  - d) Transfers into areas that require management adjustments need to be accounted for in determining TAC (e.g. a similar accounting process to current Fraser Sockeye).
  - e) Priority will be given to those proposals that allow shares to be harvested using fishing techniques that are more selective than the original technique, and / or allow harvesting in fishing areas that avoid stocks or management units of concern.
- 9) Harvest of commercial salmon allocations is not guaranteed and actual harvest opportunities may be limited by constraints to protect species or stocks of concern. Commercial fishery participants that demonstrate an ability to fish selectively may be able to access a greater amount of their harvest share.



- 10) Enhanced fisheries monitoring and catch reporting programs must be in place for participants to ensure that there is reliable accounting for both retained and released fish and that harvests do not exceed defined shares. Incremental monitoring costs will not be assumed by DFO, and will need to be covered by parties to the transfer arrangement.
- 11) Proposals for transfer arrangement must include contingencies for situations where shares are exceeded. Parties not complying with agreed-to arrangements could face enforcement actions.
- 12) Transfers of commercial salmon shares will not be permitted when this may adversely affect First Nations Food, Social and Ceremonial harvest opportunities in the area.
- 13) Surpluses of salmon in terminal areas (i.e. ESSR fisheries) will continue to be managed using existing ESSR guidelines.

All decisions regarding temporary salmon share transfers are one-time only. Unless otherwise communicated by DFO at the time of the decision, all future transfer requests must undergo new process of application, review and approval from DFO.

### **12.7.1.1 NEW 2021 TRANSFER PROPOSAL**

The Area H Harvest Committee has submitted a salmon transfer request for the possibility to transfer available Cowichan River Chum commercial TAC with Area H, Area E and Cowichan Tribes First Nation EO & demonstration fisheries. The discussions are preliminary and will continue with the Area Harvest Committees and Cowichan Tribes First Nations. No changes will be made until details are finalized and changes are accepted by the Harvest Committees and Demonstration Fisheries participants. For details of the full proposal, please contact [Ge.Li@dfo-mpo.gc.ca](mailto:Ge.Li@dfo-mpo.gc.ca) or [Christine.Bukta@dfo-mpo.gc.ca](mailto:Christine.Bukta@dfo-mpo.gc.ca).

# I3 SPECIES SPECIFIC SALMON FISHING PLANS

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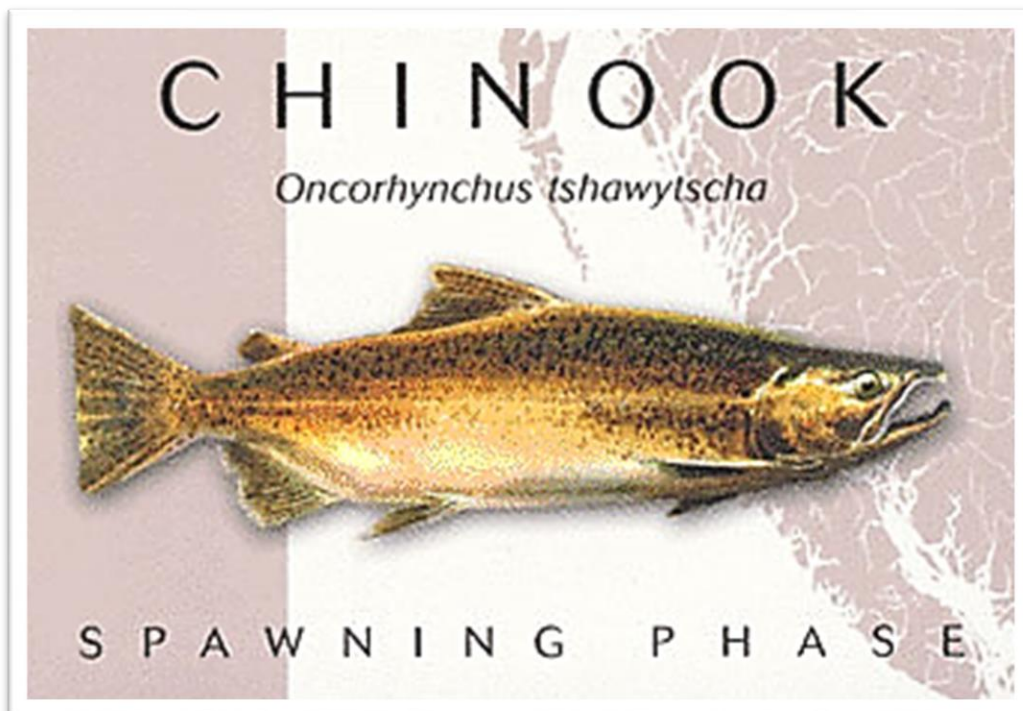
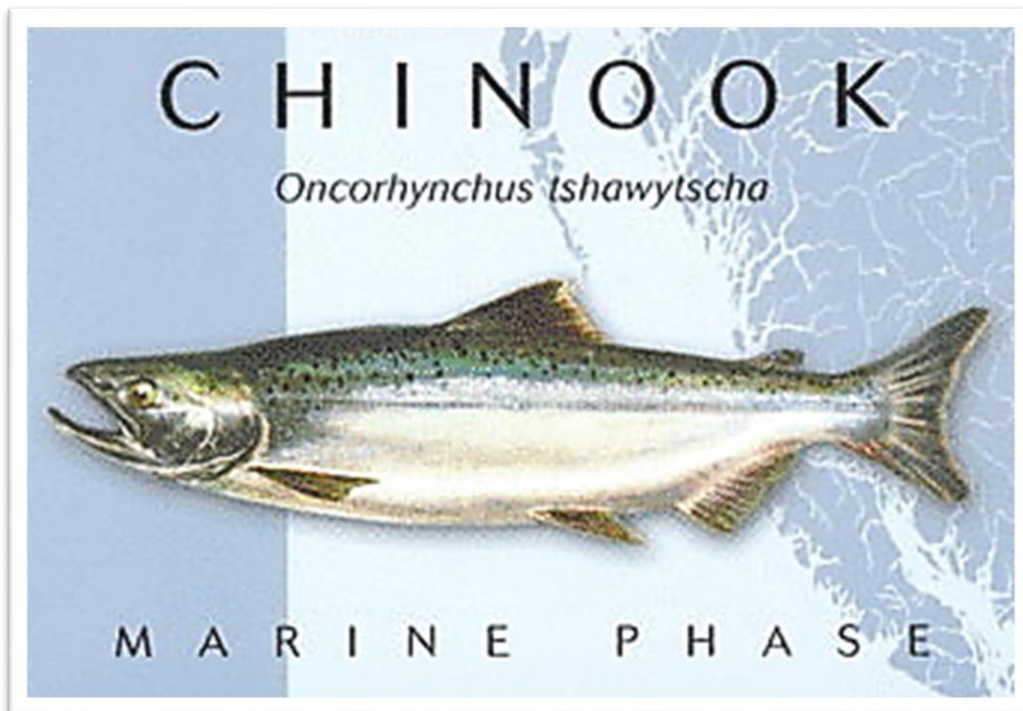
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## 13.1.1 NORTHERN CHINOOK OVERVIEW

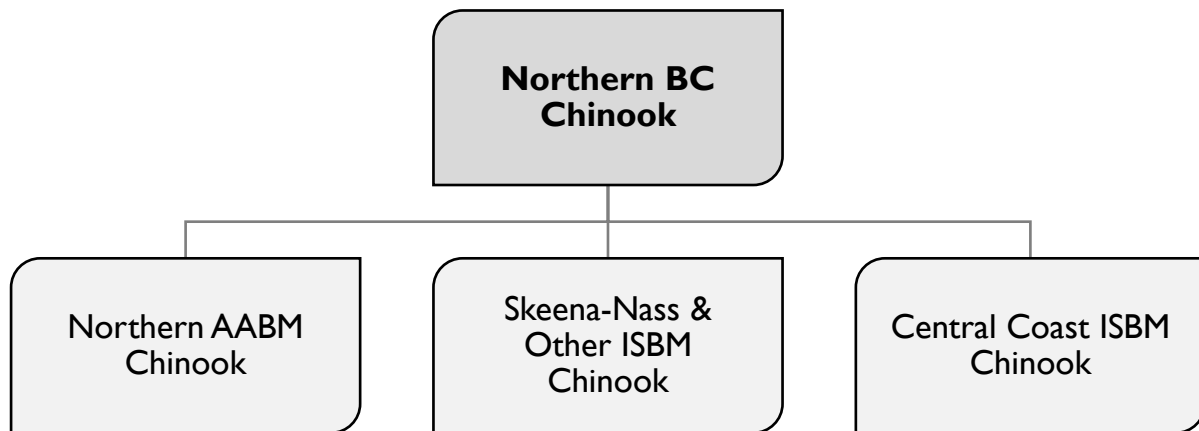


Figure 13.1-1: Overview of Northern Chinook salmon

Chinook salmon fisheries in British Columbia are managed under the umbrella of the Pacific Salmon Treaty (PST) between Canada and the United States of America. Canada's domestic management considerations include stocks of concern, allocations between sectors, and application of selective fishing practices.

With the exception of the Transboundary Rivers, the basis for managing fisheries impacting Chinook salmon from Alaska to Oregon is the Chinook abundance-based management system in Chapter 3 of the PST. This management system was adopted in 1999 and defined harvests of Chinook through 2008. Chapter 3 of the PST was revised for implementation in 2009 to maintain the abundance-based management framework established under the 1999 Agreement until 2018. This chapter was recently re-negotiated and the updated version implemented as of January 1, 2019 for a ten-year period.

Further explanation and the text of the Chinook salmon agreements can be found on the PSC website at:

<https://www.psc.org/>

Accounting of Chinook salmon fisheries for the PST occurs from October 1 in one calendar year, to September 30 in the next calendar year.

Two types of fisheries are identified in the PST, Chapter 3:

Aggregate Abundance Based Management (AABM) fisheries; and

Individual Stock Based Management (ISBM) fisheries.

Within the PST Chinook management framework, Canadian domestic policy further defines fishing opportunities. The domestic objectives or policies which affect fishing opportunities include: conservation, Canada's constitutional obligations to First Nations, the Wild Salmon Policy (WSP), An Allocation Policy for Pacific Salmon, and the Policy for Selective Fishing in Canada's Pacific Fisheries.

### **13.1.1.1 OVERVIEW OF NORTHERN CHINOOK CONSERVATION CONCERNS**

Escapement of northern Chinook salmon declined dramatically in recent years. Reduced survival rates and productivity have been observed across British Columbia and South East Alaska. This led to unprecedented declines of northern Chinook in 2017 and triggered significant management measures that were implemented for 2018 salmon fisheries and again in 2019 and 2020. Post season evaluation of Nass and Skeena Chinook returns in 2019 and 2020 were poorer than expected. For 2021, management measures will be put in place to support conservation and promote rebuilding of Skeena Chinook. A suite of proposed measures modelled on the actions taken in 2018, including spatial and temporal closures and quota reductions, have been included in this plan. These proposed management actions will be informed by consultations with First Nations and stakeholders both bilaterally and within the IHPC process.

To address Fraser Chinook conservation concerns for the 2021 season, the Department is continuing the precautionary approach for Fraser River Chinook populations (including Spring 42, Spring 52, Summer 52, and Fall 41) to support conservation and promote rebuilding. These measures are planned in addition to existing fishery management measures already in place. Management measures implemented in 2019 and 2020 are being reviewed to consider potential measures for implementation in the 2021 season for Northern BC AABM troll fisheries.

### **13.1.1.2 OVERVIEW AABM FISHERIES**

Chinook salmon fisheries implemented under the PST AABM management regime include three mixed-stock fisheries:

- Southeast Alaska recreational, net and troll (SEAK);
- Northern British Columbia troll and Haida Gwaii (Queen Charlotte Islands) recreational (NBC); and
- West Coast of Vancouver Island troll and outside recreational (WCVI).

These fisheries are managed to an annual total allowable catch (TAC) based on the forecast abundance of the aggregate of stocks that contribute to each fishery. Annual quotas for each AABM fishery are developed by prediction of Chinook salmon abundance based upon a Cohort analysis model. For NBC fisheries, a single AABM quota is applied to troll fisheries Pacific Fishery Management Areas (PFMA) 1 to 5, 101 to 105 and 142 and to recreational fisheries in PFMA's 1, 2, 101, 102 and 142.

In Canada, conservation is the first priority in fisheries management. Once conservation obligations are met, priority access is given to First Nations for food, social, ceremonial, and treaty requirements. Once those obligations are met, priority access to Chinook salmon is provided to the recreational fishery, with commercial fisheries next in priority. Once the AABM quota is defined for the combined troll and recreational fishery, the projected recreational catch is subtracted from the TAC, with the remainder allocated to the troll fishery. Thus, the troll fishery is the first fishery to be impacted if stocks of conservation concern require management actions in NBC fisheries. Management constraints to the fishery include management for stocks of conservation concern, minimizing encounters of undersized Chinook salmon and non-target species and minimizing fisheries where legal and sublegal-sized Chinook salmon have to be released.

Canadian Chinook fisheries in all other areas of the North and Central Coast are managed as ISBM fisheries.

### 13.1.1.3 OVERVIEW ISBM FISHERIES

Under the PST, an ISBM fishery is an abundance-based regime that constrains to a numerical limit the total catch or the total adult equivalent mortality rate within the fisheries of a jurisdiction for a naturally spawning Chinook salmon stock or stock group. For Canadian ISBM fisheries, the agreement identifies a general obligation that limits the total adult equivalent mortality rate across all fisheries for individual stock groups to 63.5% of that which occurred in the 1979 to 1982 base period.

ISBM management regimes apply to all Chinook salmon fisheries subject to the PST that are not AABM fisheries and include marine and freshwater salmon fisheries from northern British Columbia to northern Oregon coast. ISBM fisheries for Chinook salmon in the North and Central Coast include all First Nations fisheries in both marine and fresh waters, all commercial gillnet and seine fisheries, all freshwater recreational fisheries, marine recreational fisheries in PFMA's 3 to 10, 103 to 110 and 130, and troll fisheries in PFMA's 6 to 10, 106 to 110 and 130.

### 13.1.1.4 NORTHERN CHINOOK ENHANCEMENT INFORMATION

The major BC North Coast DFO operation enhancement facilities that produce Chinook are:

- Kitimat River hatchery
- Snootli Creek hatchery

There are two Chinook salmon exploitation rate indicator stocks in the North Coast that rely on hatchery production of coded wire tagged releases. The Atnarko River Chinook indicator stock is produced at the Snootli Creek Hatchery and the Kitsumkalum River Chinook indicator stock is produced at Deep Creek Hatchery. Deep Creek Hatchery does not appear in the list above since it is not considered a major DFO Operations facility and these fish are raised for assessment purposes only.

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), Public Involvement Projects (PIP and DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS).

There are two datasets available: **Post-Season Production** from the 2019 brood year (i.e. 2020 releases, and numbers on hand for 2021 release), and the **Production Plan**, which includes proposed targets for the upcoming 2021 brood year. These are available at the following website:

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/ifmp-pgip-eng.html>

- For 2021, the Kitimat Chinook egg target has been adjusted in an effort to achieve egg targets on a consistent annual basis. Although originally set at 2.3M, the number of eggs collected annually over the past 10 years has averaged ~1.7M, mostly due to many biological and logistical challenges related to brood collection. Therefore, it was decided and supported by various sectors within DFO to adjust the egg target to 1.5M, in order to improve the consistency of Kitimat Chinook production across all cycle lines, which in turn would be expected to improve the ability to manage fisheries around this piece of production.

## 13.1.2 NORTHERN AABM CHINOOK

### 13.1.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

An AABM fishery is an abundance-based regime that constrains catch or total mortality to a numerical limit computed from a pre-season forecast of abundance, from which a harvest rate index can be calculated, expressed as a proportion of the 1979 to 1982 base period. Although in-season estimates of abundance are permitted under the PST, none have been approved by the Chinook Technical Committee (CTC) for use in Canadian AABM fisheries.

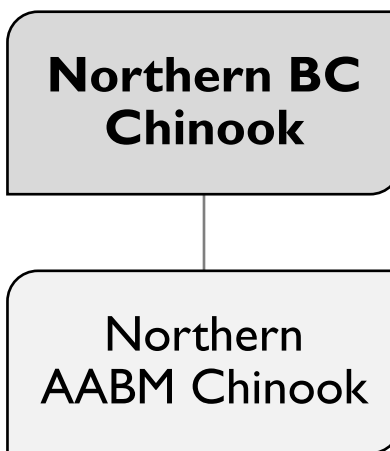


Figure 13.1-2: Overview of Northern AABM Chinook

The Northern AABM fishery includes commercial troll caught Chinook salmon in Pacific Fishery Management Areas 1 to 5, 101-105 and 142 and recreational Chinook fisheries in Haida Gwaii in Areas 1, 2, 101, 102 and 142.

The AABM Chinook fishery targets Canadian and U.S. origin wild and enhanced Chinook populations. The main components of the harvest are U.S. and Fraser origin Chinook; however, most BC Chinook conservation units may be encountered in this area. Most of the catch consists of mature fish migrating to spawn but a small portion of the catch includes immature or rearing fish (feeders).

### 13.1.2.2 STOCK ASSESSMENT INFORMATION

#### 13.1.2.2.1 Pre-season

See Appendix 10: 2021 Preliminary Salmon Outlook for more information.



The Chinook Technical Committee (CTC) provides a final calibration of the Chinook Model annually. The completed calibration provides the Abundance Indices (AI) that are required for determining the pre-season estimated allowable catches for the three AABM fisheries.

The Chinook Technical Committee (CTC) provides a final calibration of the Chinook Model annually. The completed calibration provides the Abundance Indices (AI) that are required for determining the pre-season estimated allowable catches for the three AABM fisheries.

<b>Pre-season Abundance indices and associated allowable catches for the October 1, 2020 to September 30, 2021 NBC AABM Fisheries:</b>	<b>SEAK</b>	<b>NBC</b>	<b>WCVI</b>
<b>Abundance Index</b>	3.85 (CPUE)*	1.27	0.76
<b>Allowable Catch</b>	205,165	153,800	88,000

\*SEAK uses a CPUE model (not an AI) to determine annual allowable catch

**13.1.2.2.2 In-season**

Sport and troll catch and effort in NBC are monitored in-season. Genetic samples are collected from Chinook salmon caught in both fisheries and troll fishery samples are analyzed in-season. Troll effort data are monitored to inform the effort-based approach to predict WCVI Chinook harvest rates by the Area F Troll fishery.

**13.1.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Within the PST Chinook management framework, Canadian domestic policy further defines fishing opportunities. The domestic objectives or policies which will most affect fishing opportunities include conservation, Canada’s constitutional obligations to First Nations, the WSP, *An Allocation Policy for Pacific Salmon*, and the *Policy for Selective Fishing in Canada’s Pacific Fisheries*. Domestic conservation concerns may reduce the TAC to levels less than identified under the PST Chinook AABM fisheries.

When there is a TAC identified for the AABM management area, targeted Chinook fisheries are planned for recreational and commercial sectors. The table below describes management measures that will be taken to minimize impacts on stocks of concern in AABM Chinook fisheries.

Table 13.1-1: Stock management actions anticipated in Northern British Columbia AABM Chinook fisheries to limit impacts on stocks of concern

Stock of Concern (constraint)	First Nations (FN) Fishery	Recreational Fishery	Commercial Fishery
<b>Nass / Skeena Chinook</b>	No impacts on First Nations fisheries anticipated	Management actions to reduce impacts on Skeena Chinook stocks similar to those implemented in 2018; proposed limit reduction and/or closure window during peak Skeena timing	Area F – Fishing plans to be confirmed before final IFMP. Consultations ongoing through Spring 2021.
<b>WCVI Chinook</b>	No impacts on First Nations fisheries anticipated	No impacts on North Coast recreational fisheries anticipated	Area F – restrictions in the North Coast troll fishery to limit ER to 3.2%. Time and area closures and effort limits.
<b>Fraser River Chinook</b>	No impacts on First Nations fisheries anticipated	No impacts on North Coast recreational fisheries anticipated	Management measures implemented in 2019 and 2020 are being reviewed to consider potential measures for implementation in the 2021 season.

The Department manages domestic stocks of concern using various approaches. Management actions in northern fisheries to reduce impacts on Fraser River 4<sub>2</sub> and 5<sub>2</sub> Chinook includes delaying the start of the Area F Troll fishery to allow these stocks to migrate through the area. The Area F Chinook troll fishery is also managed to limit its catch of WCVI Chinook to 3.2% of the return to Canada. The Department developed and implemented an in-season management tool to estimate the WCVI harvest rate in 2014. This approach uses the historical daily fishing effort daily WCVI Chinook catch derived from DNA-based stock composition estimates and post-season estimates of WCVI returns to Canada.

For 2021, the Area F fishery: The Department intends to implement management measures that were announced for the 2020 season beginning April 1<sup>st</sup>, 2021 as interim measures to provide time for a technical review of the 2020 fishery management measures and completion of consultations on possible adjustments to these management measures. The Department is

seeking feedback from First Nations and established advisory groups on potential adjustments to 2020 management measures that should be considered for 2021/22. The final IFMP will be updated to reflect final approved measures.

The Department will continue to collect and analyze DNA samples from the catch which will be used for post-season identification of stock composition in the catch and post-season evaluation of management objectives.

The projected catch of Chinook by the Haida Gwaii recreational Chinook fishery for 2021, based on normal limits, is 45,100. If the in-season estimate of total annual recreational catch is expected to be less than the forecasted amount, a portion of the total AABM TAC may be reallocated to the troll fishery. In this case, the amount will be divided up amongst licences based on their in-season proportion of the troll TAC, after all transfers have been taken into account.

**13.1.2.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO AABM CHINOOK FISHERIES**

AABM fisheries may be subject to constraints due to concerns for specific domestic stocks and or co-migrating species (such as Coho) as described in the table below.

Fishery Period	Risk of impact on stocks of concern
Oct. – Jan	Low risk. This period is outside the migration timing and area for stocks of concern such as WCVI Chinook, Fraser River Spring 4 <sub>2</sub> and Spring and Summer 5 <sub>2</sub> Chinook.
Feb. – June	High risk. Specific concerns for WCVI and spring timed Fraser River 4 <sub>2</sub> and 5 <sub>2</sub> Chinook as these stocks are prevalent during parts of this period. For 2021 there is heightened concern for Fraser Chinook. Risk declines in August as the majority of Fraser River Spring stocks have migrated out of the area by early July. Impacts on WCVI Chinook are reduced by time and area restrictions.

Fishery Period	Risk of impact on stocks of concern
July	<p>Low risk for WCVI Chinook. Spatial restrictions are implemented to avoid areas with higher prevalence of WCVI Chinook. Fishery is managed to ensure NBC troll impacts do not exceed 3.2% ER.</p> <p>Continuing high risk for Fraser River Spring 4<sub>2</sub> and Spring and Summer 5<sub>2</sub> Chinook. Management actions in 2021 include delaying start of the troll fishery until mid-August to pass more abundant Fraser stocks to higher priority fisheries.</p>
August	<p>Moderate risk. Specific concerns for WCVI Chinook as peak migration of this stock through the area occurs during August. Reduced NBC troll Chinook fishing opportunities during August.</p>
September	<p>Low Risk. WCVI Chinook may be avoided by area restrictions. Risk declines through September as most stocks of concern have migrated out of the area in September.</p>

In addition to the poor outlook for Fraser River Spring 4<sub>2</sub> and 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook, very poor returns are expected for Chinook across many parts of the region. The Department will therefore continue with the precautionary management strategy for 2021 that may include TAC reductions in addition to targeted time and area closures in areas where stocks of concern are prevalent. Additional restrictions may be implemented if required.

The Area F Chinook fishery will close on September 30th which is defined as the end of the AABM Chinook fishing year within Chapter 3 of the Pacific Salmon Treaty. All Chinook must be unloaded and validated within 5 days of the closure date.

### 13.1.2.5 ALLOCATION AND FISHING PLANS

#### 13.1.2.5.1 First Nations Fisheries

##### *Food, Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations

are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section 10.2 for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive, and at the end of each month between November 1 and March 31.

### *Treaty Fisheries*

There are no Treaty fisheries for Northern AABM Chinook.

#### **13.1.2.5.2 Recreational Fisheries**

The recreational total annual limit for Chinook from any tidal waters was set at 10 Chinook in April 2019 as part of conservation measures to address the poor status of many Chinook stocks in BC. This annual limit remained in place for 2020/21 and DFO is proposing to maintain this annual limit for the 2021/22 season. Feedback is requested on this approach and a decision will be included as part of the IFMP development process. Recreational anglers must record all Chinook retained catch either on their licence, or if mobile internet access is immediately available, the licence holder may alternatively record catch immediately in their National Recreational Licensing System (NRLS) account. DFO is also proposing to reduce the number of slots on the recreational licence to match the annual limit in effect at the time of licence issuance, pursuant to that decision.

Sport fisheries in Canada receive priority access over commercial fisheries to Chinook salmon. Two of the largest recreational fisheries in Northern BC (NBC) occur in Haida Gwaii and

Chatham Sound. NBC recreational fisheries experienced significant growth until 2005 when they reached a maximum catch of 82,000 Chinook. Since that time, catches have fluctuated between 40,000-55,000 Chinook salmon annually. In 2020, recreational fishing effort was greatly reduced due to COVID related travel restrictions and the estimated tidal sport catch was 6,087 Chinook salmon for Areas 1 and 2 combined. AABM recreational Chinook fisheries occur in the tidal waters surrounding Haida Gwaii, with the majority of effort focused along the shoreline from Masset to Langara Island in Area 1 and between Englefield Bay and Port Louis in Area 2W. Recreational fishing occurs primarily between May and September with peak effort and catch occurring in July and August. The daily aggregate limit for salmon is four (4) per day.

Updates to recreational fisheries are provided via Fishery Notice and published on the recreational fisheries website at:

<http://www.bcsportfishingguide.ca>

### *Fishery Monitoring and Catch Reporting*

In DFO has been collecting recreational catch data through the Lodge Log Book Program and the Haida Creel Program since 1995. Participation in monitoring and reporting of recreational catch in Areas 1 and 2 has been excellent over the past 26 years. Monitoring is continuing to improve with region-wide initiatives.

#### **13.1.2.6 ALLOCATION**

For PST purposes, the accounting year for Chinook runs from October 1 to September 30 of the following year. The northern B.C. AABM total allowable catch (Management Areas 1 to 5) for 2021 is 153,800.

##### **13.1.2.6.1 Recreational Fisheries**

The expected harvest of Chinook by the Haida Gwaii recreational Chinook fishery is 45,100. The recreational harvest will be re-assessed in-season. If the in-season estimate of total annual recreational catch is anticipated to be less than the forecasted amount, a portion of the total AABM TAC may be reallocated to the Area F troll fishery. If this is the case, the amount will be divided up amongst licences based on their in-season proportion of the troll TAC, after all transfers have been taken into account.

##### **13.1.2.6.2 Commercial Fisheries**

The preliminary Area F troll allowable catch is 108,700 (The total AABM for northern BC minus the recreational expected harvest).

*Specific Conservation Measures:*

The Department is implementing reductions in Chinook harvest targeted for specific stocks of concern in 2021, specifically several Fraser River stocks of concern, and Skeena River stocks. Management measures for the Area F troll fishery to reduce impacts on these stocks will be determined through consultations with First Nations and stakeholders through Spring 2021. The fishery will be further restricted by area closures to restrict impacts to a maximum 3.2% harvest rate objective on WCVI Chinook.

*Allocation*

The overall TAC for northern BC Chinook fisheries is calculated using the Abundance Index (AI) determined by the Chinook Technical Committee of the PSC. The commercial TAC is derived by deducting the expected use by the Haida Gwaii recreational fleet from the overall TAC for northern BC AABM Chinook.

Table 13.1-2: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
<b>Northern BC AABM Chinook</b>	1, 2E, 2W, 101-105, 130, 142	*	*	100.0% <sup>a</sup>

Notes on Chinook allocations (North):

\* by-catch provisions

<sup>a</sup> Northern BC AABM Chinook harvest

*AABM Chinook Fishing Plan**Area F Troll Fishing Plan*

All dates are anticipatory. Subareas open and hours of fishing will be announced in fishery notices prior to openings.

Please note: All Chinook must be validated within 5 days of a Chinook closure.

The number of Area F troll licences is 217 and the number of Chinook for each Area F licence based on an Individual Transferable Quota (ITQ) will be 0.4608 % of the Area F TAC. The troll fishery will be managed to a maximum 3.2% harvest rate on WCVI Chinook.

The Chinook fishery will be conducted under the ITQ rules. With the management measures to reduce impacts on Fraser Chinook similar to 2020, the opening of the fishery will be delayed to approximately mid-August. As such, there is expected to be a low likelihood of the fishery

exceeding the 3.2% harvest rate on WCVI Chinook. The harvest rate is determined in-season by the relationship between effort and harvest rate developed from historical DNA catch information. The harvest rate will be validated by CWT and DNA analysis of catch post-season. The fishery will close on September 30th.

The ceiling on the number of uncaught Chinook that can be held on any single licence is the equivalent to the sum of three licence ITQ allocations which equates to 1.38% of the TAC. The amount of uncaught quota shall be determined by fisher-supplied catch reports, dockside validations or a combination of the two. This is intended to prevent speculation and large scale amassing of quota.

**All Areas and Subareas mentioned are subject to change in-season.** Below is a list of areas and Subareas expected to open:

Subareas 1-1, 101-1, 101-2, 101-4, 101-5.

Those portions of Subareas 1-2, 1-3 and 1-7 that are outside and seaward of 1 nautical mile from the Graham Island and Langara Island shorelines (defined at the mean high water mark).

Subarea 1-5, inside or shoreward of a line commencing at Wiah Point then following the Subarea boundary east for one nautical mile, then running parallel to the mean high water mark of Graham Island at a distance of one nautical mile to a point true north of Skonun point, then running true south to Skonun Point.

Those portions of Subareas 101-3, 101-6 and 101-7 except those portions inside or shoreward of a line commencing at 54 degrees 14.976 minutes north latitude and 133° 04.386 minutes west longitude then true west for one nautical mile then north and east running parallel to the mean high water mark of the shorelines of Langara Island and Graham Island at a distance of one nautical mile.

That portion of Subarea 2-88 north of 53 degrees 37-minutes north latitude. Subareas 2-92, 2-97, 2-98.

That portion of Subarea 142-2 north of 53 degrees 37-minutes north latitude.

The Frederick Island Rockfish Conservation Area remains closed to hook and line fisheries (see below for description).

Those portions of Subareas 1-1, 101-1 and 142-2 that lies outside a line that: begins at 53 degrees 56.246 minutes north and 133 degrees 17.500 minutes west then true East to 53 degrees 56. 246 minutes north and 133 degrees 11.862 minutes west (Hope Point) then to 53 degrees 57.144 minutes north and 133 degrees 07.938 minutes west (Graham Island) then southerly following



the shoreline of Graham Island to the intersection with 53 degrees 47.0 minutes north, then to 53 degrees 47.00 minutes north and 133 degrees 10.00 minutes west thence to the beginning point.

The above boundaries retains the 1.0 nautical mile ribbon boundary in Areas 1 and 101 following the Graham Island and Langara Island shorelines initiating at Langara Island and terminating at Skonun Point. There will be no commercial trolling shoreward of this ribbon boundary.

### *Fishery Monitoring and Catch Reporting*

The Area F troll fishery has three levels of catch monitoring. This includes fisher-reported catch, dockside validation and dockside sampling of catch. The first level of catch monitoring is provided fisher reported catch logs. Fishers are required to provide a daily record of their catch and releases by species and area within 24 hours of landing their catch. This information is entered into the Fisheries Operating System (FOS) database by a third party service provider.

The second level of catch monitoring is dockside monitoring of Chinook landings, which is mandatory in ITQ fisheries. Therefore 100% of all offloads containing Chinook are required to be validated by a dockside validation service provider. All species are accounted for in these offloads. The third level of monitoring is dockside sampling of catch. This sampling program includes DNA sampling of Chinook as well as salmon head recovery in Chinook and Coho to estimate the stock-specific impacts of the troll fishery.

In accordance with the conditions of the Area F troll license, all vessels are required to bring all Chinook and Coho heads (or snouts if they are cut properly to include any CWT) to the dock for submission, unless the license is listed in a fisheries notice listing the Area F troll licenses that are exempted from retaining salmon heads during the 2021 fishing season. This fisheries notice is expected to be released prior to the opening of the fishery.

Poor compliance and head retention practices in past fishing seasons led to the requirement that 50% of the Area F troll fleet retain salmon heads to ensure that Canada met its obligation to sample a minimum of 20%. Salmon head recovery compliance by the Area F troll fleet has improved, since 2013 and allowed for a reduction in the number for vessels that retain salmon heads.

For 2021, the exemption rate will be approximately 70%. As in past seasons, licences that were insufficiently diligent in carrying out their conditions of license to bring in all Chinook and Coho heads will not be exempted in 2021.

#### **13.1.2.6.3 ESSR Fisheries**

There are no ESSR fisheries for northern AABM Chinook.

### 13.1.3 SKEENA-NASS ISBM CHINOOK

#### 13.1.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

Escapement of northern Chinook salmon declined significantly until 2017, and then recovered somewhat in 2018 due in part to improved productivity and also restrictive management measures implemented in that year. In 2019 and 2020, Skeena chinook stocks did not perform as expected, and as such, in 2021, a continued precautionary approach will be implemented for the management of Skeena Chinook to further promote rebuilding.

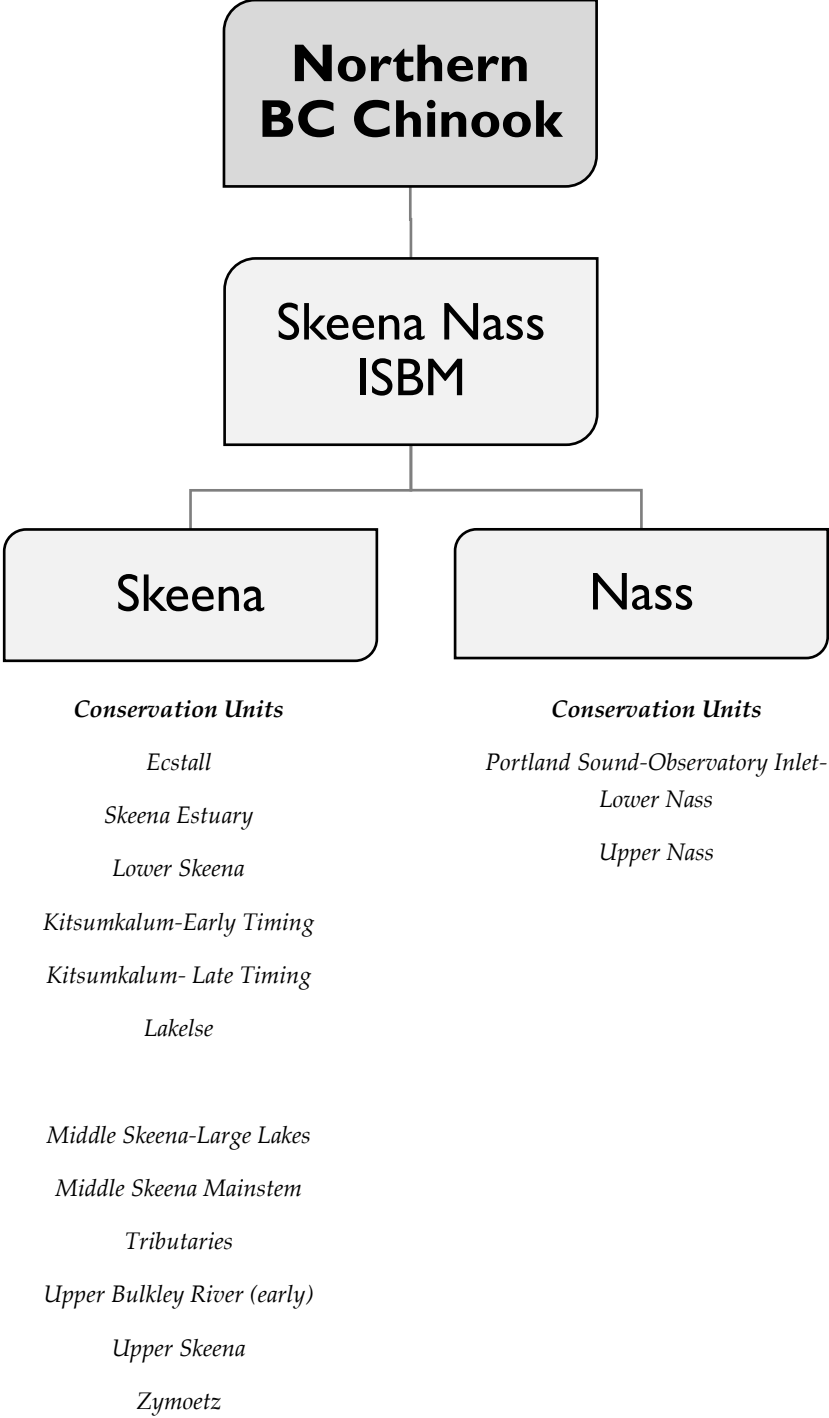


Figure 13.1-3: Overview of the Skeena-Nass ISBM Chinook

### **13.1.3.2 STOCK ASSESSMENT INFORMATION**

#### **13.1.3.2.1 Pre-season**

Nisga'a Fisheries and Wildlife has provided an above average forecasted return for Nass ISBM Chinook in 2021.

There are no formal pre-season forecasts for Skeena ISBM Chinook stocks; however, the poor performance since 2017 suggests the need for a precautionary approach in 2021.

#### **13.1.3.2.2 In-season**

The status of North Coast Chinook stocks is evaluated primarily by observed escapements to individual streams. On the Nass, in-season assessments of Chinook stocks are conducted by Nisga'a Fisheries through fish wheel catch information. A mark-recapture program is used post-season to estimate Chinook escapements to the Nass River.

The Tyee test fishery is the main in-season stock assessment tool for estimating the relative abundance of Skeena River salmon and Steelhead through the use of a multi-panel gill net with varying mesh sizes. Daily in-season escapements and total run size estimates by the Tyee Test fishery are only available for Sockeye. Tyee Test information requires calibration and this is only possible for Sockeye as a result of Babine fish fence operations which capture the majority of Skeena Sockeye. Salmon returns of other species are more variable as estimates are subject to error as annual run timing and the annual catchability of salmon by the Tyee test fishery net varies. The Department is working collaboratively with Skeena First Nations to explore the utility of the Tyee Test Fishery as an indicator of in-season Chinook abundance; however, current estimates of Skeena Chinook abundance are based on returns of indicator stocks to the Kitsumkalum River post-season.

### **13.1.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

The returning final escapement to the Skeena River in 2021 is anticipated to be relatively poor. A precautionary approach to management will continue in 2021 to further promote rebuilding of these stocks and to address concerns for uncertain and changing environmental conditions. Consultation with First Nations and stakeholders has been on-going to determine the appropriate management actions. Management actions will be in accordance with the allocation policy.

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, the following will be implemented:

- Recreational fisheries for salmon in the Skeena River will be closed.
- Recreational marine fisheries for salmon in Area 3, 4, and 5 will have existing retention limits reduced by half.
- Area 4 commercial fishing opportunities would be suspended.

The management actions listed above may be modified should abundances of other salmon species be sufficient to allow harvest beyond food, social, and ceremonial requirements, and will be determined in season.

Should in-season estimates indicate FSC closures are no longer warranted, these management measures would be reversed in when the FSC closures are lifted, and they do not preclude management measures already in place for each species.

### **13.1.3.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO SKEENA-NASS ISBM CHINOOK FISHERIES**

The management regime for Skeena Chinook in 2021 was informed through consultations with First Nations and stakeholders in the IHPC and bilaterally. The Department is proposing the following suite of management actions to promote rebuilding of Skeena Chinook, which are currently in a period of low productivity.

2021 Proposed Recreational Management Actions: Skeena Chinook

AABM Fisheries:

- June 1, 2021 to July 10, 2021: the daily limit is one (1) Chinook per day in Areas 1, 2, 142, and that portion of Area 101 west of 131 degrees 40.0 minutes West Longitude.

ISBM Fisheries:

- June 1, 2021 to June 18, 2021: the daily limit is one (1) Chinook Salmon per day in Areas 3 to 5, 103 to 105, Subarea 102-1, and that portion of Area 101 east of 131 degrees 40.0 minutes West Longitude.
- June 19, 2021 to July 11, 2021: Zero (0) retention of Chinook Salmon in Areas 3 to 5, 103 to 105, Subarea 102-1, and that portion of Area 101 east of 131 degrees 40.0 minutes West Longitude.
- July 12, 2021 to July 31, 2021: the daily limit is one (1) Chinook Salmon per day in Areas 3 to 5, 103 to 105, Subarea 102-1, and that portion of Area 101 east of 131 degrees 40.0 minutes West Longitude.

### Freshwater Fisheries

- Recreational fishing for Chinook Salmon in the Skeena Watershed will be closed.

No retention of Chinook salmon in all rivers draining into the Pacific Fishery Management Areas 3 to 6, not including the Kitimat or Nass Rivers.

### Commercial Fisheries

Opportunities for a Chinook-targeted gill net fishery in Area 4 will not be considered in 2021.

- Retention of Chinook in commercial net fisheries will not be permitted for the 2021 season.
- Area F Troll Chinook retention date not expected to impact Skeena River Chinook.

## Revival Tanks

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### 13.1.3.5 ALLOCATION AND FISHING PLANS

#### 13.1.3.5.1 First Nations Fisheries

##### *Food, Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the

dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors: in-season stock strength; management measures taken to ensure conservation of individual stocks; community needs of First Nations; and alternative sources of salmon if preferred species are not available locally due to low abundance.

The Department will be actively consulting and First Nations regarding appropriate strategies in 2021 and supporting collaborative process of engagement such as the Skeena First Nations Technical Committee.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

### *Specific Conservation Measures for First Nations Fisheries*

Protective measures may be considered in terminal areas to reduce harvest impacts. Potential measures will be the subject of discussion with First Nations communities prior to development of First Nations fishing plans.

### *Treaty Fisheries*

#### *Nisga'a Fisheries*

**As part of the 2021 Pacific Salmon Strategy Initiative, this fishery will be closed. See Appendix 11 for a complete list of Northern salmon commercial closures.**

The Nisga'a Annual Fishing Plan (NAFP) is developed by the Nisga'a-Canada-BC Joint Fisheries Management Committee (JFMC) and governed by the terms of the Nisga'a Final

Agreement and the Nisga'a Harvest Agreement of the Nisga'a Treaty. The Nisga'a Harvest Agreement includes Nisga'a fish allocations expressed as a percentage of the adjusted total allowable catch of Sockeye and Pink salmon. The NAFP is developed in accordance with Chapter 8 of the Nisga'a Final Agreement. Once approved by the Minister, the Nisga'a Annual Fishing Plan remains in effect until replaced the following year. The fishing plan applies to persons who harvest fish, other than steelhead, in Nisga'a fisheries.

Nisga'a salmon allocations, as defined in the Nisga'a Treaty, are set out as a percentage of the Total Return to Canada (TRTC) up to maximum catch thresholds (63,000 Sockeye [10.5%], 6,300 Pink [0.6%], 12,600 Chinook [21%], 19,200 Coho [8%], and 12,000 Chum [8%]) in large return years. These Nisga'a salmon allocations have the same priority in fisheries management decisions as domestic [food, social and ceremonial (FSC)] fisheries that target Nass salmon.

The NAFP defines the escapement goals required to guide management decisions for Nass salmon stocks, calculates Nisga'a allocations for each salmon species and provides the general regulatory requirements for catches of each salmon species. The NAFP is provided to other Nass watershed First Nations for their information and is reviewed by the JFMC prior to being submitted to the Minister for approval. Nisga'a Lisims Government is responsible for the internal allocation of catch opportunities between Nisga'a fishers and day to day operation of the Nisga'a fishery.

Pre-season estimates and ranges for the Nisga'a salmon allocations in 2021 are:

Nass Chinook: Two methods (sibling and a 5-year average) are used to estimate the pre-season TRTC forecasts that are based on Total Run forecast estimates and a mean Alaska Harvest Rate (5.7%) from 2000 to 2017. The TRTC 50% probability point estimate for 2021 from the average of the two different pre-season forecast methods and a 5.7% Alaska Harvest rate (~1,000 Nass Chinook) is 25,000 with a range of point estimates from 19,000 (75% probability estimate) to 32,000 (25% probability estimate). The averaging forecast method's mean absolute accuracy for predicting TRTC returns was 73.7% (range: 12–99%) for 2000 to 2020 returns. Based on the pre-season TRTC forecasts and the minimum escapement goal (10,000) for Nass Chinook for 2021, the Nisga'a allocation ranges between 4,000 and 6,900. While returns of Chinook to the Nass are anticipated to be healthy in 2021, caution in future years may be required due to recent poor returns in 2017 (~5,000 spawners) and 2018 (extreme low water conditions during migration and spawning). The mean TRTC forecast (25,000) will be used for calculating the initial target for the in-season Nisga'a allocation (5,300) of Nass Chinook for 2021.



### 13.1 NORTHERN CHINOOK SALMON FISHING PLAN

#### KWINAGEESE CHINOOK ESCAPEMENT

BROOD YEAR	Year	ESCAPEMENT	RETURN YEAR													
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
	2006	173	Age 5													
	2007	70	Age 4	Age 5												
	2008	16		Age 4	Age 5											
	2009	895			Age 4	Age 5										
	2010	128				Age 4	Age 5									
	2011	740					Age 4	Age 5								
	2012	715						Age 4	Age 5							
	2013	813							Age 4	Age 5						
	2014	560								Age 4	Age 5					
	2015	1,093									Age 4	Age 5				
	2016	853										Age 4	Age 5			
	2017	241											Age 4	Age 5		
	2018	456												Age 4	Age 5	
	2019	518													Age 4	
	2020	584														

#### UPPER NASS CHINOOK ESCAPEMENT

BROOD YEAR	Year	ESCAPEMENT	RETURN YEAR									
			2016	2017	2018	2019	2020	2021	2022			
	2011	9,600	Age 5									
	2012	8,688	Age 4	Age 5								
	2013	8,011		Age 4	Age 5							
	2014	11,509			Age 4	Age 5						
	2015	18,262				Age 4	Age 5					
	2016	9,037						Age 4	Age 5			
	2017	4,419								Age 4	Age 5	
	2018*	4500*										Age 4
	2019	10,493										
	2020	12,713										

\*Estimate is 31% of the aggregate run above fishwheels in 2018 due to extreme low water levels from August to October 2018 based on stock composition analyses and count at Kwinageese

UPPER NASS ESC GOAL = 10,000 (56% of 17,800)

Poor	Fair	Good
4500	4501-10700	10700

#### 13.1.3.5.2 Recreational Fisheries

The recreational total annual limit for Chinook from any tidal waters was set at 10 Chinook in April 2019 as part of conservation measures to address the poor status of many Chinook stocks in BC. This annual limit remained in place for 2020/21 and DFO is proposing to maintain this annual limit for the 2021/22 season. Recreational anglers must record all Chinook retained catch either on their licence, or if mobile internet access is immediately available, the licence holder may alternatively record catch immediately in their National Recreational Licensing System (NRLS) account. DFO is also proposing to reduce the number of slots on the recreational licence to match the annual limit in effect at the time of licence issuance, pursuant to that decision.

Recreational fisheries in Canada receive priority access to Chinook over commercial fisheries. Two of the largest recreational fisheries in Northern BC (NBC) occur in Haida Gwaii and in Chatham Sound. NBC recreational fisheries experienced significant growth until 2005 when they reached a maximum catch of approximately 82,000 Chinook.

The recreational fisheries in Haida Gwaii and Chatham Sound are mixed stock fisheries and migrating stocks of Chinook salmon originating from Alaska to California are encountered.

The Department is proposing the following suite of management actions to promote rebuilding of Skeena Chinook, which are currently experiencing a period of low productivity.

#### 2021 Proposed Recreational Management Actions: Skeena Chinook

- AABM Fisheries:
  - June 1, 2021 to July 10, 2021: the daily limit is one (1) Chinook per day in Areas 1, 2, 142, and that portion of Area 101 west of 131 degrees 40.0 minutes West Longitude.
- ISBM Fisheries:
  - June 1, 2021 to June 18, 2021: the daily limit is one (1) Chinook Salmon per day in Areas 3 to 5, 103 to 105, Subarea 102-1, and that portion of Area 101 east of 131 degrees 40.0 minutes West Longitude.
  - June 19, 2021 to July 11, 2021: Zero (0) retention of Chinook Salmon in Areas 3 to 5, 103 to 105, Subarea 102-1, and that portion of Area 101 east of 131 degrees 40.0 minutes West Longitude.
  - July 12, 2021 to July 31, 2021: the daily limit is one (1) Chinook Salmon per day in Areas 3 to 5, 103 to 105, Subarea 102-1, and that portion of Area 101 east of 131 degrees 40.0 minutes West Longitude.
- Freshwater Fisheries
  - Recreational fishing for Chinook Salmon in the Skeena Watershed will be closed.
  - No fishing for Chinook salmon in all rivers draining into the Pacific Fishery Management Areas 3 to 6, not including the Kitimat or Nass Rivers.

In-season updates and fishery regulation changes can be found on the recreational fisheries website: <https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

*Fishery Monitoring and Catch Reporting*

The Area 3 and 4 creel program operated from May 1 to August 31, 2020 with 9,665 boat trips and a retained catch of 8,247 Chinook.

A creel survey of freshwater recreational fisheries on the lower Skeena River watershed was conducted by Kitsumkalum Fish and Wildlife program and LGL in 2020. From July 14 to September 18, 2020 there were approximately 49,363 angler-hours with an estimated retained catch of 534 large Chinook and 538 Jack Chinook.

A creel survey of the freshwater recreational fisheries in four river systems of the Nass watershed was not conducted in 2020.

**13.1.3.5.3 Commercial Fisheries**

*Allocation*

Table 13.1-3: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
<b>North-Inside</b>	3 to 5	*	100.0% <sup>d</sup>	*

Notes on Chinook allocations (North):

\* by-catch provisions

<sup>d</sup> by-catch provision and near-terminal directed fisheries (e.g. Skeena)

*Skeena ISBM Chinook Fishing Plan*

*Area C Gill Net Fisheries*

For 2021, directed gill net opportunities for Chinook salmon in Area 4 will not be considered.

When abundances permit, this Chinook fishery is managed to a maximum catch of 4,000 Chinook. In most years, the fishery begins with an initial opening of 18 hours. Subsequent fishing opportunities are dependent upon CPUEs on the first opening. If average or better abundances are indicated, flexibility will be exercised to facilitate the harvest of the 4,000 Chinook by the gill net fleet. This may include some flexibility with the timing of openings to provide increased opportunity to harvest Chinook. Gill nets have a 137 mm (5.39 in) maximum mesh restriction. This restriction is in place so that Sockeye is targeted selectively and larger, non-target species such as Chinook and Chum are impacted to a lesser degree.

In years when this fishery occurs, if the returning run strength is very weak, additional management actions may occur. Consultation with First Nations and stakeholders would be taken to determine a course of action to protect the Chinook run. Management actions would be in accordance with the allocation policy.

### *Fishery Monitoring and Catch Reporting*

Fishery Monitoring and Catch Reporting includes the following:

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type*).

#### **13.1.3.5.4 ESSR Fisheries**

There are no ESSR fisheries for Chinook on the North Coast.

13.1.4 CENTRAL COAST ISBM CHINOOK

13.1.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

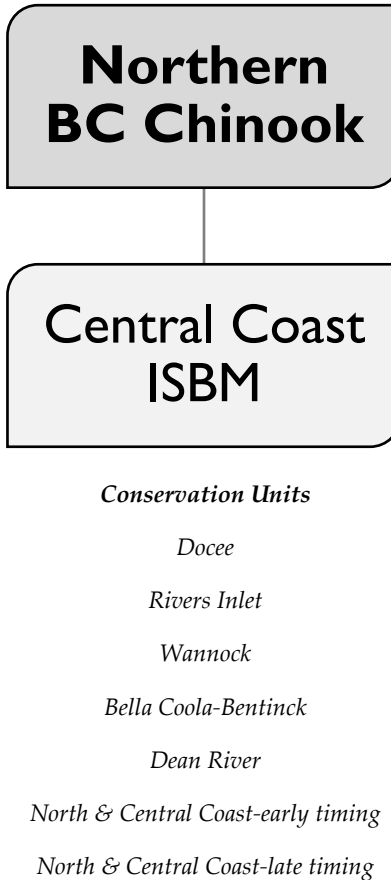


Figure 13.1-4: Overview of Central Coast ISBM Chinook

ISBM management regimes apply to all Chinook salmon fisheries subject to the PST that are not AABM fisheries and include marine and freshwater salmon fisheries from Northern British Columbia to Northern Oregon coast. ISBM fisheries in Northern BC include First Nations, recreational, and Central Coast gill net.

**Atnarko Chinook**

The Atnarko Chinook stock in Area 8 is an enhanced Chinook population that supports First Nations FSC and recreational fisheries, as well as a terminal commercial Chinook gill net fishery.

### 13.1.4.2 STOCK ASSESSMENT INFORMATION

#### 13.1.4.2.1 Pre-season

There is no formal pre-season forecast for Central Coast ISBM Chinook.

There are no known Chinook populations within Area 7. The Outlook for Area 8 for 2021 is “average.” Returns for the Bella Coola/Atnarko system have been good over the last several years with an exceptional escapement in 2015, and a slightly lower than average escapement in 2017. Should the stocks remain productive, the 2021 returns to the Bella Coola/Atnarko River should be average, mainly due to anticipated below average 4 year, and average 5 year age return. The outlook for Areas 9 and 10 is “below average” for the Wannock River and “below average” for Owikeno tributary stocks and the Chuckwalla/Kilbella systems based on recent trends.

There are few in-season estimates of abundance for Central Coast ISBM Chinook.

For Atnarko Chinook, commercial catch per unit effort and the Nuxalk First Nation’s FSC fishery provide the best indication of run strength.

### 13.1.4.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

#### Atnarko Chinook

DFO is working with local advisors and the First Nations Central Coast Salmon Coordinating Committee for advice on fisheries in these areas.

There are currently no biologically based escapement goals for Atnarko Chinook but there are estimates of the escapement required to produce maximum sustained yield ( $S_{MSY}$ ) and the spawning escapement at replacement ( $S_{REP}$ ).  $S_{MSY}$  was estimated to be 5,009 and the spawning escapement at replacement  $S_{REP}$  was estimated to be 14,595 (Vélez-Espino et. al. 2014).

Opportunities for a one day gill net fishery on the last week in May or the first week in June are evaluated during the pre-season planning process in November/December. If recent escapement estimates indicate an increasing or stable run, the fishery will likely go ahead. In-season, these opportunities are evaluated based mainly on First Nations FSC fishery catches with consideration of commercial and recreational catches as well. Atnarko Chinook escapements have been variable but above  $S_{REP}$  since 2013 with a record return of 44,329 in 2015.

#### Incidental Harvest, By-catch and Constraints to Inside Chinook ISBM Fisheries

Atnarko Sockeye continue to be a stock of concern and any fisheries will be managed to avoid or minimize impacts on these stocks.

### **13.1.4.4 ALLOCATION AND FISHING PLANS**

#### **13.1.4.4.1 First Nations Fisheries**

##### *First Nations Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for North Coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

##### *Specific Conservation Measures for First Nations Fisheries*

Protective measures may be considered in terminal areas to reduce harvest impacts. Potential measures will be the subject of discussion with First Nations communities prior to development of fishing plans.

### *Treaty Fisheries*

There are no treaty fisheries for Central Coast ISBM Chinook stocks.

#### **13.1.4.4.2 Recreational Fisheries**

The recreational total annual limit for Chinook from any tidal waters was set at 10 Chinook in April 2019 as part of conservation measures to address the poor status of many Chinook stocks in BC. This annual limit remained in place for 2020/21 and DFO is proposing to maintain this annual limit for the 2021/22 season. Recreational anglers must record all Chinook retained catch either on their licence, or if mobile internet access is immediately available, the licence holder may alternatively record catch immediately in their National Recreational Licensing System (NRLS) account. DFO is also proposing to reduce the number of slots on the recreational licence to match the annual limit in effect at the time of licence issuance, pursuant to that decision.

Recreational salmon fishing occurs in the tidal waters of the Central Coast (Areas 6 to 10), with interception fisheries beginning in late April and the peak of the season being from June to August. The minimum size limit for Chinook salmon is 45 cm, and the daily limit is 2. The open time is April 1st to March 31st. The possession limit for salmon is twice the daily limit.

In Area 9, a condition of licence in the recreational Tidal Waters Sport Fishing Licence, applies to all angling in the Rivers Inlet Special Management Zone (SMZ). Any anglers fishing in this area should consult the Tidal Waters Sport Fishing Regulations before commencing fishing.

Recreational harvesting occurs in Area 10 with participation by independent anglers and charter operators.

The Central Coast non-tidal waters are in Regions 5B and 6 freshwater fishing areas, and there are openings for Chinook salmon in the different watersheds at different time periods. Daily possession, annual limits, and size limits may apply, dependent on the river system.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>.

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.



*Fishery Monitoring and Catch Reporting*

In Areas 6 to 9, DFO has been collecting recreational catch data through the Lodge Log Book Program. In Area 10, Logbook information is used to provide catch and release numbers from anglers fishing there.

**13.1.4.4.3 Commercial Fisheries**

*Allocation and Fishing Plans*

Table 13.1-4: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
Central	6 to 10	*	100.0% <sup>b</sup>	* <sup>c</sup>

Notes on Chinook allocations (North):

\* by-catch provisions

<sup>b</sup> near-terminal fisheries (primarily hatchery origin)

<sup>c</sup> review potential re-entry of troll into Production Areas 6 + 7. By-catch provisions

*Central Coast Chinook ISBM Fishing Plan*

*Area C*

All dates are anticipatory

Area 8: **June 07** – First anticipated gill net opening in the Bella Coola gillnet area. This will be a directed Chinook fishery. Minimum mesh size 203 mm (7.99 inches).

Atnarko Chinook are harvested by the commercial gillnet fleet in North Bentinck Arm, a portion of South Bentinck Arm, Labouchere Channel and Burke Channel. A fleet of approximately 40 gill net vessels using large mesh nets is normal for recent years.

Gill nets have a 203 mm mesh restriction. This restriction is in place so that chinook are selectively targeted and other non-target species, such as sockeye, are impacted minimally.

*Fishery Monitoring and Catch Reporting*

Fishery Monitoring and Catch Reporting includes the following:

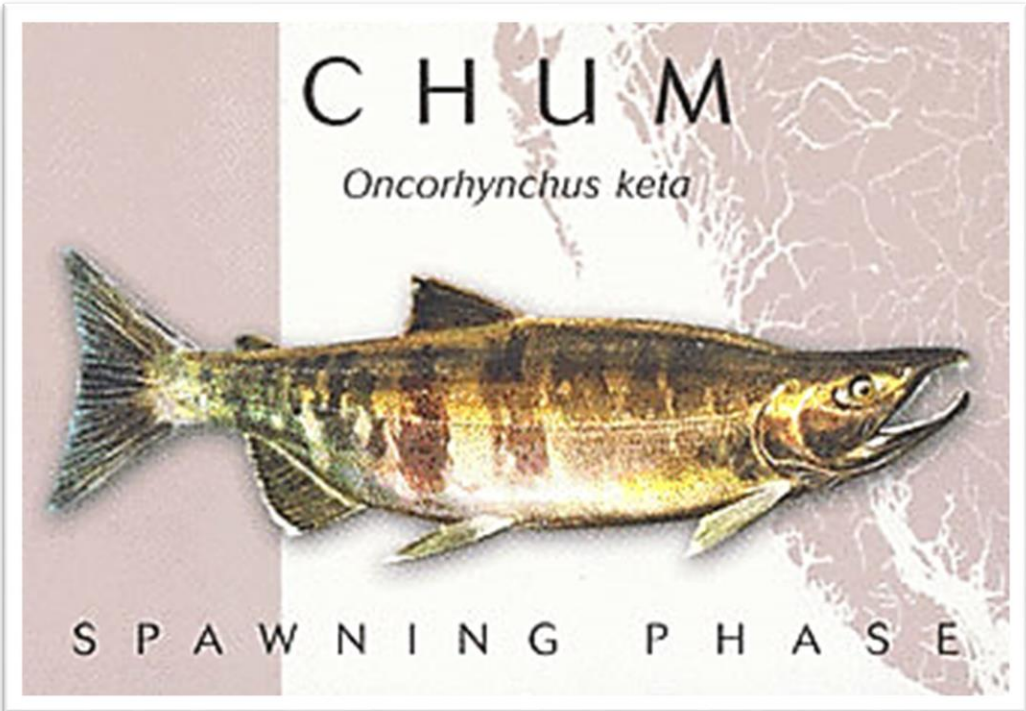
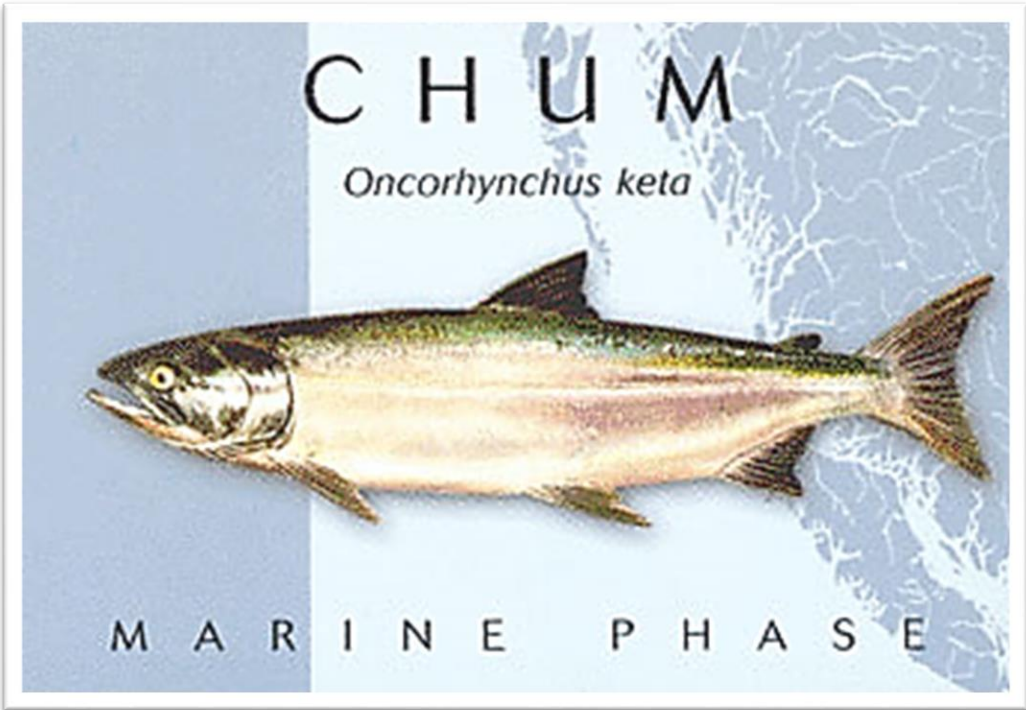
Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type*).

### **13.1.4.4.4 ESSR Fisheries**

There are currently no ESSR fisheries for Central Coast Chinook.

13.2 NORTHERN CHUM SALMON FISHING PLAN



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### 13.2.1 NORTHERN CHUM OVERVIEW

Chum salmon have the most extensive geographic distribution of all the salmon species and can be found from northern California to Alaska, including the Aleutian Islands, as well as the Yukon and Mackenzie rivers in the Arctic.

Returns are predominately age 3 to 5 fish and in some systems are the latest of the five salmon species to enter their natal rivers and stream to spawn. Chum salmon have pale flesh and a low fat content, and are usually marketed as a fresh, frozen or smoked product.

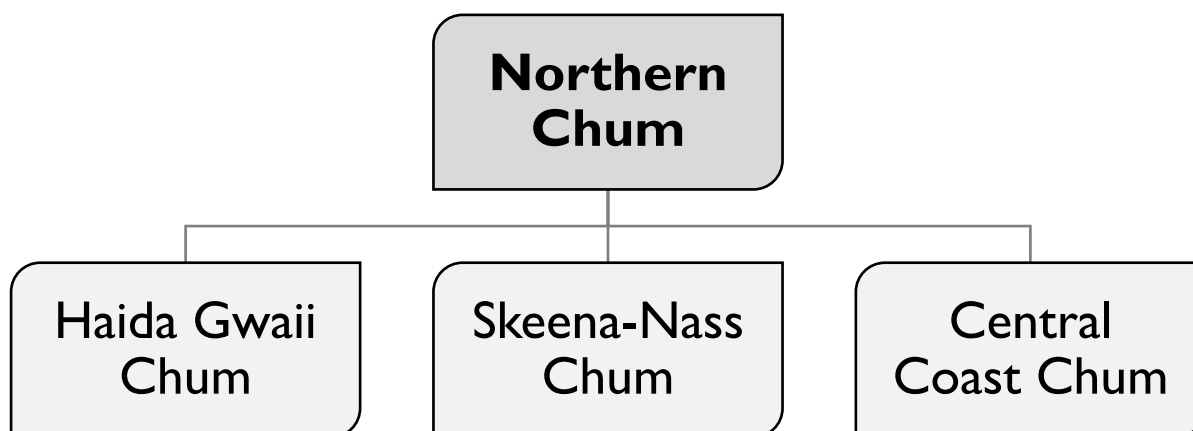


Figure 13.2-1: Overview of Northern Chum

#### 13.2.1.1 NORTHERN CHUM ENHANCEMENT INFORMATION:

The major BC North Coast DFO operation enhancement facilities that produce Chum are:

- Kitimat River hatchery
- Snootli Creek hatchery

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), Public Involvement Projects (PIP and DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS).

There are two datasets available: **Post-Season Production** from the 2019 brood year (i.e. 2020 releases, and numbers on hand for 2021 release), and the **Production Plan**, which includes proposed targets for the upcoming 2021 brood year. These are available at the following website:

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/ifmp-pgip-eng.html>

## 13.2.2 HAIDA GWAII CHUM – OVERVIEW

### 13.2.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

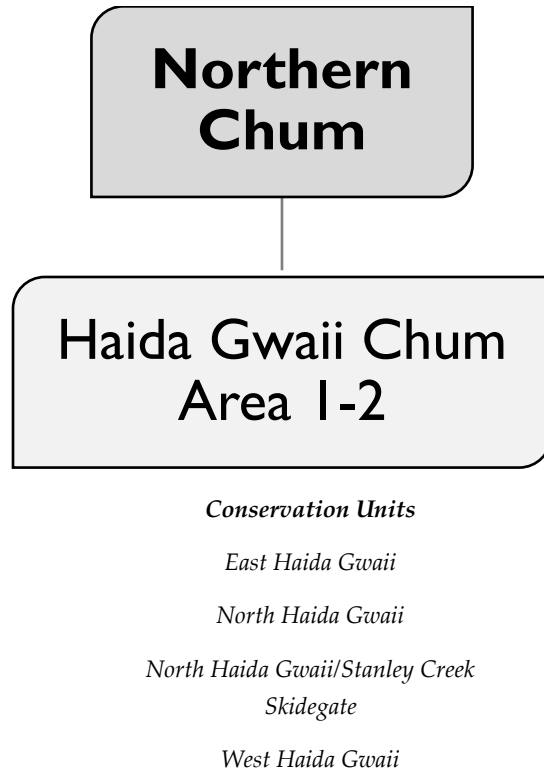


Figure 13.2-2: Overview of Haida Gwaii Chum

Historically, terminal Chum salmon harvesting opportunities have occurred in a variety of wild stock locations in Haida Gwaii. In general, returns to Haida Gwaii have been below management targets. Chum returns have declined to levels where fishing opportunities for commercial net fisheries are infrequent. The size of the runs to these systems can usually be determined by observations of fish holding in front of the streams and the historic average run timing for that system. Chum net fisheries will be managed in-season on a local basis.

### 13.2.2.2 STOCK ASSESSMENT INFORMATION

#### 13.2.2.2.1 Pre-season

Formal quantitative forecasts are not prepared for Haida Gwaii Chum. See Appendix 10: 2021 Salmon Outlook for more information. Chum salmon harvesting opportunities are expected to be limited in 2021.

**13.2.2.2 In-Season**

Monitoring to determine incoming runs throughout the season will be concentrated on the east coast of Haida Gwaii between Skidegate Inlet and Darwin Sound, and on the west coast between Dawson Inlet and Tasu Sound.

**13.2.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Terminal net fishery openings are based on fish observed to be schooling in front of the various systems. Fisheries will only be considered if the estimated return of salmon is sufficient to meet escapement goals. The size of the return will be estimated by charter patrolmen using visual assessments.

For Area F troll, there will be non-retention of Chum in effect in Dixon Entrance and Hecate Strait to protect northern and eastern Haida Gwaii Chum stocks as well as northern mainland BC Chum stocks. Retention of Chum may be allowed along the west coast of Haida Gwaii during August and September as west Haida Gwaii stocks are considered healthy.

**13.2.2.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO FISHERIES**

Assessment of escapements to streams in and near any identified surpluses to be harvested will need to be conducted. Conservation of smaller and/or weaker returning stocks that may be affected by a potential harvest opportunity may influence the timing and/or location of the fishery or may result in the foregoing of the fishery.

Coho by-catch may be a concern in some areas and so brailing by seines and the use of revival tanks by both gill nets and seines may be required.

To minimize the amount of by-catch, all fisheries will be held during daylight hours, generally 11 or 12 hour days during September reducing to 10 or 11 hour days in October.

All net fisheries are managed so that catch may be delivered within two days, at the request of the commercial industry.

**Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.



While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### 13.2.2.5 ALLOCATION AND FISHING PLANS

#### 13.2.2.5.1 First Nations Fisheries

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for FSC purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors: in-season stock strength; management measures taken to ensure conservation of individual stocks; community needs of First Nations; and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in the Northern BC / First Nations Fisheries.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

*Treaty Fisheries*

There are no Treaty fisheries for Haida Gwaii Chum.

**13.2.2.5.2 Recreational Fisheries**

Recreational salmon fishing occurs primarily in the tidal waters surrounding Haida Gwaii, with the majority of effort focused along the shoreline from Masset to Langara Island in Area 1 and between Englefield Bay and Port Louis in Area 2W. Recreational fishing occurs primarily between May and September with peak effort and catch occurring in July and August. Chum salmon are incidentally retained in the recreational fishery which primarily targets Chinook and Coho salmon. The daily aggregate limit of salmon is four (4) per day and a maximum 2 of which may be Chinook.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

*Fishery Monitoring and Catch Reporting*

DFO has been collecting recreational catch data through the Lodge Log Book Program and the Haida Creel Program since 1995. Participation in monitoring and reporting of recreational catch in Areas 1 and 2 has been excellent over the past 26 years. Monitoring is continuing to improve with region wide initiatives.

**13.2.2.5.3 Commercial Fisheries**

*Allocation*

Table 13.2-1: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
<b>North</b>	1, 2E, 2W, 101 to 111, 130, 142	54.0%	43.0%	3.0%

### *Haida Gwaii Chum Fisheries*

#### *Area A and Area C*

**Mid-September to October:** Possible terminal fisheries directed on identified surpluses of local Chum stocks in Areas 1, 2E and 2W.

No gill net or seine fisheries will be directed on passing stocks.

#### *Area F Troll*

Chum retention will not be permitted in Dixon Entrance and Hecate Strait. Retention of Chum may be allowed along the west coast of Haida Gwaii during August and September depending on in-season indications of Chum stock strength.

### *Fishery Monitoring and Catch Reporting*

Fishery Monitoring and Catch Reporting includes the following:

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type*).

#### **13.2.2.5.4 ESSR Fisheries**

There are no ESSR fisheries anticipated for Haida Gwaii Chum.

13.2.3 SKEENA-NASS CHUM

13.2.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

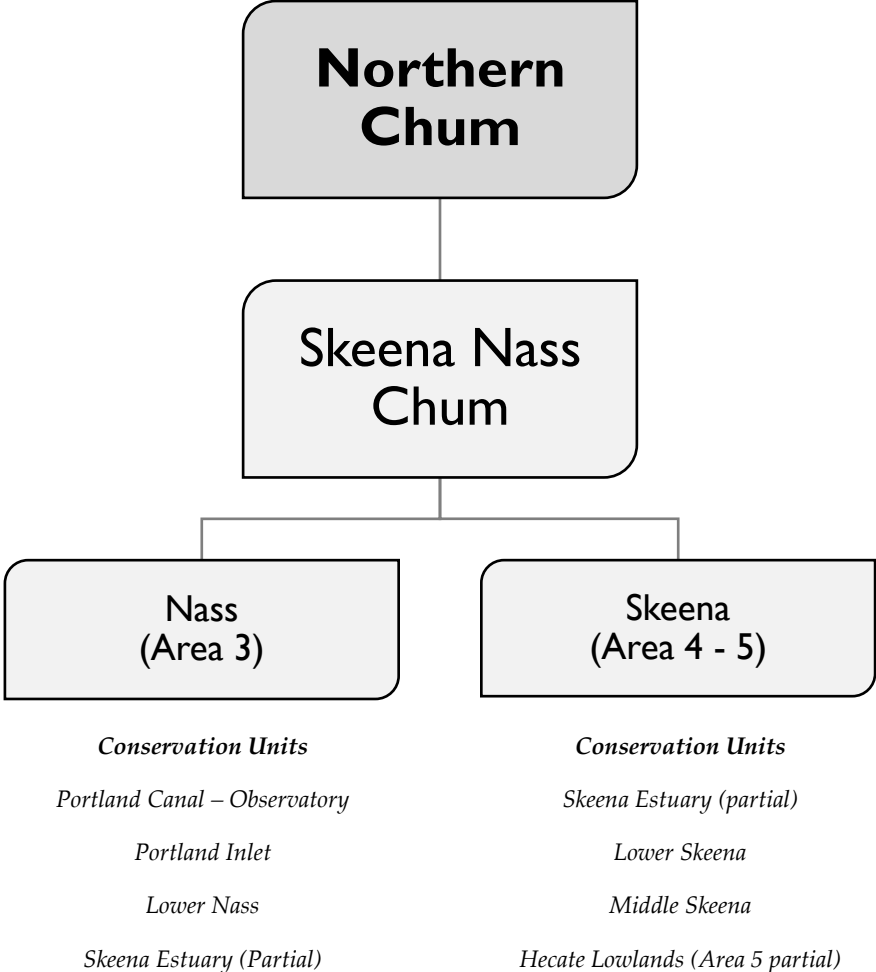


Figure 13.2-3: Overview of Skeena-Nass Chum

Chum salmon are the least abundant salmon species in Areas 3 to 5 and return to the fewest number of streams.

Nass and Skeena River-destined Chum are considered depressed and thus directed-effort by commercial fisheries on wild stocks is restricted, except for some limited opportunities as by-catch in Pink and Sockeye-directed fisheries in Area 3 when enhanced Chum are present. Rebuilding plans for both stocks can be found in [Appendix 7](#) and [Appendix 8](#).

### 13.2.3.2 STOCK ASSESSMENT INFORMATION

#### 13.2.3.2.1 Pre-season

Formal quantitative forecasts are not prepared for Nass or Skeena (Area 3 to 4) Chum. See Appendix 10: 2021 Salmon Outlook for more information. Chum salmon surpluses are not expected in 2021.

Table 13.2-2: Management Escapement Goals (MEGs) and escapements for major Chum systems in Areas 3-5. Note: MEGs were developed in the 1980s and require review.

Area	System	MEG	2020*	2019	2018	2017	2016	2015	2014	2013
3	Khutzeymateen River	20,000	123,342	68,000	6,600	N/I	N/I	31000	5100	4800
3	Kshwan River	15,000	13,918	7,310	18,686	7,272	820	17400	N/I	1100
3	Stagoo Creek	15,000	152,080	6,367	9,164	6,804	8,139	6758	8200	7100
3	Toon River	7,000	37,800	9,000	2,091	N/I	N/I	N/I	N/I	1080
4	Ecstall River	20,000	15	610	130	255	3,351	A/P	A/P	A/P
5	No major producers									

N/I defines Not Inspected, and A/P defines that Adults were present but that an estimate was not developed due to a lack of sufficient inspection information.

#### 13.2.3.2.2 In-season

Returns of Chum salmon to the Nass River are monitored through the fish wheel program operated by Nisga'a Fisheries and by escapement surveys to indicator systems. Chum stocks are managed to stream-specific escapement goals in Area 3.

The Tyee test fishery on the Skeena River is the main indicator for relative abundance of Chum salmon in Areas 4 and 5 through the use of a multi-panel gill net with varying mesh sizes. Returns are variable and estimates are subject to error as annual run timing and catchability of salmon by the Tyee test fishery net varies.

### 13.2.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

Commercial fisheries in Areas 3 to 5 will be managed to avoid wild Chum stocks. There will be no opportunities for directed harvest on wild Nass or Skeena Chum.

Retention of Chum in Area 3 will be permitted as by-catch in times and areas coinciding with high abundances of US hatchery origin Chum, while still meeting the objective of maintaining reduced impact on Canadian wild stocks. All other times and areas will remain non-retention/non-possession of Chum in Area 3 fisheries. Otolith and DNA samples will be collected in Area 3 to determine the presence of US hatchery Chum in both retention and non-retention areas.

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, the following will be implemented:

- Recreational fisheries for salmon in the Skeena River will be closed.
- Recreational marine fisheries for salmon in Area 3, 4, and 5 will have existing retention limits reduced by half.
- Area 4 commercial fishing opportunities would be suspended.

The management actions listed above may be modified should abundances of other salmon species be sufficient to allow harvest beyond food, social, and ceremonial requirements, and will be determined in season.

Should in-season estimates indicate FSC closures are no longer warranted, these management measures would be reversed in when the FSC closures are lifted, and they do not preclude management measures already in place for each species.

### **13.2.3.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO SKEENA AND NASS CHUM FISHERIES**

#### **Area 3:**

Area 3 Chum are considered a stock of concern and will require focused management planning. A rebuilding plan can be found in Appendix 7. Fisheries will continue to be managed to reduce impacts to Canadian Chum. Part of the rebuilding plan for the immediate future is to keep the Canadian average exploitation rate (ER) on Area 3 and 4 Chum below 10%.

Commercial fisheries are limited to daylight hours.

Non-retention of Steelhead is mandatory in all fisheries.

Gill nets have a 137mm (5.39 inch) maximum mesh restriction. This restriction is in place so that Sockeye is targeted selectively and larger, non-target species such as Chum and Chinook are impacted to a lesser degree.

Pink fishing opportunities will be managed to conserve weak stocks of Area 3 Chum.

### **Area 4:**

Retention of Chum and Steelhead is prohibited in all fisheries.

Gill nets have a 137 mm (5.39 inch) maximum mesh restriction during the Sockeye fishery. This restriction is in place so that Sockeye is targeted selectively and larger, non-target species such as Chum and Chinook are impacted to a lesser degree.

Skeena Chum remain a stock of concern and Canadian harvest impacts will be limited to a maximum exploitation rate of 10%. This is a ceiling and harvest impacts would be expected to be well below this level in most years. It is anticipated that these management measures will be in place for an extended period. A rebuilding plan for Skeena Chum can be found in Appendix 7.

### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

## **13.2.3.5 ALLOCATION AND FISHING PLANS**

### **13.2.3.5.1 First Nations Fisheries**

First Nations opportunities to harvest salmon for FSC purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis.

Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in the Northern BC First Nations Fisheries.

### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

### *Treaty Fisheries*

#### *Nisga'a Fisheries*

The Nisga'a Annual Fishing Plan (NAFP) is developed by the Nisga'a-Canada-BC Joint Fisheries Management Committee (JFMC) and governed by the terms of the Nisga'a Final Agreement and the Nisga'a Harvest Agreement of the Nisga'a Treaty. The Nisga'a Harvest Agreement includes Nisga'a fish allocations expressed as a percentage of the adjusted total allowable catch of Sockeye and Pink salmon. The NAFP is developed in accordance with Chapter 8 of the Nisga'a Final Agreement. Once approved by the Minister of Fisheries, the Nisga'a Annual Fishing Plan remains in effect until replaced the following year. The fishing plan applies to persons who harvest fish, other than steelhead, in Nisga'a fisheries.

Nisga'a salmon allocations, as defined in the Nisga'a Treaty, are set out as a percentage of the Total Return to Canada (TRTC) up to maximum catch thresholds (63,000 Sockeye [10.5%], 6,300 Pink [0.6%], 12,600 Chinook [21%], 19,200 Coho [8%], and 12,000 Chum [8%]) in large return years. These Nisga'a salmon allocations have the same priority in fisheries management decisions as domestic [food, social and ceremonial (FSC)] fisheries that target Nass salmon.

The NAFP defines the escapement goals required to guide management decisions for Nass salmon stocks, calculates Nisga'a allocations for each salmon species and provides the general regulatory requirements for catches of each salmon species. The NAFP is provided to other



Nass watershed First Nations for their information and is reviewed by the JFMC prior to being submitted to the Minister for approval. Nisga'a Lisims Government is responsible for the internal allocation of catch opportunities between Nisga'a fishers and day to day operation of the Nisga'a fishery.

Pre-season estimates and ranges for the Nisga'a salmon allocations in 2021 are:

Nass Chum: The Total Run size probability point estimate for 2021 from a pre-season model based on a 4-year average brood return is 46,000 (50%) with a range in point estimates between 29,000 (75%) and 73,000 (25%). Assuming a 15% Alaskan exploitation rate (based on the average of odd-year harvests from 2009 to 2019, approximately 7,000 Nass Chum), the 50% probability point estimate for the Total Return to Canada (TRTC) of Nass Chum is 39,000 with a range of point estimates from 25,000 (75% probability) to 62,000 (25% probability). The forecast method's mean absolute accuracy for predicting TRTC returns was 67.1% (range: 28–91%) for 2016 to 2020 returns. Based on the pre-season TRTC forecasts and the minimum escapement goal (30,000) for Nass Chum for 2021, the Nisga'a allocation ranges between <500 (incidental by-catch only) and 5,000. The mean TRTC forecast (39,000) will be used for calculating the initial target for the in-season Nisga'a allocation (3,100) of Nass Area Chum for 2021. The actual Nisga'a allocation target for 2021 may be lower depending on in-season run strength to account for the current cumulative overage (approximately 900) accrued from 2000 to 2020.

### 13.2.3.5.2 Recreational Fisheries

Due to the fact that both Nass and Skeena Chum are subject to rebuilding plans, the daily limit for Chum salmon is zero.

The Skeena and Nass Rivers are in Region 6 freshwater fishing area, and are closed to fishing for Chum salmon.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

### *Fishery Monitoring and Catch Reporting*

The Area 3 and 4 Creel Program operated by the North Coast Skeena First Nations Stewardship Society ran from May 1st to August 31st, 2019, with a recorded total of 14,163 boat trips and a retained catch of 62 Chum salmon.

### 13.2.3.5.3 Commercial Fisheries

Table 13.2-3: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
North	3 to 5	55.0% <sup>b</sup>	45.0% <sup>b</sup>	*

Notes on Chum allocations (North):

<sup>b</sup> recent Chum non-retention; fishery allows by-catch of Chum

\* by-catch provision

#### *Area A (Seine) and Area C (Gillnet)*

There will be no directed commercial opportunities for wild Nass or Skeena Chum.

Retention of Chum as by-catch in Area 3 will be permitted in times and areas coinciding with high abundances of US hatchery origin Chum, while still meeting the objective of maintaining reduced impact on Canadian wild stocks. All other times and areas will remain non-retention/non-possession of Chum in Area 3 fisheries. Otolith and DNA samples will be collected in Area 3 to determine the presence of US hatchery Chum in both retention and non-retention area. All fisheries will be announced via fishery notice.

#### *Area F (Troll)*

There will be non-retention of Chum in effect all year in Dixon Entrance and Hecate Strait to protect wild Skeena and Nass Chum.

#### *Fishery Monitoring and Catch Reporting*

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type.*)

### 13.2.3.5.4 ESSR Fisheries

There are no ESSR fisheries for Skeena or Nass Chum.

13.2.4 CENTRAL COAST CHUM

13.2.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

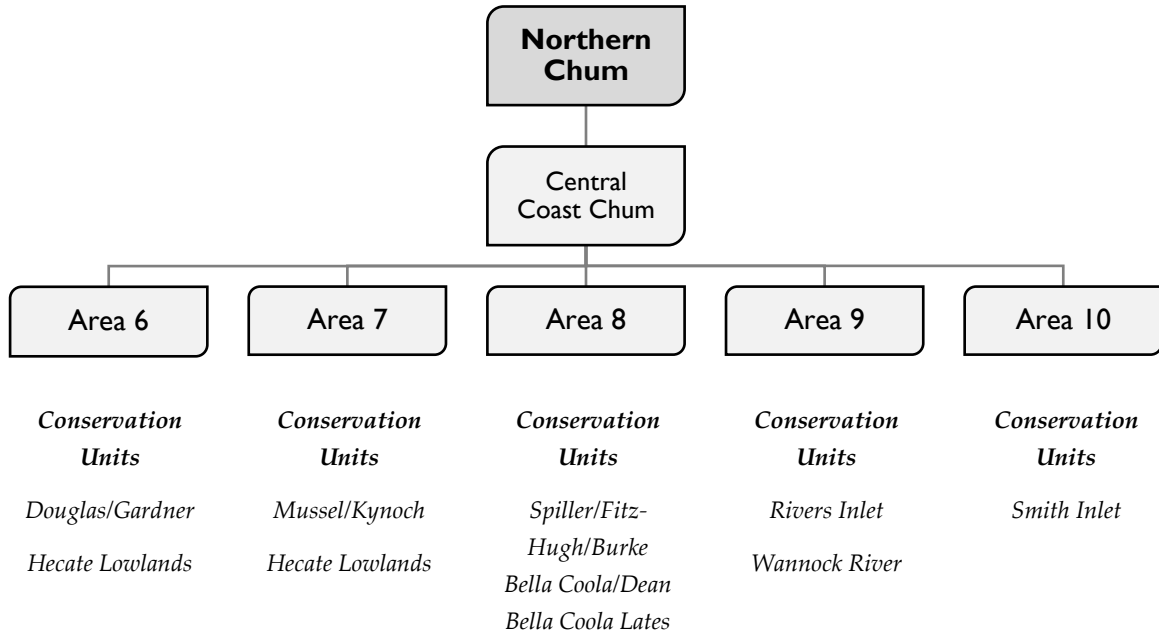


Figure 13.2-4: Overview of Central Coast Chum

Wild Chum stocks in Area 6 to 10 have been trending below average since 2010.

Commercial fisheries target hatchery enhanced Chum stocks in Area 6 (Kitimat Hatchery), Area 7 (Kitasoo and McLoughlin Bay Hatcheries), and Area 8 (Snootli Hatchery). The fisheries occur in approach areas where timings of the returns are known.

Commercial fisheries also target stronger wild stocks. For instance, in Area 7, fisheries for Mussel and Kainet Chum generally occur in late July and August, while fisheries for the other stocks occur in the later part of August and September. Chum fisheries in Area 8 occur on returns to Kimsquit and Lower Dean streams (Elcho, Cascade, and Jenny). There are no anticipated fisheries in Areas 9 and 10 in 2021.

### 13.2.4.2 STOCK ASSESSMENT INFORMATION

#### 13.2.4.2.1 Pre-season

Formal quantitative forecasts are not prepared for Central Coast Chum (Area 6 to 10). See Appendix 10: 2021 Salmon Outlook for more information.

#### 13.2.4.2.2 In-season

Opportunities for harvest will be considered based on in-stream escapement assessments in Area 6 and reports from the hatchery on run strength of the enhanced stock.

In Areas 7 and 8, harvest opportunities will be based on brood year escapements, in-stream escapement assessments and the success of assessment fisheries that may be run to gauge run strength.

There are no commercial fisheries anticipated for Areas 7, 9 and 10.

### 13.2.4.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

#### Area 6:

Opportunities for a directed terminal gill net fishery in Kitimat Arm are based on Kitimat Hatchery Chum production, assessment fisheries and in-season escapement estimates. The Department's plans to pilot an otolith study to determine the enhanced contribution to the fishery took place in 2020 and expects to proceed for 2021.

#### Area 7:

For Areas 7 to 10, decisions are made in consultation with local First Nations, the Central Coast First Nations Salmon Coordinating Committee, and Central Coast advisors, for the management of fisheries in these areas.

Opportunities for one-day gillnet and seine assessment fisheries in the last week of July or first week of August are determined pre-season based on recent trends in brood year escapement and in-season information. If recent escapements indicate an increasing or stable run, the assessment fisheries will very likely proceed. Given the recent trend of poor returns, one-day assessment fisheries for lower Finlayson, lower Mathieson, Sheep Pass and the eastern portion of Seaforth Channel may be curtailed unless in-river assessment suggest improved returns.

**July and First Week of August:** One additional day of fishing during daylight hours is considered if the run appears strong. The assessment of run strength is based on a review of catch data and salmon escapements to the Mussel and Kainet Rivers to-date.

**Second Week of August until Mid-October:** The results of the past week's fisheries, status of target stocks and their implications for any potential by-catch are reviewed with the local advisory group. If stock strength permits, fishing opportunities are considered each week until mid-October. Announcements for the next week's opportunities are made on the Thursday at 16:00 hours or Friday of the week preceding the proposed fishery.

Subject to in-season assessment, Lama Pass (McLoughlin Bay) may be opened in mid-August and the fishing time may be spread over more than one day each week, depending on observed Chum abundance and processing capacity. Seines and gill nets will alternate fishing opportunities each week with the gill net fleet going first in 2021.

Subject to in-season assessment, the Klemtu Pass area may be opened to harvest surplus Chum returning to the Kitsoo Creek Hatchery. Openings targeting Kitsoo Creek Hatchery stocks and surplus Chum in terminal areas would follow the pattern of gill nets fishing first day and seines the second day.

Subject to in-season assessment, portions of Spiller Channel may be opened to seines and gill nets in late August. Openings in that area will depend on Chum returns to Neekas Creek.

Subject to in-season assessment, portions of Johnson Channel and Roscoe Inlet may be opened to seines and gill nets in late August. Openings in that area will depend on Chum returns to the Roscoe, Quartcha, and Clatse systems.

### **Area 8:**

During the pre-season planning process, opportunities for gill net assessment fisheries in the first two weeks of July are evaluated. The evaluation is mainly based on Chum brood year escapements. This fishery is implemented to get an early assessment of run strength. It has very little impact on the stock because it occurs early in the run and provides information to better manage the fishery later in the season.

**Second Week of July:** The assessment openings may be extended if the runs appear strong based on a review of catches to-date. Opportunities for a gill net and seine opening on Monday in the third week of July are considered, based on the results of the assessment fisheries:

If Atnarko Pink stocks are weak but Bella Coola and Kimsquit Chum stocks are strong, Subareas 8-3 and a portion of Subarea 8-4 south of a line from Walker Point to Hergest Point may be closed.

If Kimsquit Chum are weak but Bella Coola Chum are strong, Subarea 8-5 may be closed.

If Kimsquit Chum are very weak but Bella Coola Chum are strong, Subareas 8-5 and 8-4 north of Walker Point may be closed.

### **Area 9:**

Escapement levels for Area 9 Chum have been below target for several years. No fishery is anticipated.

### **Area 10:**

In-season escapement information will be used to evaluate fishing opportunities for Nekite Chum. No fishery is anticipated. Should commercial Sockeye opportunities occur during the 2021 season, Chum retention is unlikely to be permitted.

#### **13.2.4.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO CENTRAL COAST CHUM FISHERIES**

### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### **Area 6:**

Commercial net fishing is limited to daylight hours.

Mandatory brailing for all seine sets and non-retention of Chinook and Steelhead in all fisheries and non-retention of Chum at the Gil Island seine fishery.

Constraints for the Kitimat gill net Chum fishery are as follows:

Gill nets will be required to have a 149mm minimum and 165mm maximum mesh restriction when fishing Chum to reduce encounters of non-target species.

- Gill net Chum fisheries will be restricted to 6-1 and a portion of 6-2 unless surplus stocks are identified elsewhere in-season.

### **Area 7:**

Gill nets with 149mm minimum mesh restriction all season to protect Sockeye stocks in central coast systems.

Seines are required to brail and release Sockeye, Chinook and Steelhead to the water with the least possible harm for the duration of the season.

Fishing is limited to daylight hours.

Net fisheries will initially be non-retention Coho. Easing of restrictions in-season could occur if abundance is high.

The half-mile radius boundary around Mary's Cove Creek and Sockeye Creek are in effect year- round to conserve Sockeye Creek, Mary's Cove and Lagoon Creek Sockeye.

During periods of high salmon catches in Areas 7 or 8, fisheries will most likely be managed so that there is a maximum of two consecutive days of fishing. This action has been recommended by fishers and processors to maximize the value of the salmon caught.

Where possible, openings in Areas 6 through 10 will be coordinated to distribute effort appropriately.

Additional fishing time: A large fleet size could adversely affect small mixed-stock runs in the area. Extra fishing time may depend on openings in other areas in the North Coast.

### **Area 8:**

Gill net fisheries have a 158mm minimum mesh restriction until the beginning of August to protect weak Sockeye stocks. Gill nets with 149mm mesh will be allowed for the remainder of the season. Gill net fishermen are required to release all live Sockeye to the water with the least possible harm, all season long.

Fishing is limited to daylight hours.

Net fisheries will begin with a non-retention of Coho restriction in place. Easing of restrictions in- season could occur if abundance is high.

Seines are required to brail and release Sockeye, Chinook, and Steelhead to the water all season. Gill nets are required to release Steelhead.

If salmon stocks surplus to escapement requirements are identified, fisheries could occur in areas where incidental catch or by-catch concerns do not preclude harvest activities.

The seine opening date is usually coordinated with other seine openings on the North Coast.

During periods of high salmon catches in Areas 7 or 8, fisheries will be managed so that there is a maximum of two consecutive days of fishing. This action has been recommended by fishers and processors to maximize the value of the salmon caught.

When possible, openings will be coordinated with other North and Central Coast areas.

### **Area 10:**

If a fishery takes place, a maximum mesh restriction of 150mm will be in place to protect Docee River Chinook stocks.

Boundaries will be restrictive to protect non-targeted stocks. There will be no Coho retention unless abundance warrants.

### **13.2.4.5 ALLOCATION AND FISHING PLANS**

#### **13.2.4.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial*

First Nations target local salmon stocks for food, social and ceremonial (FSC) purposes throughout the North Coast.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information



to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

### *Treaty Fisheries*

There are no Treaty fisheries for Central Coast Chum.

#### **13.2.4.5.2 Recreational Fisheries**

Recreational salmon fishing occurs in the tidal waters of the Central Coast (Areas 6 to 10). The Chum salmon fishery is open April 1st to March 31st, with the peak of the season being from June to August. The daily limit for Chum salmon is four (4) per day, unless otherwise varied.

The minimum size limit for Chum salmon is 30 cm, in tidal waters and freshwater. The possession limit for salmon is twice the daily limit.

In Area 9, there is a condition of licence in the recreational Tidal Waters Sport Fishing Licence that applies to all angling in the Rivers Inlet Special Management Zone (SMZ). Any anglers fishing in this area should consult the Tidal Waters Sport Fishing Regulations prior to commencing fishing.

The Central Coast non-tidal waters are in Regions 5B and 6 freshwater fishing areas, and there are openings for Chum salmon in the different watersheds at different time periods. The minimum size limit is 30 cm, with daily and total possession limits.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

### *Fishery Monitoring and Catch Reporting*

In Areas 6 to 9, DFO has been collecting recreational catch data through the Lodge Log Book Program. In Area 10, logbook information is used to provide catch and release numbers from anglers fishing in the area.

## 13.2.4.5.3 Commercial Fisheries

Table 13.2-4: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
Central	6 to 10	45.0% <sup>c</sup>	55.0%	*

Notes on Chum allocations (North):

<sup>c</sup> currently Chum non-retention

\* by-catch provision

### Area 6

**Area C:** Gill net openings will be dependent upon in-season assessments of hatchery Chum returns to the Kitimat River.

**Area A:** Seine openings target Pink salmon populations in the Area. Bycatch of Chum is not permitted. Opportunities for targeting hatchery Chum will be assessed in-season.

**Area F:** No troll opportunities for Chum fisheries in this area in 2020.

### Area 7

**Area A & C:** July 26 – First potential gill net and seine opening in 7-5, portion of 7-6 (Finlayson), portions of 7-9 (Mathieson) and 7-29 (Sheep), dependent on in-season assessment. Minimum mesh size 149 mm.

Mid-late August – Consideration for net openings in 7-17 (McLoughlin Bay hatchery Chum). Gear types will alternate each week; Subarea 7-5 terminal Chum harvest on Kitasoo Creek Hatchery stocks with gill nets first and seines second. Net opening in Spiller Channell to harvest Neekas Creek Chum.

Late August to early September – Considerations for net openings in 7-30 (Johnson Channel), 7-15 (Roscoe Inlet) and 7-13 (Spiller Channel).

**Area F:** No troll opportunities for Chum fisheries in this area in 2021.

### *Area 8*

**\*As part of the 2021 Pacific Salmon Strategy Initiative, the Area 8 Chum commercial fisheries will be closed. See Appendix 11 for a complete list of Northern salmon commercial closures.**

**Area C\*:** July 5 – Anticipated Chum gill net opening in the Bella Coola gillnet area and Fisher Channel/Fitz Hugh Sound. Minimum mesh size 158 mm (6.22 inches).

**Area A\*:** July 19 – First anticipated seine opening in Fisher Channel/Fitz Hugh Sound.

Minimum bunt mesh size 70 mm (2.76 inches)

July 12 to August 15: Weedlines are in effect in upper 8-5 (Fisher Channel) and 8-8 (Upper Dean Channel)

**Area F:** No troll opportunities for Chum fisheries in this area in 2021.

### *Area 9*

No Chum fisheries for any gear type are anticipated for this area in 2021.

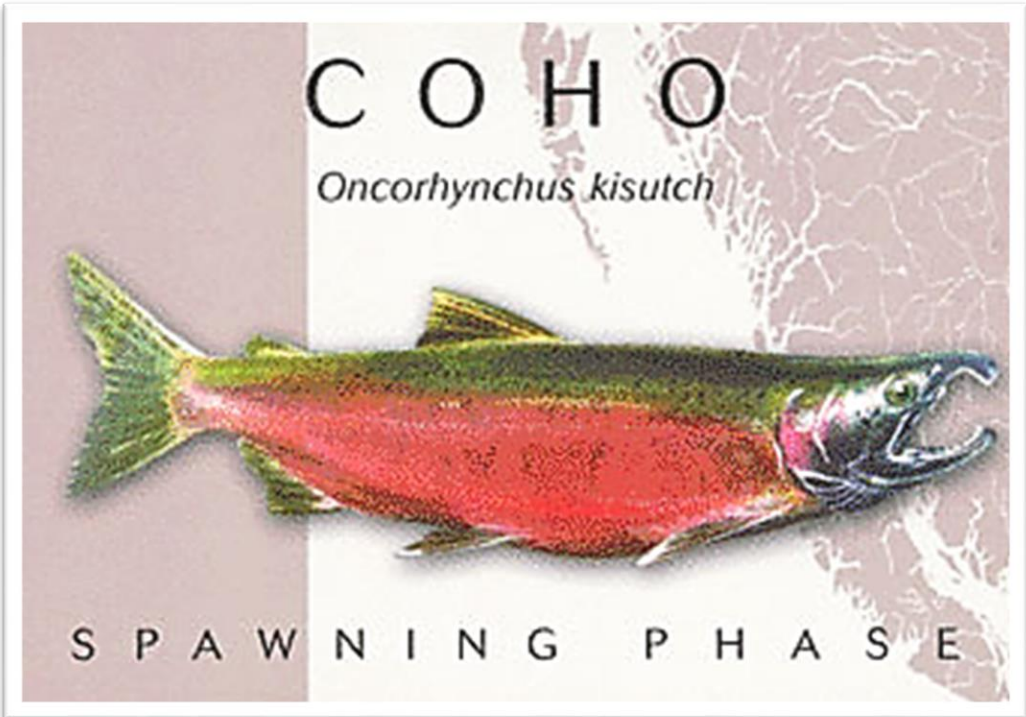
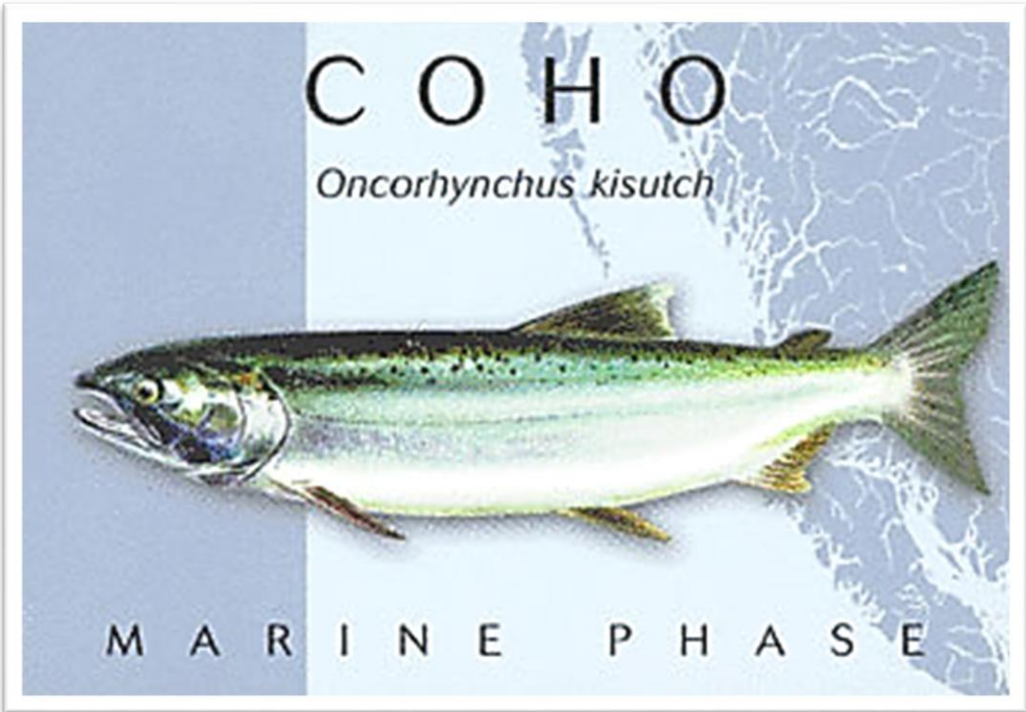
### *Area 10*

No Chum fisheries for any gear type are anticipated for this area in 2021.

#### **13.2.4.5.4 ESSR Fisheries**

There are no ESSR fisheries for Central Coast Chum.

13.3 NORTHERN COHO SALMON FISHING PLAN



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### 13.3.1 NORTHERN COHO OVERVIEW

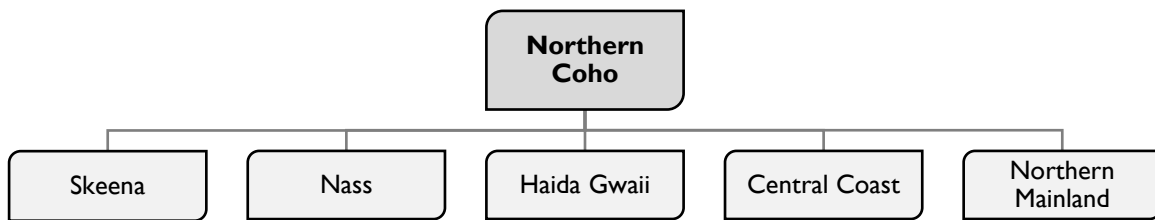


Figure 13.3-1: Overview of North Coast Coho

In recent years, Northern Coho are primarily harvested through commercial troll and mixed-species fisheries; formal guidelines for abundance based harvest levels have not been developed. In general, commercial net fisheries on the North Coast and Central Coast start with Coho non-retention, which is reviewed in-season in each area based on observed abundance.

For 2021, lower productivity over previous years is forecasted based on low returns in recent years for both interior and coastal Coho populations and continuance of lower marine survivals. However, there is very little data to review to develop an overall assessment.

#### 13.3.1.1 NORTHERN COHO ENHANCEMENT INFORMATION:

The major BC North Coast DFO operation enhancement facilities that produce Coho are:

- Kitimat River hatchery

There is one Coho salmon exploitation rate indicator stock in the North Coast that relies on hatchery production of coded wire tagged releases. The Toboggan Creek Coho indicator stock is produced at the Toboggan Creek Hatchery. Toboggan Creek hatchery does not appear in the list above since it is not a production facility and these fish are raised for assessment purposes only.

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), Public Involvement Projects (PIP and DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS).

There are two datasets available: **Post-Season Production** from the 2019 brood year (i.e. 2020 releases, and numbers on hand for 2021 release), and the **Production Plan**, which includes proposed targets for the upcoming 2021 brood year. These are available at the following website:

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/ifmp-pgip-eng.html>

13.3.2 NORTHERN COHO

13.3.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

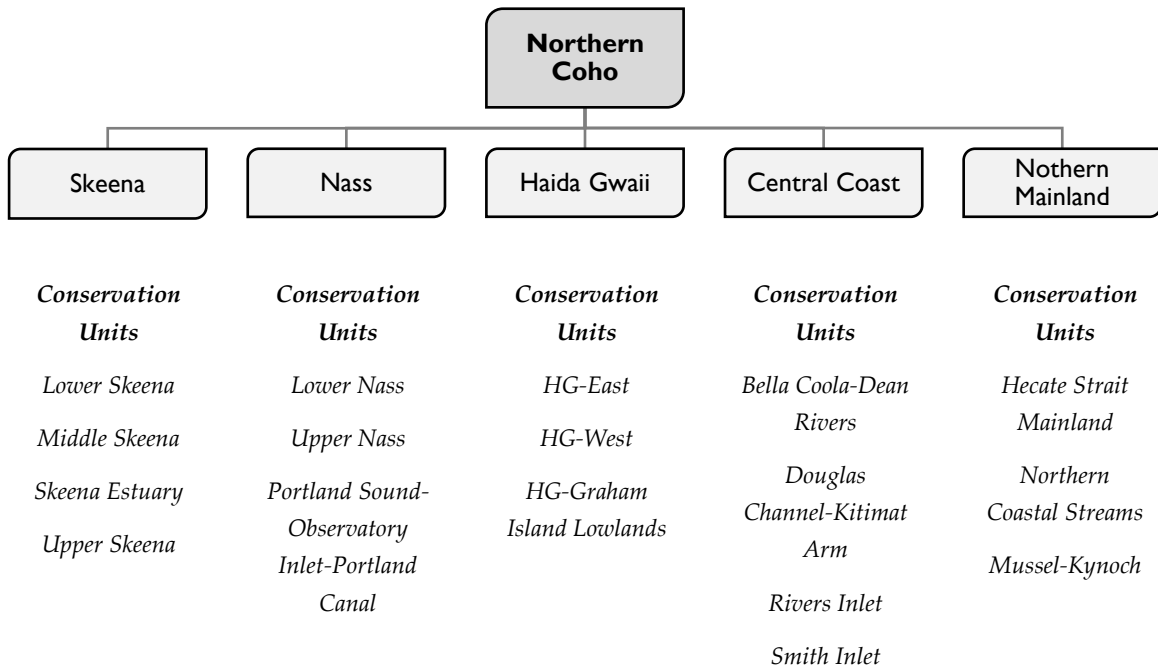


Figure 13.3-2: Overview of North Coast and Central Coast Coho

In Northern BC, Coho are typically caught as by-catch during First Nations’ FSC fisheries that are directed on Sockeye; however, some small directed Coho FSC fisheries do occur. Nisga’a Coho catches are limited by the Nisga’a Final Agreement that depends on in-season abundance estimates generated from the Nass fishwheel mark-recapture program. First Nations Coho FSC catches have rarely been constrained by conservation objectives in the North and Central Coast.

Coho catches in the recreational fishery are managed by daily/possession limits and time and area closures. Poor returns of Coho to many North and Central Coast areas in recent years have resulted in precautionary management measures to reduce overall exploitation in 2021. Specifics of these management measures will be determined through consultations with First Nations and stakeholders through the IHPC process in the Spring of 2021.

### **13.3.2.2 STOCK ASSESSMENT INFORMATION**

#### **13.3.2.2.1 Pre-season**

There are no formal pre-season forecasts for Northern BC Coho. Most adults returning in 2021 are from the 2018 brood year that went to sea in 2020. Ocean indicators suggest conditions affecting early marine survival have been variable in recent years. Therefore, pre-season predictions for Coho returns in 2021 are uncertain. See Appendix 10: 2021 Salmon Outlook for more information.

##### ***Haida Gwaii***

See Appendix 10: 2021 Salmon Outlook for more information. Deena Coho in the East Haida Gwaii CU are used as an indicator stock for Haida Gwaii. Returning Coho are also enumerated at the Tlell counting fence. Limited stock assessment information is available for the remainder of Haida Gwaii CU's. Coho returns to Haida Gwaii are generally considered to be healthy.

##### ***Nass River***

Total escapement is expected to be below average in 2021. The 2020 run size was well below average with low productivity and marine survival evident in the preceding years.

##### ***Skeena River***

Returns are expected to be low due to recent lower productivity, poor marine survivals and low returns in 2018, 2019, and 2020. Returns are uncertain and depend on the survivals of the juveniles that went to sea in 2020.

##### ***Areas 5 and 6***

Returns are uncertain and depend on the survival of the juveniles that went to sea in 2020.

##### ***Central Coast***

Low returns are anticipated due to a period of lower productivity and low returns in 2020. However, there is very little data to develop an overall assessment. Returns are uncertain and depend on the survival of juveniles in the marine environment.

#### **13.3.2.2.2 In-season Assessment**

At this time, there are no in-season assessments done on most Northern BC Coho stocks. On the Skeena River, the Tyee test fishery provides a relative index abundance but can only provide in-



season escapement estimates for Sockeye due to calibration from Babine fence counts. On the Nass River, in-season estimates of Coho abundance are gained from the Nass fish wheel program operated by Nisga'a Fisheries.

#### 13.3.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

A precautionary approach to management will be implemented in 2021 in response to poor returns in recent years and to address concerns for uncertain and changing environmental conditions.

For 2021 there will be non-retention of Coho in all North Coast net fisheries. Should returns indicate sufficient numbers, this may be re-evaluated in-season.

The Coho-directed troll fishery may open in Area 3 depending on in-season Coho abundance indicator information. While the 50% probability forecasted point estimate for the Total Return to Canada (TRTC) of Nass Coho is 290,000, in-season estimates will be used to trigger directed fisheries. DFO will work closely with the Nisga'a to monitor Coho run strength via Nisga'a fish wheels.

Central Coast areas will initially be closed to full fleet troll opportunities but this may be adjusted in-season depending on Coho abundance. The Central Coast Limited Effort Coho Demonstration Fishery, as proposed within Commercial Salmon Allocation Framework is not being considered for 2021.

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, the following will be implemented:

- Recreational fisheries for salmon in the Skeena River will be closed.
- Recreational marine fisheries for salmon in Area 3, 4, and 5 will have existing retention limits reduced by half.
- Area 4 commercial fishing opportunities would be suspended.

The management actions listed above may be modified should abundances of other salmon species be sufficient to allow harvest beyond Food, Social, and Ceremonial requirements, and will be determined in season.

Should in-season estimates indicate FSC closures are no longer warranted, these management measures would be reversed in when the FSC closures are lifted, and they do not preclude management measures already in place for each species.

#### 13.3.2.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO NORTHERN COHO FISHERIES

In-river recreational Coho fisheries will be permitted in the Nass and Skeena Rivers. Daily, possession, and annual limits are in effect. Reduced retention limits during openings and spatial closures will be implemented for both river systems in 2021, including:

- Skeena River mainstem at the mouth of the Kitsumkalum River (including Kitsumkalum River), Kitwanga River, Kispiox River, and Bulkley-Morice.
- Nass River mainstem at the confluence of the Meziadin River until September 15, 2020.

Marine recreational fisheries will be permitted. Daily, possession, and annual limits are in effect.

Non-retention of Coho in commercial net fisheries in Areas 1 through 10. Changes to retention rules may change in-season for Area 3 fisheries if there are indications of stronger abundance through the Nass fishwheels.

The Pacific Salmon Treaty (PST) includes a provision for closing North Coast troll fisheries. Specifically, a Coho CPUE for a specified time period and location of the southeast Alaska troll fishery is used as a trigger for closures to areas 1, 3, 4, 5 and adjacent offshore areas. This provision of the treaty was invoked for the first time in 2019. Further work to develop this trigger and others for use in domestic management decisions regarding Coho is currently underway.

#### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### **13.3.2.5 ALLOCATION AND FISHING PLANS**

#### **13.3.2.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in the Northern BC First Nations Fisheries.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

##### *Treaty Fisheries*

###### *Nisga'a Fisheries*

The Nisga'a Nisga'a Annual Fishing Plan (NAFP) is developed by the Nisga'a-Canada-BC Joint Fisheries Management Committee (JFMC) and governed by the terms of the Nisga'a Final Agreement and the Nisga'a Harvest Agreement of the Nisga'a Treaty. The Nisga'a Harvest Agreement includes Nisga'a fish allocations expressed as a percentage of the adjusted total

allowable catch of Sockeye and Pink salmon. The NAFP is developed in accordance with Chapter 8 of the Nisga'a Final Agreement. Once approved by the Minister of Fisheries, the Nisga'a Annual Fishing Plan remains in effect until replaced the following year. The fishing plan applies to persons who harvest fish, other than steelhead, in Nisga'a fisheries.

Nisga'a salmon allocations, as defined in the Nisga'a Treaty, are set out as a percentage of the Total Return to Canada (TRTC) up to maximum catch thresholds (63,000 Sockeye [10.5%], 6,300 Pink [0.6%], 12,600 Chinook [21%], 19,200 Coho [8%], and 12,000 Chum [8%]) in large return years. These Nisga'a salmon allocations have the same priority in fisheries management decisions as domestic [food, social and ceremonial (FSC)] fisheries that target Nass salmon.

The NAFP defines the escapement goals required to guide management decisions for Nass salmon stocks, calculates Nisga'a allocations for each salmon species and provides the general regulatory requirements for catches of each salmon species. The NAFP is provided to other Nass watershed First Nations for their information and is reviewed by the JFMC prior to being submitted to the Minister for approval. Nisga'a Lisims Government is responsible for the internal allocation of catch opportunities between Nisga'a fishers and day to day operation of the Nisga'a fishery.

Pre-season estimates and ranges for the Nisga'a salmon allocations in 2021 are:

*Nass Coho:* The Total Run size probability point estimate for 2021 from a pre-season brood regression model of 3- and 4-year-old returns for Coastal, Lower, and Upper Nass Coho stocks is 244,000 (50%) with a range in point estimates between 145,000 (75%) and 454,000 (25%). Assuming a 34.8% Alaskan exploitation rate (based on the average from 2017 to 2020, approximately 85,000 Nass Coho), the 50% probability point estimate for the Total Return to Canada (TRTC) of Nass Coho is 159,000 with a range of point estimates from 94,000 (75% probability) to 296,000 (25% probability). The forecast method's mean absolute accuracy for predicting TRTC returns was 57.6% (range: <1–98%) for 2000 to 2020 returns. Based on the pre-season TRTC forecasts and the minimum escapement goal (40,000) for Nass Coho for 2021, the Nisga'a allocation ranges between 7,500 and 19,200 (maximum entitlement). The mean TRTC forecast (159,000) will be used for calculating the initial target for the in-season Nisga'a allocation (12,700) of Nass Coho for 2021. The actual Nisga'a allocation target for 2021 may be higher depending on in-season run strength to account for the current cumulative underage (approximately 21,000) accrued from 2000 to 2020.

#### 13.3.2.5.2 Recreational Fisheries

Recreational fisheries targeting Northern BC Coho take place in marine Areas 1 through 10 and in-river. Conservation measures to protect Coho will be in place in a number of areas and times.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

The possession limit for salmon is twice the daily limit.

In North Coast tidal waters, the minimum size limit for Coho salmon is 30 cm, with daily and total possession limits in effect. The open time is April 1st to March 31st.

#### ***Haida Gwaii (Areas 1 and 2)***

Recreational salmon fishing primarily occurs in the tidal waters surrounding Haida Gwaii, with the majority of effort focused along the shoreline from Masset to Langara Island in Area 1 and between Englefield Bay and Port Louis in Area 2W. Recreational fishing occurs primarily between May and September with peak effort and catch occurring in July and August. The recreational fishery targets Coho of mixed stocks from across the north and central coast of B.C.

#### ***Nass (Area 3)***

Recreational salmon fishing occurs in the tidal waters adjacent to the Nass River, with the peak of the season being from June to August.

The Nass River and tributaries are in Region 6 freshwater fishing area, and there are openings for Coho salmon throughout the watershed at different time periods. The standard close time for Coho is November 1st to December 31st. The minimum size limit is 30 cm, with daily and total possession limits in effect.

#### ***Skeena (Area 4)***

Recreational salmon fishing occurs in the tidal waters adjacent to the Skeena River, with the peak of the season being from June to August.

The tidal waters salmon recreational fishery in Pacific Fishery Management Area 4 begins with low effort in late April with early season participation by local area residents. Independent and guided day charter effort increases significantly in late May and remains high throughout the peak season in June, July and August, decreasing at the end of August with primarily local participants again by the end of September.

The Skeena River and tributaries are in Region 6 freshwater fishing area, and there are openings for Coho throughout the watershed at different time periods. On the lower Skeena River

mainstem, the standard opening is July 15th to November 30th, with daily and total possession limits in effect. On the upper Skeena River mainstem, the standard opening is July 15th to October 15th. The minimum size limit is 30 cm.

#### *Areas 5 & 6 Tidal Waters*

The Area 5 tidal water interception salmon recreational fishery begins in late April. Initial effort is mostly by local independent anglers out of Prince Rupert and Port Edward; however, the most significant portion of the recreational fishing season develops late May and continues to mid-September. The fleet operating in Area 5 is made up mainly of independent anglers and charter operators.

The Area 6 tidal water interception salmon recreational fishery begins in late April. Initial effort is mostly by local independent anglers out of Kitimat. One recreational fishing lodge and a number of charter operators also fish in Area 6 with the most significant portion of the recreational fishing season taking place between late May and mid-September.

In the mainland watersheds of Region 6 freshwater fishing area, a standard closed time for Coho is November 1st to December 31st. Depending on the watershed, openings occur on different dates, with daily and total possession limits in effect.

#### *Central Coast (Areas 7 to 10)*

*Central Coast First Nations have expressed a significant concern towards the poor productivity of Central Coast Coho stocks in recent years. The Department is committed to working collaboratively with First Nations and stakeholder groups to better assess both the status of these stocks and the impacts of existing fisheries. These include a suite of new stock assessment activities jointly operated by Central Coast First Nations and the Department, which will be used to inform management decisions in the future.* The main recreational fishing activity takes place in Milbanke Sound off of St. Johns Harbour and in Seaforth Channel between St. Johns and Idol Point; fishing effort is primarily from several recreational lodges and charter operators.

In Area 8, the main recreational fishing effort in tidal water is concentrated in the Hakai Pass area by guests of the recreational lodges in the area. There is also individual angler effort within the area. In Area 9, the main recreational fishing effort in tidal water is concentrated in Rivers Inlet area by guests of the recreational lodges in the area. There is also individual angler effort within the area.

In Area 9, a condition of licence in the recreational Tidal Waters Sport Fishing Licence, applies to all angling in the Rivers Inlet Special Management Zone. Any anglers fishing in this area

should consult the Tidal Waters Sport Fishing Regulations prior to commencing fishing. The online guide can be found at:

<http://www.bcsportfishingguide.ca>

Recreational harvesting does occur in Area 10, with participation by independent anglers and charter operators.

The Central Coast non-tidal waters are in Regions 5B and 6 freshwater fishing areas, and there are openings for Coho salmon in the different watersheds at different time periods. The minimum size limit is 30 cm, with daily and total possession limits in effect. Many rivers have closures from October to December.

#### *Fishery Monitoring and Catch Reporting*

In Haida Gwaii, DFO has been collecting recreational catch data through the Lodge Log Book Program and the Haida Creel Program since 1995. Participation in monitoring and reporting of recreational catch in Areas 1 and 2 has been excellent over the past 26 years. Monitoring is continuing to improve with region wide initiatives.

The Area 3 and 4 creel programs operated by the North Coast Skeena First Nations Stewardship Society ran from May 1 to August 31, 2020 with a recorded total of 9,665 boat trips and a retained catch of 25,599 Coho.

A creel survey of freshwater recreational fisheries on the lower Skeena River watershed was conducted by Kitsumkalum Fish and Wildlife program and LGL in 2020. From July 14 to September 18, 2020 there were approximately 49,363 angler hours with an estimated retained catch of 583 Coho.

A creel survey of the freshwater recreational fisheries in four river systems of the Nass watershed was not conducted in 2020. The mean average in-river recreational catch of Nass Sockeye from 2000-2015 is 540 fish. In Areas 6 to 9, DFO has been collecting recreational catch data through the Lodge Log Book Program. In Area 10, Logbook information is used to provide catch and release numbers from anglers fishing there.

#### **13.3.2.5.3 Commercial Fisheries**

When abundance permits, Coho may be taken as by-catch in Sockeye-directed net fisheries in Areas 3 and 4. Commercial opportunities for Coho for the Area F troll fleet occur in off-shore portions of Haida Gwaii and in Dixon Entrance. Additional opportunities in Area 3 and in the Central Coast are possible in years of sufficient abundance.

*Allocation*

Table 13.3-1: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
<b>North</b>	1 to 10, 101 to 111, 130, 142	12.5%	6.5%	81.0%

*Northern BC Coho Fisheries**Area C Gillnet*

The Area C Harvest Committee has indicated interest in creating a Coho-directed fishery in portions of Areas 3; however, further discussion is required to develop fishery strategies that mitigate stocks of concern such as Area 3 Chum which currently limit directed fisheries and has a rebuilding management objective.

Retention of Coho will not be allowed in Sockeye-directed gill net fisheries in Areas 3 and 4. This may be modified in-season as more information on stock abundance becomes available.

Non-retention of Coho in all gill net fisheries in Areas 1 and 2.

In the Central Coast, gill net opportunities will be non-retention Coho unless otherwise specified.

*Area A Seine*

There are no directed fisheries for Northern BC Coho.

Retention of Coho will not be allowed in Sockeye and Pink-directed seine fisheries in Areas 3 and 4. This may be modified in-season as more information on stock abundance becomes available. Non-retention of Coho in all seine fisheries in Areas 1, 2 and 6.

In the Central Coast, seine openings will be non-retention Coho unless specified in the fishery notice.

*Area F Troll*

**As part of the 2021 Pacific Salmon Strategy Initiative, the Area F Troll Mixed Stock Coho commercial fishery will be closed. See Appendix 11 for a complete list of Northern salmon commercial closures**

Opening dates for the Area F Coho-directed Troll fishery will be informed by ongoing consultations with First Nations and stakeholders through the IHPC process, and are expected



to be linked with decisions related to Fraser chinook conservation measures. Details will be distributed when available during the Spring 2021 pre-season consultation period.

Full fleet troll fishing opportunities in Area 3 and Central Coast will be determined by in-season monitoring of Coho abundance. Due to prevailing low abundance of Coho, the Central Coast Limited Effort Coho demonstration fishery for the Area F troll fishery will not occur in 2021.

#### *Fishery Monitoring and Catch Reporting*

Fishery Monitoring and Catch Reporting includes the following:

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type*).

Mandatory validation of all salmon for vessels that have retained Chinook.

All Area F trollers are required to submit daily catch reports within 24 hours of landing.

#### *Retention of freezer troll salmon heads*

In accordance with the conditions of the Area F troll license, all vessels are required to bring all Chinook and Coho heads (or snouts if they are cut properly to include any CWT) to the dock for submission, unless the license is listed in a fisheries notice listing the Area F troll licenses that are exempted from retaining salmon heads during the 2021 fishing season. This fisheries notice is expected to be released prior to the opening of the fishery.

Poor compliance and head retention practices prior to 2013 led to the requirement that 50% of the Area F troll fleet retain salmon heads to ensure that Canada met its obligation to sample a minimum of 20%. In recent years, salmon head recovery compliance by the Area F troll fleet has improved allowing for a reduction in the number for vessels that retain salmon heads.

For 2021, the exemption rate will be between 70%. As in past seasons, licences that were insufficiently diligent in carrying out their conditions of license to bring in all Chinook and Coho heads will not be exempted in 2021.

#### *Skeena Coho Inland Demonstration Fishery*

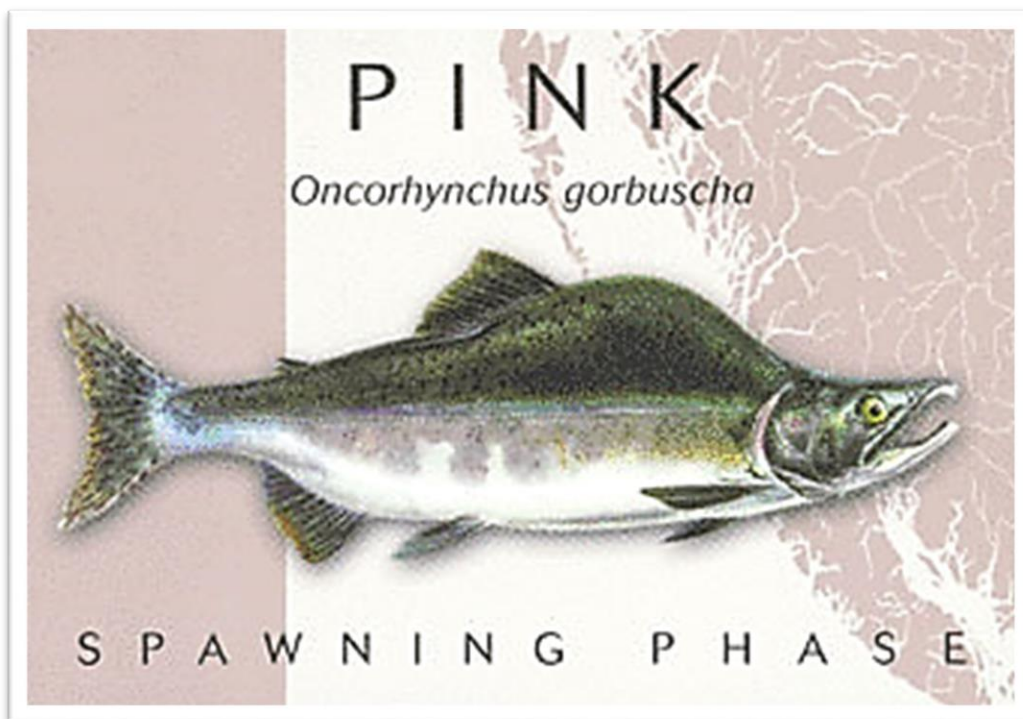
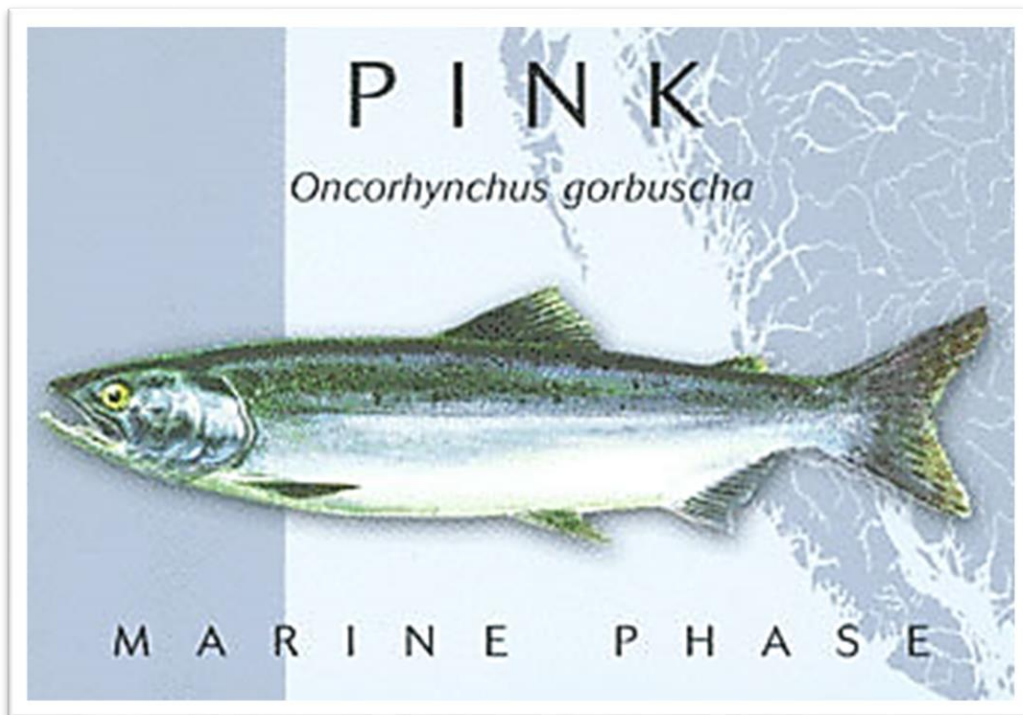
In 2018, a proposal to permit Coho retention within the existing Wet'suwet'en Pink directed ESSR fishery at Moricetown Canyon was approved through updates to the Commercial Salmon Allocation Framework. The total inland allocation is determined in-season and based off of historic and in-season stock assessment information, specific to the harvest area. For more information on this fishery, please see Appendix 6: Updates to Commercial Salmon Allocation Framework.

The DFO contact for more information is Jen Gordon at (250) 600-0246.

#### **13.3.2.5.4 ESSR Fisheries**

There are currently no ESSR fisheries for Northern BC Coho.

## 13.4 NORTHERN PINK SALMON FISHING PLAN



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**13.4.1 NORTHERN PINK SALMON OVERVIEW**

Pink salmon are the most abundant but smallest of the Pacific salmon species. They are unusual in having a fixed 2-year life span, with one year class sometimes have stronger returns than the other.

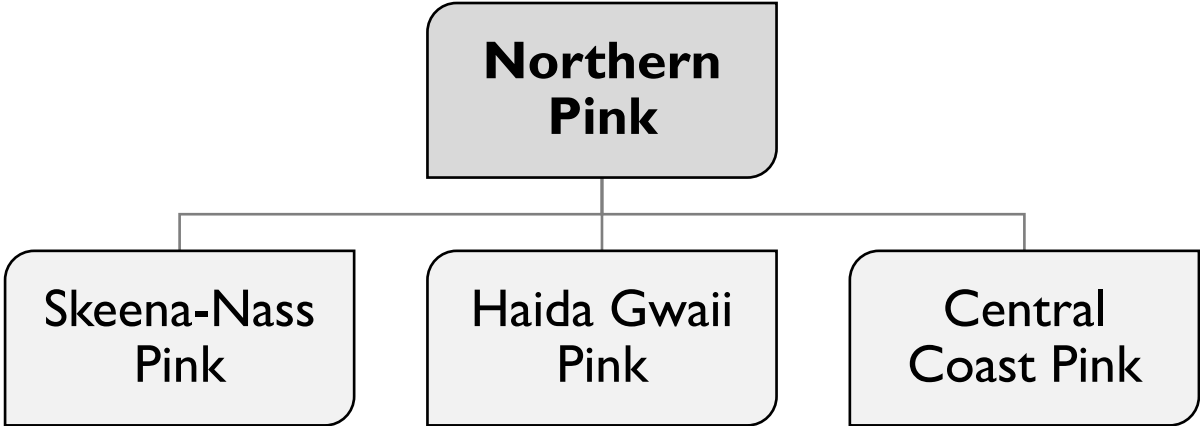


Figure 13.4-1: Overview of Northern Pink Salmon

13.4.2 HAIDA GWAII PINK SALMON

13.4.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

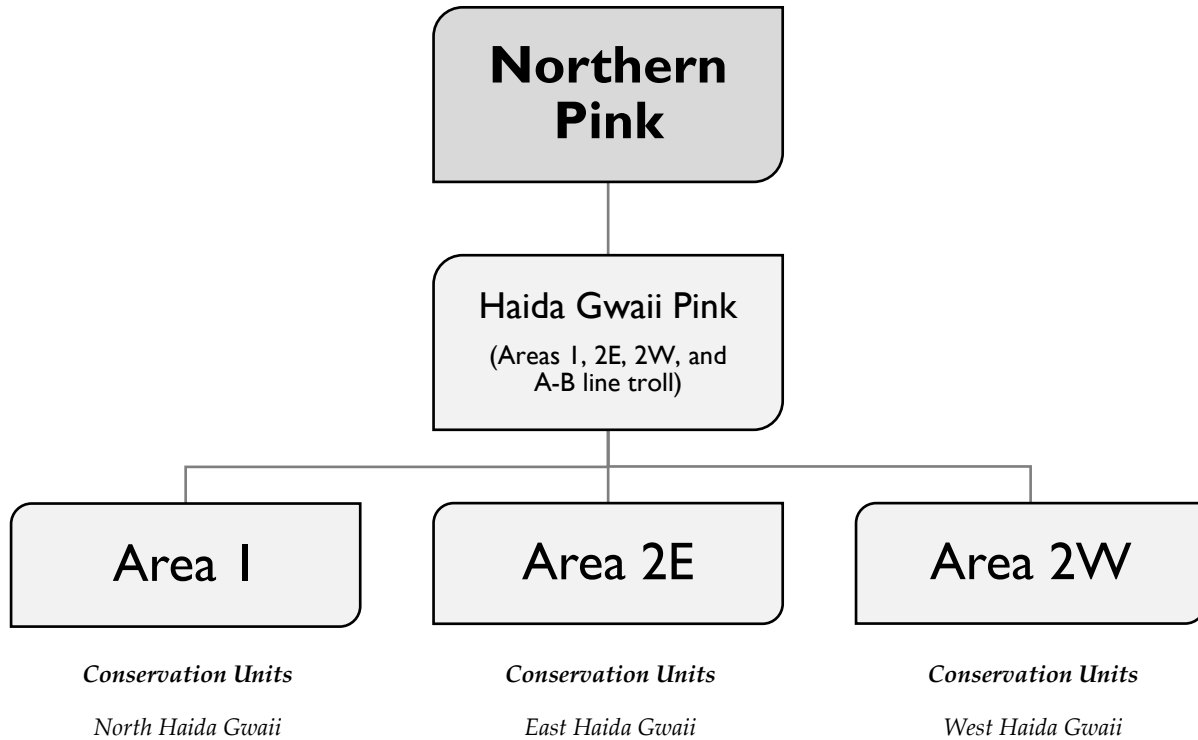


Figure 13.4-2: Conservation Units in the Haida Gwaii Pink Salmon Management Unit (1 CU)

Haida Gwaii Pink salmon return on a two year cycle, with dramatic differences in return strength between even and odd calendar years. Most streams have a strong return of Haida Gwaii Pink salmon during even calendar years only. Directed harvests are only anticipated during even years.

Pink salmon are also harvested in the Area F troll fishery.

13.4.2.2 STOCK ASSESSMENT INFORMATION

13.4.2.2.1 Pre-season

There are no formal pre-season forecasts for Haida Gwaii Pinks. Opportunities for Pink salmon fisheries are determined in-season. Pre-season expectations for Haida Gwaii Pinks are poor, as it is a non-dominant year, and poor brood year escapements in 2019.

See Appendix 10: 2021 Salmon Outlook for more information.

**13.4.2.2 In-season**

In-season Pink salmon assessments will determine if harvest opportunities are viable.

The assessments of Haida Gwaii Pink run size and escapement are done visually by charter patrolmen and opportunistically by DFO staff. Additional assessments are coordinated with the Haida Fisheries Program and Parks Canada. The main areas assessed for harvest opportunities are Masset Inlet, Skidegate Inlet, Cumshewa Inlet, Selwyn Inlet, Darwin Sound, Rennell Sound, West Skidegate and Englefield Bay.

**13.4.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Terminal net fishery openings are based on fish observed schooling in front of the various systems. Fisheries will only be considered if sufficient salmon return to meet escapement goals.

For Area F troll, Canada will manage the Area 1 troll fishery to achieve an annual catch share of 2.57 percent of the annual allowable harvest (AAH) of a portion of south-east Alaska, as agreed to in the Pacific Salmon Treaty (PST). The methodology for AAH calculations is provided in the PST. Canada can carry forward from year to year annual deviations from the prescribed catch. To optimize the Pink catch, the northern section of Dixon Entrance will open to Pink salmon fishing on July 1st. During this fishery, Coho retention will also be allowed. Pink salmon retention will also be allowed during the Chinook fishery.

**13.4.2.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO HAIDA GWAII PINK FISHERIES**

Before a harvest can occur, assessment of escapements to streams in and near the surplus to be harvested will need to be conducted. Conservation of smaller and/or weaker returning stocks that may be affected by a potential harvest opportunity may influence the timing and/or location of the fishery or may result in the forgoing of the fishing opportunity.

Coho by-catch may be a concern in some areas. Brailing by seines and the use of revival boxes by both gill nets and seines will be required.

**Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.



While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### 13.4.2.5 ALLOCATION AND FISHING PLAN

#### 13.4.2.5.1 First Nations Fisheries

##### *Food Social and Ceremonial Fisheries*

First Nations opportunities to harvest salmon for FSC purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

### *Treaty Fisheries*

There are currently no Treaty fisheries for Haida Gwaii Pink salmon.

#### **13.4.2.5.2 Recreational Fisheries**

Recreational salmon fishing primarily occurs in the tidal waters surrounding Haida Gwaii, with the majority of effort focused along the shoreline from Masset to Langara Island in Area 1 and between Englefield Bay and Port Louis in Area 2W. Recreational fishing occurs primarily between May and September with peak effort and catch occurring in July and August. Pink salmon are incidentally retained in the recreational fishery which primarily targets Chinook and Coho salmon. The daily aggregate limit of salmon is four (4) per day and a maximum 2 of which may be Chinook.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<http://www.dfo-mpo.gc.ca/fisheries-peches/recreational-recreative/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

### *Fishery Monitoring and Catch Reporting*

DFO has been collecting recreational catch data through the Lodge Log Book Program and the Haida Creel Program since 1995. Participation in monitoring and reporting of recreational catch in Areas 1 and 2 has been excellent over the past 26 years. Monitoring is continuing to improve with region wide initiatives.

#### **13.4.2.5.3 Commercial Fisheries**

In 2021, potential opportunities for commercial fisheries for Haida Gwaii Pink salmon will be assessed in-season.

Description	Areas	Seine A	Gill Net C	Troll F
<b>North</b>	1, 2E, 2W (even), 3 to 5, 101 to 105	75.5%	22.5% <sup>a</sup>	2.0%

Notes on Pink allocations (North):

<sup>a</sup> Skeena sharing 75% seine: 25% gillnet

### *Haida Gwaii Pink Fisheries*

Although 2021 is an odd year cycle and no directed fisheries are anticipated for Haida Gwaii Pink salmon, fishing opportunities may be considered if stocks appear to be returning in sufficient abundance. Commercial harvest opportunities are dependent on run timing, but typically occur in the last half of August.

#### *Area A (Seine) and Area C (Gill Net)*

No Chinook gillnet or seine fisheries will be directed on passing stocks.

#### *Area F Troll*

Retention of Pink salmon will be permitted in conjunction with troll openings targeting Coho and Chinook as follows:

July 1– AB Line Targeted Pink opening with Coho retention. See Section [13.3](#) – Northern Coho for details.

August 1 – Targeted coho fishery opening. See Section [13.3](#) – Northern Coho for details.

TBD – Chinook ITQ opening. See Section 13.1 – Northern AABM Chinook for details.

### *Fishery Monitoring and Catch Reporting*

Fishery Monitoring and Catch Reporting includes the following:

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type*).

#### **13.4.2.5.4 ESSR Fisheries**

There are no anticipated ESSR fisheries for Haida Gwaii Pink salmon.

13.4.3 SKEENA-NASS PINKS

13.4.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

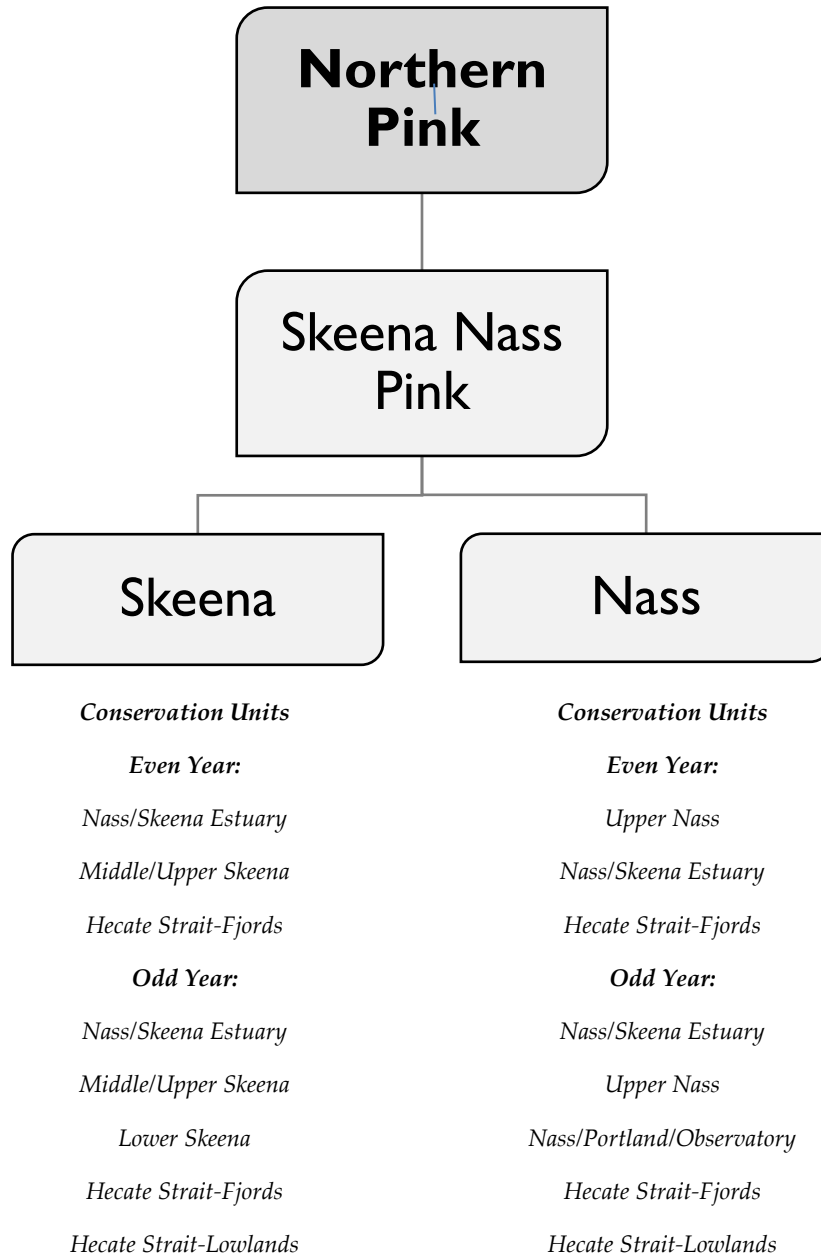


Figure 13.4-3: Conservation Units in the Skeena-Nass Pink Salmon Management Unit

Pink returns to the Nass watershed are dominant in odd-years with major returns seen to the Iknouk, Kwinimass and Khutzeymateen Rivers. Most Area 3 Pink stocks arrive in the fishing

area at approximately the same time, usually in mid-July. The outer coastal stocks are an exception, arriving in August and early September.

In the Skeena River, 128 systems have recorded Pink salmon presence. Tagging studies were conducted in 1982, 1984 and 1985. These studies were designed primarily to provide information on interception rates of southeast Alaskan Pink stocks, but also provided information on stock abundance, migration and timing of Canadian stocks. Management stock groupings are Skeena River and Coastal. There are no major coastal Pink stocks in Areas 4 or 5; the majority of returns to these areas are from a number of small streams that contribute to the total return.

### **13.4.3.2 STOCK ASSESSMENT INFORMATION**

#### **13.4.3.2.1 Pre-season**

There are no formal pre-season forecasts for Pinks in the Nass or Skeena watersheds. Both areas usually see greater returns in odd years, with smaller returns in even years. Historically Pink returns have been highly variable and expectations are highly uncertain.

See Appendix 10: 2021 Salmon Outlook for more information. Returns are known to be highly variable. Fishing opportunities in Areas 3, 4, and 5 will be based on in-season indications of abundance.

#### **13.4.3.2.2 In-season**

Returns of Pink salmon to the Nass River are monitored through the fish wheel program operated by Nisga'a Fisheries. Pink stocks are managed to stream-specific escapement goals in Area 3 while keeping within the Pacific Salmon Treaty Pink annex considerations. Targeted net Pink fisheries will be based upon identified surpluses with consideration for stocks of concern.

The Tyee test fishery on the Skeena River is the main indicator for relative abundance of Pink salmon in Areas 4 and 5 through the use of a multi-panel gill net with varying mesh sizes. Returns are variable and estimates are also subject to error as annual run timing and the annual catchability of salmon by the Tyee test fishery net varies. Fishing opportunities for Pinks in Area 5 are managed through in-season assessments.

### **13.4.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

#### **In-season Decisions**

Weekly in-season decisions for Nass Pinks are made from run size predictions based on:

Catch and effort data from the Area 3 and Alaskan Tree Point commercial net fisheries.

Escapement information from the Nisga'a Fishwheel Program conducted at test-fishing sites near Gitwinksihlkw on the Nass River, and later from individual stream inspections for Pinks.

Pink stocks are managed to stream-specific escapement goals in Area 3 while keeping within the Pacific Salmon Treaty Pink annex considerations. Targeted net Pink fisheries will be based upon identified surpluses with consideration for stocks of concern.

Fisheries on the Skeena traditionally switch focus from Sockeye to Pink salmon in mid-August when abundance permits. Once the fishery switches to Pink management, if the yearly escapement is not expected to reach one million, the fishery may close. Pink returns between one and two million are managed with a balance between catch and escapement. This balance depends on escapement distribution and concern for other species. Coastal Area 4 and 5 Pink stocks are traditionally managed in accordance with Skeena runs until early-August when local Pink stocks become prevalent. Care will be taken not to over-harvest local stocks while conducting the Skeena directed fishery. For instance, in years when there are large surpluses of Skeena Pink salmon, boundaries may be established around local, coastal Pink streams to protect Pinks holding in front of these systems while conducting the main Skeena directed Pink fishery. Seine fisheries for coastal Pink stocks are then considered based on catch and stream escapement information generated from Charter Patrol assessments.

Seine fisheries for Area 5 Pink stocks are considered starting in mid-August based on catch and stream escapement information. A targeted selective gill net fishery for Pinks in Area 5 is possible while Skeena Pinks are transiting the area and before the terminal stocks in Ogden Channel appear. Small mesh nets would be implemented to minimize the by-catch of Sockeye and Chum, and the fishery would be terminated if by-catch encounters were found to be high.

If abundances permit, a troll Pink fishery in Area 3 may be conducted. This fishery would be managed to minimize by-catch of Chum and gear conflicts with net fleets.

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, the following will be implemented:

- Recreational fisheries for salmon in the Skeena River will be closed.
- Recreational marine fisheries for salmon in Area 3, 4, and 5 will have existing retention limits reduced by half.

- Area 4 commercial fishing opportunities would be suspended.

The management actions listed above may be modified should abundances of other salmon species be sufficient to allow harvest beyond Food, Social, and Ceremonial requirements, and will be determined in season.

Should in-season estimates indicate FSC closures are no longer warranted, these management measures would be reversed in when the FSC closures are lifted, and they do not preclude management measures already in place for each species.

### **13.4.3.4 INCIDENTAL HARVEST, BY-CATCH, AND CONSTRAINTS TO SKEENA AND NASS PINK FISHERIES**

For Nass area fisheries, Pink fishing opportunities will be managed to conserve weak stocks of Area 3 Chum. Area 3 Chum are subject to a rebuilding plan (see [Appendix 7: Nass Chum Draft Rebuilding Plan](#)) and will require continued focused management planning.

Area 4 and 5 fisheries will be managed in late July and early August to minimize impacts to weak Sockeye and Chum stocks.

Skeena Pink fishing opportunities may be limited to reduce harvest impacts on Skeena Sockeye and Chum stocks by restricting late season openings and ensuring compliance during seine Pink harvests.

#### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### **13.4.3.5 ALLOCATION AND FISHING PLANS**

#### **13.4.3.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial Fisheries*

First Nations opportunities to harvest salmon for FSC purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements, if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

##### *Treaty Fisheries*

###### *Nisga'a Fisheries*

The Nisga'a Annual Fishing Plan (NAFP) is developed by the Nisga'a-Canada-BC Joint Fisheries Management Committee (JFMC) and governed by the terms of the Nisga'a Final Agreement and the Nisga'a Harvest Agreement of the Nisga'a Treaty. The Nisga'a Harvest Agreement includes Nisga'a fish allocations expressed as a percentage of the adjusted total allowable catch of Sockeye and Pink salmon. The NAFP is developed in accordance with



Chapter 8 of the Nisga'a Final Agreement. Once approved by the Minister, the Nisga'a Annual Fishing Plan remains in effect until replaced the following year. The fishing plan applies to persons who harvest fish, other than steelhead, in Nisga'a fisheries.

Nisga'a salmon allocations, as defined in the Nisga'a Treaty, are set out as a percentage of the Total Return to Canada (TRTC) up to maximum catch thresholds (63,000 Sockeye [10.5%], 6,300 Pink [0.6%], 12,600 Chinook [21%], 19,200 Coho [8%], and 12,000 Chum [8%]) in large return years. These Nisga'a salmon allocations have the same priority in fisheries management decisions as domestic [food, social and ceremonial (FSC)] fisheries that target Nass salmon.

The NAFP defines the escapement goals required to guide management decisions for Nass salmon stocks, calculates Nisga'a allocations for each salmon species and provides the general regulatory requirements for catches of each salmon species. The NAFP is provided to other Nass watershed First Nations for their information and is reviewed by the JFMC prior to being submitted to the Minister for approval. Nisga'a Lisims Government is responsible for the internal allocation of catch opportunities between Nisga'a fishers and day to day operation of the Nisga'a fishery.

Pre-season estimates and ranges for the Nisga'a salmon allocations in 2021 are:

*Nass Pink*: The Total Run size probability point estimate for 2021 from a pre-season odd-year brood regression model (2 year) is 428,000 (50%) with a range in point estimates between 191,000 (75%) and 963,000 (25%). Assuming an 8% Alaskan exploitation rate (based on the average of odd years from 2009 to 2019, approximately 33,000 Nass Pink), the 50% probability point estimate for the Total Return to Canada (TRTC) of Nass Pink is 395,000 with a range of point estimates from 176,000 (75% probability) to 888,000 (25% probability). The forecast method's mean absolute accuracy for predicting TRTC returns was 59.7% (range: 32–98%) for odd-year returns from 2013 and 2019 returns. Based on the pre-season TRTC forecasts and the minimum escapement goal (225,000) for 2021, the Nisga'a allocation ranges between <1,000 (incidental by-catch only) and 104,000. The mean TRTC forecast (395,000) will be used for calculating the initial target for the in-season Nisga'a allocation (28,000) for Nass Area Pink in 2021. The actual Nisga'a allocation target for 2021 may be higher depending on in-season run strength to account for the current cumulative underage (approximately 14,000) accrued from odd-year returns from 2000 to 2019.

### 13.4.3.5.2 Recreational Fisheries

Recreational salmon fishing occurs in the tidal waters adjacent to the Nass and Skeena Rivers, Areas 3 and 4. The fishery is open April 1st to March 31st, with the peak of the season being

from June to August. The daily limit for Pink salmon in Areas 3 & 4 is four (4) per day, unless otherwise varied.

The Nass and Skeena Rivers and tributaries are in Region 6 freshwater fishing area, and an opening for Pink salmon occurs on the Nass and Skeena mainstems from July 1st to September 15th. The minimum size limit is 30 cm, and a daily limit of 2 fish.

The minimum size limit for Pink salmon is 30 cm, in tidal waters and freshwater. The possession limit for salmon is twice the daily limit.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<http://www.dfo-mpo.gc.ca/fisheries-peches/recreational-recreative/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

### *Fishery Monitoring and Catch Reporting*

The Area 3 and 4 Creel Program was run by the North Coast Skeena Stewardship Society and operated from May 1st to August 31st, 2020, with 9,665 recorded boat trips and a retained catch of 2,998 Pink salmon.

A creel survey of freshwater recreational fisheries on the lower Skeena River watershed was conducted by Kitsumkalum Fish and Wildlife program and LGL in 2020. From July 14 to September 18, 2020 there were approximately 49,363 angler-hours with an estimated retained catch of 167 Pink.

### 13.4.3.5.3 Commercial Fisheries

#### *Allocations*

Table 13.4-1: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
<b>North</b>	1, 2E, 2W (even), 3 to 5, 101 to 105	75.5%	22.5% <sup>a</sup>	2.0%

Notes on Pink allocations (North):

<sup>a</sup> Skeena sharing 75% seine: 25% gillnet

### *Skeena-Nass Pink Fisheries*

Fishing opportunities may be considered if stocks appear to be returning in sufficient abundance. Commercial harvest opportunities are dependent on run timing, but typically occur between mid-July and mid-August. The areas typically fished are outlined below and may be updated in-season.

For Area 3, seine Pink fishing opportunities and opening dates are evaluated pre-season based on brood year escapements, run timing and any concurrent fisheries taking place in other areas.

For 2021, the Department is proposing a one-day Seine assessment opening in the first week of July to assess opportunities to target Pink stocks returning to Area 3, including the Iknouk, Kwinimass and Khutzeymateen Rivers. This fishery is planned to get an early assessment of relative run strength. It will have very little impact on the stock because it occurs early in the run and provides information to better manage the fishery later in the season. Additional fishing opportunities are based on in-season assessments of commercial catch per unit effort (CPUE), with high CPUE's being indicative of a strong return. As the season progresses, the in-season indicator changes to the assessment of stream escapements to determine if further fishing opportunities are available.

#### *Area A Seine*

**Area 3:** First week of July – One day Seine Pink assessment opening. Sockeye retention will be determined when the fishery is announced, and will be informed by in-season estimates of abundance. Additional seine fishery openings will be determined in-season based on both Sockeye and Pink abundance. Minimum bunt mesh size 70 mm (2.76 inches). Assessment fishery will be limited to one day only.

**Areas 4 and 5:** Openings will be based on Skeena salmon returns and the target annual exploitation rate and will be similar to previous years subject to ongoing discussions with First Nations and commercial fishing interests.

#### *Area C Gill Net*

**Area 3:** June 29 – Potential one day Gill Net Sockeye assessment opening with Pink retention. Maximum mesh size is 137 mm (5.39 in). This fishery will assess opportunities to target returning Nass River Sockeye and assess run strength. Assessment fisheries will be operated with spatial closures in place to avoid Nass Chinook. Assessment fishery will be limited to one day only. The assessment fishery will be informed by data from the Nass fish wheels.

**Areas 4 and 5:** Openings will be based on Skeena salmon returns and the target annual exploitation rate and will be similar to previous years subject to ongoing discussions with First Nations and commercial fishing interests.

### *Area F Troll*

**Area 3:** If abundances permit, a troll Pink fishery may be conducted. This fishery would be managed to minimize by-catch of Chum and gear conflicts with net fleets.

### ***Fishery Monitoring and Catch Reporting***

For 2021, the Department is continuing to work with Area Harvest Committees on catch monitoring programs in the following areas:

Area A Seine (PFMA 3 to 6):

Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)

Catch estimates to be communicated prior to any shore-based offload.

Independent verification of landed catch through a designated service provider

Deployment of at-sea observers with priority placed on highest profile fisheries occurring concurrently.

Area C Gill net (PFMA 3 to 5):

Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)

Catch estimates to be communicated prior to any shore-based offload.

Pilot of Super Sales Slip program by a portion of Area C licences during regular gill net fisheries is under consideration.

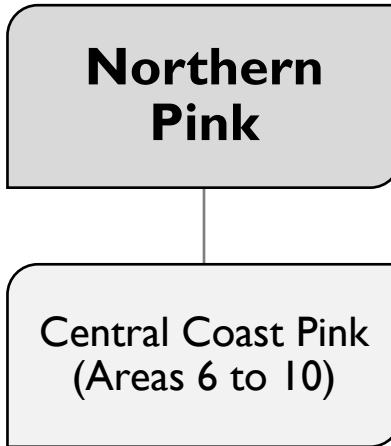
Additional details on the catch monitoring programs will be communicated via Fisheries Notices.

#### **13.4.3.5.4 ESSR Fisheries**

All Pink ESSR fisheries will be by selective means with live release of all non-target species. If a local surplus of Pinks is identified, an ESSR opportunity may be available at the Kitwanga weir (Gitanyow First Nation) and Moricetown fishway (Wet'suwet'en First Nation).

13.4.4 CENTRAL COAST PINK SALMON

13.4.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT



*Conservation Units*

*Areas 6 to 10*

*Even Year:*

*Hecate Strait Fjords*

*Hecate Strait Lowlands*

*Odd Year:*

*Hecate Strait Fjords*

*Hecate Strait Lowlands*

*Areas 9 and 10*

*Homathko-Klinaklini Rivers-Smith*

*Inlet-Bella Coola-Dean*

Figure 13.4-4: Conservation Units in the Central Coast Pink Salmon Management Unit

The Central Coast has more than 250 streams and rivers that support populations of Pink salmon. Central Coast streams support both odd and even year stocks with odd year stocks being more abundant in all areas since the early 2000s. Both Area 6 and Area 8 can see extremely large returns of Pink salmon, with total run averages over a million since 2000 even in even years, which have not been dominant since that time.

### **13.4.4.2 STOCK ASSESSMENT INFORMATION**

#### **13.4.4.2.1 Pre-season**

There are no formal pre-season forecasts for Pinks in the Central Coast. Area 6 usually sees greater returns in odd years, while Areas 7 to 10 historically saw larger runs in even years. However, since flood events in 2010 the greater returns to Area 8 have been in odd years. Pink returns have been highly variable and expectations are highly uncertain.

See Appendix 10: 2021 Salmon Outlook for more information.

For Areas 7 to 10, poor returns are expected based on low returns in the 2019 brood year. Fishing opportunities in Areas 6 to 10 will be based on in-season indications of abundance.

#### **13.4.4.2.2 In-season**

Catch and spawning escapement data are used as indicators of stock abundance for Central Coast Pink stocks. Catch per unit effort in the commercial fishery is monitored as an indicator of overall Pink abundance, and can be used as an indicator as to whether or not escapement targets will be met. Each area contains key streams whose escapements are actively monitored in-season to determine run timing and size. This is accomplished by visual counts of fish in streams, either from the air or by walking the streams.

### **13.4.4.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

#### **13.4.4.3.1 In-season Decisions**

Where possible, openings in Areas 6 through 10 will be coordinated to distribute effort appropriately.

For Area 6, seine Pink fishing opportunities and opening dates are evaluated pre-season based on brood year escapements, run timing and any concurrent fisheries taking place in other areas. Seine fisheries will target Pink stocks returning to numerous streams near Gil Island with the Quaal and Kemano Rivers being the main producers in this area. Additional fishing opportunities are based on in-season assessments of commercial catch per unit effort (CPUE), with high CPUE's being indicative of a strong return. As the season progresses, the in-season indicator changes to the assessment of stream escapements to determine if further fishing opportunities are available.

For Areas 7 through 10, in-season decisions are made in consultation with local First Nations, the Central Coast First Nations Salmon Coordinating Committee and Central Coast Advisors for the management of fisheries in these areas.

Pink salmon are mainly caught as by-catch in Chum-directed fisheries in Area 7. In Area 8, Pink fisheries target mainly Atnarko River stocks but there is a component of Kwatna River and Koeye River Pinks that are fished. The Pink fishery on Kwatna stocks occurs at the same time as the Atnarko fishery, while Koeye Pinks are harvested during the latter part of August. There are no Pink-directed fisheries in Areas 9 or 10.

### **13.4.4.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO CENTRAL COAST PINK FISHERIES**

#### **Area 6:**

Area 6 can produce large returns of Pink salmon in some years. Seine fisheries targeting large Pink returns will be managed with consideration of impacts to non-target species such as wild Chum.

Commercial net fishing is limited to daylight hours.

Other management measures in effect include mandatory brailing for all seine sets and non-retention of Chinook, Coho and Steelhead in all fisheries and non-retention of Chum at the Gil Island seine fishery.

#### **Area 7:**

Fishing will be limited to daylight hours.

Net fisheries will begin with non-retention of Coho. Easing of restrictions in-season could occur if Coho abundance is high. In McLoughlin Bay and Kitasoo hatchery Chum targeted fisheries, Coho retention will likely be allowed due to the terminal nature of these fisheries and the hatchery origin of the stocks.

Harvesting opportunities for Pink salmon will be coincidental to Chum-directed harvests.

Sines are required to brail their catch and release Sockeye, Coho, Chinook and Steelhead. Gill nets are required to release Steelhead and Coho.

During periods of high salmon catches in Areas 7 or 8, fisheries will be managed so that there is a maximum of two consecutive days of fishing. This action has been recommended by fishers and processors to maximize the value of the salmon harvested.

### **Area 8:**

Fishing will be limited to daylight hours.

Net fisheries will begin with non-retention of Coho. Easing of restrictions in-season could occur if Coho abundance is high.

Seines are required to brail their catch and release Sockeye, Coho, Chinook, and Steelhead. Gill nets are required to release Steelhead and Coho.

If salmon stocks surplus to escapement requirements are identified, fisheries could occur in areas where incidental catch or by-catch concerns do not preclude harvest activities.

Between July 12 and August 15, weedlines are required for all gill nets in Subareas 8-5 north of Bold Point and 8-8 to reduce Steelhead interceptions.

During periods of high salmon catches in Areas 7 or 8, fisheries will be managed so that there is a maximum of two consecutive days of fishing. This action has been recommended by fishers and processors to maximize the value of the salmon harvested.

### **Areas 9 and 10:**

There are no Pink-directed fisheries in these areas.

### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.



### **13.4.4.5 ALLOCATION AND FISHING PLANS**

#### ***First Nations Fisheries***

##### *Food Social and Ceremonial Fisheries*

First Nations opportunities to harvest salmon for FSC purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe details of the FSC fishery, including the dates, times, methods, and locations of harvest. Communal licences for north coast First Nations are typically multi-species, and are issued on an annual basis. Licences may also be amended for shorter durations.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

#### ***Fishery Monitoring and Catch Reporting***

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

#### ***Treaty Fisheries***

There are no Treaty fisheries for Central Coast Pink salmon.

#### **13.4.4.5.1 Recreational Fisheries**

Recreational salmon fishing occurs in the tidal waters of the Central Coast (Areas 6 to 10). The Pink salmon fishery is open April 1st to March 31st, with the peak of the season being from June to August. Daily and total possession limits are in effect.

The minimum size limit for Pink salmon is 30 cm, in tidal waters and freshwater. The possession limit for salmon is twice the daily limit.

The Area 6 tidal water recreational salmon fishery begins in late April. Initial effort is mostly by local independent anglers out of Kitimat. One recreational fishing lodge and a number of charter operators also fish in Area 6 with the most significant portion of the recreational fishing season taking place between late May and mid-September.

In Area 7, the main recreational fishing activity takes place in Milbanke Sound off of St. Johns Harbour and in Seaforth Channel between St. Johns and Idol Point; fishing effort is primarily from several recreational lodges and charter operators.

In Area 8, the main recreational fishing effort in tidal water is concentrated in the Hakai Pass area by guests of the recreational lodges in the area. There is also individual angler effort within the area.

In Area 9, the main recreational fishing effort in tidal water is concentrated in Rivers Inlet area by guests of the recreational lodges in the area. There is also individual angler effort within the area.

In Area 9, a condition of licence in the recreational Tidal Waters Sport Fishing Licence, applies to all angling in the Rivers Inlet Special Management Zone (SMZ), and any anglers fishing in this area should consult the Tidal Waters Sport Fishing Regulations prior to commencing fishing.

Recreational harvesting occurs in Area 10 with participation by independent anglers and charter operators.

The Central Coast non-tidal waters are in Regions 5B and 6 freshwater fishing areas, and there are openings for Pink salmon in the different watersheds at different time periods. The minimum size limit is 30 cm, with daily and total possession limits in effect.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<http://www.dfo-mpo.gc.ca/fisheries-peches/recreational-recreative/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

### *Fishery Monitoring and Catch Reporting*

In Areas 6 to 9, DFO has been collecting recreational catch data through the Lodge Log Book Program. In Area 10, logbook information is used to provide catch and release numbers from anglers fishing in the area.

#### 13.4.4.5.2 Commercial Fisheries

##### *Allocations*

Table 13.4-2: Commercial Allocation Implementation Plan for the 2015–2021 period

Description	Areas	Seine A	Gill Net C	Troll F
Central	6 to 10	95.0%	5.0% <sup>b</sup>	*

Notes on Pink allocations (north):

\* by-catch provision

<sup>b</sup> potential for future re-negotiation

##### *Central Coast Pink Fisheries*

Fishing opportunities may be considered if stocks appear to be returning in sufficient abundance. Commercial harvest opportunities are dependent on run timing, but typically occur between mid-July and mid-August. The areas typically fished are outlined below and may be updated in-season.

###### *Area 6*

**July 15:** First potential seine opening; areas open will be determined in-season. Minimum bunt mesh size 70mm. Catch rates in this fishery will be used as an indicator of returning abundances of Pink salmon to Area 6.

###### *Area 7*

Harvest opportunities for Pink salmon will be incidental to Chum-directed fisheries for both seine and gillnets.

###### *Area 8*

**Second week of July:** The assessment openings may be extended if the runs appear strong based on a review of catches to-date. Opportunities for a gill net and seine opening on

Monday in the third week of July are considered, based on the results of the assessment fisheries:

If Atnarko Pink stocks are weak but Bella Coola and Kimsquit Chum stocks are strong, Subareas 8-3 and a portion of Subarea 8-4 south of a line from Walker Point to Hergest Point may be closed;

If Kimsquit Chum are weak but Bella Coola Chum are strong, Subarea 8-5 may be closed;

If Kimsquit Chum are very weak but Bella Coola Chum are strong, Subareas 8-5 and 8-4 north of Walker Point may be closed.

#### *Areas 9 and 10*

No commercial harvesting of Pink salmon is anticipated in these areas in 2021.

#### ***Fishery Monitoring and Catch Reporting***

Fishery Monitoring and Catch Reporting includes the following:

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries.

In addition, for any fisheries in Area 6 the following will be implemented as a part of the catch monitoring pilots (Area A Seine: PFMA 3 and 6; Area C Gill net: PFMA 3 to 5):

Area A Seine (PFMA 3 and 6):

Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)

Catch estimates to be communicated prior to any shore-based offload

Independent verification of landed catch through a designated service provider

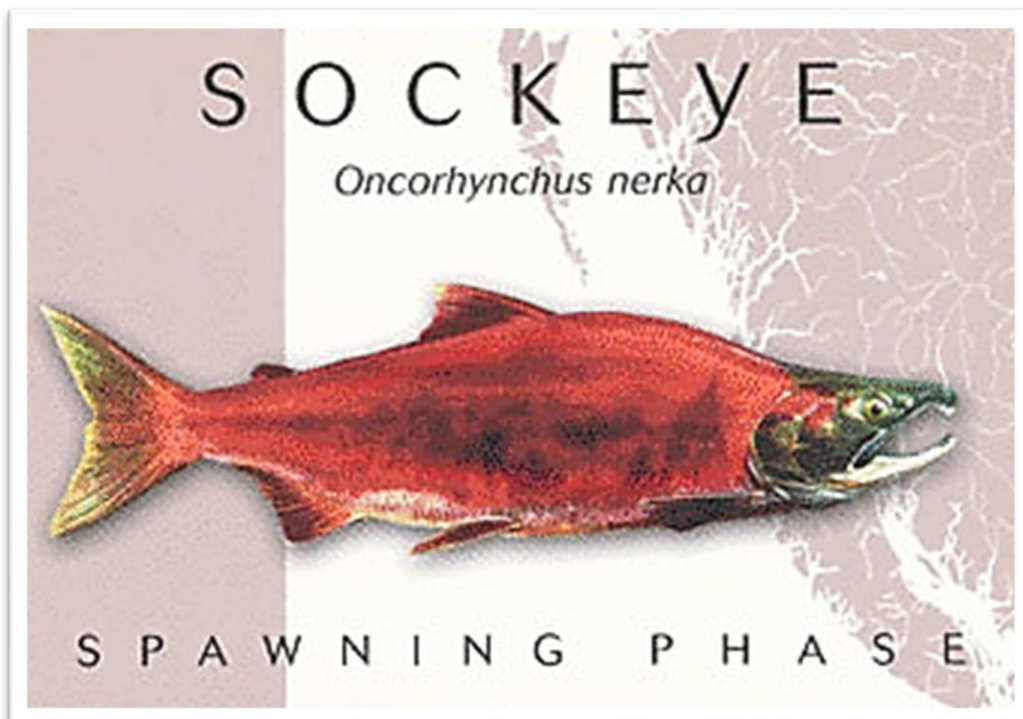
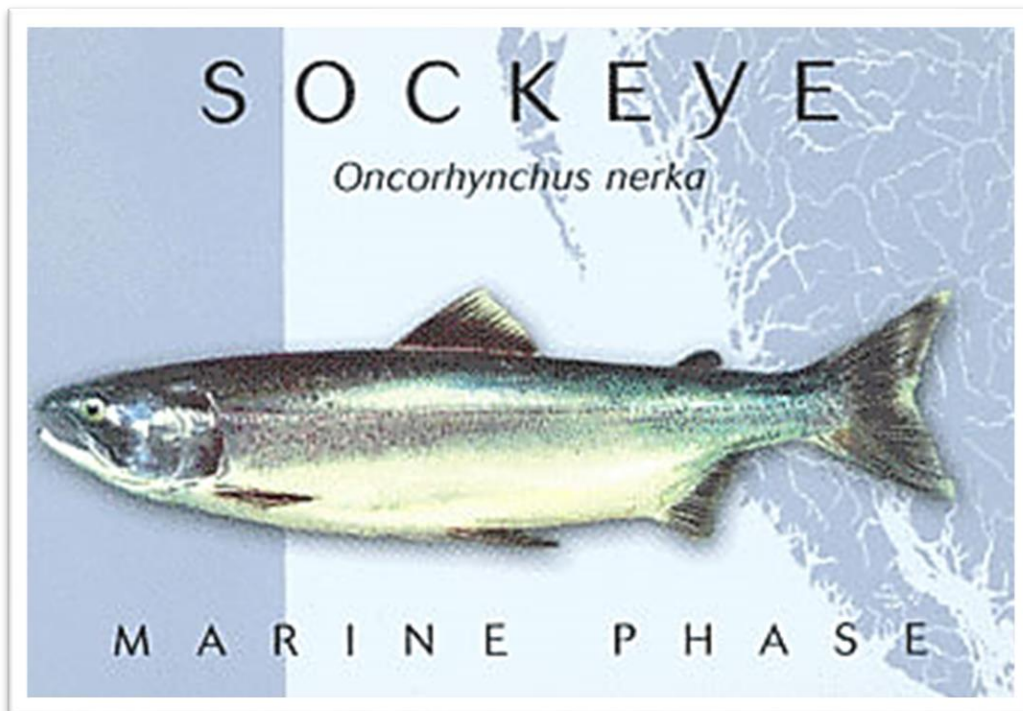
Deployment of at-sea observers with priority placed on highest profile fisheries occurring concurrently

Additional details on the catch monitoring programs will be communicated via Fisheries Notices.

### **13.4.4.5.3 ESSR Fisheries**

All Pink ESSR fisheries will be by selective means with live release of all non-target species. If a local surplus of Pinks is identified, an ESSR opportunity may be available on the Kemano River or at Bish Creek (Haisla First Nation).

## 13.5 NORTHERN SOCKEYE SALMON FISHING PLAN



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### 13.5.1 NORTHERN SOCKEYE OVERVIEW

Major spawning runs of Sockeye salmon occur in the Skeena and Nass watersheds and historically in Rivers and Smith Inlets. Sockeye salmon are among the most economically and culturally important of Pacific salmon species.

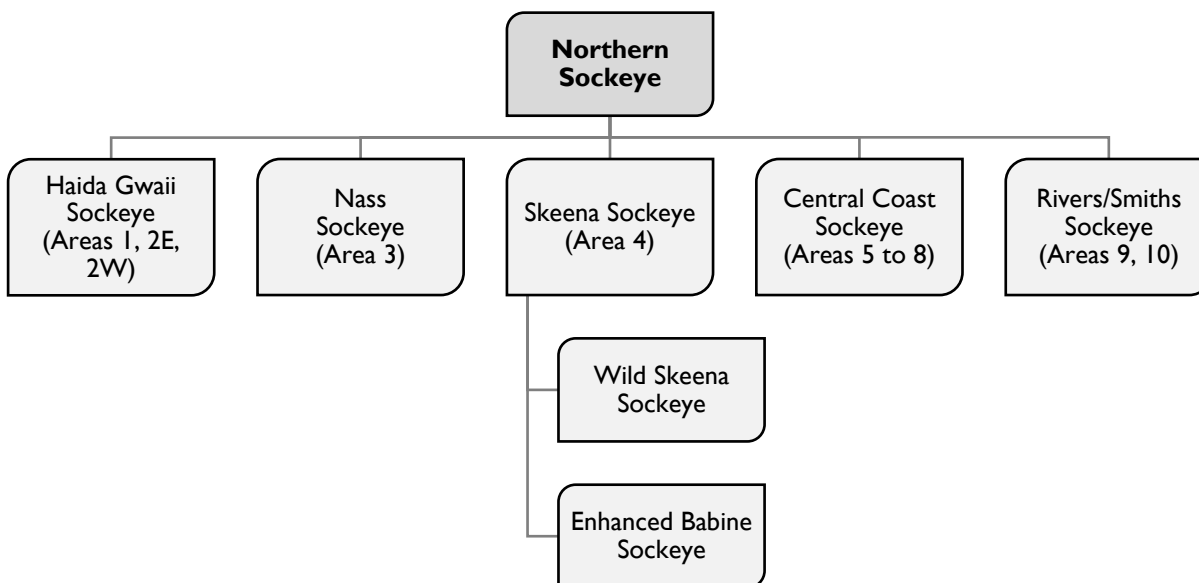


Figure 13.5-1: Overview of Northern Sockeye Salmon

#### 13.5.1.1 NORTHERN SOCKEYE ENHANCEMENT INFORMATION

The major BC North Coast DFO operation enhancement facilities that produce Sockeye are:

- Fulton River project
- Pinkut Creek project
- Snootli Creek hatchery

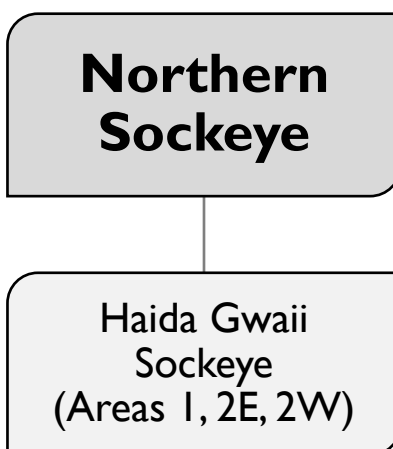
The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), Public Involvement Projects (PIP and DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS).

There are two datasets available: **Post-Season Production** from the 2019 brood year (i.e. 2020 releases, and numbers on hand for 2021 release), and the **Production Plan**, which includes proposed targets for the upcoming 2021 brood year. These are available at the following website:

<http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/ifmp-pgip-eng.html>

### 13.5.2 HAIDA GWAII SOCKEYE (AREAS I, 2W AND 2E)

#### 13.5.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT



*Conservation Units*

*Ain/Skundale*

*Awun*

*Fairfax*

*Jalun*

*Marian/Eden*

*Marie*

*Mathers*

*Mercer*

*Skidegate*

*Yakoun*

Figure 13.5-2: Overview of Haida Gwaii Sockeye

Sockeye returning to Haida Gwaii are relatively small stocks and are primarily harvested in targeted Haida food, social and ceremonial (FSC) fisheries.

### **13.5.2.2 STOCK ASSESSMENT INFORMATION**

#### **13.5.2.2.1 Pre-season**

There are no formal quantitative pre-season forecasts for Haida Gwaii Sockeye. See Appendix 10: 2021 Salmon Outlook for more information.

#### **13.5.2.2.2 In-season**

The Haida Fisheries Program conducts the stock assessment of Haida Gwaii Sockeye to facilitate management of FSC fisheries. Sockeye returning to Skidegate Lake are visually enumerated at a floating fish fence at Copper Creek while the remainder of Sockeye stocks are typically enumerated using visual stream counts during spawning. The Haida Fisheries Program is developing a pilot ARIS program (sonar based counter) on the lower Yakoun River, which has been operational since 2019.

### **13.5.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

There are no commercial fisheries and very little recreational effort directed on Haida Gwaii Sockeye. The Haida Fisheries Program facilitates the management of the FSC harvest by conducting stock assessment, monitoring, FSC harvesting and develops FSC fishery management guidelines based on consultation with the Haida community.

### **13.5.2.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO HAIDA GWAII SOCKEYE FISHERIES**

Haida Gwaii Sockeye are generally very early-timed and return from mid-May to late June. Sockeye are very small in size and do not contribute to any commercial net harvest as a target species or as by-catch, and are not subject to any known recreational harvest. Haida Gwaii Sockeye are mainly harvested in First Nations FSC fisheries.

The main producers of Sockeye harvested in the Area F troll fishery are the Skeena and Nass Rivers, and trollers at times intercept a small amount of these fish in Dixon Entrance as by-catch in their directed Fisheries on Coho, Pink and Chinook. Fisheries are managed to avoid the interception of migrating Fraser River Sockeye by prohibiting Sockeye retention west of 133 degrees West Longitude. In years of low Skeena or Nass Sockeye returns, Sockeye retention may be prohibited throughout the North Coast area.

### **13.5.2.5 ALLOCATION AND FISHING PLANS**

#### **13.5.2.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe the details of the FSC fishery including the dates, times, methods, locations of harvest. Communal licences for Northern Coastal First Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

##### *First Nations Specific Conservation Measures*

When a conservation concern has been identified for an individual stock that is harvested by First Nations, consultations will be undertaken to adapt the fishing plan to provide the necessary protection to the weak stock.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

*Treaty Fisheries*

There are currently no Treaty fisheries for Sockeye in Haida Gwaii.

**13.5.2.5.2 Recreational Fisheries**

Recreational salmon fishing occurs primarily in the tidal waters surrounding Haida Gwaii, with the majority of effort focused along the shoreline from Masset to Langara Island in Area 1 and between Englefield Bay and Port Louis in Area 2W. Recreational fishing occurs primarily between May and September with peak effort and catch occurring in July and August. Sockeye salmon are incidentally retained in the recreational fishery which primarily targets Chinook and Coho salmon. The daily aggregate limit of salmon is four (4) per day.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

*Fishery Monitoring and Catch Reporting*

DFO has been collecting recreational catch data through the Lodge Log Book Program and the Haida Creel Program since 1995. Participation in monitoring and reporting of recreational catch in Areas 1 and 2 has been excellent over the past 26 years. Monitoring is continuing to improve with region wide initiatives.

**13.5.2.5.3 Commercial Fisheries**

*Allocation*

Description	Areas	Seine A	Gill Net C	Troll F
<b>Skeena/Nass</b>	1, 3 to 5, 101 to 105	25%	75%	*

Notes on Sockeye allocation (North):

\* by-catch provisions

### *Haida Gwaii Local Sockeye Fisheries*

There are no commercial fisheries targeting Haida Gwaii Sockeye stocks, and incidental harvest by the Area F troll fishery is thought to be negligible.

#### *Area A&C*

There are no commercial net fisheries that target Haida Gwaii Sockeye salmon.

#### *Area F Troll*

Forecasted returns to the Skeena River are expected to support commercial net fisheries. Therefore, retention of Sockeye salmon will be permitted as by-catch in 2021.

Troll fisheries will be managed to avoid migrating Fraser River Sockeye. This includes prohibitions of Sockeye salmon retention West of 133 degrees West longitude as well as in-season closures should Sockeye targeting be observed by Area F Troll.

### *Fishery Monitoring and Catch Reporting*

Fishery Monitoring and Catch Reporting includes the following:

Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” Fishing reports.

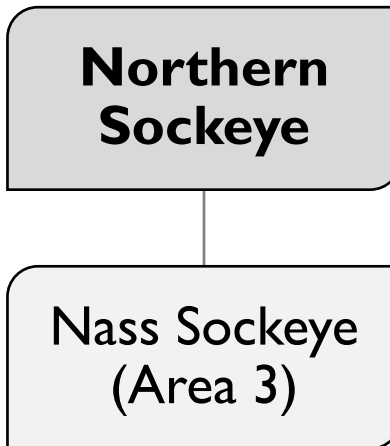
Mandatory catch reporting by phone-in with a paper harvest log and electronic transmission with an electronic harvest log (E-log) in all commercial fisheries. (*Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type*).

#### **13.5.2.5.4 ESSR Fisheries**

There are currently no ESSR fisheries taking place for Haida Gwaii Sockeye.

### 13.5.3 NASS SOCKEYE

#### 13.5.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT



*Conservation Units*

Bowser

*Damdochax/Wiminasik*

*Fred Wright*

*Kwinageese*

*Meziadin*

*Oweege*

Figure 13.5-3: Overview of Nass Sockeye Salmon

There are 14 Sockeye streams in Area 3, of which all but two are tributaries to the Nass River. The major producers of lake-type Sockeye are Bowser, Damdochax, Kwinageese and Meziadin lakes, of which Meziadin Lake is the most significant and accounts for up to 75% of Sockeye salmon production in the Nass watershed. Recent escapements to Meziadin have been below the target escapement. Kwinageese River Sockeye returns were severely affected by a rockslide in 2009 that blocked access to spawning grounds. Sockeye salmon escapements have improved since 2011, when fish passage improvement measures were implemented by Nisga'a Fisheries.

Fisheries targeting Nass Sockeye are managed to meet commitments in accordance with the Nisga'a Final Agreement (NFA), to meet First Nations FSC goals, Pacific Salmon Treaty (PST) obligations and to provide ocean commercial and inland commercial fisheries harvest opportunities.



The northern Chatham Sound portion of Area 3 is managed in conjunction with the Skeena River fishery after the beginning of July due to the large numbers of Skeena Sockeye and Pink salmon passing through the area at that time.

### 13.5.3.2 STOCK ASSESSMENT INFORMATION

#### 13.5.3.2.1 Pre-season

Decisions are made about the spawning escapement plan, management priorities and identification of conservation constraints prior to each fishing season. These decisions are made based on pre-season forecasts of run size, timing, stock composition, other technical information and input from various consultative processes. Potential fishing opportunities are identified based on these pre-season guidelines and subsequently updated using in-season information.

Seasonal management, assessment of Nass Area salmon stocks and minimum and production-based salmon escapement goals are discussed in the Nass Fisheries Operational Guidelines (FOG) which were developed to aid in the implementation of the Nisga'a Final Agreement. Additional information regarding the Nisga'a Fisheries Program can be found at: <https://www.nisgaanation.ca/fisheries-management>

Nass Sockeye are managed to achieve an aggregate spawning escapement target of 200,000. Returns in excess of the escapement target are harvested in Nisga'a Treaty, First Nations, recreational, and commercial harvest opportunities. Similar to the past four years, management measures will be in place to reduce impacts to specific stocks of concern.

Opportunities for a gillnet fishery are evaluated during the pre-season planning process based on predicted returns. The fishery is implemented to assess Sockeye run strength.

The seine fishery is usually a targeted Sockeye and Pink fishery with restrictions such as time, area and gear restrictions in place to pass stocks of concern through to the spawning grounds.

See Appendix 10: 2021 Salmon Outlook for more information.

#### ***2021 Pre-season Nass River Sockeye Run Size Forecast:***

Nass River Sockeye returns are forecasted to be below average with an expected total return to Canada from 217,000 (75% probability) to 469,000 (25% probability) and a point estimate of 318,000 (50% probability) based on a sibling-regression model. Nass Sockeye returns will be carefully monitored to take into account increasing uncertainty and recent trends towards lower survival.

### 13.5.3.2.2 In-season

#### *In-season Decisions*

Weekly decisions are made from run size predictions based on:

Catch and effort data from the Area 3 and Alaskan Tree Point commercial net fisheries;

Escapement information from the Nisga'a Fishwheel Program conducted at test fishing sites near Gitwinksihlkw on the Nass River and fish counts at the Meziadin fishway, and later from individual stream inspections.

### **13.5.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Nass Sockeye will be managed to achieve an aggregate spawning escapement target of 200,000. Returns in excess of the escapement target are harvested in Nisga'a Treaty, recreational and commercial harvest opportunities, both in marine and in-river fisheries. The escapement target for Meziadin Sockeye is 160,000. In years when Meziadin Sockeye escapement is expected to be below this target, management considerations to reduce impacts on this stock will influence decision-making for terminal commercial Sockeye harvests.

### **13.5.3.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO NASS RIVER FISHERIES**

All Nass area net fisheries will normally be restricted to daylight hours.

The local manager may vary these net fishing times depending on circumstances such as by-catch concerns, strong returns of target species and abundance of prohibited species, weather or other factors. Fishing times will be specified in fishery notices released prior to the fishery.

Commercial marine constraints this year include:

Non-retention of Steelhead is mandatory in all fisheries.

Fisheries will continue to be managed to reduce impacts to Canadian Chum. The rebuilding plan for the immediate future is to keep the Canadian average ER to below 10%.

Brailing and sorting, with the mandatory release of all Chinook will be in place for the seine fishery; gill net fisheries will be non-retention of Chinook.

Non-retention of Coho will be in place initially but could revert to retention depending on stock abundances.

### 13.5 NORTHERN SOCKEYE SALMON FISHING PLAN

Gill nets have a 137 mm (5.39 in) maximum mesh restriction. This restriction is in place so that Sockeye is targeted selectively and larger non-target species such as Chum and Chinook are impacted to a lesser degree.

Figure 13.5-4 KWINAGEESE SOCKEYE BROOD RETURN STATUS, 2011 TO 2024

		Return year										
Brood year	Escapeme	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
2010	48	Age 5										
2011	10273	Age4	Age 5									
2012	3688		Age4	Age 5								
2013	398			Age4	Age 5							
2014	438				Age4	Age 5						
2015	6888					Age4	Age 5					
2016	19797						Age4	Age 5				
2017	7240							Age4	Age 5			
2018	290								Age 4	Age 5		
2019	6007									Age 4	Age 5	
2020	3256										Age 4	

#### KWINAGEESE SOCKEYE ESCAPEMENT

		RETURN YEAR												
Year	ESCAPEMENT	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
BROOD YEAR	2006	2,700	Age 5											
	2007	?	Age 4	Age 5										
	2008	?		Age 4	Age 5									
	2009	107			Age 4	Age 5								
	2010	48				Age 4	Age 5							
	2011	10,273					Age 4	Age 5						
	2012	3,688						Age 4	Age 5					
	2013	397							Age 4	Age 5				
	2014	438								Age 4	Age 5			
	2015	7,044									Age 4	Age 5		
	2016	19,797										Age 4	Age 5	
	2017	7,240											Age 4	Age 5
	2018	290												Age 4
2019	6,007													
2020	3,256													

Kwinageese sockeye returns for 2021 are expected to be moderate following improved brood year escapement in 2016 and 2017. The management objective to reduce harvest impacts on Kwinageese Sockeye remains. The majority of Kwinageese Sockeye pass through the Area 3 commercial fishery areas from July 8th to July 28th with the peak occurring between July 12th and July 24th.

### **Revival Tanks**

Tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### **Gill Net Construction**

In Management Areas 1 to 10, gill nets of different constructions may be used. Net construction may be either multistrand (30 filaments), or four, five or six filaments (Alaska twist). Specific restrictions such as the specifications for net construction and revival boxes are found in the conditions of the individual licences, which are attached to the licence. Fishers are urged to read these conditions carefully to ensure that their vessel and fishing techniques are in accordance with their licence.

All gill nets will meet one of the following configurations:

Nets may be hung without a weed line (corkline to web distance 0 to 45 cm) to a maximum of 60 meshes deep.

In Management Areas 3 to 5, nets may be greater than 60 meshes deep, but must be hung with a weedline (corkline to web distance minimum 0.76 m, maximum 1.5 m) to a maximum of 90 meshes deep. As well, every fifth cork must be red or another distinctive colour (not white).

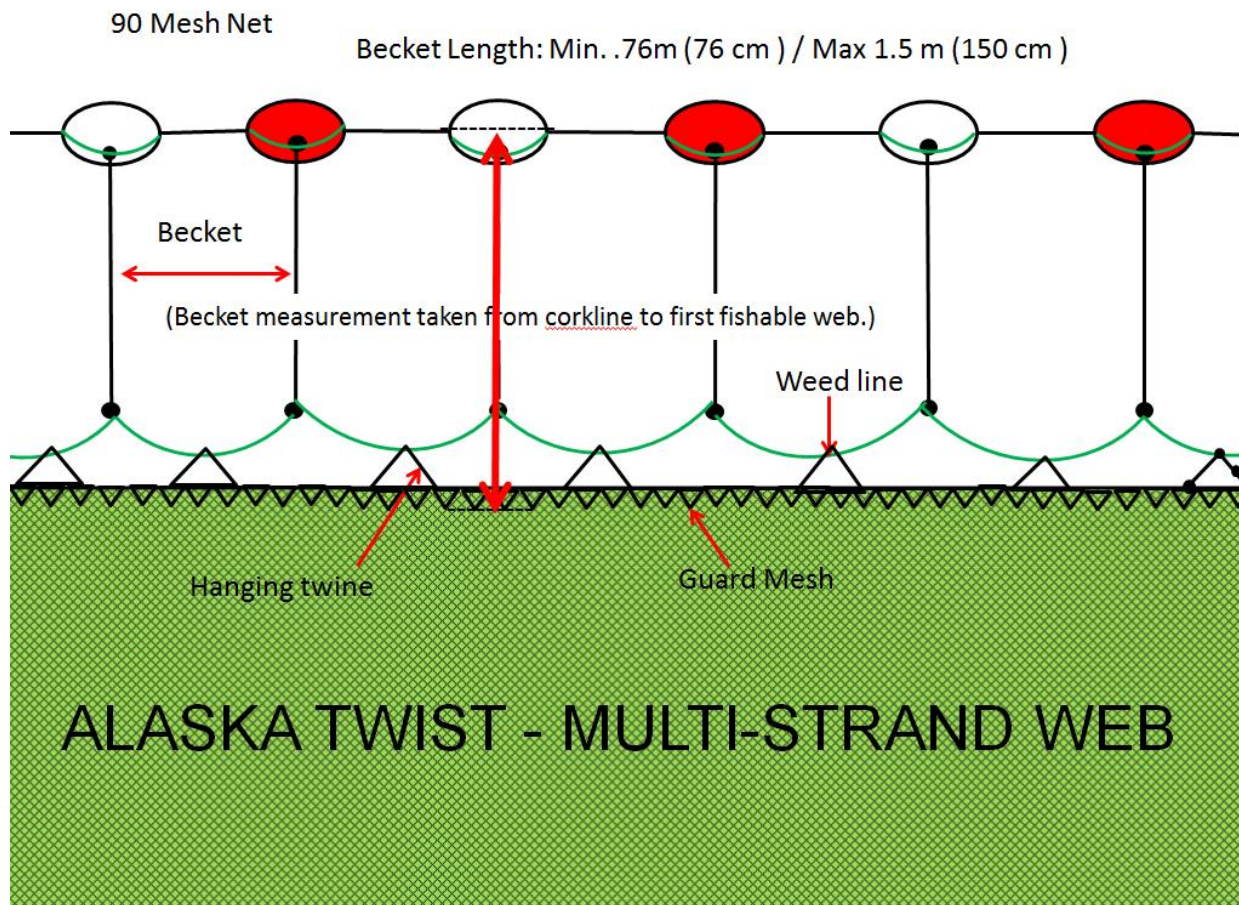


Figure 13.5-5: 90 Mesh Net Construction

Specific restrictions for net configuration are found in the Fishery Notice issued prior to every commercial fishery. Fishers must ensure that are urged to read these carefully to ensure that their fishing gear is in accordance with the regulations for each opening.

### 13.5.3.5 ALLOCATION AND FISHING PLANS

#### 13.5.3.5.1 First Nations Fisheries

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe the details of the FSC fishery including the dates, times, methods, locations of harvest. Communal licences for Northern Coastal First

Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

#### *First Nations Specific Conservation Measures*

When a conservation concern has been identified for an individual stock that is harvested by First Nations, consultations will be undertaken to adapt the fishing plan to provide the necessary protection to the weak stock.

#### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

#### *Treaty Fisheries*

##### *Nisga'a Fisheries*

**As part of the 2021 Pacific Salmon Strategy Initiative, this fishery will be closed. See Appendix 11 for a complete list of Northern salmon commercial closures.**

The Nisga'a Annual Fishing Plan (NAFP) is developed by the Nisga'a-Canada-BC Joint Fisheries Management Committee (JFMC) and governed by the terms of the Nisga'a Final Agreement and the Nisga'a Harvest Agreement of the Nisga'a Treaty. The Nisga'a Harvest Agreement includes Nisga'a fish allocations expressed as a percentage of the adjusted total allowable catch of Sockeye and Pink salmon. The NAFP is developed in accordance with Chapter 8 of the Nisga'a Final Agreement. Once approved by the Minister of Fisheries, the

Nisga'a Annual Fishing Plan remains in effect until replaced the following year. The fishing plan applies to persons who harvest fish, other than steelhead, in Nisga'a fisheries.

Nisga'a salmon allocations, as defined in the Nisga'a Treaty, are set out as a percentage of the Total Return to Canada (TRTC) up to maximum catch thresholds (63,000 Sockeye [10.5%], 6,300 Pink [0.6%], 12,600 Chinook [21%], 19,200 Coho [8%], and 12,000 Chum [8%]) in large return years. These Nisga'a salmon allocations have the same priority in fisheries management decisions as domestic [food, social and ceremonial (FSC)] fisheries that target Nass salmon.

The NAFP defines the escapement goals required to guide management decisions for Nass salmon stocks, calculates Nisga'a allocations for each salmon species and provides the general regulatory requirements for catches of each salmon species. The NAFP is provided to other Nass watershed First Nations for their information and is reviewed by the JFMC prior to being submitted to the Minister for approval. Nisga'a Lisims Government is responsible for the internal allocation of catch opportunities between Nisga'a fishers and day to day operation of the Nisga'a fishery.

Pre-season estimates and ranges for the Nisga'a salmon allocations in 2021 are:

Nass Sockeye: The Total Run size probability point estimate for 2021 from a pre-season sibling-regression model is 432,000 (50%) with a range in point estimates between 295,000 (75%) and 637,000 (25%). Assuming a 26% Alaskan exploitation rate (based on the average of run reconstructed odd years from 1999 to 2019, approximately 114,000 Nass Sockeye), the 50% probability point estimate for the Total Return to Canada (TRTC) of Nass Sockeye is 318,000 with a range of point estimates from 217,000 (75% probability) to 469,000 (25% probability). The forecast method's mean absolute accuracy for predicting TRTC returns was 76.9% (range: 53–99%) for 2003 to 2020 returns. Based on the pre-season TRTC forecasts and the minimum escapement goal (200,000) for 2021, the Nisga'a allocation ranges between 17,000 and 78,000. The mean TRTC forecast (318,000) will be used for calculating the initial target for the in-season Nisga'a allocation (44,000) for Nass Sockeye in 2021.

### 13.5.3.5.2 Recreational Fisheries

Recreational salmon fishing occurs in the tidal waters adjacent to the Nass River, with the peak of the season being from June to August.

The Nass River and tributaries are in Region 6 freshwater fishing area and a Sockeye opening occurs in Meziadin Lake and the Nass mainstem from July to September. The minimum size limit is 30 cm, and daily and total possession limits are in effect.



Triggers for the recreational fishery in Meziadin Lake were implemented in 2020 in response to recent poor returns of Meziadin Sockeye. These triggers will continue in 2021.

Table 13.5 Recreational Sockeye Fishery Triggers for Meziadin Lake

Sockeye Past Meziadin Fishway	Daily Recreational Retention Limit – Meziadin Lake
Less than 120,000	0 per day
Between 120,000 and 160,000	1 per day
Greater than 160,000	2 per day

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

***Fishery Monitoring and Catch Reporting***

The Area 3 and 4 creel program was operated by the North Coast Skeena First Nations Stewardship Society and ran from May 1 to August 31, 2020 with a total count of 9,665 boat trips and a retained catch of 8 Sockeye.

A creel survey of the freshwater recreational fisheries in four river systems of the Nass watershed was not conducted in 2020. The mean average in-river recreational catch of Nass Sockeye from 2000-2015 is 540 fish.

**13.5.3.5.3 Commercial Fisheries**

***Allocation and Fishing Plans***

Description	Areas	Seine A	Gill Net C	Troll F
<b>Skeena/Nass</b>	1, 3 to 5, 101 to 105	25%	75%	*

Notes on Sockeye allocation (North):

\* by-catch provisions



### *Nass Fisheries*

For 2021, dependent on in-season indicators, the Department is proposing a one-day gill-net assessment opening on June 29 to assess relative run strength and inform future commercial fishing opportunities. This opening will be informed by in-season assessment of run size from the Nass fish wheels and other available sources of information. It will be operated with spatial closures in place to avoid Nass Chinook.

Fishing opportunities will also be subject to achieving fisheries management objectives for constraining stocks and species of concern (e.g. Kwinageese Sockeye, Nass Chinook, Nass Chum) in areas where they are present. Later-timed fisheries will be avoided in order to minimize interactions with wild Nass Chum stocks of concern. Additional management considerations to address concerns for Nass Coho may be required.

### *Anticipated Net Opening Dates:*

#### *Area C Gill Net*

**\*As part of the 2021 Pacific Salmon Strategy Initiative, the Area C gill net commercial fishery for Nass Sockeye will be closed. See Appendix 11 for a complete list of Northern salmon commercial closures.**

**\*June 29:** Potential one-day gill net Sockeye assessment fishery to assess relative run strength and inform future commercial fishing opportunities. The assessment fishery will be informed by the in-season assessment of run size from the Nass fish wheels and other available sources of information. Maximum mesh size is 137 mm (5.39 in). This fishery will be operated with spatial closures in place to avoid Nass Chinook. Assessment fishery will be limited to one day only.

#### *Area A Seine*

**TBD:** First anticipated seine fishery opening will be determined in-season based on Sockeye and Pink abundance. Minimum bunt mesh size 70 mm (2.76 in).

### *Fishery Monitoring and Catch Reporting*

For 2021, the Department is continuing to work with Area Harvest Committees on catch monitoring programs in the following areas:

Area A Seine (PFMA 3 to 6):

- Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)
- Catch estimates to be communicated prior to any shore-based offload.

- Independent verification of landed catch through a designated service provider
- Deployment of at-sea observers with priority placed on highest profile fisheries occurring concurrently.

Area C Gill net (PFMA 3 to 5):

- Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)
- Catch estimates to be communicated prior to any shore-based offload.
- Pilot of Super Sales Slip program by a portion of Area C licences during regular gill net fisheries.
- Additional details on the catch monitoring programs will be communicated via Fisheries Notices.

### *Nass Sockeye Inland Demonstration Fisheries*

The concept of the inland demonstration fishery is to transfer the catch of commercial gill net or seine licences to the inland portion of the Nass system. This inland demonstration fishery will only take place if the Nass Sockeye run returns in sufficient strength to fish commercially in Management Area 3. This fishery will be managed with the same harvest decision guidelines as the marine commercial fishery.

Gill net or seine licence shares set aside for the inland demonstration fishery will be based on each commercial licence having an equal share of the available commercial allocation, by gear type in the Management Area 3 commercial fishery, and the weekly in-season forecast for aggregate Sockeye returns to the Nass system. The total inland allocation will be equal to the gill net and seine shares multiplied by the number of licences set aside for the inland fishery. There are approximately 107 Area A seine licences and 626 Area C gill net licences in the commercial fleets (these numbers could vary slightly prior to the fishery). The licence share will be further adjusted to reflect the stock proportion available in a specific fishing area.

For the inland demonstration fishery, the intent will be to continue the selective methods that have been developed during the 1990s pilot sales fisheries. These could include beach seine, dip net, and fishwheels. Sockeye (and possibly Pink and Coho when abundance permits) may be retained, based on the weekly allocation issued by Prince Rupert DFO, and all other species will be returned to the water with the least possible harm.

All inland commercial Sockeye salmon harvests shall be checked through a compulsory landing station. All appropriate records are to be kept for proper monitoring and enforcement. No FSC fishing or retention will be allowed while participating in the inland demonstration fishery.

Each First Nations engaging in an inland demonstration fishery must submit a demonstration fishery plan. This plan must be approved by the Department prior to harvesting.

The DFO contact for more information is Jen Gordon at 250-600-0246.

### ***Licence Set-aside rules:***

DFO may contribute commercial licences that are currently held by the Department. In addition, commercial licences may also be solicited through private ventures, through an arrangement between Nass First Nations and individual licence holders.

All licences that will be used in the inland demonstration fisheries will have to be either Area C gill net or Area A seine, and annual renewal fees will be paid in full for the current season. These licences cannot have been fished in any Area C or A fisheries during the current year. Licence documents will be held in the DFO office. This process may be updated to be consistent with licence issuance through the National Online Licensing System. Catch share transfers will be calculated based on the number of licences as indicated above. Catch shares will not be provided for marine commercial fisheries that have been announced prior to the licence transfer. Licenses transferred inland may be used simultaneously in other inland watershed demonstration fisheries as approved by DFO.

It is anticipated that the Nisga'a Lisims Government and Gitanyow First Nations demonstration fishery proposals under the Commercial Salmon Allocation Framework process will be considered in 2021. See [Appendix 6](#) for more details.

### **13.5.3.5.4 ESSR Fisheries**

Historically, ESSR fisheries for Sockeye have taken place in Meziadin Lake for the Gitanyow and Nisga'a First Nations. No ESSR fisheries are expected for 2021.

13.5.4 SKEENA SOCKEYE

13.5.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

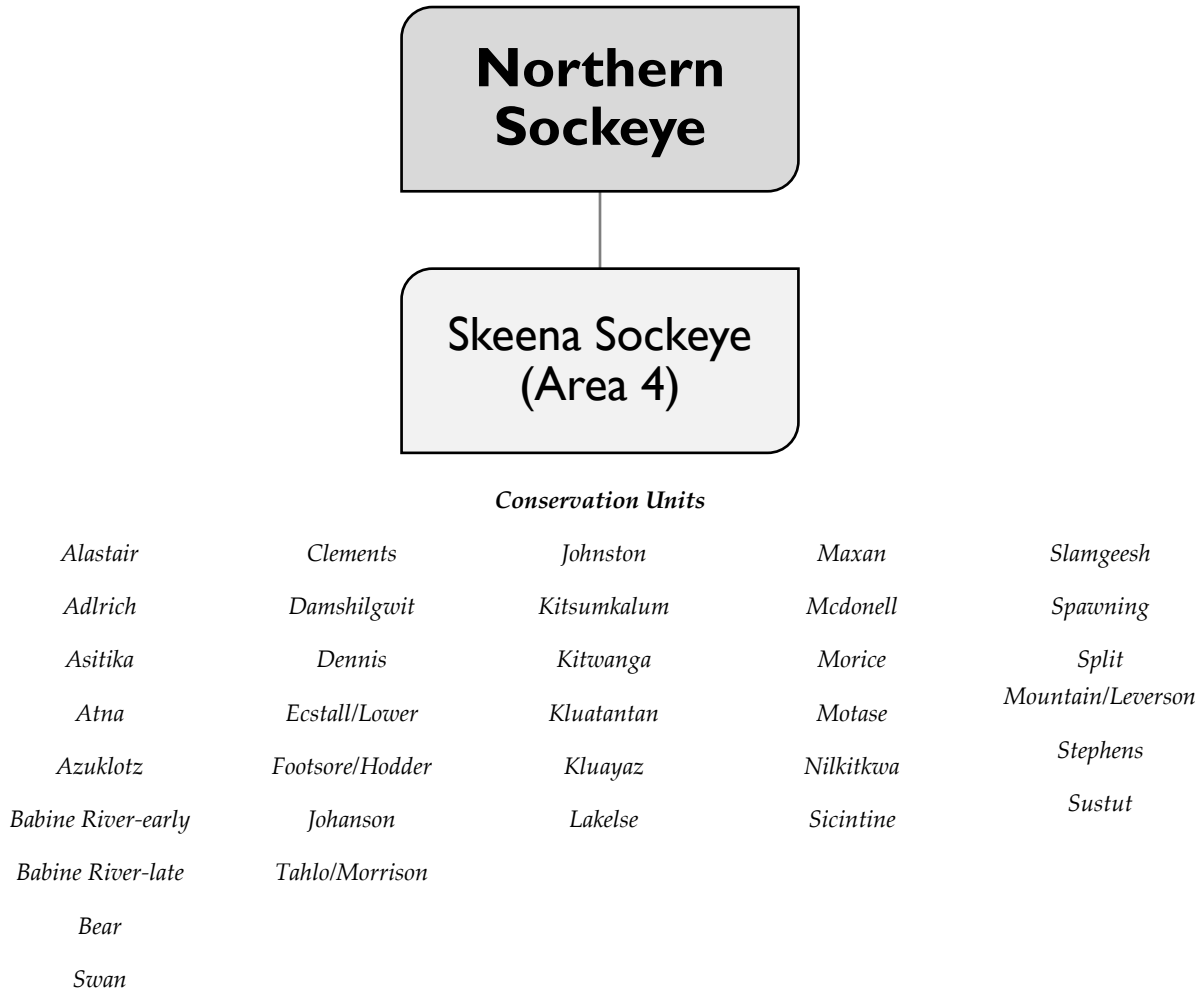


Figure 13.5-6: Overview of Skeena Sockeye Salmon

The Skeena River is the second largest producer of Sockeye in B.C. The largest producers of Sockeye salmon in the Skeena system are the enhanced runs to the Babine Lake tributary spawning channels at Fulton River and Pinkut Creek.

Sockeye from various streams and lake systems migrate up the Skeena from June through August. Wild stocks are generally less productive and therefore cannot withstand the same exploitation rate as the enhanced Babine stocks of Pinkut Creek and Fulton River. While there are a number of wild stocks of concern, current IFMP discussions have focused on three wild Sockeye stocks, the Nanika-Morice, Kitwanga and Babine River. The Nanika-Morice Sockeye

peak through the fishing area in early July (early timing), and the Kitwanga and Babine River Sockeye stocks peak through the fishing area in late July and early August.

Measures have been taken to reduce fishery impacts on Skeena River Chinook, Chum, Steelhead, and wild Sockeye stocks. These measures include non-retention of some species, gear and fishing modifications, and specific timing closures or Sockeye harvest rate reductions when weak stocks are present.

Skeena River Sockeye returns are harvested in Areas 3, 4 and 5.

### 13.5.4.2 STOCK ASSESSMENT INFORMATION

#### 13.5.4.2.1 Pre-season

The aggregate escapement target for Skeena Sockeye is currently under review. The current interim minimum escapement goal, of 400,000 is based on the lowest observed escapement from which Skeena Sockeye recovered after a landslide in 1950 that blocked fish passage into Babine River. This aggregate escapement goal does not account for the higher proportion of enhanced Babine Sockeye in the aggregate return since the inception of the Fulton and Pinkut spawning channels.

In 2017, the Skeena First Nations Technical Committee (SFNTC) provided advice to guide management of First Nations FSC fisheries in the Skeena and approach areas. At the time, the SFNTC recommended that the FSC management trigger be increased from the minimum escapement goal of 400,000 to 600,000. This recommendation was supported by the North Coast Stock Assessment Division as an interim measure to increase the likelihood of attaining a higher escapement goal for wild Skeena Sockeye populations. As a part of recent updates to Chapter 2 of the Pacific Salmon Treaty, a review of biological benchmarks for aggregate and component Skeena and Nass sockeye stocks, which may result in an updated aggregate escapement goal for Skeena River Sockeye. This updated information is scheduled to be completed by 2023.

See Appendix 10: 2021 Salmon Outlook for more information.

#### *Pre-season Skeena River Sockeye Run Size Forecast:*

The total Skeena Sockeye return is expected to be low to average with a pre-season return forecast from 0.80 million (90% probability) to 3.6 million (10% probability) and a point estimate of 1.7 million (50% probability) based on the sibling model. For more information, see Appendix 10: 2021 Salmon Outlook.

**13.5.4.2.2 In-season Assessment**

The Tyee Test fishery is the main in-season stock assessment tool for estimating the relative abundance of Skeena River salmon and Steelhead through the use of a multi-panel gill net with varying mesh sizes. Daily in-season escapements and total run size are estimated for Sockeye only. These in-season estimates are made possible due to the Babine fence operations that allow for post-season calibration of the Tyee Test fishery for Sockeye. Salmon returns are variable and estimates are also subject to error as annual run timing and the annual catchability of salmon by the Tyee test fishery net varies.

**13.5.4.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Historically, an in-season return to Canada forecasts of less than 550,000 Skeena Sockeye would trigger consultations with First Nations who harvest Skeena Sockeye, to limit food, social and ceremonial fisheries. If Skeena Sockeye return to Canada are forecasted to be less than 400,000 all fishing activity on Sockeye will cease.

For 2021, it is anticipated that there will be sufficient Skeena Sockeye to meet Skeena First Nations FSC needs. However, the Department will continue to support the management recommendations developed by the Skeena First Nations Technical Committee and supported by individual Skeena First Nations regarding Skeena Sockeye.

The Skeena First Nations Technical Committee has recommended that the FSC management trigger level for First Nations Section 35(1) Sockeye fisheries be maintained at 400,000. As proposed in previous SFNTC fishing plans, Skeena First Nations may choose to close or curtail First Nations section 35(1) FSC sockeye fisheries anytime if the in-season TRTC estimate is below 600,000. Individual Skeena First Nations FSC harvest plans will continue to be developed and refined based on in-season salmon return information including FSC opportunities in marine areas.

The current Skeena Sockeye aggregate escapement target is 900,000 and combined First Nations food, social and ceremonial fishery requirements are in the range of 150,000 annually.

If the pre-season forecast or the Skeena Sockeye return to Canada is greater than 1.05 million, then commercial fishery openings are planned.

If the pre-season run size forecast is below 1.05 million, commercial fisheries will not take place until the in-season run size prediction is greater than 1.05 million.

Any gill net fisheries on or after August 1 will be short-net, short-set.

The allowable Canadian commercial exploitation rate on the Skeena Sockeye aggregate increases as the return to Canada increases. The allowable commercial exploitation rate will be 0% for returns to Canada less than 1,050,000. The allowable exploitation rate will increase linearly from 0% at 1,050,000 to 20% at a run size of 2.0 million, 30% at 3.0 million, and up to a maximum of 40% at a return of 4.0 million or greater. See [Figure 13.5-7](#).

DFO may reserve Sockeye allocation for seine vessels to account for Sockeye by-catch during a directed Pink fishery.

Directed fisheries for Skeena Sockeye after August 1 will be constrained by Sockeye and Chum salmon stocks of concern. While the aggregate harvest rate schedule shown in [Figure 13.5-7](#) guides the overall commercial exploitation rate, other important considerations include protecting and rebuilding identified stocks and species of concern, incorporating concerns expressed by First Nations and stakeholders and impacts of other fisheries in setting weekly harvest rates. These additional considerations will guide weekly harvest rates in late July and early August.

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, the following will be implemented:

- Recreational fisheries for salmon in the Skeena River will be closed.
- Recreational marine fisheries for salmon in Area 3, 4, and 5 will have existing retention limits reduced by half.
- Area 4 commercial fishing opportunities would be suspended.

The management actions listed above may be modified should abundances of other salmon species be sufficient to allow harvest beyond Food, Social, and Ceremonial requirements, and will be determined in season.

Should in-season estimates indicate FSC closures are no longer warranted, these management measures would be reversed in when the FSC closures are lifted, and they do not preclude management measures already in place for each species.

## SKEENA SOCKEYE Commercial Mixed-Stock Fishery Abundance-Based Management Plan

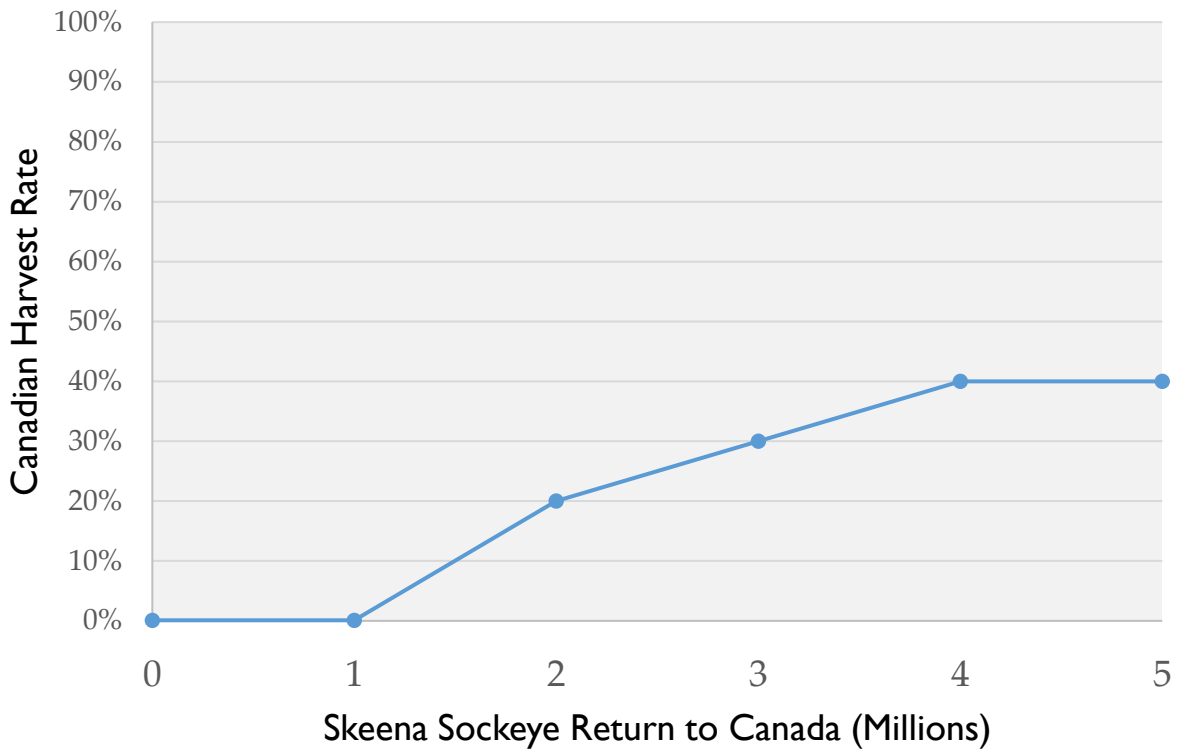


Figure 13.5-7: The allowable abundance based Canadian commercial harvest rate on Skeena Sockeye. This includes gillnet, seine and inland demonstration fisheries.

### 13.5.4.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO SKEENA SOCKEYE FISHERIES

Weaker runs of wild Sockeye salmon co-migrate with strong Sockeye stocks are, as well as stocks of all Pacific salmon species.

Fishing is limited to daylight hours except during directed Chinook gillnet fisheries when mesh size and run timing are used to target Chinook only.

There is a request for First Nations not to fish near the confluence of the Kitwanga River, to protect Kitwanga Sockeye that may be holding in that area.

As in recent years, the first Sockeye opening will be delayed to reduce impacts on Nanika Sockeye (the opening date is under discussion with the Wet’suwet’en First Nation and other interests).



Measures are required to reduce harvest impacts on Skeena River Coho, Chinook, Chum, Steelhead and some Sockeye stocks. Retention of Coho, Chinook, Chum and Steelhead is prohibited in all net fisheries.

Skeena Chum remain a stock of concern and Canadian harvest impacts will be limited to a maximum exploitation rate of 10% in Canadian fisheries. This is a ceiling, and harvest impacts would be expected to be well below this level in most years. It is anticipated that these management measures will be in place for an extended period.

Brailing and sorting with mandatory release of Chinook will be in place for the seine fishery.

Gill net Sockeye fisheries will be mandatory non-retention for Chinook and Coho. Additional restrictions to reduce impacts on these species may be necessary.

Gill nets have a 137 mm (5.39 in) maximum mesh restriction during the Sockeye fishery. This restriction is in place so that Sockeye is targeted selectively and larger non-target species such as Chum and Chinook are impacted to a lesser degree.

In-season assessments may change the management measures taken for various stocks. Measures taken could include non-retention of some species, gear and fishing modifications and specific timing closures or Sockeye harvest rate reductions when weak stocks are present.

In years of average run timing, the fishery will be managed to avoid high amounts of commercial harvest effort in late July and early August. Selective fishery constraints required to protect weak Sockeye and Chum stocks will be maintained even if late season Sockeye run size upgrades indicate a remaining allowable harvest.

Any fisheries on or after August 1 will be short-net, short-set gill net fisheries to reduce impact on Steelhead and Chum. For the August gill net fishery, the following rules will apply:

- Half-length nets: Maximum net length will be 100 fathoms, or 187.5 m. It will not be acceptable to have a regular length net on your drum and only set half. It will also not be acceptable to have both halves of the net on your drum. Only one (half-length) net will be allowed on your drum or in the water.
- 20 minute soak times: The maximum amount of time the net is allowed to be in the water from the time it is completely set to the time it begins to be retrieved is 20 minutes. Note that this “soak time” is designed to equal a 40 minute time from

when the first portion of the net enters the water to the time when the last portion of the net leaves the water. Times will be monitored on the grounds.

- Fish handling: Gill net fishers are encouraged to handle prohibited species with the greatest of care. Operating revival boxes are mandatory as in all gill net fisheries. However, if the salmon is in a vigorous condition, it is best to release it directly to the water rather than put it in the revival box. Fishers are asked to use their judgment on which fish should go into the revival box before they are then released to the water.
- Reduced fishing area: In order to effectively monitor this selective fishery, the fishing area will be reduced. This will be achieved by closing the northern portions of Chatham Sound.

#### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

Gill net revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

#### **Gill Net Construction**

In In Management Areas 1 to 10, gill nets of different constructions may be used. Net construction may be either multistrand (30 filaments), or four, five or six filaments (Alaska twist). Specific restrictions such as the specifications for net construction and revival boxes are found in the conditions of the individual licences, which are attached to the licence. Fishers are urged to read these conditions carefully to ensure that their vessel and fishing techniques are in accordance with their licence.

All gill nets will meet one of the following configurations:

Nets may be hung without a weed line (corkline to web distance 0 to 45 cm) to a maximum of 60 meshes deep.

In Management Areas 3 to 5, nets may be greater than 60 meshes deep, but must be hung with a weedline (corkline to web distance minimum 0.76 m, maximum 1.5 m) to a maximum of 90 meshes deep. As well, every fifth cork must be red or another distinctive colour (not white).

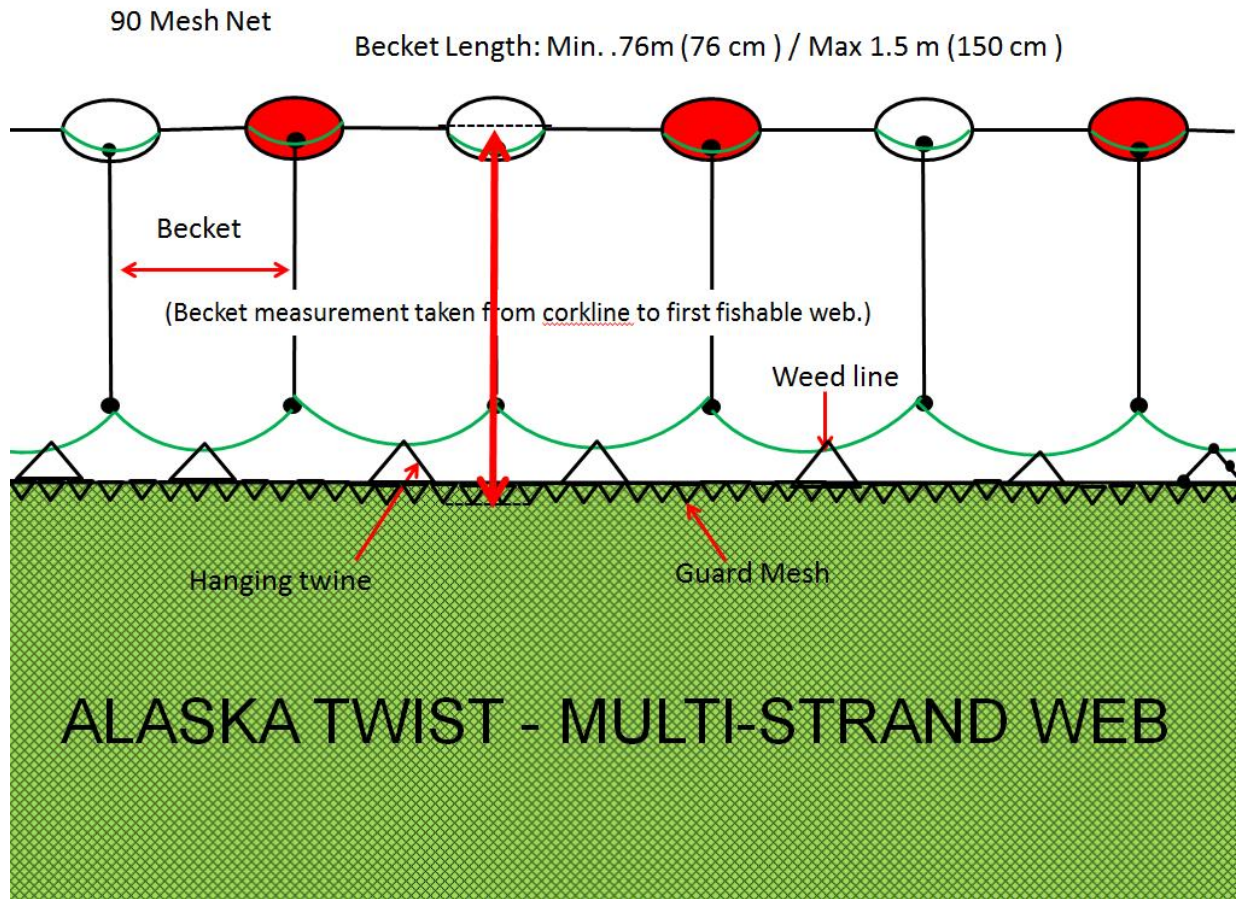


Figure 13.5-8: 90 Mesh Net Construction

Specific restrictions for net configuration are found in the Fishery Notice issued prior to every commercial fishery. Fishers are urged to read these carefully to ensure that their fishing gear is in accordance with the opening.

### **13.5.4.5 ALLOCATION AND FISHING PLANS**

#### **13.5.4.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe the details of the FSC fishery including the dates, times, methods, locations of harvest. Communal licences for Northern Coastal First Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

##### *First Nations Specific Conservation Measures*

When a conservation concern has been identified for an individual stock that is harvested by First Nations, consultations will be undertaken to adapt the fishing plan to provide the necessary protection to the weak stock.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

*Treaty Fisheries*

There are currently no Treaty fisheries for Skeena Sockeye.

**13.5.4.5.2 Recreational Fisheries**

Recreational salmon fishing occurs in the tidal waters adjacent to the Skeena River, with the peak of the season being from June to August. The daily limit for Sockeye in Areas 3 to 5 is four (4) per day, unless otherwise varied, and open based on estimates of escapement at the Tye Test Fishery.

The minimum size limit for Sockeye salmon is 30 cm, in tidal waters and freshwater. The possession limit for salmon is twice the daily limit.

The Skeena River and tributaries are in Region 6 freshwater fishing area, and there are openings for Skeena Sockeye in Babine River and Lake, Pinkut Creek, Fulton River, and the Skeena mainstem.

The daily limits for Skeena Sockeye in non-tidal waters, are set by the guidelines for management actions table below.

Table 13.5-1: Guidelines for Management Actions for Recreational Sockeye Fisheries in the Skeena Watershed

Estimated Abundance	Daily Limits		
	Skeena Mainstem	Babine River	Babine Lake
Fewer than 0.8 million past Tye	0	0	0
Between 0.8 million and 1.0 million past Tye	1	1	1
Greater than 1.0 million past Tye	2	2	2
Greater than 2.0 million return to Canada forecasted as of July 25th.	4	2	n/a
ESSR fishery on Babine Lake	n/a	n/a	4

\* Return to Canada includes Sockeye caught in Canadian marine waters

For the 2021 season, the daily limit for Sockeye will be 0 per day from the start of the season until the in-season trigger of 800 thousand past Tye. In years of high abundance, the daily limit in Babine River will remain at 2 per day as per an agreement between DFO and BC Parks. Once DFO identifies a surplus to the spawning channels that would provide for an ESSR fishery on Babine Lake, the recreational Sockeye limits in Babine Lake will be increased to 4 per day.

In-season updates and fishery regulation changes can be found on the recreational fisheries website:

<https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

When FSC fisheries for Skeena Sockeye are closed for conservation purposes, the following will be implemented:

- Recreational fisheries for salmon in the Skeena River will be closed.
- Recreational marine fisheries for salmon in Area 3, 4, and 5 will have existing retention limits reduced by half.
- Area 4 commercial fishing opportunities would be suspended.

The management actions listed above may be modified should abundances of other salmon species be sufficient to allow harvest beyond Food, Social, and Ceremonial requirements, and will be determined in season.

Should in-season estimates indicate FSC closures are no longer warranted, these management measures would be reversed in when the FSC closures are lifted, and they do not preclude management measures already in place for each species.

#### ***Fishery Monitoring and Catch Reporting***

The Area 3 and 4 Creel Program was conducted by the North Coast Skeena First Nations Stewardship Society and operated from May 1 to August 31, 2020 with 9,665 boat trips recorded and a retained catch of 8 Sockeye.

A creel survey of freshwater recreational fisheries on the lower Skeena River watershed was conducted by Kitsumkalum Fish and Wildlife program and LGL in 2020. From July 14 to September 18, 2020 there were approximately 49,363 angler-hours with an estimated retained catch of 1,737 Sockeye.

### 13.5.4.5.3 Commercial Fisheries

#### *Allocation*

Description	Areas	Seine A	Gill Net C	Troll F
<b>Skeena/Nass</b>	1, 3 to 5, 101 to 105	25%	75%	*

\* by-catch provisions

#### *Skeena Fisheries*

Commercial Sockeye fisheries will take place in Management Area 4 when the predicted return to Canada is greater than 1,050,000. Allowable exploitation rates for returns greater than 1,050,000, will be determined based on the abundance based exploitation rates showing in the Skeena Sockeye harvest rate table above.

For 2021 Skeena River Sockeye, returns are expected to be low to modest (range from approximately 0.68 million to 2.3 million). Fisheries will be informed by in-season assessments of actual Sockeye returns.

The commercial allocation of Skeena and Nass Sockeye (Areas 3 to 5) is 75% of the commercial TAC assigned to the gill net fleet, and 25% assigned to the seine fleet. The management strategy to achieve these allocations is to open the gill net fishery first, followed by the seine fishery, which usually opens mid-July, depending on estimated run size, current escapement information, and gill net catch to date. The Sockeye allocation for seines may be caught in Area 3 when Pink salmon are abundant in Area 3.

#### Area 4 Skeena River Sockeye Seine ITQ Demonstration Fishery Management Plan

Any seine fishery for Sockeye salmon in Management Area 4 (Skeena) will be an Individual Transferable Quota (ITQ) demonstration fishery. The Sockeye fishery will be managed to an equal share of a weekly quota for Sockeye salmon for each of the registered 107 seine licences (0.93458% for each license). The opening times and quota will be posted weekly by fishery notice on the Department's web-site. ITQ management for the Sockeye fishery may not apply to Pink-directed seine fisheries that may occur in August. Any Sockeye harvested in a Pink-directed commercial fishery will still be subject to the Sockeye abundance-based management rules.

For the Sockeye ITQ seine fishery, the area will usually open for 5 days per week. Areas 4-12 and 4-15 will be among the Subareas open, but all vessels will be requested to exit this area if a

concurrent gill net opening occurs. These areas will close on short notice if a gear conflict cannot be resolved.

Valid licence eligibilities will be permitted to reallocate (transfer) their quota to another valid licence eligibility each week or for the whole season. Both weekly and whole-season “Request for Temporary Reallocation of Quota” forms are available by email, fax or pick up at the Prince Rupert office. Verbal reallocation transfers will not be accepted. For an email or fax copy, please contact Jen Gordon (Jennifer.Gordon@dfo-mpo.gc.ca) or Corey Martens (Corey.Martens@dfo-mpo.gc.ca) or fax at (250) 627-3427.

Vessels receiving a reallocation for the season will receive one licence amendment with a new quota amount expressed as a percentage. Vessels requesting a short-term reallocation (less than the whole season) will receive an amendment after the TAC has been set for the given management week and vessels will receive an amendment that includes the number of Sockeye reallocated.

Weekly TACs will expire, not be cumulative, and not carry over past the end of fishing on any given management week. Vessel masters must cease fishing when their quota has been achieved. All amendments to quota must be aboard the fishing vessel or the fishing vessel must have the DFO issued confirmation number of the quota transaction prior to fishing. As per the conditions of licence, quota reallocations will be permitted up to 48 hours after the fishery closes. Failure to reconcile quota within 48 hours of the fishery closure is a violation of the conditions of licence and will be forwarded on to DFO C&P for investigation.

Vessels must have a valid ASA licence (seine) with current Conditions prior to receiving or reallocating quota.

Start, end, pause and daily catch reports (per conditions of licence) must be made by Area A vessel masters to the salmon catch monitoring service provider or by E-log (refer to the conditions of licence).

Catch validation is mandatory for all ITQ fishery participants. This catch validation must be performed by an approved service provider, be done at dockside (no packers), and be done in Prince Rupert, Port Edward or Lax Kw'alaams. The contact number to arrange registration and validation will be published in a Fishery Notice immediately prior to any fishery.

Observers will be an integral part of this fishery and vessels may be requested to take an observer as per their licence conditions. Seines participating in the ITQ fishery will be required to participate in the at-sea observer program.



All vessels must enter Management Area 4 with clean holds, proper hail procedures and no overages from the previous week. If a vessel leaves the fishery to fish in another fishery, the catch shall be offloaded and verified by a validator prior to entering another fishery.

ITQ reallocations to the inland demonstration fishery will be allowed as long as there is at least one seine licence assigned to the inland demonstration fishery. The weekly inland transfer deadline will be announced in-season.

#### *Anticipated Net Opening Dates*

Openings will be based on Skeena salmon returns and the target annual exploitation rate and will be similar to previous years subject to ongoing discussions with First Nations and commercial fishing interests.

#### *Fishery Monitoring and Catch Reporting*

For 2021, the Department is continuing to work with Area Harvest Committees on catch monitoring programs in the following areas:

Area A Seine (PFMA 3 to 6):

Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)

Catch estimates to be communicated prior to any shore-based offload

Independent verification of landed catch through a designated service provider

Deployment of at-sea observers with priority placed on highest profile fisheries occurring concurrently

Area C Gill net (PFMA 3 to 5):

Designated landing sites (list to be developed based on recommendations from the Area Harvest Committees)

Catch estimates to be communicated prior to any shore-based offload

Pilot of Super Sales Slip program by a portion of Area C licences during regular gill net fisheries.

Additional details on the catch monitoring programs will be communicated via Fisheries Notices.

#### *Skeena Sockeye Inland Demonstration Fisheries*

Opportunities for inland demonstration fisheries on Skeena River in 2021 are dependent on implementation of marine commercial fisheries in Area 4. In years of high abundance, commercial allocations of Sockeye and Pink salmon have been transferred inland to fisheries being conducted within the Skeena watershed. The Skeena River Sockeye Inland Demonstration Fishery Management Plan follows. This fishery is managed as a part of the aggregate Skeena Sockeye Canadian commercial harvest decision rule ceiling.

#### Skeena River Sockeye Inland Demonstration Fishery Management Plan

The concept of the inland demonstration fishery is to transfer the catch of a number of commercial gill net or seine licences to the inland portion of the Skeena River. DFO may contribute licences that have been relinquished from the commercial fleet and remain in the Department's inventory. In addition, commercial licences may also be solicited through private ventures, through an arrangement between Skeena First Nations and individual licence holders.

The inland demonstration fisheries will only take place if the Skeena Sockeye run returns in sufficient strength to trigger a commercial fishery and a fishing plan is approved through the area office.

The Sockeye migration time from the marine commercial fishing area to the Terrace area is approximately 1 week; to the mid-river area around Hazelton is 2 weeks; and to the Babine River weir is 3 weeks. This timing is used to develop fishing plans with First Nation proponents on the Skeena, and any flexibilities will be reflected in the fishing plans.

Gill net licence shares set aside for the inland demonstration fishery, will be based on each commercial licence having an equal share of the available commercial allocation (currently based on actual weekly catches) by that gear type in the Management Area 4 commercial fishery. The total inland gill net allocation will be equal to the share multiplied by the number of licences set aside for the inland fishery. There are approximately 626 Area C gill net licences in the commercial fleet (these numbers could vary slightly prior to the fishery). The licence share will be further adjusted to reflect the stock proportion available in a specific inland fishing area.

Seine licence shares set aside for the inland demonstration fishery, will be based on each commercial licence having an equal share of the available commercial allocation by that gear type in the Management Area 4 commercial fishery. The individual vessel quota is set each week by the DFO Prince Rupert office. The total inland seine allocation will be equal to the share multiplied by the number of licences set aside for the inland fishery. There are approximately 107 Area A seine licences in the commercial fleet (these numbers could vary

slightly prior to the fishery). The licence share will be further adjusted to reflect the stock proportion available in a specific inland fishing area (Marine – 100%; Mid-river – 95%; Upper-river – 93%).

For the inland demonstration fishery, the intent will be to continue the selective methods that were developed during the 1990s pilot sales fisheries. These could include beach seine, fishwheel, dip net, and the Babine weir. Gill nets will not be permitted. Sockeye (and possibly Pink) may be retained, based on the weekly allocation issued by Prince Rupert DFO, and all other species will be returned to the water with the least possible harm.

All inland demonstration Sockeye and Pink salmon harvest shall be checked through a compulsory landing station. All appropriate records are to be kept for proper monitoring and enforcement. No FSC fishing or retention will be allowed while participating in the inland demonstration fishery.

More information on approved or proposed demonstration fisheries can be found in Appendix 6.

The DFO contact for more information is Jen Gordon at (250) 600-0246.

Licence Set-aside rules:

DFO may contribute commercial licences that are currently held by the Department. In addition, commercial licences may also be solicited through private ventures, through an arrangement between Skeena First Nations and individual licence holders.

All licences that will be used in the inland demonstration fisheries will have to be either Area C gill net or Area A seine, and annual renewal fees will be paid in full for the current season. These licences cannot have been fished in any Area C or A fisheries during the current year. Licence documents will be held in the DFO office. This process may be updated to be consistent with licence issuance through the National Online Licensing System. Catch share transfers will be calculated based on the number of licences as indicated above. Catch shares will not be provided for marine commercial fisheries that have been announced prior to the licence transfer.

Licences may be used simultaneously in other inland watershed demonstration fisheries (e.g. Nass) as approved by DFO.

### 13.5.4.5.4 ESSR Fisheries

All ESSR fisheries are opportunistic and are not guaranteed from year to year. Harvests will be terminal in location and conducted by selective means, with live release of all non-target species.

The Lake Babine Nation has conducted ESSR fisheries in recent years in Babine Lake, targeting excess returns of enhanced Sockeye to the Pinkut and/or Fulton spawning channels. A fishing plan for this fishery has been developed and is reviewed on an annual basis; details are available upon request.

Harvest amounts are calculated in-season and along with harvest timing will be determined in close liaison with Pinkut Creek and Fulton River spawning channel managers and Lake Babine Nation Fisheries to ensure enough Sockeye are available to meet the annual loading requirements for the Pinkut and Fulton systems.

Lake Babine Nation may implement a fishery on Jack Sockeye at the Babine Fence. A precautionary plan has been developed for this fishery and details are available upon request.

For more information on ESSR Fisheries, please contact Jennifer Gordon at (250) 600-0246.

## 13.5.5 CENTRAL COAST SOCKEYE

### 13.5.5.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

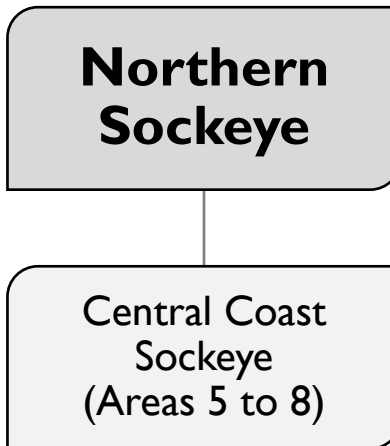


Figure 13.5-9: Overview of Central Coast Sockeye

The Central Coast MU is comprised of a number of small Sockeye stocks from Areas 5 through 8. Portions of Area 5 are traditionally managed in conjunction with Area 4 to target Skeena Sockeye and harvest opportunities may occur until mid- August when local Pink stocks become abundant. There are a number of Sockeye streams in Area 5 that may have small surpluses that have provided for some FSC harvest by local First Nations. Sockeye stocks in Areas 6, 7 and 8 have been weak in recent years and measures are in place to avoid interception of these stocks during commercial fisheries.

### 13.5.5.2 STOCK ASSESSMENT INFORMATION

#### 13.5.5.2.1 Pre-season

There is no formal pre-season forecast done for Central Coast Sockeye.

Sockeye stocks in Areas 6 through 8 continue to be uncertain and measures will be implemented to avoid interception of these fish.

As noted above, commercial Sockeye opportunities in portions of Area 5 will be managed in conjunction with Area 4. These portions include sub-areas 5-1, 5-2, 5-3, 5-10, and a portion of 5-13.

See Appendix 10: 2021 Salmon Outlook for more information.

### 13.5.5.2 In-season Assessment

There is currently no in-season assessment tool for Sockeye in Areas 7 and 8. In-stream enumerations are performed on some systems as well as overflights to estimate total escapement.

### 13.5.5.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

In Area 5, local streams could develop small surpluses, and these will be monitored in-season. Area 5 will open in conjunction with Area 4 Sockeye-directed openings until early August.

For Areas 6 through 8, there will be no targeted Sockeye openings and Sockeye will not be permitted as by-catch in the seine fishery.

### 13.5.5.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO CENTRAL COAST SOCKEYE FISHERIES

Commercial gillnet fisheries targeting local stocks in Area 5 may be considered after discussion with the Gitxaala Nation on FSC harvest opportunities. For commercial gillnet fisheries to take place on local stocks, a stock assessment, catch monitoring and enforcement plan will be required.

### Revival Tanks

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank.

The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

### Gill Net Construction

In Management Areas 1 to 10, gill nets of different constructions may be used. Net construction may be either multistrand (30 filaments), or four, five or six filaments (Alaska twist). Specific

restrictions such as the specifications for net construction and revival boxes are found in the conditions of the individual licences, which are attached to the licence. Fishers are urged to read these conditions carefully to ensure that their vessel and fishing techniques are in accordance with their licence.

All gill nets will meet one of the following configurations:

Nets may be hung without a weed line (corkline to web distance 0 to 45 cm) to a maximum of 60 meshes deep.

In Management Areas 3 to 5, nets may be greater than 60 meshes deep, but must be hung with a weedline (corkline to web distance minimum 0.76 m, maximum 1.5 m) to a maximum of 90 meshes deep. As well, every fifth cork must be red or another distinctive colour (not white).

Between July 12 and August 15 weed lines are required for gill nets in Subareas 8-5 north of Bold Point and 8-8. Maximum depth is 60 Meshes. Corkline to Web Distance a minimum of 100 cm and a maximum of 154 cm.

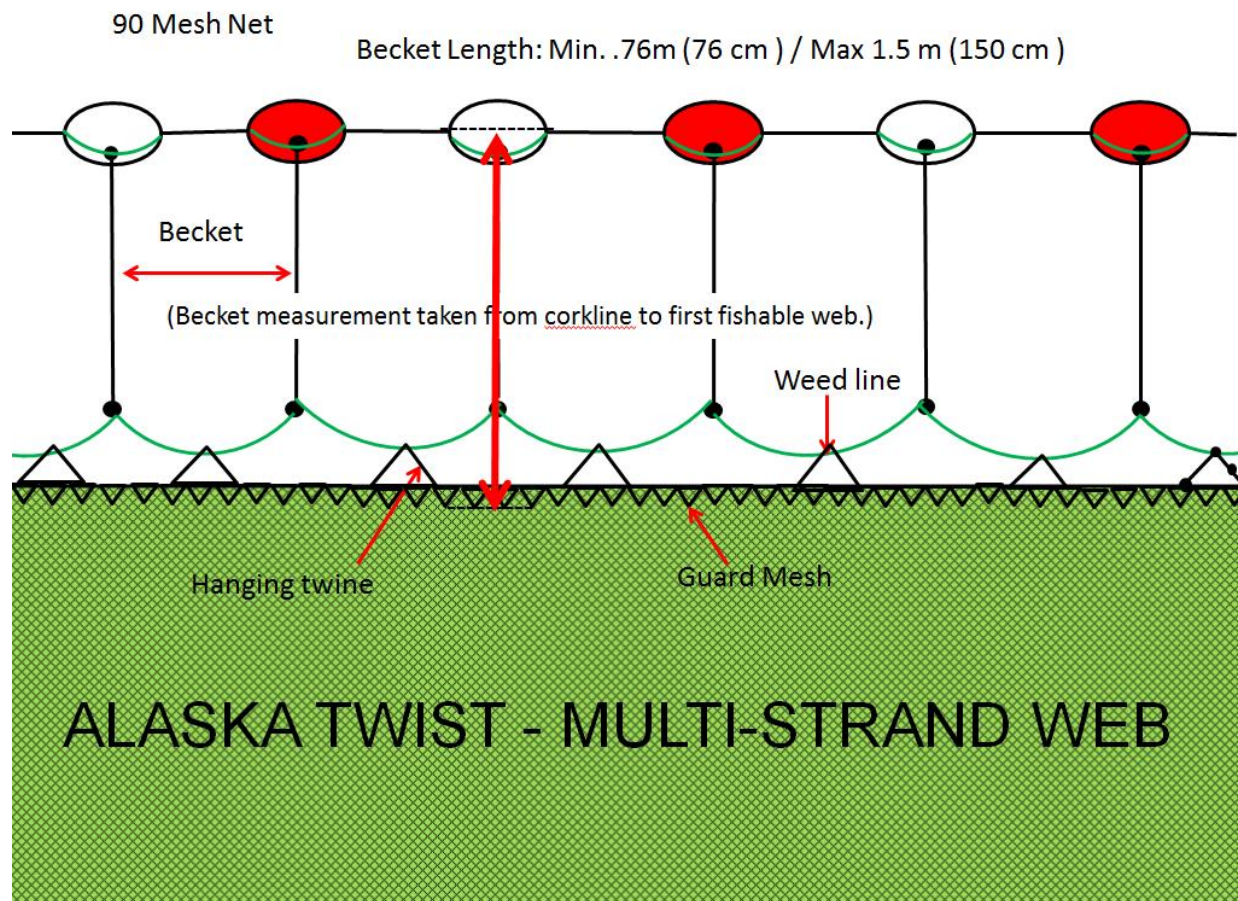


Figure 13.5-10: 90 Mesh Net Construction

Specific restrictions for net configuration are found in the Fishery Notice issued prior to every commercial fishery. Fishers are urged to read these carefully to ensure that their fishing gear is in accordance with the opening.

### 13.5.5.5 ALLOCATION AND FISHING PLANS

#### 13.5.5.5.1 First Nations Fisheries

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe the details of the FSC fishery including the dates, times, methods, locations of harvest. Communal licences for Northern Coastal First



Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

### *First Nations Specific Conservation Measures*

When a conservation concern has been identified for an individual stock that is harvested by First Nations, consultations will be undertaken to adapt the fishing plan to provide the necessary protection to the weak stock.

### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

### *Treaty Fisheries*

There are currently no Treaty fisheries for Central Coast Sockeye.

#### **13.5.5.2 Recreational Fisheries**

Recreational salmon fishing occurs in the tidal waters of the Central Coast (Areas 5 to 8) with interception fisheries beginning in late April and the peak of the season being from June to August.

In Area 5 the early season effort is mostly by local independent anglers out of Prince Rupert and Port Edward; however, the most significant portion of the recreational fishing season develops late May and continues to mid-September. The fleet operating in Area 5 is made up mainly of independent anglers and charter operators.

In Area 6, tidal water recreational salmon fisheries begin in late April. Initial effort is mostly by local independent anglers out of Kitimat. One recreational fishing lodge and a number of charter operators also fish in Area 6 with the most significant portion of the recreational fishing season taking place between late May and mid-September.

The daily limit for Sockeye in Areas 5 and 6 is four (4) per day, unless otherwise varied, and the open time is April 1st to March 31st. The catch of Sockeye is most likely very small.

There is no retention of recreationally caught Sockeye salmon in Areas 7 and 8 at any time of year. If a commercial fishery occurs in these areas, a recreational daily limit would be set.

There are several recreational lodges and charter operators in these areas.

The Central Coast non-tidal waters are in Regions 5B and 6 freshwater fishing areas, and there are no openings for Sockeye.

Detailed information on salmon closures, daily limits, size limits, gear restrictions, and other management measures are found online at BC Sport Fishing Guide. This webpage contains a link to subscribe to recreational Fishery Notices, which can be sent to your email address.

BC Sport Fishing Guide link:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

### *Fishery Monitoring and Catch Reporting*

In Areas 6 to 8, DFO has been collecting recreational catch data through the Lodge Log Book Program.

#### **13.5.5.5.3 Commercial Fisheries**

##### *Allocation*

Description	Areas	Seine A	Gill Net C	Troll F
<b>Skeena/Nass</b>	1, 3 to 5, 101 to 105	25%	75%	*
<b>Central Coast</b>	6 to 8	80% <sup>a</sup>	20% <sup>b</sup>	*

Notes on Sockeye allocation (North):

\* by-catch provisions

<sup>a</sup> share reflects current Sockeye by-catch during Pink directed fisheries

<sup>b</sup> potential for re-negotiation of sharing arrangements in event of a future directed Sockeye fishery

*Central Coast Fisheries*

No commercial opportunities are expected for Sockeye stocks in Areas 6, 7 and 8. Area 5 fisheries will open in conjunction with Sockeye-directed openings in Area 4, should they occur.

**13.5.5.4 ESSR Fisheries**

There are currently no ESSR fisheries for Central Coast Sockeye.

13.5.6 RIVERS & SMITH INLET SOCKEYE

13.5.6.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

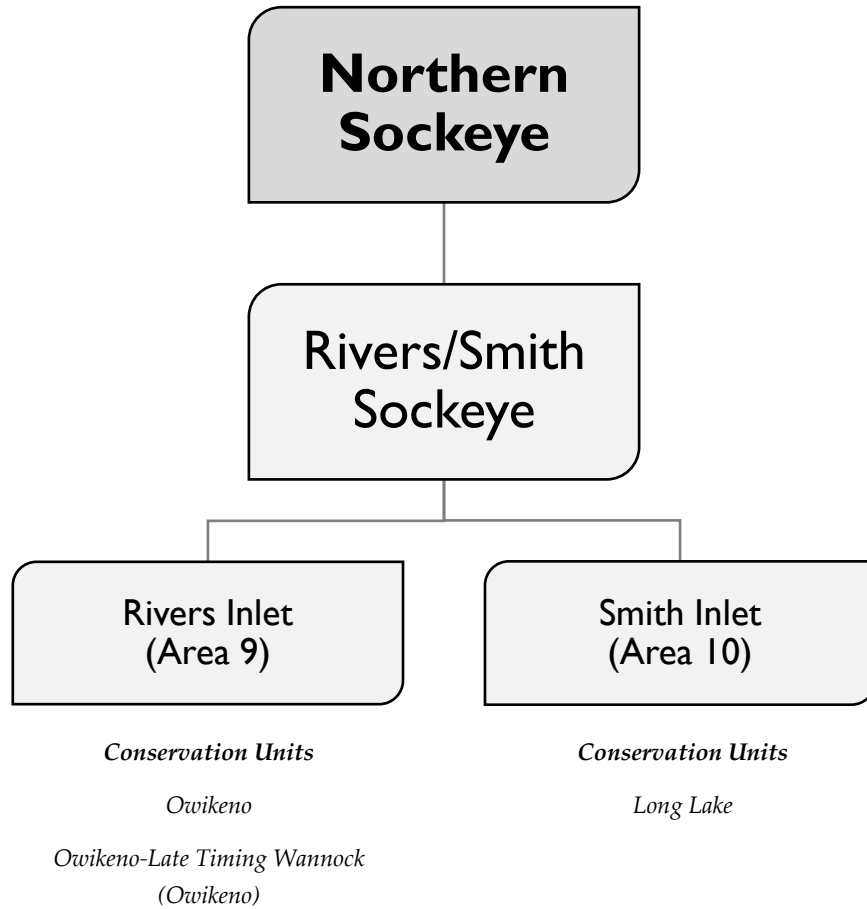


Figure 13.5-11: Overview of Rivers and Smith Inlet Sockeye

The Sockeye fishery on stocks from Rivers and Smith Inlets began in the late 19th century and increased rapidly during the early part of the 20th century. Both systems experienced dramatic declines in total returns of spawning adults since the mid-1990's and a high degree of variability in returns since that time.

There has been no gill net fishery in Rivers Inlet since 1995 after the Sockeye returns declined dramatically in 1994. This decline was caused by poor marine survival beginning with the 1990 and 1991 brood years. Stocks have shown some inconsistent improvement in recent years. Sockeye salmon in Rivers Inlet remain in a period of low productivity.

Over the last 20 years Sockeye returns to Long Lake in Smith Inlet have generally been poor, resulting in only three commercial fisheries since 1996. In recent years, returns have shown signs of improving, resulting in the three previously mentioned fishery opportunities, including a strong return in 2016 which resulted in a substantial gill net opportunity. A long-term Smith Inlet counting weir program was suspended in 2017, as a result there has not been sufficient abundance data to assess the strength of the run since then.

Long Lake Sockeye productivity has probably decreased in recent years following cessation of a fertilization program that occurred in the 1980s and 1990s. The escapement goal is currently under review and a more cautious management strategy has been adopted.

### 13.5.6.2 STOCK ASSESSMENT INFORMATION

#### 13.5.6.2.1 Pre-season

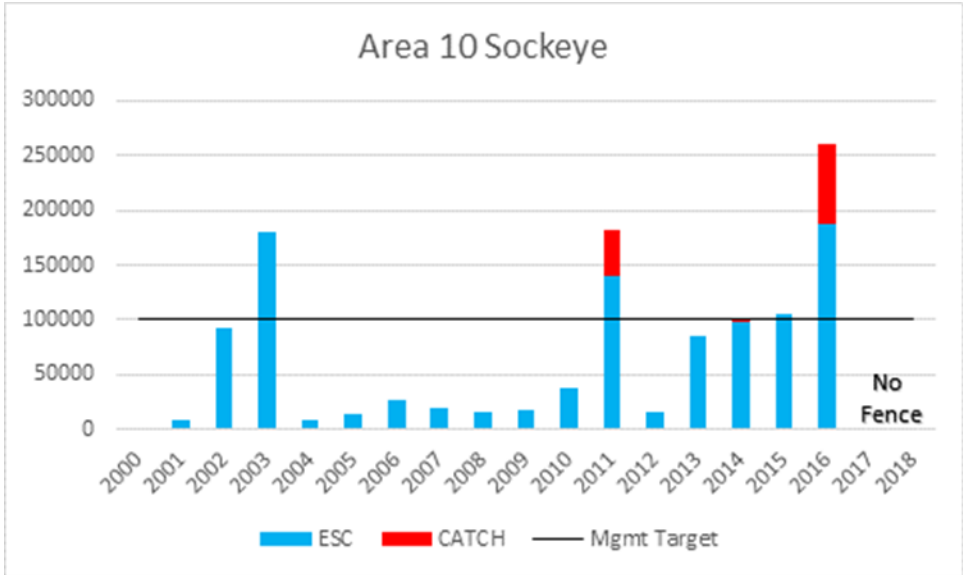
There is no formal pre-season forecast done for either Rivers Inlet or Smith Inlet Sockeye. See Appendix 10: 2021 Salmon Outlook for more information.

#### *Pre-season Rivers and Smith Inlet Sockeye Run Size Forecast:*

No commercial or recreational fisheries are expected in 2021.

The Docee River fence provided in-season assessment of sockeye salmon return to Long Lake in Area 10 from 1972-2016, but has not operated since 2017. As such, in-season estimation of returns to Long Lake will remain uncertain. The 2021 return is coming off of a return of 189,000 in 2016, and unknown returns in 2017 and 2018.

Figure 13.5-12: Sockeye Salmon Catch and Escapement to Area 10



13.5.6.2 In-season Assessment

There is currently no in-season assessment tool for Rivers Inlet Sockeye. The Wuikinuxv Nation, with assistance from LGL and PSF, have designed and implemented an in-season escapement monitoring system for Rivers Inlet Sockeye from 2014-2020 using DIDSON/ARIS sonar and a gillnet test fishery, as documented in annual reports (e.g. English and Rojas 2020). This system provides daily estimates of Sockeye migrating past the sonar sites on the Wannock (Waanukv) River. The results from these monitoring efforts are currently under review.

Until 2016, in-season assessment of Smith Inlet Sockeye was conducted at the Docee counting fence. Installed in 1972, the Docee fence allowed for reliable in-season enumeration of escapements to Long Lake, facilitating the management of the Sockeye fishery in-season. As noted above, the Docee Fence has not been in operation since 2017 and is not expected to be operating in 2021.

13.5.6.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

Rivers Inlet

DFO is continuing continues to work with the local First Nations via the First Nations Central Coast Salmon Coordinating Committee and local recreational and commercial advisors to review fishing plans for this area. The current target escapement has been set as a range with the lower threshold of 200,000 Sockeye. DFO expects to work collaboratively with First Nations

and stakeholders to review this target using Science based evaluation of the system as a whole, through a request to the Canadian Science Advisory Secretariat (CSAS) process. Working with First Nations and stakeholders, it is anticipated that the results of this review will be used to inform a further evaluation of the management framework for Sockeye fisheries in Rivers Inlet.

Nevertheless, with a pre-season forecast expectation failing to meet the lower threshold of escapement currently in place for the system, no commercial or recreational Sockeye fisheries are planned for Area 9 in 2021.

### **Smith Inlet**

Prior to 2017, the escapement target for Smith Inlet of 100,000 was evaluated in-season based on fish counts past the Docee counting fence. The Long Lake Sockeye stock remains a stock of concern because of the long period of generally low productivity.

Opportunities for Long Lake Sockeye directed fisheries have been dependent on in-season evaluation from the Docee Fence which operates in collaboration with the Gwa'sala-Nakwaxda'xw Nations (GNN).

The Docee fence has not operated since 2017 and operation of the Docee Fence in 2021 is not expected. The Government of Canada has made reconciliation with indigenous peoples of Canada, and respecting aboriginal rights a priority. The Department is committed to developing a collaborative approach that will lead to a long-term agreement with the GNN, enabling the operation of the Docee Fence Assessment program and other matters of common interest.

### **13.5.6.4 INCIDENTAL HARVEST, BY-CATCH AND CONSTRAINTS TO RIVERS AND SMITH INLET SOCKEYE FISHERIES**

#### **Rivers Inlet**

If a fishery occurs, a maximum mesh restriction of 150mm would be in place to protect Rivers Inlet Chinook stocks.

Commercial gill net boundaries will be developed through consultations with First Nations, commercial, and recreational interests.

#### **Smith Inlet**

If a fishery takes place, a maximum mesh restriction of 150mm will be in place to protect Docee River Chinook stocks.

Depending on run strength and consultations with First Nations and commercial representatives, fisheries will be considered in Subarea 10-11.

Boundaries will be restrictive to protect non-targeted stocks. There will be no Coho retention unless abundance warrants.

#### **Revival Tanks**

Revival tanks conforming to the Conditions of Licence are required, and all prohibited species captured as by-catch must be either revived in the revival tank and released, or released directly to the water with the least possible harm. Management decisions will be influenced by compliance with revival tank provisions.

While gill net fishing, revival tanks must be operating from 10 minutes prior to the commencement of retrieval of the net and continue in operation at all times during retrieval and while fish are being held in the tank. For seine and troll fishers, the revival tanks must be operating while the seine net or hooks are in the water and while fish are being held in the tank. The revival tank(s) and equipment must be kept clean and in operable condition and shall be used for no other purpose than that outlined above.

#### **Gill Net Construction**

In Management Areas 1 to 10, gill nets of different constructions may be used. Net construction may be either multi-strand (30 filaments), or four, five or six filaments (Alaska twist). Specific restrictions such as the specifications for net construction and revival boxes are found in the conditions of the individual licences, which are attached to the licence. Fishers are urged to read these conditions carefully to ensure that their vessel and fishing techniques are in accordance with their licence.

All gill nets will meet one of the following configurations:

Nets may be hung without a weed line (corkline to web distance 0 to 45 cm) to a maximum of 60 meshes deep.

In Management Areas 3 to 5, nets may be greater than 60 meshes deep, but must be hung with a weedline (corkline to web distance minimum 0.76 m, maximum 1.5 m) to a maximum of 90 meshes deep. As well, every fifth cork must be red or another distinctive colour (not white).

Between July 12 and August 15 weed lines are required for gill nets in Subareas 8-5 north of Bold Point and 8-8. Maximum depth is 60 Meshes. Corkline to Web Distance a minimum of 100 cm and a maximum of 154 cm.



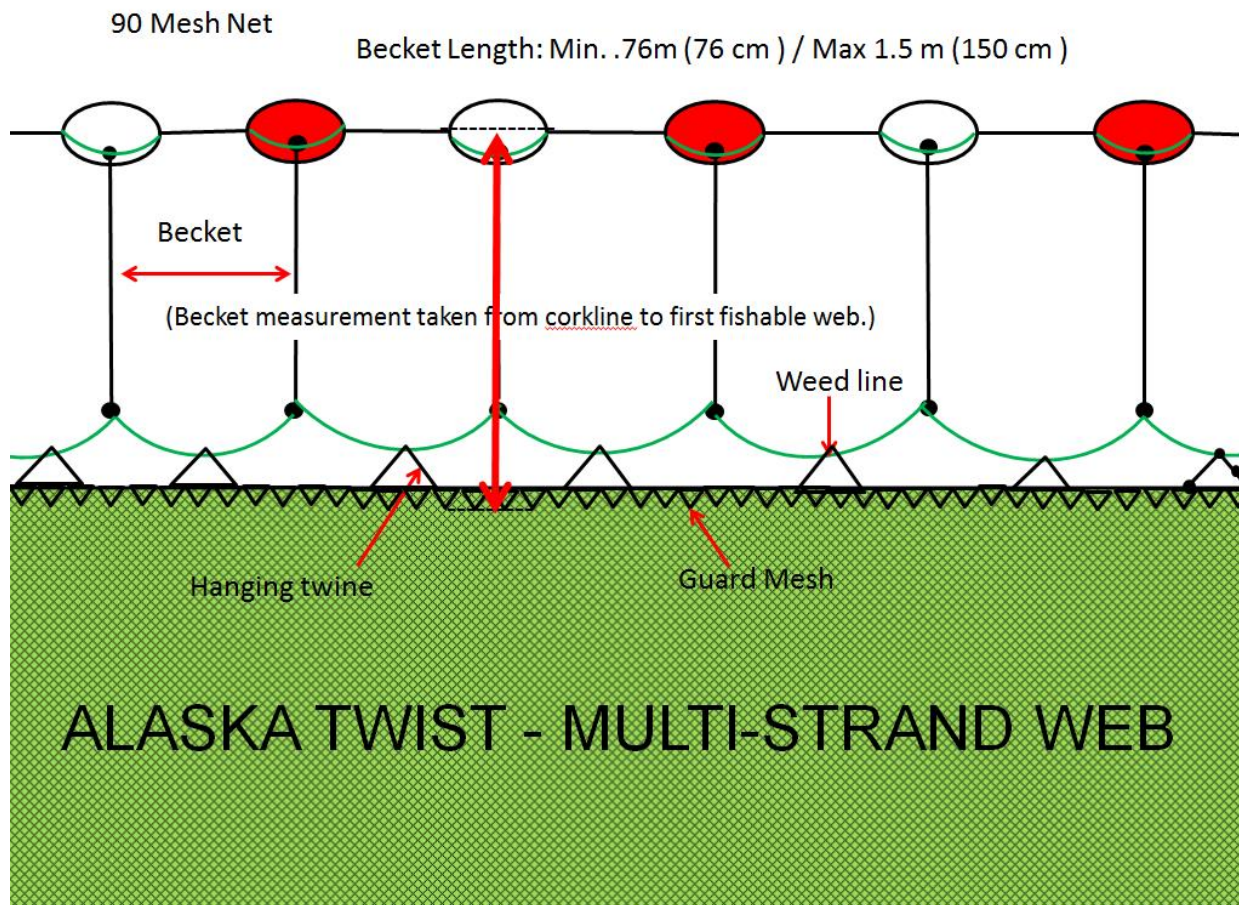


Figure 13.5-13: 90 Mesh Net Construction

Specific restrictions for net configuration are found in the Fishery Notice issued prior to every commercial fishery. Fishers are urged to read these carefully to ensure that their fishing gear is in accordance with the opening.

### 13.5.6.5 ALLOCATION AND FISHING PLANS

#### 13.5.6.5.1 First Nations Fisheries

##### *Food Social and Ceremonial*

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe the details of the FSC fishery including the dates, times, methods, locations of harvest. Communal licences for Northern Coastal First

Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion.

Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Northern BC First Nations Fisheries.

### *First Nations Specific Conservation Measures*

When a conservation concern has been identified for an individual stock that is harvested by First Nations, consultations will be undertaken to adapt the fishing plan to provide the necessary protection to the weak stock.

### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations keep records of harvest and provide catch information to DFO in a variety of formats. If a commercial vessel is used for fishing under this licence, First Nations are asked to provide information respecting the species and quantity of fish harvested by the vessel to the DFO Catch Reporting Officer within 24 hours of the landing of fish harvested from that vessel. With respect to timing of catch reports, First Nations are requested to report as follows: by the end of each month between April 1 and May 14; weekly (Wednesdays) between May 15 and October 31 inclusive; and at the end of each month between November 1 and March 31.

### *Treaty Fisheries*

There are currently no Treaty fisheries for Rivers or Smith Inlet Sockeye.

#### **13.5.6.5.2 Recreational Fisheries**

Recreational salmon fishing occurs in the tidal waters of Rivers and Smith Inlets, with several recreational lodges and independent anglers fishing from late June to early September.

In 2019 there was no recreational fishery for Sockeye salmon. Rivers Inlet also remained closed to recreational Sockeye fishing. A condition of licence in the recreational Tidal Waters Sport Fishing Licence applies to all angling in the Rivers Inlet Special Management Zone (SMZ).

Please consult the regulations on tidal and freshwater salmon recreational fishing which can be found online at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

For direct notification of regulatory changes, individuals may sign up to have recreational fishery notices sent directly to their email at the website above. Refer to the link to subscribe to fishery notices on the right hand side of the page.

***Fishery Monitoring and Catch Reporting***

In Area 9, DFO has been collecting recreational catch data through the Lodge Log Book Program. In Area 10, logbook information is used to provide catch and release numbers from anglers fishing in the area.

**13.5.6.5.3 Commercial Fisheries**

***Allocation***

Description	Areas	Seine A	Gill Net C	Troll F
Rivers/Smith Inlets	9 to 10	5%	95%	0%*

<sup>c</sup> potential for future re-negotiation

***Rivers and Smith Inlet Fisheries***

No commercial or recreational fisheries are expected for Rivers Inlet Sockeye in 2021, and will remain unlikely until there is a trend towards higher ocean survival and significant and consistent improvements in escapement.

Brood year escapements for Long Lake Sockeye have improved in recent years, but forecasts are extremely uncertain due to highly variable return rates. The preliminary pre-season forecast is highly uncertain.

**13.5.6.5.4 ESSR Fisheries**

There are currently no ESSR fisheries for Rivers Inlet or Smith Inlet Sockeye.

# APPENDIX I: LOGBOOK SAMPLES

**SALMON TROLL** Logbook I.D. # **T10001 SAMPLE** Report Catch to: 1-(888) 387-0007 Record all catch in pieces Page # 11111

Date		Mgmt. Area	Zone or Subarea	Hours Fished	Catch: Frozen or Iced?	<sup>1</sup> Kept or Released	Sockeye	Coho	Pink	Chum	<sup>2</sup> Legal Sized Chinook	<sup>2</sup> Sublegal Sized Chinook	<sup>3</sup> Grilse	Atlantic	<sup>4</sup> Rockfish	<sup>5</sup> Other Species
Vessel Name: <b>Pacific Blue</b> VRN (CFV#): <b>12346</b>																
14	Jul	4	9	3	(F)	Kept	25	0	12	0	0	X	X	3	0	0
Trip ID #: <b>FOS-12345</b>					or	Rel.	0	0	0	0	3	3	5	0	8 Yellowtail, 3 Canary	4 L, 2 D
Comments: <b>8 Hake released, lots of seals around</b>															<sup>6</sup> DCR Conf. #: <b>FOS-12346</b>	
Vessel Master Name: <b>Dan Doe</b> Signature: <i>Dan Doe</i> <sup>7</sup> F.I.N.: <b>99999</b>																
15	Jul	4	5	8 1/2	(F)	Kept	42	0	8	0	0	X	X	0	0	0
Trip ID #: <b>FOS-12345</b>					or	Rel.	0	0	0	0	2	5	1	0	8 Yelloweye, 6 unknown rockfish	0
Comments: <b>2 Rhinoceros Auklets released alive at 10 AM</b>															<sup>6</sup> DCR Conf. #: <b>FOS-12347</b>	
Vessel Master Name: <b>Dan Doe</b> Signature: <i>Dan Doe</i> <sup>7</sup> F.I.N.: <b>99999</b>																
16	Jul	5	1	10	(F)	Kept	12	0	0	0	0	X	X	0	0	0
Trip ID #: <b>FOS-12345</b>					or	Rel.	0	0	0	0	0	1	2	0	2 Chilipepper, 6 unknown rockfish	0
Comments:															<sup>6</sup> DCR Conf. #: <b>FOS-12348</b>	
Vessel Master Name: <b>Dan Doe</b> Signature: <i>Dan Doe</i> <sup>7</sup> F.I.N.: <b>77777</b>																
18	Jul	5	1	6	(F)	Kept	0	0	0	0	8	X	X	0	0	0
Trip ID #: <b>FOS-12398</b>					or	Rel.	0	6	0	0	0	1	0	0	0	1L
Comments:															<sup>6</sup> DCR Conf. #: <b>FOS-12402</b>	
Vessel Master Name: <b>John Smith</b> Signature: <i>John Smith</i> <sup>7</sup> F.I.N.: <b>77777</b>																
19	Jul	5	3	5 1/2	(F)	Kept	0	0	0	0	12	X	X	0	0	0
Trip ID #: <b>FOS-12398</b>					or	Rel.	0	0	0	0	0	0	0	0	0	2D
Comments:															<sup>6</sup> DCR Conf. #: <b>FOS-12403</b>	
Vessel Master Name: <b>John Smith</b> Signature: <i>John Smith</i> <sup>7</sup> F.I.N.: <b>77777</b>																

1. Catch: **Kept** are species retained on board; **Released** are species returned to the ocean. 2. As defined in the applicable Fishery Notice. 3. **Grilse** are juvenile salmon under 30 cm. 4. Rockfish are to be identified by species; if unsure of species, record as Unknown Rockfish. 5. **Other Species:** L=Lingcod, H=Halibut, D=D gfish, M=Mackerel, S=Steel ead, PI=ase spe ify **White r Green Sturge n** in Comments Se tion. If an **birds, marine mammals, or turtles** were encountered, give time of capture and full name of species in comments. 6. **DCR Conf. #** is the confirmation number received upon completion of the Daily Catch Report. 7. Vessel master's **Fisher Identification Number**.

**APPENDIX I: LOGBOOK SAMPLES**

**SALMON SEINE** Logbook I.D. # S10001 **Report Catch to: 1-(888) 387-0007** Record all catch in pieces **Page # 11111**

Vessel Name: **Pacific Blue** VRN (CFV#): **12346**

**Daily Catch Records**

Date	Mgmt. Area	Sub-area(s)	Hours Fished	# of sets	<sup>1</sup> Kept or Released	Sockeye	Coho	Pink	Chum	Adult Chinook	<sup>2</sup> Jack Chinook	Steel-head	Atlantic	<sup>3</sup> Other Fish	<sup>4</sup> Non-fish
Day	Mon.														

14	Aug	3	3-3, 3-2	8	5	Kept	42	0	431	0	0	0	0	6	0	<input checked="" type="radio"/> Yes
----	-----	---	----------	---	---	------	----	---	-----	---	---	---	---	---	---	--------------------------------------

Trip ID #: <b>FOS-12281</b>						Rel.	0	3	0	12	2	0	0	0	0	No
-----------------------------	--	--	--	--	--	------	---	---	---	----	---	---	---	---	---	----

Comments: **2 Rhinoceros Auklets released alive at 10 AM, 1 coho clipped, 2 coho dead, 1 rel'd alive** DCR Conf. #: <sup>5</sup> **FOS-12346**

Vessel Master Name: **Dan Doe** Signature: **Dan Doe** F.I.N.: **99999**

15	Aug	4	4-5	5½	2	Kept	38	0	850	0	0	0	0	0	0	<input checked="" type="radio"/> Yes
----	-----	---	-----	----	---	------	----	---	-----	---	---	---	---	---	---	--------------------------------------

Trip ID #: <b>FOS-12281</b>						Rel.	0	0	0	2	1	0	1	0	<b>4 D, 1 L, 1 salmon shark</b>	No
-----------------------------	--	--	--	--	--	------	---	---	---	---	---	---	---	---	---------------------------------	----

Comments: **1 harbour seal released, steelhead revived in tank, then released in good condition** DCR Conf. #: <sup>6</sup> **FOS-12358**

Vessel Master Name: **Dan Doe** Signature: **Dan Doe** F.I.N.: **99999**

19	Aug	4	4-5	9	4	Kept	53	0	560	0	0	0	0	0	0	Yes
----	-----	---	-----	---	---	------	----	---	-----	---	---	---	---	---	---	-----

Trip ID #: <b>FOS-12403</b>						Rel.	0	2	0	17	4	12	0	0	0	<input checked="" type="radio"/> No
-----------------------------	--	--	--	--	--	------	---	---	---	----	---	----	---	---	---	-------------------------------------

Comments: **Both coho rel'd in good condition. 12 jack chinook squishers all dead.** DCR Conf. #: <sup>6</sup> **FOS-12428**

Vessel Master Name: **John Smith** Signature: **John Smith** F.I.N.: **77777**

**Offload Catch Records**

Dates Fished							#	Date	Sockeye	Coho	Pink	Chum	Chinook	(Other)	Complete if catch pooled with that of another vessel:		
First date		Last date		Days Fished	Date Offloaded	Fished	Day	Month	<input type="checkbox"/> Pieces	<input type="checkbox"/> Pcs	<input type="checkbox"/> Pieces	<input type="checkbox"/> Pieces	<input type="checkbox"/> Pieces	<input type="checkbox"/> Pcs	Vessel		
Day	Month	Day	Month						<input checked="" type="checkbox"/> Lbs	<input type="checkbox"/> Lbs	<input checked="" type="checkbox"/> Lbs	<input type="checkbox"/> Lbs	<input type="checkbox"/> Lbs	<input checked="" type="checkbox"/> Lbs			
Day	Month	Day	Month	Fished	Day	Month			<input type="checkbox"/> Kgs	<input type="checkbox"/> Kgs	<input type="checkbox"/> Kgs	<input type="checkbox"/> Kgs	<input type="checkbox"/> Kgs	<input type="checkbox"/> Kgs	Received from:	Offloaded to:	Name:

14	Aug	15	Aug	2	15	Aug			471	0	3958	0	0	42	<input type="checkbox"/>	<input type="checkbox"/>	
----	-----	----	-----	---	----	-----	--	--	-----	---	------	---	---	----	--------------------------	--------------------------	--

Business and port offloaded to: **Canfisco, Pr. Rupert** Fish slip #: **79768** OCR Conf. #: <sup>6</sup> **FOS-12380**

19	Aug	19	Aug	1	20	Aug			310	0	1692	0	0	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<b>Home Run II</b>
----	-----	----	-----	---	----	-----	--	--	-----	---	------	---	---	---	--------------------------	-------------------------------------	--------------------

Business and port offloaded to: **Canfisco, Pr. Rupert** Fish slip #: **79801** OCR Conf. #: <sup>6</sup> **FOS-12482**

1. Catch: Kept are species retained on board; Released are species returned to the ocean. 2. **Jack Chinook** are all chinook smaller than 67 cm fork length (approx 26 inches). 3. **Other Fish**: M= Mackerel, L= Lingcod, H= Halibut, D= Dogfish. Please specify **White or Green Sturgeon** in Comments Section. Give full name for other species. 4. Circle Yes or No as appropriate if any **birds, marine mammals, or turtles** were encountered. Give time of capture and full name of species in comments. 5. **DCR Conf. #** is the confirmation number received upon completion of the Daily Catch Report. 6. **OCR Conf. #** is the Offload Catch confirmation number. 7. Enter the vessel master's Fisher Identification Number.

**APPENDIX I: LOGBOOK SAMPLES**

**SALMON GILLNET** Logbook I.D. # **G10001** Report Catch to: 1-(888) 387-0007 Record all catch in pieces Page # **11111**

Vessel Name:		<b>Pacific Blue</b>										VRN (CFV#):		<b>12346</b>			
Net Details		Type1: <b>A</b>	# Strands2: <b>6</b>	Length: <b>200</b> (fathoms)	Weedline Depth3: <b>30cm</b>	Hang Ratio: <b>3</b> :1	Mesh Size3: <b>4 7/8"</b>	# Meshes: <b>90</b>									
Daily Catch Records																	
Date	Mgmt. Area	Sub-area(s)	Hours Fished	# of sets	<sup>4</sup> Kept or Released	Sockeye	Coho	Fink	Chum	Chinook	Steel-head	Atlantic	Dogfish	<sup>5</sup> Sturgeon	<sup>6</sup> Other Fish	<sup>7</sup> Non-fish	
4	Aug	12	12-4	5.5	5	Kept	4	0	23	127	0	0	0	0	0	0	Yes
Trip ID #: <b>FOS-12480</b>					Rel.	0	9	0	0	0	0	0	0	0	0	0	No
Comments: <b>2 birds killed in 10AM set, kept for research program. Rhinoceros Auklets.</b>															<sup>8</sup> DCR Conf. #: <b>FOS-12346</b>		
Vessel Master Name: <b>Dan Doe</b>					Signature: <b>Dan Doe</b>					<sup>9</sup> F.I.N.: <b>99999</b>							
5	Aug	12	12-5	7	3	Kept	73	0	245	4	0	0	1	0	0	0	Yes
Trip ID #: <b>FOS-12480</b>					Rel.	0	2	0	0	0	0	0	0	2	0	2M, 1 salmon shark	No
Comments: <b>Offloaded at CANFISCO in Port Hardy on August 5 at 14:00.</b>															<sup>8</sup> DCR Conf. #: <b>FOS-12367</b>		
Vessel Master Name: <b>Dan Doe</b>					Signature: <b>Dan Doe</b>					<sup>9</sup> F.I.N.: <b>99999</b>							
6	Aug	12	12-4	6	3	Kept	88	0	116	7	0	0	2	0	0	0	Yes
Trip ID #: <b>FOS-12480</b>					Rel.	0	0	0	0	0	0	1	0	0	0	11 M, 2 R	No
Comments: <b>Steelhead released in good condition. 2 sea lions released alive around 11AM.</b>															<sup>8</sup> DCR Conf. #: <b>FOS-12382</b>		
Vessel Master Name: <b>Dan Doe</b>					Signature: <b>Dan Doe</b>					<sup>9</sup> F.I.N.: <b>99999</b>							
29	Aug	17	17-11	6	6	Kept	163	0	328	0	0	0	0	0	0	0	Yes
Trip ID #: <b>FOS-12773</b>					Rel.	0	0	0	0	3	1	0	0	0	0	0	No
Comments: <b>Fished two management areas today</b>															<sup>8</sup> DCR Conf. #: <b>FOS-12521</b>		
Vessel Master Name: <b>John Smith</b>					Signature: <b>John Smith</b>					<sup>9</sup> F.I.N.: <b>77777</b>							
29	Aug	29	29-2	4	6	Kept	205	0	493	0	0	0	0	0	0	0	Yes
Trip ID #: <b>FOS-12773</b>					Rel.	0	2	0	0	1	1	0	0	0	0	0	No
Comments: <b>Both coho put in rev. tank, one died, one released in good condition</b>															<sup>8</sup> DCR Conf. #: <b>FOS-12523</b>		
Vessel Master Name: <b>John Smith</b>					Signature: <b>John Smith</b>					<sup>9</sup> F.I.N.: <b>77777</b>							

1. **Net Types:** enter 'A' for Alaska Twist, 'M' for Multi Strand or 'C' for Combination. 2. Enter number of strands if net is 'Alaska Twist' type mesh. 3. Give measurement units ( in or " = inches, cm = centimeters, mm = millimeters). 4. **Kept** are species retained on board; **Released** are species returned to the ocean. 5. Please specify White or Green Sturgeon in **Comments** Section. 6. **Other Fish:** M= Mackerel, L= Lingcod, H= Halibut. Give full name for other species. 7. Circle Yes or No as appropriate if any **birds, marine mammals, or turtles** were encountered. Give time of capture and species details in comments. 8. **DCR Conf. #** is the confirmation number received upon completion of the Daily Catch Report. 9. **F.I.N.** Is the Fisher Identification Number.

## APPENDIX 2: FISHING VESSEL SAFETY

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## I OVERVIEW – FISHING VESSEL SAFETY

Vessel owners and masters have a duty to ensure the safety of their crew and vessel. Adherence to safety regulations and good practices by owners, masters and crew of fishing vessels will help save lives, prevent vessel damage and protect the environment. All fishing vessels must be in a seaworthy condition and maintained as required by Transport Canada (TC), WorkSafeBC, and other applicable agencies. Vessels subject to inspection should ensure that the certificate of inspection is valid for the area of intended operation.

In the federal government, responsibility for shipping, navigation, and vessel safety regulations and inspections lies with TC; emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. The Transportation Safety Board is an independent agency that advances transportation safety by investigating selected occurrences in the air, marine, pipeline and rail modes of transportation including fishing vessel occurrences. In BC, WorkSafeBC exercises jurisdiction over workplace health and safety and conducts inspections on commercial fishing vessels in order to ascertain compliance with the *Workers Compensation Act (WCA)* and the *Occupational Health and Safety Regulation (OHSR)*.

Before departing on a voyage the owner, master or operator must ensure that the fishing vessel is capable of and safe for the intended voyage and fishing operations. Critical factors for a safe voyage include the seaworthiness of the vessel, having the required personal protective and life-saving equipment in good working order, adequate number of properly trained crew, and knowledge of current and forecasted weather conditions. As safety requirements and guidelines may change, the vessel owner, crew, and other workers must be aware of the latest legislation, policies and guidelines prior to each trip.

There are many useful tools available for ensuring a safe voyage. These include:

Education and training programs

Marine emergency duties training

Fish Safe – Stability Education Program & 1 Day Stability Workshop

Fish Safe – SVOP (Subsidized rate for BC commercial fishers provided)

Fish Safe – Safest Catch program – **FREE** for BC commercial fishers

Fish Safe *Safe At Sea* DVD Series – Fish Safe

Fish Safe Stability Handbook – *Safe at Sea* and *Safest Catch* – DVD Series

Fish Safe *Safest Catch* Log Book



Fish Safe Safety Quiz

First Aid training

Radio Operators Course (Subsidized rate for BC commercial fishers provided)

Fishing Masters Certificate training

Small Vessel Operators Certificate training

Publications:

- Gearing Up for Safety – WorkSafeBC
- Transport Canada Publication TP 10038 Small Fishing Vessel Safety Manual (can be obtained at Transport Canada Offices from their website at: <http://www.tc.gc.ca/eng/marinesafety/tp-tp10038-menu-548.htm>)
- Amendments to the *Small Fishing Vessel Inspection Regulations* (can be obtained from: <http://www.gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php>)
- Safety Issues Investigation into Fishing Safety in Canada report can be accessed: <https://www.tsb.gc.ca/eng/rapports-reports/marine/etudes-studies/M09Z0001/M09Z0001.html>

For further information see: <https://tc.canada.ca/en/marine-transportation>  
<http://www.fishsafebc.com>  
<http://www.worksafebc.com>  
[www.tsb.gc.ca/eng/rapports-reports/marine/index.html](http://www.tsb.gc.ca/eng/rapports-reports/marine/index.html)

## 2 IMPORTANT PRIORITIES FOR VESSEL SAFETY

There are three areas of fishing vessel safety that should be considered a priority. These are: vessel stability, emergency preparedness, and cold water immersion.

### 2.1 FISHING VESSEL STABILITY

Vessel stability is paramount for safety. Care must be given to the stowage and securing of all cargo, skiffs, equipment, fuel containers and supplies and to correct ballasting. Fish harvesters must be familiar with their vessel's centre of gravity, the effect of liquid free surfaces on stability (e.g. loose water or fish on deck), loading and unloading operations, watertight integrity and

the vessel's freeboard. Know the limitations of your vessel; if you are unsure, contact a naval architect, marine surveyor or the local Transport Canada Marine Safety Office.

Fishing vessel owners are required to develop detailed instructions addressing the limits of stability for each of their vessels. These instructions must include detailed safe operation documentation kept on board the vessel.

In 2017, Transport Canada Marine Safety (TC) issued Ship Safety Bulletin (SSB) [No. 03/2017](#) announcing the coming into force of the *New Fishing Vessel Safety Regulations*. The initial regulations were published in the Canada Gazette Part II on July 13, 2016 and came into force on July 13, 2017. The bulletin includes important information on changes to requirements for Written Safety Procedures, Safety Equipment and Vessel Stability.

As of July 13, 2017, new regulations pertaining to stability assessments to be performed by a competent person came into effect, as follows:

- A new fishing vessel that has a hull length of more than 9 m where the vessel construction was started or that a contract was signed for the construction after July 13, 2018;
- A fishing vessel more than 9 m and that has undergone a major modification or a change in activity that is likely to adversely affect its stability;
- A fishing vessel that is fitted with an anti-roll tank at any time;
- A fishing vessel more than 15 gross tonnage and used for catching herring or capelin during the period beginning on July 6, 1977 and ending on July 13, 2017.
- For an existing fishing vessel that is not required to undergo a stability assessment, the owner shall be capable of demonstrating that their vessel has adequate stability to safely carry out the vessel's intended operations. Guidelines have been developed and are available online to help small fishing vessel owners and operators meet their regulatory requirements
- Two good resources can be found here: [TP 15393 - Adequate stability and safety guidelines for fishing vessels \(2018\)](#) and [TP 15392 – Guidelines for fishing vessel major modification or a change in activity \(2018\)](#)

Further, the new Regulation requires a "Stability Notice" to be developed after a stability assessment. This notice includes a simple diagrammatic of the vessel, its tanks and fish holds, or deck storage as the case may be. It is intended to assist fishing vessel crews in quickly determining the safe carriage limits of the vessel without having to reference a complicated Trim and Stability Book.

Additionally, Transport Canada published a Stability Questionnaire ([SSB No. 04/2006](#)) and Fishing Vessel Modifications Form ([SSB No. 01/2008](#)) which enable operators to identify the criteria which will trigger a stability assessment. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires a stability assessment or to receive guidance on obtaining competent assessor.

In 2019, TC provided an updated [SSB 03/2019](#), which sets out a voluntary record of modifications for the benefit of owners/masters of any fishing vessels. For vessels of more than 15 gross tons, the record of modifications was to be reviewed by TC inspectors during regular inspections and entered on the vessel's inspection record. However, information gathered during the Transportation Safety Board's (TSB) Safety Issues Investigation into the fishing industry showed minimal recording of vessel modifications prior to this date.

The TSB has investigated several fishing vessel accidents since 2005 and found a variety of factors that effected the vessel's stability were identified as contributing factors in vessels capsizing, such as with: [M05W0110](#) - *Morning Sunrise*, [M07M0088](#) - *Big Sisters*, [M08W0189](#) - *Love and Anarchy*, [M09L0074](#) - *Le Marsouin I*, [M10M0014](#) - *Craig and Justin*, [M12W0054](#) - *Jessie G*, [M12W0062](#) - *Pacific Siren*, [M14P0121](#) - *Five Star*, [M15P0286](#) - *Caledonian*, [M16A0140](#) - *C19496NB*, [M17C0061](#) - *Emma Joan*, [M17P0052](#) - *Miss Cory* and [M18P0073](#) - *Western Commander*, and [M18A0425](#) - *Charlene A*.

Vessel masters are advised to carefully consider stability when transporting gear. Care must be given to the stowage and securing of all traps, cargo, skiffs, equipment, fuel containers and supplies and also to correct ballasting. Know the limitations of your vessel; if you are unsure contact a reputable marine surveyor, naval architect or the local Transport Canada Marine Safety office.

WorkSafeBC's *Occupational Health and Safety Regulations* (OHSR) require owners of fishing vessels to provide documentation on board, readily accessible to crew members, which describes vessel characteristics, including stability.

Fish Safe has developed a code of best practices for the food and bait/roe herring fisheries and the prawn fishery: These Best Practices are available on Fish Safe's website for convenient download here: <https://www.fishsafebc.com/best-practices>. Please contact Ryan Ford at Fish Safe for a copy of the program materials they developed to address safety and vessel stability in these fisheries. Ryan Ford – Office: (604) 261-9700 - Email: [ryan@fishsafebc.com](mailto:ryan@fishsafebc.com).

## **2.2 EMERGENCY DRILL REQUIREMENTS**

The *Canada Shipping Act* 2001 requires that the Authorized Representative of a Canadian Vessel shall develop procedures for the safe operation of the vessel and for dealing with emergencies.

The Act also requires that crew and passengers receive safety training. The *Marine Personnel Regulations* require that all personnel on board required to meet the minimum safe manning levels have received MED (Marine Emergency Duties) training to an A1 or A3 level, depending on the vessel's voyage limits, within 6 months of serving aboard. MED A3 training is 8 hours in duration and is applicable to seafarers on fishing vessels less than 150 GRT that are within 25 miles from shore (NC2). MED A1 training is 19.5 hours duration and is applicable to all other fishing vessels.

To assist fishers in meeting their crew training requirements, Fish Safe has created a downloadable '*New Crew Orientation Form and How To Guide*' available on Fish Safe's website here: <https://www.fishsafebc.com/downloadable-tools>

MED provides a basic understanding of the hazards associated with the marine environment; the prevention of shipboard incidents; raising and reacting to alarms; fire and abandonment situations; and the skills necessary for survival and rescue.

WorkSafeBC's *Occupational Health and Safety Regulation* (OHSR) requires written rescue and evacuation procedures for work on or over water. Additionally, fishing vessel masters must establish procedures and assign responsibilities to each crew member to cover all emergencies, including the following: crew member overboard, fire on board, flooding of the vessel, abandoning ship, and calling for help. Fishing vessel masters are also required to conduct emergency drills at the start of each fishing season, when there is a change of crew, and at periodic intervals to ensure that crewmembers are familiar with emergency procedures.

Between 2011 and 2015 the TSB investigated 17 fishing vessel accidents which resulted in 17 fatalities. The report's findings highlighted the lack of safety drills and safety procedures and practices.

The *Safest Catch* program, delivered by Fish Safe and free to BC commercial fishers, includes comprehensive practice of drills such as abandon ship, man overboard and firefighting drills.

### **2.3 COLD WATER IMMERSION**

Drowning is the number one cause of death in BC's fishing industry. Cold water is defined as water below 25 degrees Celsius, but the greatest effects occur below 15 degrees C. BC waters are usually below 15 degrees C. Normal body temperature is around 37 degrees Celsius; cold water rapidly draws heat away from the body. The effects of cold water on the body occur in four stages: cold shock, swimming failure, hypothermia and post-rescue collapse. Know what to do to prevent you or your crew from falling into the water and what to do if that occurs. More information is available in the WorkSafeBC Bulletin *Cold Water Immersion* (available from the WorkSafeBC website at [www.worksafebc.com](http://www.worksafebc.com))

Under the recently amended (June 2019) *OHS Regulation*, section 24.96.1, a crewmember must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure or when on the deck of a fishing vessel that has a deck or deck structure. The use of a PFD will prepare a crewmember to remain afloat, to survive the effects of cold shock, reduce the need to swim and give rescuers time to respond.

Section 8.26, which requires workers to wear a PFD or lifejacket when working “under conditions which involve a risk of drowning”, would continue to apply to fishing crewmembers and other workers (e.g. when they are working on shore, docks and other vessels).

The specific requirements can be found on WorkSafeBC’s PFD Primer provided on Fish Safe’s website here: <https://www.fishsafebc.com/cold-water-survival>.

It has been demonstrated time and again that, when worn, PFD's save lives - and the chance of surviving a mishap increases significantly when these devices are worn while working on deck.

Resulting from the TSB investigations into the *Diane Louise* - [M14P0110](#) and the *Caledonian* – [M15P0286](#) fishing vessel accidents, the Board recommended that both TC and WorkSafeBC require that persons wear a suitable personal flotation devices (PFDs) at all times when: on the deck of a commercial fishing vessel; or, when on board a commercial fishing vessel without a deck or deck structure, and ensure that programs are developed to confirm compliance.

## **2.4 OTHER ISSUES**

### **2.4.1 WEATHER**

Vessel owners and masters are reminded of the importance of paying close attention to current weather trends and forecasts during the voyage. Marine weather information and forecasts can be obtained on VHF channels 21B, Wx1, Wx2, Wx3, or Wx4. Weather information is also available from Environment Canada website at: [https://weather.gc.ca/marine/index\\_e.html](https://weather.gc.ca/marine/index_e.html)

### **2.4.2 EMERGENCY RADIO PROCEDURES**

Vessel owners and masters should ensure that all crew are able to activate the Search and Rescue (SAR) system early rather than later by contacting the Canadian Coast Guard (CCG). It is strongly recommended that all fish harvesters carry a registered 406 MHz Emergency Position Indicating Radio Beacon (EPIRB). These beacons should be registered with the National Search and Rescue secretariat. When activated, an EPIRB transmits a distress call that is picked up or relayed by satellites and transmitted via land earth stations to the Joint Rescue Co-ordination Centre (JRCC), which will task and co-ordinate rescue resources. The TSB notes that there have been several recent occurrences on board vessels not equipped with an EPIRB, and that were either unable or did not use any other means of emergency signaling distress (e.g.

[M14P0121](#), [M14A0289](#), [M15A0189](#), [M16A0327](#), [M18A0076](#), [M18A0303](#), [M18A0078](#), M18P0184, M19A0082, M19P0242, [M20A0258](#), [M20A0160](#)) which resulted in 24 fatalities.

Fish harvesters should monitor VHF channel 16 or MF 2182 KHz and make themselves and their crews familiar with other radio frequencies. All crew should know how to make a distress call and should obtain their restricted operator certificate from Industry Canada. However, whenever possible, masters should contact the nearest Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) station (on VHF channel 16 or MF 2182 kHz) prior to a distress situation developing. Correct radio procedures are important for communications in an emergency. Incorrect or misunderstood communications may hinder a rescue response. Further information is available at [Radio Aids to Marine Navigation General](#)

Since August 1, 2003, all commercial vessels greater than 8 metres in length are required to carry a Class D VHF Digital Selective Calling (DSC) radio. A registered DSC VHF radio has the capability to alert other DSC equipped vessels in your immediate area and MCTS that your vessel is in distress. Masters should be aware that they should register their DSC radios with Industry Canada to obtain a Marine Mobile Services Identity (MMSI) number or the automatic distress calling feature of the radio may not work. For further information see the Coast Guard website at: <http://www.ccg-gcc.gc.ca/eng/CCG/Home> or go directly to the Industry Canada web page: [www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.html](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01032.html)

A DSC radio that is connected to a GPS unit will also automatically include your vessel's current position in the distress message. More detailed information DSC can be found here: [TC DSC Safety Bulletin](#). Questions regarding Coast Guard DSC capabilities can be obtained by contacting your local MCTS centre (Prince Rupert MCTS (250) 627-3070 or Victoria MCTS (250)363-6333).

### **2.4.3 COLLISION REGULATIONS**

Fish harvesters must be knowledgeable of the Collision Regulations and the responsibilities between vessels where risk of collision exists. Navigation lights must be kept in good working order and must be displayed from sunset to sunrise and during all times of restricted visibility. To help reduce the potential for collision or close quarters situations which may also result in the loss of fishing gear, fish harvesters are encouraged to monitor the appropriate local Vessel Traffic Services (VTS) VHF channel when travelling or fishing near shipping lanes or other areas frequented by large commercial vessels. Vessels required to participate in VTS include:

- a) every ship twenty metres or more in length,
- b) every ship engaged in towing or pushing any vessel or object, other than fishing gear,

- c) where the combined length of the ship and any vessel or object towed or pushed by the ship is forty five metres or more in length; or
- d) where the length of the vessel or object being towed or pushed by the ship is twenty metres or more in length.

Exceptions include:

- e) a ship towing or pushing inside a log booming ground,
- f) a pleasure yacht less than 30 metres in length, and
- g) a fishing vessel that is less than 24 metres in length and *not* more than 150 tons gross.

More detailed information on VTS can be obtained by calling (either Prince Rupert MCTS (250)627-3070 or Victoria MCTS (250)363-6333 or from the Coast Guard website:

<https://www.ccg-gcc.gc.ca/publications/mcts-sctm/ramn-arnm/part3-eng.html>

#### **2.4.4 BUDDY SYSTEM**

Fish harvesters are encouraged to use the buddy system when transiting and fishing as this allows for the ability to provide mutual aid. An important trip consideration is the use of a sail/voyage plan which includes the particulars of the vessel, crew and voyage. The sail plan should be left with a responsible person on shore or filed with the local MCTS. After leaving port the fish harvester should contact the holder of the sail plan daily or as per another schedule. The sail plan should ensure notification to JRCC when communication is not maintained which might indicate your vessel is in distress. Be sure to cancel the sail plan upon completion of the voyage.

### **3 WORKSAFEBC**

WorkSafeBC exercises jurisdiction over workplace health and safety, including the activities of crews of fishing vessels. Commercial fishing, diving and other marine operations are subject to the provisions of the *Workers Compensation Act (WCA,)* and requirements in Part 24 of the *Occupational Health and Safety Regulation (OHSR)*.

Examples of Part 24 regulatory requirements related to fishing include, but are not limited to, the requirement to establish emergency procedures, to conduct emergency drills, to provide immersion suits for the crew, to provide stability documentation for the vessel, safe work procedures, injury reporting, correction of unsafe working conditions, the requirement to wear personal flotation devices (PFDs), etc.

Other sections of the OHSR also apply to commercial fishing operations. For example, Part 3 addresses training of young and new workers, first aid and employer incident/accident



investigations. Part 4 addresses general conditions such as maintenance of equipment, workplace conduct and impairment. Part 8 addresses issues related to safety headgear, safety footwear, eye and face protection, limb and body protection and personal flotation devices (PFDs) when working on the dock. Part 12 addresses issues related to tools, machinery and equipment, including safeguarding. Part 15 addresses issues related to rigging.

Both owners and masters of fishing vessels are considered to be employers. Under the *Workers Compensation Act* and the *OHS Regulation* (OHSR) they have varying and overlapping duties and responsibilities. Masters, because they have the most control during fishing and related activities, are considered to be the employer with primary responsibility for the health and safety of the crew.

The OHSR and the WCA are available from the Provincial Crown Printers or by visiting the WorkSafeBC website: [www.worksafebc.com](http://www.worksafebc.com)

NOTE: Regarding the OHSR requirement to wear PFD's, WorkSafeBC has produced a video entitled "Turning the Tide – PFD's in the Fishing Industry". For more information on PFD use, including a link to the video, please access the following site:

<https://www.worksafebc.com/en/about-us/news-events/news-releases/2018/November/new-fishing-industry-safety-video?origin=s&returnurl=https%3A%2F%2Fwww.worksafebc.com%2Fen%2Fsearch%23q%3DTurning%2520the%2520Tide%26sort%3Drelevancy%26f%3Alanguage-facet%3D%5BEnglish%5D>

For further information, contact an Occupational Safety Officer:

Bruce Logan	Vancouver/ Richmond/Delta	(604) 244-6477
Mark Lunny	Courtenay	(250) 334-8732
Cody King	Courtenay	(250) 334-8733
Paul Matthews	Courtenay	(250) 334-8741
Jessie Kunce	Victoria	(250) 881-3461

or the Manager of Interest for Marine and Fishing, Pat Olsen (250) 334-8777

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski, Manager, OHS Consultation y and Education Services, at (604) 233-4062 or by email: [tom.pawlowski@worksafebc.com](mailto:tom.pawlowski@worksafebc.com) or Tim Pryde, OHS Consultant at (604) 802-2954 or by email: [tim.pryde@worksafebc.com](mailto:tim.pryde@worksafebc.com).



## **4 FISH SAFE BC**

Fish Safe encourages Vessel masters and crew to take ownership of fishing vessel safety. Through this industry driven and funded program, Fish Safe provides fishing relevant tools and programs to assist fishers in this goal. The Fish Safe Stability Education Program and 1 Day Stability Workshop are available to all fishers who want to improve their understanding of stability and find practical application to their vessel's operation. The SVOP (Small Vessel Operator Proficiency) Course is designed to equip crew with the skills they need to safely navigate during their wheel watch. The Safest Catch Program, along with fisher-trained Safety Advisors, is designed to give fishers the tools they need to create a vessel specific safety management system.

As referenced throughout the above documentation, Fish Safe provides a broad range of courses, programs and services that are either free for BC commercial fishers or highly subsidized.

Fish Safe is managed by Ryan Ford, Program Manager and support staff including John Krgovich, Program Coordinator, Stephanie Nguyen, Program Assistant, Rhoda Huey, Bookkeeper/Administrative Assistant and an experienced team of fisher Safety Advisors. All activities and program development is directed by the Fish Safe Advisory Committee (membership is open to all interested in improving safety on board fishing vessels). The Advisory Committee meets two to three times annually to discuss safety issues and give direction to Fish Safe in the development of education and tools for fish harvesters.

Fish Safe also works closely with WorkSafeBC to improve the fishing injury claims process. For further information contact:

Ryan Ford	
Program Manager	Cell: (604) 739-0540
Fish Safe	Office: (604) 261-9700
#100, 12051 Horseshoe Way	Email: ryan@fishsafebc.com
Richmond, BC V7A 4V4	<a href="http://www.fishsafebc.com">www.fishsafebc.com</a>

## **5 TRANSPORTATION SAFETY BOARD**

The Transportation Safety Board (TSB) is not a regulatory board. The TSB is an independent agency that investigates marine, pipeline, railway and aviation transportation occurrences to determine the underlying risks and contributing factors. Its sole aim is the advancement of transportation safety by reporting publicly through Accident Investigation Reports or Marine Safety Information Letters or Advisors. It is not the function of the Board to assign fault or

determine civil or criminal liability. Under the *TSB Act*, all information collected during an investigation is completely confidential.

In 2014 the TSB pacific region released three investigation reports:

- the collision between trawl fishing vessel [Viking Storm](#) and US long line fishing vessel *Maverick* and the subsequent fatality,
- the person over board off the prawn fishing vessel [Diane Louise](#) and the subsequent fatality, and
- the capsizing of the crab fishing vessel [Five Star](#) and subsequent fatality.

In 2016 the TSB pacific region released one investigation report:

- the capsizing of the trawl [Caledonian](#) and subsequent fatalities.

In 2018 the TSB pacific region released two investigation reports:

- the capsizing and sinking of the [Miss Cory](#) and subsequent fatality.
- the sinking of the [Western Commander](#) and loss of life.

In 2020 the TSB pacific region is investigated the fatal accident involving the [Arctic Fox II](#) on August 11.

The TSB issued five recommendations following the *Caledonian* report. Three recommendations issued are aimed at ensuring all crews have access to adequate stability information that meets their needs. That means:

- All commercial fishing vessels should have a stability assessment appropriate for their size and operation.
- The information from that assessment must then be kept current, and it must be used to determine safe operating limits.

Moreover, these operating limits must be easily measurable, and relevant to the vessel's operation. For example, that could mean marking the sides of a vessel's hull to indicate the maximum operating waterline, or maximum permitted loads can be specified in the most relevant unit of measure—total catch weight for instance, or the safe number of traps.

Regardless, for it to be of real, practical use, the information must be presented in a format that is clearly understood and easily accessible to crew.

The other two recommendations address the most basic step that harvesters can take: wearing a personal flotation device. Here in British Columbia, roughly 70 percent of all fishing-related fatalities in the past decade came while not wearing a PFD. Yet many harvesters still do not wear them. TC regulations currently require that PFDs be worn only if harvesters identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC to require persons to wear suitable personal flotation devices at all times

when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that programs are developed to confirm compliance. In June 2019, WorksafeBC amended its fishing regulation related to the use of PFDs. Under the amendments, crewmembers must wear a PFD or lifejacket when on board a fishing vessel that has no deck or deck structure, or when on the deck of a fishing vessel that has a deck or deck structure. Crewmembers are not required to wear lifejackets or PFDs below deck or when inside a deck structure where there is risk of entrapment. This amendment removes the need for a risk of drowning to be present before a PFD must be worn.

For more information about the TSB, visit the website at [www.tsb.gc.ca](http://www.tsb.gc.ca)

For information about the TSB's investigation into fishing safety, or to view a brief video, visit: <http://www.tsb.gc.ca/eng/medias-media/videos/marine/m09z0001/index.asp>

To view information on the TSB's recent safety Watchlist, visit: <http://www.bst-tsb.gc.ca/eng/surveillance-watchlist/marine/2018/marine.html>

Reporting an Occurrence: [www.tsb.gc.ca/eng/incidents-occurrence/marine/](http://www.tsb.gc.ca/eng/incidents-occurrence/marine/)

After a reportable occurrence happens; you can fill out the TSB 1808 form or call the TSB at the contact information below.

Recently the TSB produced a Safe at Sea: Activity book on fishing safety intended for the next generation of fish harvesters (ages 4-7). Download a copy.

[www.tsb.gc.ca](http://www.tsb.gc.ca) > [eng](#) > [medias-media](#) > [prudence-safe](#) > [safe-at-sea](#)

[Glenn Budden](#), Investigator, Marine - Fishing Vessels

Transportation Safety Board of Canada

4 - 3071 No. 5 Road

Richmond, BC, V6X 2T4

Telephone: (604) 619-6090

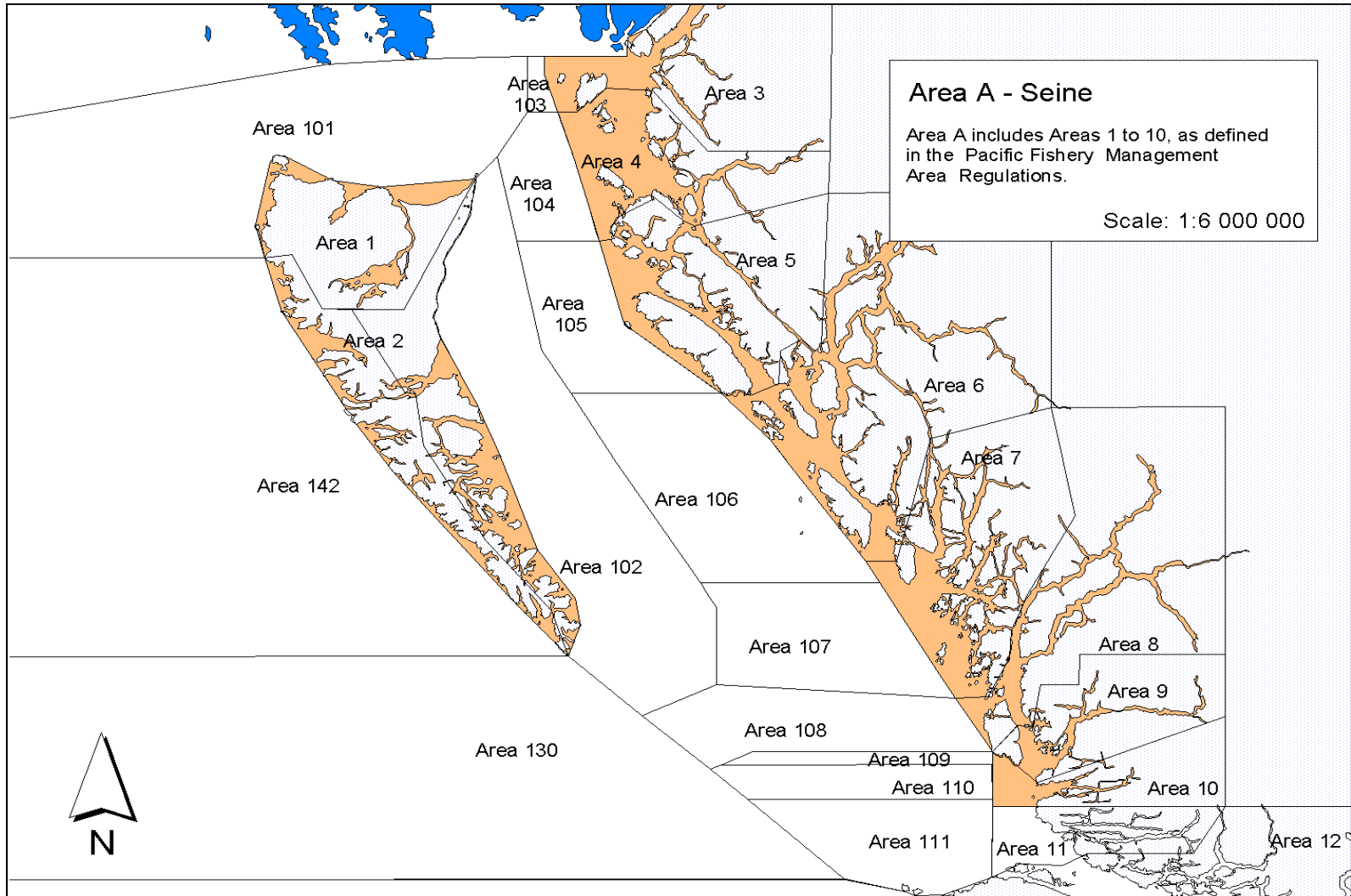
Email: [glenn.budden@tsb-bst.gc.ca](mailto:glenn.budden@tsb-bst.gc.ca)

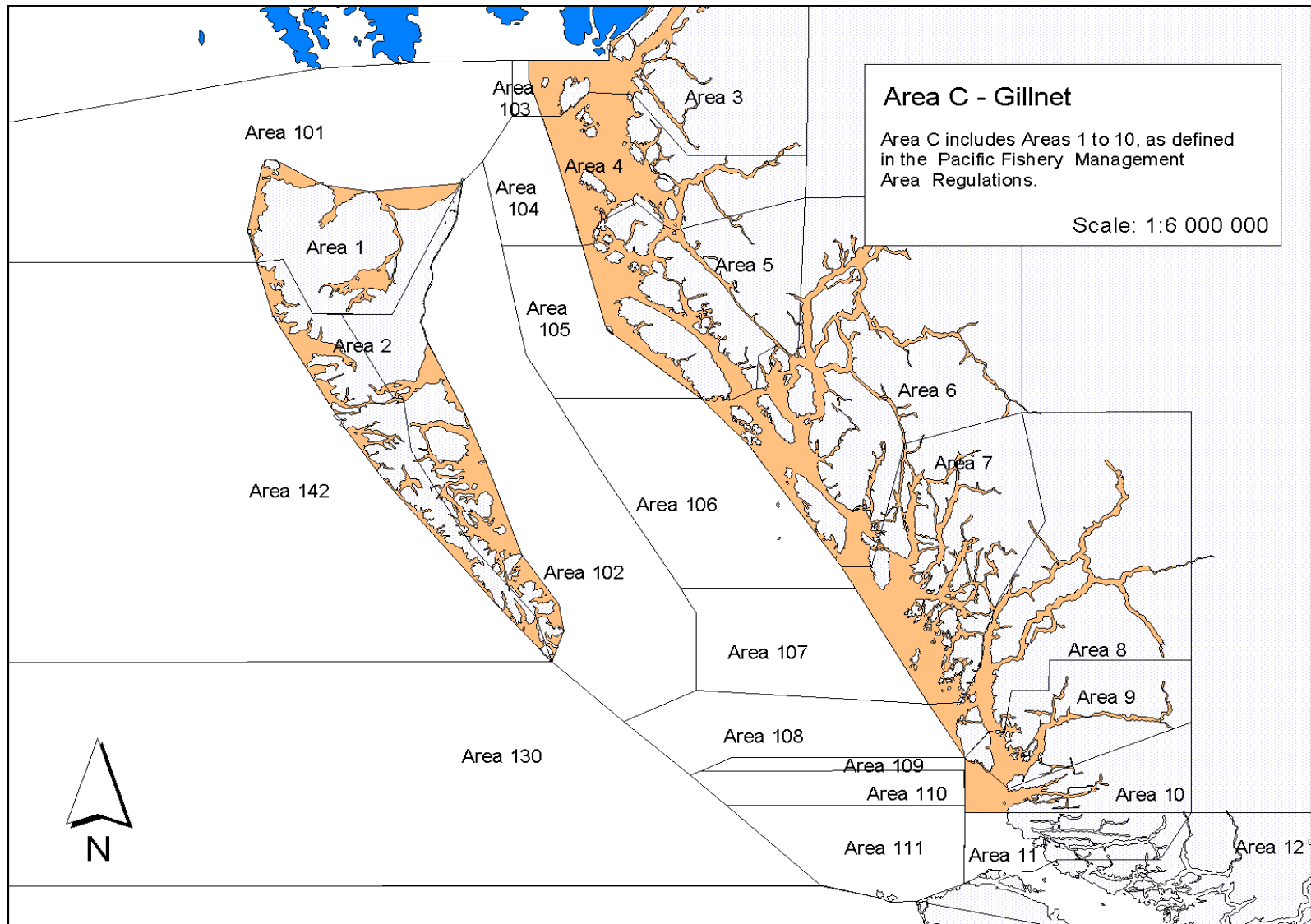
## APPENDIX 3: COMMERCIAL SALMON LICENCE AREAS

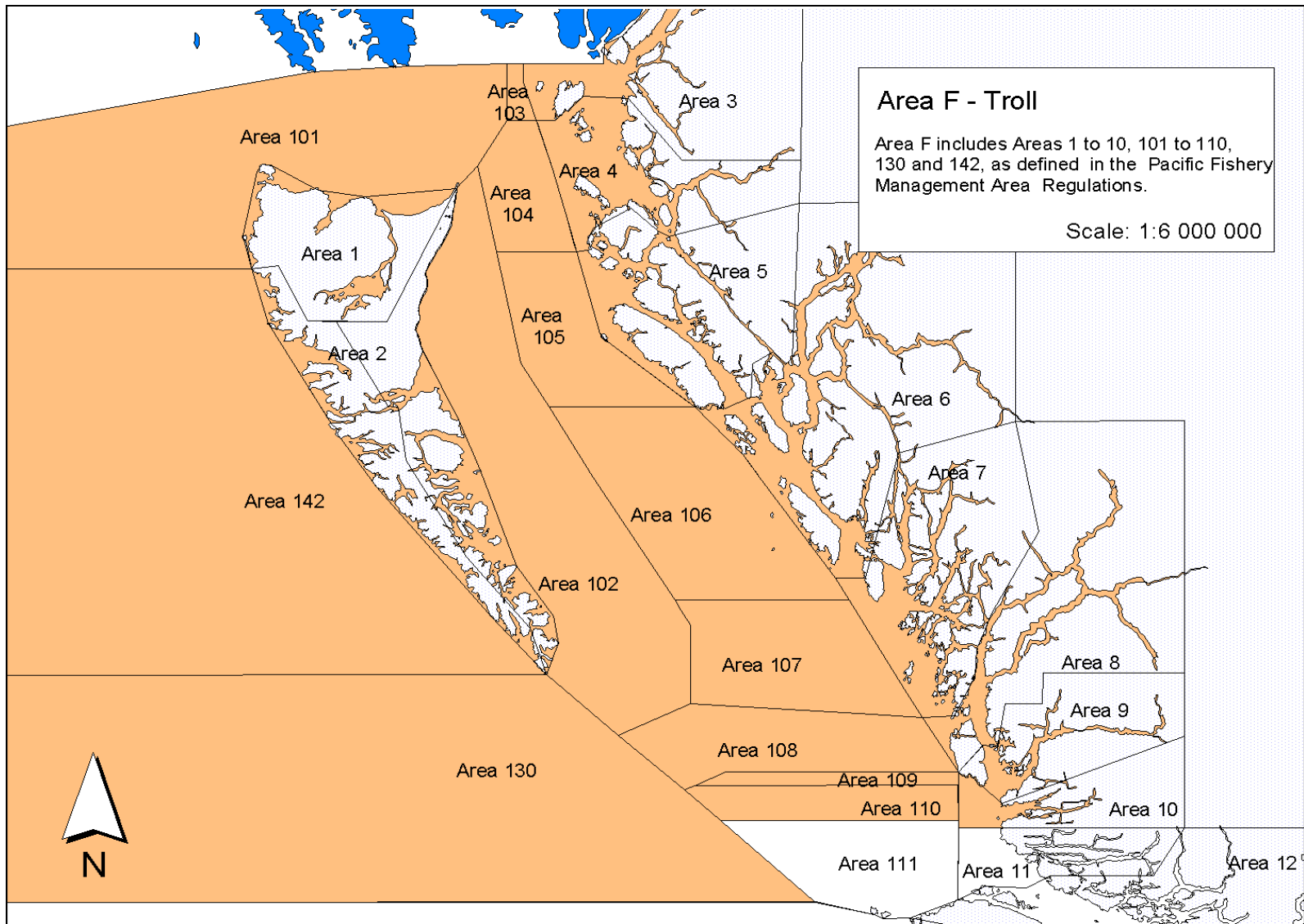
Pacific Salmon Fishing Area	Gear	Corresponding Pacific Fisheries Management Areas (PFMA)
Salmon Area A	Seine	Areas 1 to 10, Subarea 101-7
Salmon Area B	Seine	Areas 11 to 29 and 121
Salmon Area C	Gill net	Areas 1 to 10, Subarea 101-7
Salmon Area D	Gill net	Areas 11 to 15 and 23 – 27
Salmon Area E	Gill net	Areas 16 to 22, 28, 29 and 121
Salmon Area F	Troll	Areas 1 to 10, 101 to 110, 130 and 142
Salmon Area G	Troll	Areas 11, 20 to 28, 111, 121, 123 to 127 and Subareas 12-5 and 12-6
Salmon Area H	Troll	Areas 12 to 19, 28 and 29

For North Coast PFMA's please see [Appendix 4](#): Maps of Northern BC Commercial Licence.

# APPENDIX 4: MAPS OF NORTHERN BC COMMERCIAL LICENCE AREAS









## APPENDIX 5: ADVISORY BOARD MEMBERSHIPS

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Meeting dates and records of consultation can be found at:

<http://www.pac.dfo-mpo.gc.ca/consultation/fisheries-peche/smon/ihpc-cpip/index-eng.htm>

The IHPC membership list can also be found on the DFO website at:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/ihpc-cpip/membs-eng.html>

### INTEGRATED HARVEST PLANNING COMMITTEE NORTH COAST SUBCOMMITTEE MEMBERS

#### RECREATIONAL (THREE) MEMBERS

Urs Thomas ..... [info@goldenspruce.ca](mailto:info@goldenspruce.ca)  
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Aaron Hill ..... [hillfish@telus.net](mailto:hillfish@telus.net)

**FIRST NATIONS (FOUR) MEMBERS**

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Harry Nyce - Nisga'a Lisims Government ..... [eagle1@nisgaa.net](mailto:eagle1@nisgaa.net)

Vacant - Council of the Haida Nation ..... N/A

Stu Barnes - Skeena Fisheries Commission ..... [stu\\_barnes@skeenafisheries.ca](mailto:stu_barnes@skeenafisheries.ca)

**ALTERNATES**

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Walter Joseph - Wet'suwet'en First Nation ..... [walter.joseph@wetsuweten.com](mailto:walter.joseph@wetsuweten.com)

**PROVINCE (EX-OFFICIO)**

Vacant

# APPENDIX 6: UPDATES TO THE COMMERCIAL SALMON ALLOCATION FRAMEWORK

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## I INTRODUCTION AND PURPOSE

The purpose of this appendix is to outline progress related to updates to the Commercial Salmon Allocation Framework (CSAF), including

Document progress on key work plan items for the 2021 season agreed to by the Salmon Coordinating Committee, Commercial Salmon Advisory Board and DFO;

Describe principles and guidelines for sharing arrangements, building on guidelines approved in the 2015/2016 IFMP (Section 3);

Outline CSAF demonstration fishery proposals assessed through the Departments' Evaluation Framework. These may be implemented subject to a final fishing plan being approved in the area which addresses any outstanding elements highlighted and sufficient returns for commercial fishing.

## 2 BACKGROUND

In September 2013, as part of the Pacific Salmon Treaty Mitigation program, Fisheries and Oceans Canada started a process to obtain advice on updating the CSAF to address deficiencies raised by commercial harvesters and First Nations. The Department engaged the existing advisory processes, principally the First Nations Salmon Coordinating Committee (SCC) and the Commercial Salmon Advisory Board (CSAB), and also sought the views of other First Nations and commercial interests on possible changes to the framework. Discussions with the SCC and CSAB were completed at the end of January 2015. Updates approved are detailed in the final 2015/16 IFMP. Work to address key issues raised continue. Key items being discussed include:

- a) Supporting local area collaboration: to improve integration and collaboration among CSAF Demonstration, commercial marine and First Nation fishers;
- b) Providing support to local proponents and DFO area staff in reviewing and developing existing and new CSAF demonstration fishery proposals; and
- c) Using the CSAF small group forum to explore timelines and information needs to support the 5 year review of the CSAF sharing arrangements among fleets. Any proposed changes will be included in next year's draft IFMP for feedback prior to being implemented.

The Department's broad interests in continuing to support this process are to improve the long term sustainability of Pacific wild salmon, help commercial fishery participants achieve greater economic benefit, and create more resilient commercial salmon fisheries. The Department's role

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has not been to propose changes to the CSAF; rather its focus has been to consider proposed changes to ensure that these were consistent with key Departmental objectives, policies, and programs.

A summary of previous work completed related to the initiative to update the CSAF is also available through the following link:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/saf-crrs/index-eng.html>.

Principles and guidelines approved through the 2015 IFMP and expanded on in 2017 are included in Section 3 below. No changes have been suggested for the 2021 season.

### **3 PRINCIPLES AND GUIDELINES FOR CALCULATING SALMON SHARES**

Below are principles and guidelines intended to provide clarity on commercial sharing arrangements. They have been developed as part of the initiative to update the CSAF in collaboration with the CSAB and SCC.

Please note: these guidelines and principles may be reviewed and updated annually to ensure they remain relevant and clear. Proposed changes will be included in draft IFMPs for feedback prior to being approved. There are no changes proposed for the 2021 season.

#### **APPROVED PRINCIPLES**

For simplicity, the updates to the CSAF are organized into three categories: 1. Stabilizing commercial shares; 2. Flexibility to harvest the shares and integrated planning process; and 3. Additional elements for future discussion.

#### **CATEGORY 1: STABILIZING COMMERCIAL SHARES**

The following recommendations form the basis for the commercial allocation plan starting in 2015:

- a) Commercial salmon shares (specified as a % allocation of the allowable commercial harvest) will be assigned by species, fleet and fishery production area. Shares at the species, fleet and fishery production area are provided in Section 12.7 of the IFMP;
- b) Shares will apply for a 5 year period with a provision for a review after year 4 to determine if adjustments should be made to Area A-H sharing arrangements in subsequent years. An earlier review could be considered if circumstances warrant by majority agreement of the commercial advisory board;

- c) Sockeye equivalents will no longer be used to adjust shares on an annual basis;
- d) Licences transferred to First Nations communities for commercial purposes, from an individual relinquished commercial licence, will be based on an equal percentage allocation of the allowable commercial harvest for all licences (e.g.  $1/X$  where  $X$  = total licences per fleet) in that commercial licence area (i.e. Areas A to H). Please note that licence shares may change over time due to changes in fleet size (e.g. licence retirements, stacking) or updates to the A-H sharing arrangements outlined in the commercial salmon allocation plan based on the periodic review (i.e. for the 2021 season).
- e) A central, common tracking system developed to provide an open and transparent annual accounting of all commercial A to H licences/allocations and First Nation economic fishery allocations by each First Nations economic fishery.
- f) In addition to the 22 fishery production areas that existed pre-2015, three new areas have been added, as of 2015, to better define sharing arrangements for troll fisheries limited by the Pacific Salmon Treaty including the WCVI Aggregate Abundance Based Management (AABM) Chinook, Northern BC AABM Chinook and the AB-line Pink troll fisheries.
- g) Sharing arrangements in the commercial salmon allocation plan are not fixed entitlements. Although best efforts will be made to achieve fishery production area target allocations over the course of the season, no guarantees are offered that allocations will actually be achieved in any given year. The achievement of commercial allocations will depend upon the ability to fish selectively and the conservation needs of the resource. In the event that allocations are not achieved over the course of the season, no compensatory adjustments (i.e. overage/underage provisions) will be made to future allocations.
- h) Fishing opportunities for all commercial fisheries, including First Nations commercial fisheries, targeting the same fishery management unit should be planned to provide reasonable opportunities to harvest shares. No fishery should be allowed such that its operation puts another fleet out of the water (e.g. using a disproportionate amount of bi-catch to target share or using insufficient effort such that it takes an unreasonable amount of time to achieve weekly target). Post season reviews will address whether fisheries adjustments may be required in future years to address situations where allocations are not achieved.
- i) In the event of extenuating circumstances (e.g. when fisheries are opened until further notice after escapement objectives are met in a terminal fishery), commercial sharing arrangements may be set aside and commercial opportunities will focus on harvesting

surplus salmon. These situations will be discussed at local processes where possible to coordinate fishing plans.

### **Further considerations on Stabilizing Commercial Shares**

In addition to the three additional production areas which were approved starting in 2015, the SCC recommended adding an additional fishery production area for a total of 26. This 26th fishery production area would result by dividing the Fraser River Chum from the southern inside Chum production area. This additional production area was not approved, however may be considered in the future pending additional discussion.

It is expected that annual post-season reviews will be conducted to consider how well the approved allocation arrangements have been implemented in commercial fisheries that season.

### **CATEGORY 2: FLEXIBILITY TO HARVEST SHARES AND INTEGRATED PLANNING PROCESS**

Both the CSAB and the SCC are seeking greater flexibility to harvest the shares that are assigned at the fishery production area level and/or are associated with voluntarily relinquished commercial licences transferred to First Nations.

The following principles and operational guidelines form the basis for the incremental testing of flexibilities to harvest shares which started in 2016 informed through the collaborative advisory process (CSAF small group, which includes participants of from the SCC, CSAB and DFO) and a Departmental evaluation framework (these are described in more detail under “further considerations on flexibilities” below).

- a) Greater flexibility, such as fishing location and methods, should be provided to harvest the shares; however, ‘one size does not fit all’ and each gear type through its area harvest committee or First Nations economic fishery should determine the best approach to harvest their shares;
- b) First Nations that have Area A-H licences may continue to fish those licences in the current A-H fisheries or they may choose to transfer the harvest share associated with those licences to a First Nation economic fishery. Under the SCC proposal, any First Nations economic fishery would have to be managed in coordination with other fisheries and would require approval from the Department (including proposed fishing method, location and time);

- c) A revised collaborative process will be required to coordinate the collective interests of the A-H fisheries and First Nations economic fisheries in order to produce integrated fishing plans. This could also include more local harvest planning processes as required;
- d) In-season transfers of shares among and between A-H and First Nation economic fisheries will be considered. These arrangements will be subject to operational guidelines for pre-season and in-season transfers (see the current Guidelines and any proposals for Temporary Commercial Salmon Share Transfers, Section [12.7.1](#));
- e) Transfers between fisheries, including marine and inland areas, must account for similar stocks/species, as well as, any management adjustments that may need to be taken into consideration for transfers to inland areas;
- f) Bycatch and stocks of concern (i.e. non-targeted species that limit target species access) will not be formally allocated at this time. Available impacts must be shared between all commercial fisheries, including First Nation economic fisheries, in the development of operational plans to allow every fishery reasonable access to its target species. Operational plans should be discussed annually through a collaborative process among all commercial fishery participants, including First Nations economic interests. The use of bycatch will require more discussion to further clarify how bycatch is best used under different scenarios;
- g) There will be a requirement to have accurate, timely and accessible fisheries data, such that there is sufficient information for all Pacific salmon fisheries to be managed sustainably and to meet other reporting obligations and objectives; and
- h) Common standards and approach will be used for evaluating and approving flexibilities to harvest shares whether these are Area A-H or First Nations economic fisheries. Operational issues about how to operationalize harvest flexibilities in different areas has underscored the need for greater clarity and transparency in applying any of the proposed changes.
- i) Assessment fisheries should take into consideration existing sharing arrangements between A to H and First Nations commercial fisheries; opportunities for assessment fisheries should be proportionate with existing shares or as agreed to by the relevant parties.

**Further Considerations on Flexibility to Harvest Shares:**

The SCC proposal envisaged that any First Nations that have Area A-H licence(s) may continue to fish those licence(s) in A-H fisheries or choose to transfer the harvest share associated with

that licence to a First Nation economic fishery. This could result in First Nation economic fisheries in marine or inland areas based on shares converted from A-H fisheries. The relevant First Nations economic fishery (including any proposed fishing methods, times and locations) would need approval from the Department. Any First Nations fishery would have to be managed in coordination with other commercial fisheries (including A-H), on the same species and would have to meet Department requirements for stock assessment, catch monitoring, compliance and enforcement.

Similarly, the CSAB suggested that fleets in the A-H fisheries should decide how to best harvest their shares through harvest committee deliberations and thus endorsed the view that “one size does not fit all” when it came to how fleets may choose to harvest their shares.

The Department will adopt an incremental approach to implementation of harvesting flexibilities starting in 2016, informed through a collaborative advisory process and a common evaluation framework to review proposals submitted.

### **Collaborative Process**

An inclusive commercial advisory process including commercial representatives from the A – H fisheries and First Nations economic fisheries will be required for the Department supporting implementation of any proposed flexibilities. Since 2015, a small working group comprised of CSAB, SCC and DFO representatives has been effective at exploring opportunities for collaboration and improving understanding of various perspectives, while communicating with each host organization to ensure consistency and accuracy of feedback included. The purpose of this CSAF small working group is as a forum to discuss and make recommendations for the Department’s consideration on implementation of the revised allocation framework, the operational details associated with proposed flexibilities and how to prioritize testing of potential harvesting flexibilities including: reviewing and assessing proposals pre-season and considering the results of pilots against evaluation criteria post-season. The Department will continue to work with the existing CSAB and SCC to determine next steps, other priority items for discussion, relevant for this forum and support the use of the CSAF small group process for collaborative discussions.

### **Local Fishing Area Discussions:**

Discussions on commercial harvest plans including which group fishes first, sequencing of opportunities, amounts of fishing time and other fishing plan parameters should be discussed among fishery participants at planning processes suitable to the scale of the fishery (e.g. local area) and included within the IFMP as required. The Department will continue to consider



advice and recommendations on proposed fishing plans from the local First Nations, Area Harvest Committees, and other groups to promote integrated fishery planning.

Local management committees are encouraged to promote effective communication, consultation and support increased collaboration and integration of commercial fisheries. Structure and protocol for any local committees should promote effective management through open, transparent and collaborative process to develop and implement commercial fishing plans. Existing processes will be used whenever possible/practical to support pre-season planning, in-season management and post-season review. Operational plans should be guided by the principles and guidelines outlined in this document and, where possible, identify clear decision guidelines that address the potential fishery configurations and effort associated with a range of potential commercial harvest scenarios.

Pre-agreed methods for calculating in-season harvest amounts associated with commercial allocations for all groups should be identified in local area fishing plans and/or the IFMP where appropriate and communicated pre-season so all commercial participants have clarity on sharing arrangements. Methods should account for all commercial allocations including A to H fleets, FN demonstration, economic opportunities and harvest agreement fisheries.

Approaches for in-season communication (e.g. integrated conference calls, Fisheries Notices, etc.) of fishing opportunities, sharing arrangements and catch to date should be provided for discussion with First Nations and stakeholders.

### **Evaluation Framework**

In 2016, DFO in collaboration with the SCC and CSAB developed an Evaluation Framework (E.F.) supported by all parties. The E.F. outlines the objectives and criteria that are used to assess CSAF proposals for flexible harvest arrangements for all commercial/economic fisheries. The E.F. may be reviewed and updated annually based on post-season discussions.

### **CATEGORY 3: ADDITIONAL ELEMENTS FOR DISCUSSION:**

In addition to commercial allocation arrangements within Section [12.5](#) of the IFMP and those listed above in Category 2: *Flexibility to Harvest Shares*, there are a number of additional elements in the SCC and CSAB proposals where differences remain. These elements may have policy implications and require additional discussion, collaboration and analysis by commercial harvesters, First Nations and the Department.

Details are included within the original proposals received by both the SCC and CSAB in 2015 which can be reviewed at:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/saf-crrs/index-eng.html>

**Further considerations on additional elements:**

The following areas have been highlighted by the SCC and CSAB where there was no agreement concerning the proposed changes.

There was also a difference of views on the approach to dual fishing (the retention of fish for food, social and ceremonial purposes during a commercial fishery under agreed circumstances). The SCC has proposed that First Nations economic fisheries be permitted to have dual fishing whereas the CSAB has raised concerns about fairness of this approach to the A to H fishery and its potential conservation issues on stocks of concern. The Department has initiated discussions with the SCC on draft dual fishing principles, intended to guide under what circumstances dual fishing pilots may be considered in the future.

The CSAB has indicated concerns with the guidelines for the conversion of an existing marine A-H commercial licence (not including licences held in DFO inventory) into a First Nation economic fishery allocation (guidelines the CSAB would like to be consider prior to approval of conversions include timing (e.g. pre-season vs. in-season), notification, and transfer/tracking requirements. Please see the transfer guidelines in Section [12.7.1](#) for more details.

In addition, there are some proposed changes that are principally matters best handled between DFO and the relevant group. These matters will require further discussion with the Department.

The SCC has proposed a separate management body/process to manage First Nations salmon shares including a proposed body (a 'First Nations' licensing board') to administer use of shares associated with relinquished commercial salmon licences from the DFO inventory or licences otherwise set aside for First Nations use. The Department has not initiated development of a separate board; however DFO would be interested in hearing any principles for the distribution of licences which the SCC may suggest for consideration.

The CSAB had indicated interest in reviewing commercial licencing policy, however initial discussions highlighted the diversity of views and priorities on potential areas of work within the CSAB.

## **4 CSAF DEMONSTRATION FISHERY PROPOSALS FOR FLEXIBLE HARVEST ARRANGEMENTS**

As part of implementing changes to the CSAF, the Department adopted an incremental approach to providing increased flexibility to harvest salmon shares starting in 2016. Each proposal is assessed by the same Evaluation Framework which defines the principles and operational guidelines required by DFO to ensure appropriate implementation of proposed

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harvesting flexibilities. The Department’s Evaluation Framework was developed to assess proposals with input from the SCC and CSAB. There continues to be agreement from DFO, the SCC and CSAB to continue using the Evaluation Framework with no updates to the principles, objectives and criteria currently in use.

Below is a table outlining demonstration fishery proposals that were reviewed using the Department’s Evaluation Framework. For details on proposals or fishing plans for CSAF demonstrations which were included in the final IFMP and implemented in previous years, please contact the relevant resource manager in the area or Ge Li (Ge.Li@dfo-mpo.gc.ca).

Approved CSAF demonstration fisheries listed below will be implemented contingent on any remaining considerations being resolved with a fishing plan approved in the local area and sufficient returns for commercial harvest. The Department will be discussing operational details with First Nations and stakeholders in each demonstration fishery proposal area to develop fishing plans. Should operational considerations not be resolved or sufficient abundance not materialize, the demonstration fishery will not occur in the coming season.

Any demonstration fishery that does proceed in 2021 will be reviewed as part of the post-season review process. Below is a table which outlines the section and related demonstration fishery project included within this appendix.

<b>Year Approved</b>	<b>Salmon Coordinating Committee</b>	<b>Commercial Salmon Advisory Board</b>
	<u>Northern B.C.</u>	<u>Northern B.C.</u>
2016	Central Coast hatchery Chum (Heiltsuk/Kitasoo)	Central Coast Coho (Area F)
2016	Nass River Sockeye (Nisga'a Lisims Government)	
2016	Nass River Sockeye (Gitanyow Fisheries Authority)	
2016	Skeena Sockeye (NCSFNSS)	
2016	Skeena Sockeye (Lake Babine Nation)	
2016	Skeena Sockeye (Gitksan Watershed Authorities)	
2017	Central Coast Chum (Nuxalk)	
2017	Haida Gwaii Coho (CHN)	

<b>Year Approved</b>	<b>Salmon Coordinating Committee</b>	<b>Commercial Salmon Advisory Board</b>
2018	Skeena Pink – Area 3 / 4 (NCSFNSS)	
2018	Coho bycatch within existing Pink ESSR (Wet’suwet’en)	
2018	Central Coast Chinook (Nuxalk)	
2019	Skeena Sockeye (Metlakatla First Nation)	
2020	Central Coast Chum and Pink (Heiltsuk First Nation)	
2021	<b>Skeena Sockeye (Lax Kw’alaams Band)</b>	
2021	<b>Nass Pink (Metlakatla First Nation and Lax Kw’alaams Band)</b>	
	<u>Southern B.C.</u>	<u>Southern B.C.</u>
2016	Cowichan Chum (Cowichan Tribes)	
2017	Goldstream Chum (Saanich Tribes)	Qualicum/Puntledge (Chum Area D)
2017		Area 12 – 9 Encounter study (Area D)
2017		Mainland/Inlet Pink and Chum (Area H)
2018	Bute Inlet Chum (Homalco First Nation)	Bute Inlet Chum (Area H)
2018		Bute Inlet Chum (Area D)
2019	Terminal Chum (K’omoks First Nation)	Mainland Inlet Pink & Chum Fishery: Area 12 Broughton Archipelago (Area H)
2019	Nanaimo Terminal Chum (Snuneymuxw First Nation)	
2020		Fraser Chum ITQ (Area E)

First Nations requests for access to salmon allocations associated with licences in the Departmental licence inventory will be reviewed internally by the Department and outcomes will be confirmed First Nations proponents. Demonstration fisheries that do not receive requested allocations will not proceed.

**Full versions of the original proposals or final fishing plans is available upon request to [Ge.Li@dfo-mpo.gc.ca](mailto:Ge.Li@dfo-mpo.gc.ca) or [the local fishery manager](#).**



**4.1 AREA 6 PINK (GITGA’AT FIRST NATION)**

	Area 6 Pink
<b>Allocation*</b>	16.76%
<b>Location</b>	Portions of sub-areas 6-5, 6-6, 6-10, 6-28 where Area A commercial fisheries are permitted for Pink salmon.
<b>Size</b>	1-2 purse seine vessels, with at least one operated by a Gitga’at member. Anticipated to be 1 or 2 vessels per opening.
<b>Catch Monitoring (Key Elements)</b>	One individual on each vessel will be responsible of recording all catches and reporting to the Gitga’at fishery manager; mandatory fisher logs; landing sites; same level of dockside validation as Area A.
<b>Communication</b>	Gitga’at will be responsible for all pre-season, in-season and post-season communications with DFO and participating individuals through pre-season planning meetings, in-season weekly conference calls and any related post-season review meetings.
<b>Further Information</b>	Jennifer Gordon (Jennifer.Gordon@dfo-mpo.gc.ca)

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

**4.2 COAST TSIMSHIAN AREA 4 DEMONSTRATION SOCKEYE FISHERY (METLAKATLA AND LAX KW’ALAAMS FIRST NATIONS)**

	Area 4 Sockeye
<b>Allocation*</b>	Equal share of the Skeena Sockeye allocation (Lax Kw’alaams and Metlakatla to receive a combined 1/3 of the marine portion and NCSFNSS will receive 2/3 for the four member Nations).
<b>Location</b>	Area 4 and a fresh water area within the Skeena River mainstem.
<b>Size</b>	TBD after allocations are determined.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols; hail in/out; mandatory fisher logs; landing sites; 100% dockside validation; monitoring plan will be implemented by Coast Tsimshian technical staff.

<b>Communication</b>	Coast Tsimshian technical staff will be responsible for all communications with DFO and participating fishers.
<b>Further Information</b>	Jennifer Gordon ( <a href="mailto:Jennifer.Gordon@dfo-mpo.gc.ca">Jennifer.Gordon@dfo-mpo.gc.ca</a> )

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.3 COAST TSIMSHIAN AREA 3 DEMONSTRATION PINK FISHERY (METLAKATLA AND LAX KW'ALAAMS FIRST NATIONS)

	Area 3 Pink
<b>Allocation*</b>	Equal share of the Northern Pink allocation (Lax Kw'alaams and Metlakatla to receive a combined 1/3 of the 13.41% and NCSFNSS will receive 2/3 for the four member Nations).
<b>Location</b>	Area 3
<b>Size</b>	The number of vessels for each fishing week will be determined after the allocations are calculated in order to provide a meaningful financial opportunity for selected fishers.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols; hail in/out; mandatory fisher logs; landing sites; 100% dockside validation.
<b>Communication</b>	Coast Tsimshian technical staff will be responsible for all communications with DFO and participating fishers.
<b>Further Information</b>	Jennifer Gordon ( <a href="mailto:Jennifer.Gordon@dfo-mpo.gc.ca">Jennifer.Gordon@dfo-mpo.gc.ca</a> )

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.4 SKEENA SOCKEYE (METLAKATLA FIRST NATION)

	Skeena Sockeye
<b>Included in Final IFMP</b>	2019
<b>Status (Implemented/ Developing)</b>	2019: not implemented 2020: implemented
<b>Allocation*</b>	0.999% of the Total Commercial Allowable Catch (TCAC) harvest of Skeena Sockeye in Area 4. This percentage is based on a 1/5 share of 1/3rd of the 14.9% of Skeena Sockeye allocation associated

	with the 88 Area C and 19 Area A licences in the DFO inventory (Addison & English, 2017 Tsimshian Fishery Pilot Proposal).
<b>Location</b>	Area 4-9, 4-12 and 4-15 and freshwater site (Aberdeen Boat Launch) (TBC)
<b>Size</b>	6-12 Vessels. TBC
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols; by-vehicle patrols; hail in/out; mandatory fisher logs; landing sites; 100% dockside validation
<b>Communication</b>	Metlakatla Fisheries Manager will work with other Skeena First Nations, DFO and CSAB through a Local Harvest Planning Committee (LHPC) to discuss and coordinate fishing plans.
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.5 TROUT BAY CHUM (KITASOO FIRST NATION)

	Trout Bay Chum (Kitasoo First Nation)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/ Developing)</b>	2016: insufficient returns 2017: insufficient returns 2018: insufficient returns 2019: insufficient returns 2020: not implemented
<b>Allocation*</b>	15.71% of Chum
<b>Location</b>	7-5
<b>Size</b>	1 seine or 2- 6 gillnet vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols by a member of the Kitasoo Co-mgt program and/or DFO; mandatory landing site (Trout Bay dock); 100% dock side enumeration
<b>Communication</b>	Kitasoo Fisheries Program will be responsible for all pre-season, in-season and post-season communications with DFO and participating FNs.
<b>Further Information</b>	Brad Koroluk – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.



**4.6 MCGLOUGHLIN BAY CHUM (HEILTSUK FIRST NATION)**

	McLoughlin Bay Chum (Heiltsuk First Nation)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/ Developing)</b>	2016: implemented 2017: insufficient returns 2018: insufficient returns 2019: insufficient returns 2020: not implemented
<b>Allocation*</b>	15.71% of Chum
<b>Location</b>	7-17
<b>Size</b>	1 – 2 seines or 3 - 8 gillnet vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols by a member of the Heiltsuk Co-mgt program and/or DFO; mandatory landing site (McLoughlin Bay – Heiltsuk fish plant); 100% dock side enumeration
<b>Communication</b>	Heiltsuk Fisheries Program will be responsible for all pre-season, in-season and post-season communications with DFO and participating FNs.
<b>Further Information</b>	Brad Koroluk – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

**4.7 BELLA COOLA CHUM AND CHINOOK (NUXALK NATION)**

	Bella Coola: Terminal Chum and Chinook (Nuxalk Nation)
<b>Included in Final IFMP</b>	2017
<b>Status (Implemented/ Developing)</b>	2017: Implemented for Chum 2018: Implemented for Chum (addition of Chinook in proposal) 2019: Implemented for Chinook 2020: Not implemented
<b>Allocation*</b>	15.71% of Chum and 14.04% of Chinook.
<b>Location</b>	8-10, Portions of 8-11 and 8-12 and 8-15
<b>Size</b>	17 Vessels. Final number based on the number of fish to be harvested.

<b>Catch Monitoring (Key Elements)</b>	Single designated mandatory landing site; monitor will be the Nuxalk Coastal Guardian Watchmen; Level of coverage – 50% on water; 100% dock side enumeration
<b>Communication</b>	A representative/manager of the Nuxalk Stewardship Office will be assigned as the demonstration fishery manager and will be responsible for the coordination of the Nuxalk fishery
<b>Further Information</b>	Brad Koroluk – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.8 NASS RIVER SOCKEYE (NISGA’A LISIMS GOVERNMENT)

	Nass River Sockeye (Nisga’a Lisims Government)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/ Developing)</b>	2016: insufficient returns 2017: insufficient returns 2018: insufficient returns 2019: not implemented 2020: not implemented
<b>Allocation*</b>	8.68% of the combined Area A and C commercial TAC.
<b>Location</b>	3
<b>Size</b>	Within existing Nisga’a Treaty fishery**, with gear types including marine gillnets, river gillnets, and fish wheels
<b>Catch Monitoring (Key Elements)</b>	100% catch monitoring and validation at either a marine packer or the Nisga’a Processing Plant in Gitlakdamiks; all Nisga’a fisheries are sampled for marks; all non-target salmon caught (released and kept) accounted for in all Nisga’a salmon fisheries
<b>Communication</b>	NFWD managers will participate in weekly conference calls with DFO throughout the Sockeye fishing season and will continue to provide in-season and post-season Nass escapement and run size information needed to manage Nass Area Sockeye and other salmon species like in other
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

\*\*Please see Section 10.4 of the Northern IFMP for further details on the Nisga’a Treaty fisheries

**4.9 NASS RIVER SOCKEYE (GITANYOW FISHERIES AUTHORITY)**

	Nass River Sockeye (Gitanyow Fisheries Authority)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/ Developing)</b>	2016: insufficient returns 2017: insufficient returns 2018: insufficient returns 2019: implemented 2020: not implemented
<b>Allocation*</b>	6.30% of the combined Area A and C commercial TAC.
<b>Location</b>	3
<b>Size</b>	To be finalized prior to the fishery and based on available allocation
<b>Catch Monitoring (Key Elements)</b>	Combination of fishing site and landing site monitoring will take place in-season. To be confirmed with DFO area staff.
<b>Communication</b>	GFA representatives will participate in the Local Harvest Planning Committee (LHPC) to discuss and coordinate fishing plans with other Nass Nations, CSAB and DFO. GFA will also participate at in-season weekly conference calls and any post-season review.
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

**4.10 SKEENA SOCKEYE (NORTH COAST SKEENA FIRST NATION STEWARDSHIP SOCIETY (NCSFNSS))**

	Skeena Sockeye (NCSFNSS)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/ Developing)</b>	2016: Implemented 2017: Insufficient returns 2018: Implemented 2019: Not implemented 2020: Implemented
<b>Allocation*</b>	3.995% of the allowable commercial harvest of Skeena Sockeye which has been recently based on actual weekly commercial catches of Sockeye in Area 4. This percentage is based on sharing of the 1/3 share of the 14.99% of Skeena Sockeye allocation associated

	with the 88 Area C and 19 Area A licences in the DFO Inventory between the Metlakatla First Nation and NCSFNSS proposals.
<b>Location</b>	Area 4-12 and 4-15
<b>Size</b>	1-3 Vessels. Final number based on the number of fish to be harvested and participating First Nations.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols; mandatory fisher logs; landing sites; 100% dockside validation
<b>Communication</b>	NCSFNSS will work with other Skeena First Nations, DFO and CSAB through the Local Harvest Planning Committee (LHPC) to discuss and coordinate fishing plans.
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.11 SKEENA SOCKEYE (LAKE BABINE NATION)

	Skeena Sockeye (Lake Babine Nation)
<b>Included in Final IFMP</b>	This fishery has been implemented since 90’s as pilot sales fisheries (see Skeena River Sockeye Inland Demonstration Fishery Management Plan for more information). Since 2016, this fishery has been implemented through updates to CSAF.
<b>Status (Implemented/Developing)</b>	2016: Implemented 2017: Insufficient returns 2018: Implemented 2019: Insufficient returns 2020: Implemented
<b>Allocation*</b>	4.99% of the allowable commercial harvest of Skeena Sockeye which as been recently based on actual weekly commercial catches of Sockeye in Area 4 and the weekly allocation per licence for the Area 4 Seine ITQ fishery. This percentage is based on 1/3 share of the 14.99% of Skeena Sockeye allocation associated with the 88 Area C and 19 Area A licences in the DFO Inventory.
<b>Location</b>	Babine River Counting Fence
<b>Size</b>	To be finalized prior to the fishery and based on available allocation.
<b>Catch Monitoring (Key Elements)</b>	Combination of fishing site catch monitoring and dockside validation will take place in-season.
<b>Communication</b>	Lake Babine Nation (LBN) representatives will participate in the Local Area Committee (LAC) to discuss and coordinate

	fishing plans with other Skeena Demonstration fishery proponents, CSAB, and DFO.
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.12 SKEENA SOCKEYE (GITKSAN WATERSHED AUTHORITIES)

	Skeena Sockeye (Gitksan Watershed Authorities)
<b>Included in Final IFMP</b>	This fishery has been implemented since 90's as pilot sales fisheries (see <i>Skeena River Sockeye Inland Demonstration Fishery Management Plan</i> for more information). Since 2016, this fishery has been implemented through updates to CSAF.
<b>Status (Implemented/Developing)</b>	2016: Implemented 2017: Insufficient returns 2018: Implemented 2019: Insufficient returns 2020: Implemented
<b>Allocation*</b>	4.99% of the allowable commercial harvest of Skeena Sockeye which has been recently based on actual weekly commercial catches of Sockeye in Area 4 and the weekly allocation per licence for the Area 4 Seine ITQ fishery. This percentage is based on 1/3 share of the 14.99% of Skeena Sockeye allocation associated with the 88 Area C and 19 Area A licences in the DFO Inventory.
<b>Location</b>	Mainstem Skeena River and Babine River
<b>Size</b>	To be finalized prior to the fishery and based on available allocation.
<b>Catch Monitoring (Key Elements)</b>	Combination of fishing site catch monitoring and dockside validation will take place in-season.
<b>Communication</b>	Gitksan Watershed Authorities (GWA) representatives will participate in the Local Area Committee (LAC) to discuss and coordinate fishing plans with other Skeena Demonstration fishery proponents, CSAB, and DFO.
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

**4.13 NASS PINK (NORTH COAST SKEENA FIRST NATION STEWARDSHIP SOCIETY (NCSFNSS))**

	Nass Pink (NCSFNSS)
<b>Included in Final IFMP</b>	2018
<b>Status (Implemented/ Developing)</b>	2018: Not Implemented 2019: Implemented 2020: Not Implemented
<b>Allocation*</b>	13.41% of the allowable commercial harvest of Area 3 Pink salmon.
<b>Location</b>	Sub-areas in Areas 3 where commercial fisheries are permitted for Pink salmon
<b>Size</b>	1-2 Vessels. Final number based on the number of fish to be harvested and participating First Nations.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols; mandatory fisher logs; landing sites; 100% dockside validation
<b>Communication</b>	NCSFNSS will work with other Skeena First Nations, DFO and CSAB through the Local Harvest Planning Committee (LHPC) to discuss and coordinate fishing plans.
<b>Further Information</b>	Jen Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

**4.14 HAIDA GWAII COHO (COUNCIL OF THE HAIDA NATION (CHN))**

	Haida Gwaii Coho Troll (CHN)
<b>Included in Final IFMP</b>	2017
<b>Status (Implemented/ Developing)</b>	2017: Implemented (not fished) 2018: Available for Implementation (did not fish) 2019: Not Implemented 2020: Not Implemented
<b>Allocation*</b>	3.13% of North Coast commercial Coho catch based on the respective gear shares in the North Coast Coho production area
<b>Location</b>	In Area 1 (North Coast of Haida Gwaii) DFO fishing management areas 1-3, 1-5 and a portion of 101-7 east of Klashwun Point (Shag Rock) to the eastern boundary of Rose Spit. In Area 2W (West Coast Haida Gwaii) DFO fishing management areas 2-63, 2-64 & 2-68 (West Skidegate Inlet and Cartwright Sound).

<b>Size</b>	Vessels will be limited to boats 17 feet to 26 feet long. Limit on the total number of vessels not anticipated. Expect participation of 20-30 total vessels.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols and validation of all offloads at designated landing sites; 100% dockside validation
<b>Communication</b>	A Haida Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the Haida fishery and will be the primary contact for all communication with DFO and fishers.
<b>Further Information</b>	Patrick Fairweather – DFO Fisheries Manager

\*The Haida share depends on the allocation of the 21 Area F licences with no Chinook quota in the DFO Inventory.

#### 4.15 CENTRAL COAST COHO (AREA F)

	Central Coast Coho (Area F)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/ Developing)</b>	2016: Implemented 2017: Implemented 2018: Implemented 2019: Implemented 2020: Not implemented
<b>Allocation*</b>	Limited effort, risk based fishery.
<b>Location</b>	Area 6, 7, 8
<b>Size</b>	As in previous years, approval for 4, 3 and 2 vessels in Areas 6, 7, and 8 respectively in consideration of increased potential to encounter stocks of concern in areas further south.
<b>Catch Monitoring (Key Elements)</b>	Limited number of catch validation/landing sites; 100% monitoring; logbook or e-log entry for each day of fishing
<b>Communication</b>	Communication in-season would be via the local harvest committee reps established pre-season.
<b>Further Information</b>	Patrick Fairweather – DFO Fisheries Manager

#### 4.16 BULKLEY RIVER COHO (WET’SUWET’SEN FIRST NATION)

	Bulkley River Coho (Wet’suwet’en First Nation)
<b>Included in Final IFMP</b>	2018

<b>Status (Implemented/ Developing)</b>	2018: Insufficient returns 2019: Not implemented 2020: Not implemented
<b>Allocation*</b>	~1000-2000 pieces. Coho are not managed to a TAC in Area A&C fisheries, but are retained as bycatch when abundance permits. The Bulkley River Coho demo will follow similar guidelines.
<b>Location</b>	4
<b>Size</b>	Within existing Wet'suwet'en Moricetown Canyon Pink ESSR fishery, with gear types including beach seine and dip net.
<b>Catch Monitoring (Key Elements)</b>	100% catch validation at designated landing sites; all non-target salmon caught (released and kept) accounted for by fishing site.
<b>Communication</b>	Wet'suwet'en managers will provide weekly in-season updates on numbers of each species caught, sold, retained, and released by fishing site.
<b>Further Information</b>	Jennifer Gordon – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.17 CENTRAL COAST CHUM AND PINK (HEILTSUK FIRST NATION)

	Central Coast Chum and Pink (Heiltsuk First Nation)
<b>Included in Final IFMP</b>	2020
<b>Status (Implemented/ Developing)</b>	2020: Not Implemented
<b>Allocation*</b>	15.71% of Central Coast Chum
<b>Location</b>	Seaforth Channel, Spiller Channel, Return Channel, Roscoe Inlet, Lama Passage and Johnson Channel in Area 7
<b>Size</b>	TBD
<b>Catch Monitoring (Key Elements)</b>	At sea patrols, a single designated mandatory landing site, and mandatory fisher logs
<b>Communication</b>	Heiltsuk fisheries program representative will participate in pre-season meetings, in- season weekly calls and any post- season review meetings related to the operation of the Heiltsuk demonstration fisheries.
<b>Additional Comments</b>	Area E has resolved to transition all their Fraser River salmon fisheries from open/competitive to transferable share based over time. For 2020/2021 Area E will proceed with a Chum ITQ demonstration fishery proposal.



<b>Further Information</b>	Brad Koroluk – DFO Fisheries Manager
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\*Shares change annually based the respective gear shares for the production Area and licences held in DFO Inventory for use by First Nations. Shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

## APPENDIX 7: NASS CHUM DRAFT REBUILDING PLAN

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### CURRENT MANAGEMENT ACTIONS

The objective of the Area 3 Chum rebuilding plan is to: “protect Area 3 wild Chum and at the same time provide opportunities to retain enhanced US Chum in places and times where they are most abundant”.

The Canadian Area 3 fishery is currently managed to significantly reduce exploitation rates on Area 3 Canadian Chum stocks from historical levels, as a rebuilding measure. The harvest reductions have been achieved, with current Canadian exploitation rates averaging below 10% which is down from the average of 28% from 1982 to 1999 ([Figure 13.5-14](#)). The Area 3 rebuilding plan for the immediate future is to keep the Canadian average exploitation rates below 10%.

Management measures that reduce Area 3 Pink and Sockeye fishery impacts on Area 3 wild Chum include:

Non retention of Chum for most net fisheries with exceptions in the early season in areas where the otolith analysis confirmed US hatchery Chum are a very high proportion of the harvest.

Closed areas where Chum are relatively abundant compared to the target species

Brailing and sorting will be in place for the seine fishery.

Gill nets have a 137 mm (5.39 in) maximum mesh restriction. This restriction is in place so that Sockeye is targeted selectively and larger non-target species such as Chum and Chinook are impacted to a lesser degree.

### BACKGROUND

General background information on Nass Chum was provided in Peacock and Spilsted (2010). The Fishery Operational Guidelines associated with the Nisga'a Treaty set minimum and target escapement goals for Chum and other species that are the limit and target reference points used to implement the Nisga'a Treaty. DFO uses the Management Escapement Goals (MEG) as both the limit and target reference points.

Details of the 2020 management approach for Chum and all fisheries in Area 3 are included in DFO fisheries management post-season reports. Limited Chum retention fisheries were

provided that intercepted US hatchery Chum returns in Pink and Sockeye-directed commercial fisheries. Otolith samples were taken to refine our knowledge of the times and areas where the US hatchery stocks were most abundant relative to wild stocks. Thermal marks from US hatcheries were found on 67-93% of the Chum sampled from Chum retention fisheries from 2012-2018. In 2021 DFO will be working with partners to review the efficacy of management measures used to date to limit impacts on Area 3 Chum.

## **STOCK STATUS TO 2017**

The Nisga'a Joint Technical Committee and recent DFO assessments indicate recent aggregate status in the amber zone for Portland Inlet and the Portland Canal-Observatory Inlet CUs and data deficiencies for the Lower Nass CU. Chum stocks are not rebuilding even though exploitation rates have been reduced since 2000. This may be partly the result of reduced productivity over the same period.

The management intent is to keep the Area 3 Chum Exploitation Rates low through a period of "normal" productivity to evaluate the productive potential.

## **ASSESSMENT OF FISHERY IMPACTS**

LGL Limited provided Area 3 Chum exploitation rate time series for US and Canadian fisheries up to 2017 ([Figure 13.5-14](#)). Although for a period of time the total ER hovered between 40-70%, since 1998 it has decreased to an average of 22%, with the Canadian ER below 10% since 2006. The current ER is well below the level that would be expected to provide for rapid stock increases under "normal" productivity conditions. Unfortunately, a consistent stock rebuilding pattern has not been observed, potentially due to low productivity and/or unideal marine conditions.

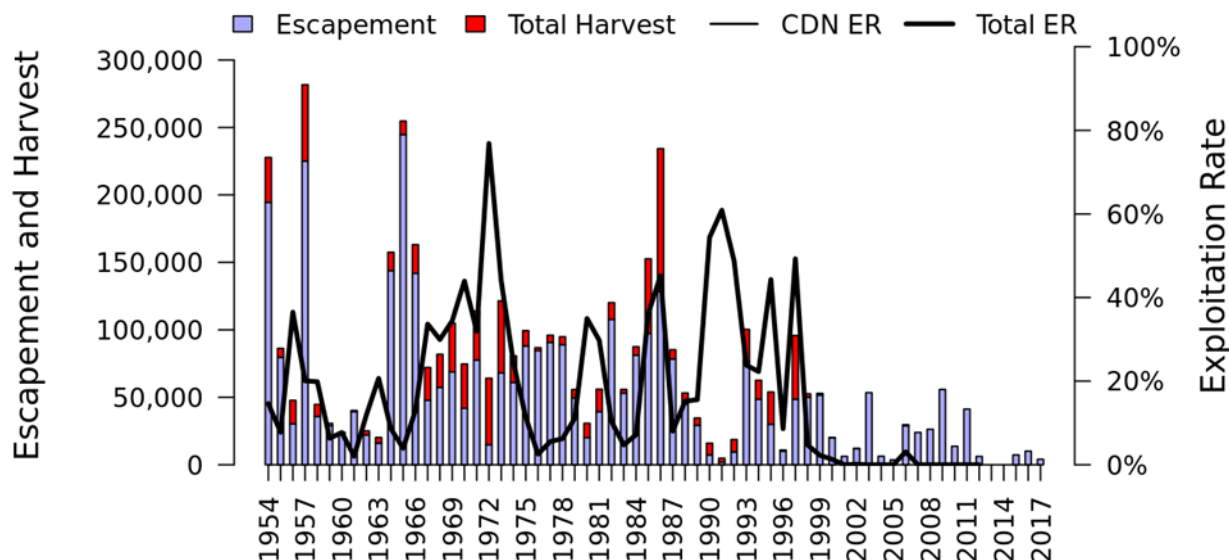


Figure 13.5-14: Area 3 Chum Exploitation Rates (US and Canada)

## NASS CHUM REBUILDING PLAN ACTIVITIES

Key Activities	Status
Complete reconstructed time series of escapement, catch and run size for Nass Chum.	Completed as described in English et al 2019 and updated by DFO and the PSF. Updates provided regularly at <a href="http://shiny/lglsidney.com/ncc-salmon/">http://shiny/lglsidney.com/ncc-salmon/</a>
Develop Chum harvest rate assessment models for Nass Chum.	Nisga’a Joint Technical Committee has over the past 10 years developed methods to estimate Nass Chum escapement and catch. This technical background formed the basis for, and the technical committee participated in, the assessment model development revised and described in English 2013, and English et al 2012.
Analyze stock recruit metrics and indicated benchmarks and status interpretations.	Completed initial assessments by the Nisga’a Joint Technical Committee (for Nass area and CU’s) and by DFO (by Stat area and CU) in September annually.

Key Activities	Status
<b>Complete annual Northern Boundary Sockeye Reconstruction. Required to generate the weekly harvest rate estimates for Nass Sockeye model. The weekly Sockeye HR's are used in the Nass Chum HR assessment model.</b>	Completed annually in January by the Pacific Salmon Commission's Northern Boundary Technical Committee.
<b>Review 2020 Nass Chum escapement enumeration plans.</b>	Enumerations plans reviewed each year through the Nisga'a Joint Technical committee. In addition, Nisga'a has submitted a northern fund proposal to refine and standardize Nass Chum escapement estimates.
<b>Collect otoliths and DNA from Area 3 fisheries to determine US hatchery contributions in both retention and non-retention areas</b>	Since 2011 otoliths have been collected and analyzed. DNA will be collected in 2020 if funding obtained from the PSC Northern Fund.
<b>Evaluate enhancement and habitat restoration projects that would aid in Area 3 Chum rebuilding.</b>	Kincolith side channel restoration work initiated in 2013 and planned for 2014 and 2015. Kitsault restoration activities that should be considered are presented in Gaboury and Bocking 2007. Monitoring of the progress and contribution of these restoration activities is an important component of any rebuilding plan.
<b>Continue to work through the Pacific Salmon Commission's Northern Panel to discuss Chum management plans in the northern boundary area.</b>	PSC Northern Panel meetings are scheduled for January and February each year.
<b>Review and update Nass Chum harvest rate models, both Sockeye and Pink effort based. Include a sensitivity analysis of the model Area 3 Chum run timing assumptions.</b>	Technical work scheduled for spring Nisga'a Joint Technical Committee annually.
<b>The appropriateness of the ER objective should be reviewed each year taking into account the latest stock assessment information.</b>	Review Nass Chum assessments, status and the rebuilding plan with FN technical committees and with the Nisga'a JFMC, the IHPC and other interested parties.

<b>Key Activities</b>	<b>Status</b>
<b>Develop 2014 IFMP Nass Chum fishing plan in cooperation with FN technical committees, the Nisga'a JFMC, the IHPC and other interested parties.</b>	Nisga'a and IHPC meetings scheduled through to the spring of 2014.

## REFERENCES

English, K.K., T. Mochizuki and D, Robichaud. 2012. Review of North and Central Coast Salmon Indicator Streams and Estimating Escapement, Catch and Run Size for each Salmon Conservation Unit. Report for Pacific Salmon Foundation and Fisheries and Oceans, Canada. 78 p.

English, K.K. 2013. Extended Time-series of Catch and Escapement Estimates for Skeena Sockeye, Pink, Chum, Coho and Chinook Salmon Conservation Units. Report for Pacific Salmon Foundation. 19 p.

Gaboury, Marc and Robert Bocking. 2007. Assessment of Enhancement Opportunities for Wild Chum Stocks in Canadian Statistical Area 3. Prepared by LGL Limited, for the Pacific Salmon Commission Northern Fund.

Peacock. D. and B. Spilsted. 2010. Nass River Chum (*Oncorhynchus keta*) stock status. Canadian Science Advisory Secretariat Draft Report 2010. 58p. Available from authors.

## APPENDIX 8: SKEENA CHUM DRAFT REBUILDING PLAN

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### CURRENT MANAGEMENT ACTIONS

The objective of the Skeena Chum rebuilding plan is to: “rebuild Skeena Chum and improve Skeena Chum stock status”

The Canadian Area 4 fishery is currently managed to significantly reduce Skeena Chum Canadian exploitation rates from historical levels, as a measure to rebuild Skeena Chum stocks. The harvest reductions have been achieved, with recent Canadian exploitation rates averaging well below 10%. The rebuilding plan for the immediate future is to keep the Canadian average exploitation rates below 10%.

Management measures that reduce Area 4 Sockeye and Pink fishery impacts on Skeena wild Chum include:

Non retention of Chum in all Area 4 commercial fisheries.

Brailing and sorting will be in place for the seine fishery.

Gill nets have a 137 mm (5.39 in) maximum mesh restriction. This restriction is in place so that Sockeye is targeted selectively and larger non-target species such as Chum and Chinook are impacted to a lesser degree.

### BACKGROUND

Background information on Skeena Chum is provided in Peacock and Spilsted (2010). A recent paper by Price et al (2013) evaluates the historical abundance of Skeena Chum.

### STATUS

Skeena Chum assessments have been completed by Korman and English (2013). The key conclusions are that Skeena Chum are severely depressed, and are not rebuilding even though recent exploitation rates are well below the optimal equilibrium harvest rate ( $U_{msy}$ ) values, likely due to reduced productivity in the last decade. DFO supports this assessment and has implemented sustained harvest reductions as a rebuilding plan.



## FISHERY IMPACTS

LGL Limited provided Area 4 Chum exploitation rate time series for US and Canadian fisheries up to 2010 (Figure 13.5-15). The recent 4 year cycle average Canadian ER is below 2% and the last decade average is below 3%. This provides for total ER averaging below 14% over the last decade, down from the 42% average from 1982 to 1999. The current ER is well below the level that would be expected to provide for rapid stock increases if “normal” productivity returns (given the  $U_{msy}$  estimate of 0.44). Keep in mind there is concern that the Stock-Recruit (S-R) metrics are biased by long history of high ER, limiting S-R data range in the more recent time series. This will tend to over-estimate  $U_{msy}$ .

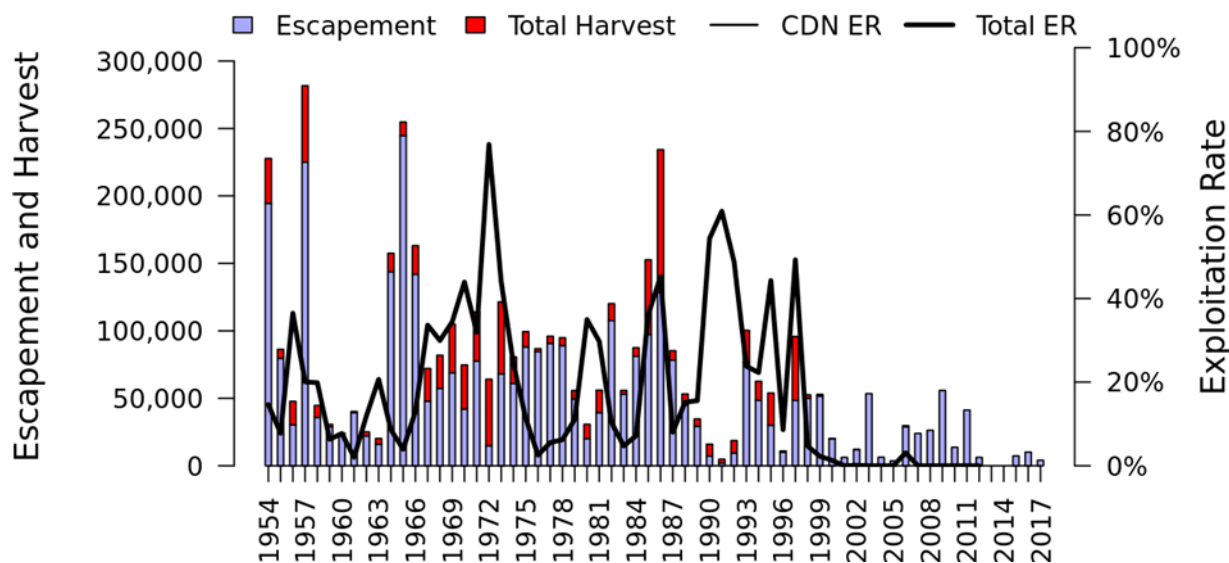


Figure 13.5-15: Area 4 Chum Exploitation Rates US and Canada

## SKEENA CHUM REBUILDING PLAN ACTIVITIES

Key Activities	Status
Complete reconstructed time series of escapement, catch and run size for Skeena Chum.	Completed as described in English et al 2012, updated English 2013 and updated annually (unpublished DFO).
Develop Chum harvest rate assessment models for Skeena Chum.	First versions completed as described in English 2013 and English et al 2012.
Analyze stock recruit metrics and indicated benchmarks and status interpretations.	Completed assessments by Korman and English (2013).

<b>Key Activities</b>	<b>Status</b>
<b>Continue to review potential enhancement and habitat measures to aid rebuilding.</b>	A northern fund project "Kleanza Creek spawning weir" accepted through the first round of reviews.
<b>Complete annual Northern Boundary Sockeye Reconstruction. The reconstruction is required to generate the weekly harvest rate estimates for Skeena Sockeye model. The weekly Sockeye HR's are used in the Skeena Chum HR assessment model.</b>	Completed annually, Northern Boundary Technical Committee.
<b>Evaluate Ecstall Chum spawner enumeration methods.</b>	Two reports published.
<b>Review and update Skeena Chum harvest rate model, and evaluate utility of using the Pink effort/HR model applied to Chum as a comparison.</b>	Completed annually.
<b>Review Skeena Chum assessments and status with FN technical committees and through the IHPC and other interested parties.</b>	Chum update at post-season review, and discussions take place at the technical committees, and IHPC meetings.
<b>Review Skeena Chum escapement enumeration plans.</b>	Enumerations plans developed annually by DFO and participating First Nations.

## REFERENCES

- English, K.K., T. Mochizuki and D, Robichaud. 2012. Review of North and Central Coast Salmon Indicator Streams and Estimating Escapement, Catch and Run Size for each Salmon Conservation Unit. Report for Pacific Salmon Foundation and Fisheries and Oceans, Canada. 78 p.
- English, K.K. 2013. Extended Time-series of Catch and Escapement Estimates for Skeena Sockeye, Pink, Chum, Coho and Chinook Salmon Conservation Units. Report for Pacific Salmon Foundation. 19 p.
- Korman, J, and K. English. 2013. Benchmark Analysis for Pacific Salmon Conservation Units in the Skeena Watershed. Submitted to the Pacific Salmon Foundation.
- Peacock. D. and B. Spilsted. 2010. Skeena River Chum (*Oncorhynchus keta*) stock status. Canadian Science Advisory Secretariat Draft Report 2010/059.
- Price, M.H.H., Gayeski, N., and J. A. Stanford. 2013. Abundance of Skeena River Chum salmon during the early rise of commercial fishing. Transactions of the American Fisheries Society 142:4, 989-1004.

## APPENDIX 9: CATCH MONITORING AND REPORTING RISK ASSESSMENTS FOR PACIFIC SALMON

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Following multi-sectoral consultations, DFO released the national *Fishery Monitoring Policy* in 2019 (available at: <http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/fishery-monitoring-surveillance-des-peches-eng.htm>), replacing the regional *Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries* (2012). The national *Fishery Monitoring Policy* seeks to provide dependable, timely and accessible fishery information through application of a common set of procedural steps used to establish fishery monitoring requirements across fisheries. A phased approach to implementation of the national *Fishery Monitoring Policy* will result in a transition period from the Strategic Framework to the national policy.

There are two new risk assessment tools associated with the national policy—the Risk Screening Tool and the Quality Assessment Tool. These tools will screen risks posed by fisheries to stocks and examines complexity and compliance to inform monitoring requirements, and examine the impacts of monitoring program design and operation on the data quality of the resulting catch estimates, respectively. The national *Fisheries Monitoring Policy* is designed to help bring consistency and equity across fisheries for monitoring programs that adequately address the risk posed by each fishery. Levels and frequency of monitoring should respond to the degree of risk associated with the fishery and the complexity of the fishery. The steps to implement the national *Fishery Monitoring Policy* are outlined in Figure 13.5-16 below.

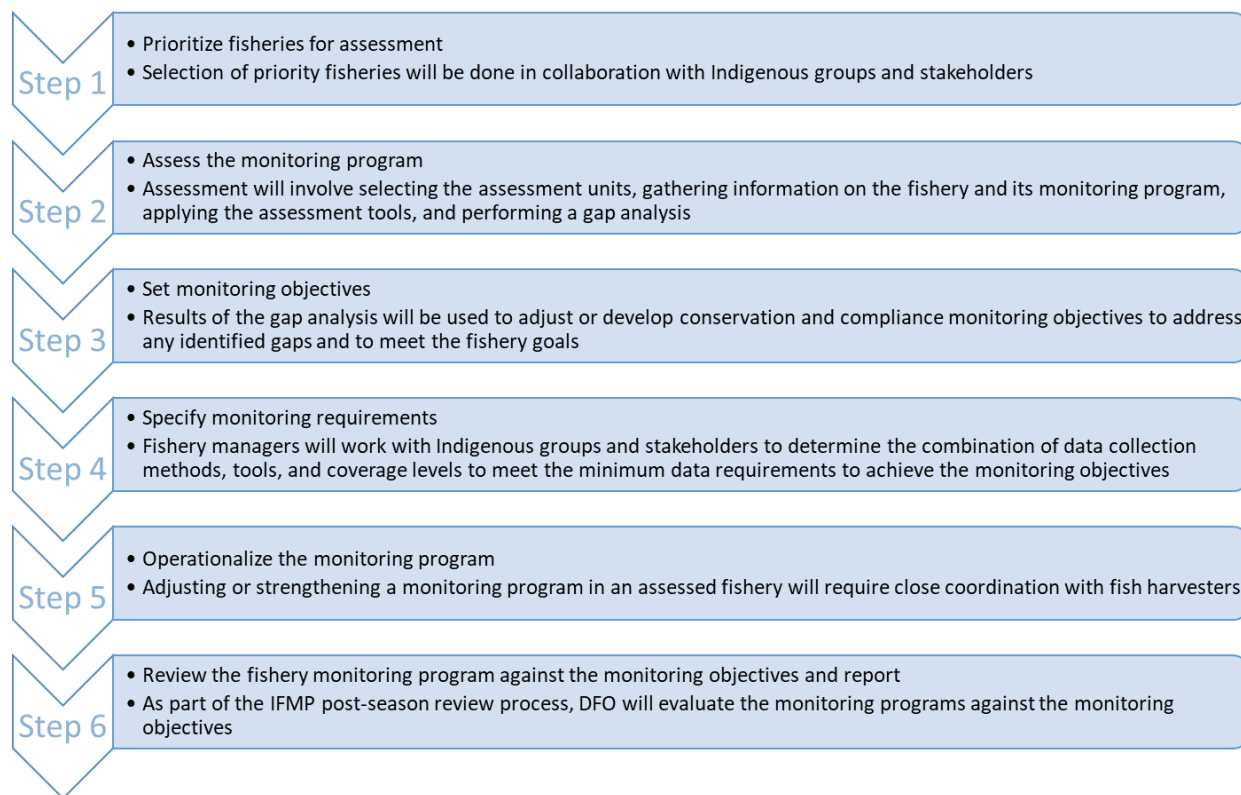


Figure 13.5-16: Procedural steps for implementing the national Fishery Monitoring Policy

In 2015, DFO partnered with the Monitoring and Compliance Panel to identify round 1 priority fisheries in Pacific Region to undertake risk assessments under the Strategic Framework. Thirteen draft risk assessments for commercial salmon fisheries were drafted internally by the Department in late 2018/early 2019 and released in the 2019-20 North and South Coast Salmon IFMP's for consultation. Feedback received during the 2019-20 IFMP consultation process included concern over inaccurate and inconsistent scoring and lack of transparency and inclusivity in the process. This feedback was reviewed internally by DFO at the regional level and incorporated where possible. To further ensure accuracy and consistency in scoring, two contractors were hired to complete independent reviews of the draft commercial risk assessments. After reviewing the changes made to the draft assessments as a result of this process with the Commercial Salmon Advisory Board and Area Harvest Committees, and considering the development and finalization of the national *Fishery Monitoring Policy*, a decision was made to reassess the fisheries evaluated under the Strategic Framework before proceeding with publishing the final risk assessments. Future fishery assessments will proceed under the national *Fishery Monitoring Policy*.

To discuss the new national *Fishery Monitoring Policy* with regional staff, please contact the Regional Fisheries Monitoring Coordinator, Caroline Wells, at [Caroline.Wells@dfo-mpo.gc.ca](mailto:Caroline.Wells@dfo-mpo.gc.ca) or 778-939-8503. Feedback and questions are welcomed, as your contributions and participation are valuable to the implementation of this national policy.

## APPENDIX 10: 2021 SALMON OUTLOOK

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### Purpose

The purpose of this document is to provide an 'Outlook' of expected abundance of salmon in 2021 to inform the harvest planning process.

The Outlook provides either an expected abundance for those stocks with statistical forecasts or a categorical abundance expectation based expert opinion.

### Changes to the outlook

For 2021, changes have been made to the Outlook document in order to:

- IX. Align CU groupings with stock management units (SMUs) to better inform decision-making consistent with *Fishery Act* and IFMP requirements.
- X. For those SMUs with statistical forecasts, consolidate and report them in the Outlook Document.
- XI. For those SMUs without statistical forecasts, standardize the interpretation of SMU status in relation to outlook categories;
- XII. Remove language regarding fishery consequences.
- XIII. Add information on SMU 'stock trajectories' and biological benchmarks and management references (where defined) for additional context. (In Progress)

It is hoped these changes will result in a document that provides more useful and relevant information to inform decision-making.

### Background

#### Stock Management Units

For the 2021 Outlook, 'Stock Management Units' (SMUs) replace 'Outlook Units' (OUs). This change has been made because many OUs did not correspond well with stock aggregates used to inform development of Integrated Fisheries Management Plans (IFMPs) for salmon. Refinement is also required for implementation of the fisheries-related revisions to the Fishery Act.

For salmon, the working definition of a 'stock management unit' (SMU) is a 'group of one or more conservation units (CUs) that are managed together with the objective of achieving a joint status', meaning harvest control rules would apply to the aggregate, at least in a coarse sense. Use of SMUs does not preclude considerations related to conserving CU-level diversity, but

rather is a practical aggregation of CUs for harvest planning and reporting purposes. That is, it is the scale at which harvest management plans, or better, management and assessment procedures, are developed in Integrated Fisheries Management Plans (IFMPs). In many cases, elements of the Precautionary Approach are implemented at finer scales of organization within a SMU.

**Biological and Management References**

The purpose of a stock forecast or outlook is to provide information to harvest managers to potentially adjust harvest plans according to the expected stock abundance. Ideally in that regard, the status of the stock management unit (or sub-unit) is assessed against specified limits and targets and pre-defined harvest strategies (or harvest control rules) are in place that define the actions required to meet targets and avoid limits.

Therefore, where biological benchmarks and/or limit reference points are defined for CUs or SMUs, respectively, they are noted in the Outlook/Forecast tables below. Similarly, if management targets are in place they are identified. Lack of these references is a gap and work is on-going to develop methods and complete the analyses to define these references. The summary below describes how these biological and management references are applied and interpreted.

**WSP Lower Biological Benchmarks and Limit Reference Points (LRPs)**

For implementation of the Wild Salmon Policy, the status of salmon Conservation Units (CU) is assessed against ‘biological benchmarks’. The lower biological benchmark allows for substantial buffer between it and the level of abundance at which the stock would be considered at risk of extinction and is generally estimated as SGEN. The upper biological benchmark delineates the ‘amber’ from ‘green’ WSP status zone and is generally estimated as .80 SMSY. For more data-limited systems (i.e. where it is not possible to numerically estimate stock-recruit parameters), proxies for lower and upper biological benchmarks may be applied. For example, the lower and upper biological benchmarks are estimated as .25 and .60 percentiles of the long-term observed spawning abundance.

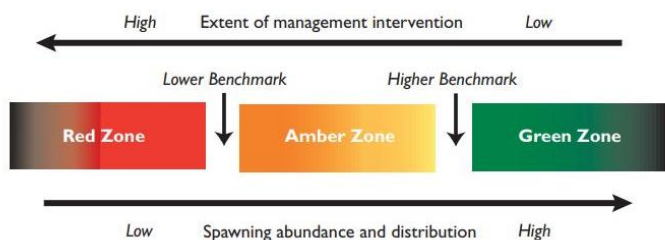


Figure 13.5-17. Benchmarks and biological status zones for CU assessments.



Under DFO’s Precautionary Approach (PA), the stock management unit (SMU) limit reference point (LRP) is a biologically-defined reference that delineates the ‘critical zone’ from the ‘cautious zone’ for harvest management. It represents the status below which serious harm is occurring to the stock. There may also be resultant impacts to the ecosystem, associated species and a long-term loss of harvest opportunities.

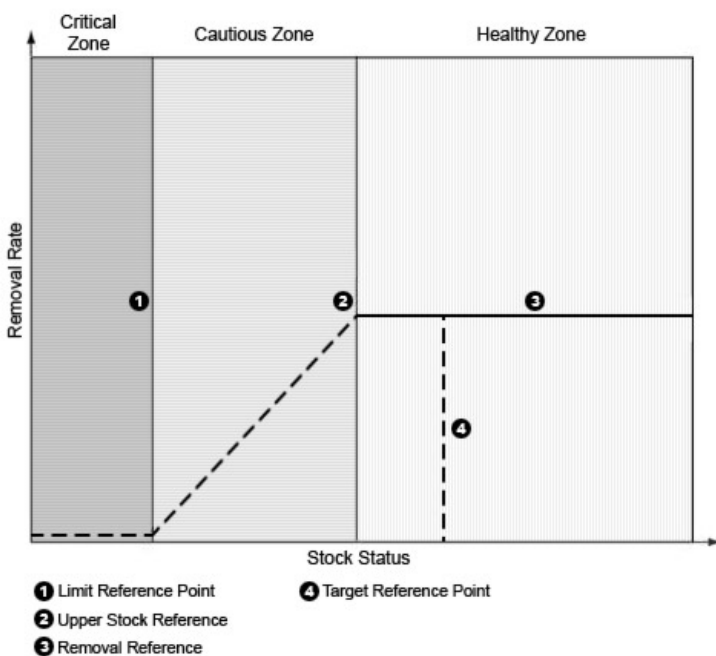


Figure 13.5-18. Schematic of a generalized harvest strategy under DFO’s PA.

Given the intent is similar between the WSP and DFO’s PA, it is practical to equate the SMU LRPs with lower biological benchmarks at the CU level. However, the WSP recognizes that serious harm to species occurs when CUs are depleted or lost. Therefore, to be consistent with the WSP, LRPs at the SMU scale should consider CU-scale biodiversity. Methodological approaches for defining LRPs are being developed to ensure CU-level biodiversity is taken into account and for both data-rich and data-limited assessment systems.

**Management Targets and Operational Control Points**

While management targets or operational control points are often informed by biological benchmarks and stock-recruit reference points, they also take into account other objectives such as maximizing sustainable harvest, avoiding over-fishing, maintaining stable access and opportunity, allocation objectives such as how catch is distributed among harvesters, etc. As such, they are tightly linked to the harvest strategy and fishery management measures.

In some cases, the management target may be a simple trigger such as when a ‘surplus-to-escapement-target’ harvest control rule is in place. In other cases, there may be multiple management targets (or operational control points) used to adjust the harvest control rule at different levels of abundance.

Note that an SMU can be below its management target (and therefore subject to some level of harvest restriction as per the harvest control strategy), but well above levels that represent a serious conservation concern (i.e. the LRP or LBB). In other situations, an SMU may be well above its target but subject to harvest restrictions because the stock rears or co-migrates in mixed-stock fishing areas with other SMUs (or CUs) that are near or below their LRP (or LBB).

**Stock outlooks**

**Categorical stock outlooks**

For the ‘Preliminary Outlook’ and for those SMUs for which statistical forecasts are not produced, either because the SMU is not intensively managed and/or is more data limited, categorical ‘outlooks’ are assigned. These outlooks are based on expert opinion qualified with information from monitoring programs. For each stock grouping an outlook of expected spawning abundance is assigned based on a scale of 1 to 4.

For CUs or SMUs with references in place (i.e. either lower (LBB) and upper biological benchmarks (UPP) and/or lower reference points (LRP) and upper stock references (USR) and Target Reference Point (TRP)), these references are used to assign Outlook category. For more data-limited CUs or SMUs (i.e. those without defined stock or management references), expected spawning abundance is compared to average or median abundance based on available information.

SMUs for which insufficient data area available to determine an Outlook are noted as ‘Data Deficient’.

Outlook Category	CUs or SMUs with references		Data Limited CUs or SMUs	
	Wild Salmon Policy (CU Level)	Precautionary Approach (SMU Level)	Category Definition	Expected spawning abundance
1	Red Zone (i.e. below the LBB)	Critical Zone (i.e. below the LRP)	Well below average	<25 <sup>th</sup> percentile

**APPENDIX 9: CATCH MONITORING AND REPORTING RISK ASSESSMENTS FOR PACIFIC SALMON**

Outlook Category	CUs or SMUs with references		Data Limited CUs or SMUs	
	Wild Salmon Policy (CU Level)	Precautionary Approach (SMU Level)	Category Definition	Expected spawning abundance
2	Amber Zone (i.e. below the LBB, below the UPP)	Cautious Zone (i.e. above the LRP below the USR)	Below Average	25 to 40 <sup>th</sup> percentile
3	Green Zone (i.e. above the UBB)	Healthy Zone (i.e. above the USR)	Near Average	40 to 60 <sup>th</sup> percentile
4	Green Zone (i.e. at or above the TRP)	Healthy Zone (at or above the TRP)	Abundant	>60 <sup>th</sup> percentile
Data Deficient			Insufficient information	Unknown

**YUKON RIVER AND TRANSBOUNDARY**

**YUKON RIVER**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Forecast /Outlook
<b>YUKON CHINOOK</b>	Aggregate includes 9 CUs	<b>51,000</b> (ESC. AVG. 2005+)		<b>48,750</b> (42,500 – 55,000) Escapement Target (S <sub>MSY</sub> )	<b>57,000 (80% CI; 42,000 – 77,000)</b>
	Porcupine Aggregate includes 3 CUs	Data Deficient (Mainstem as indicator)		N/A	
	The spawning escapement of Canadian-origin Yukon River mainstem Chinook salmon in 2020 was below average, at 31,000. The current spawning escapement goal endorsed by the U.S./Canada Yukon River Panel for Mainstem Chinook is 42,500-55,000 Chinook salmon and has been met only 50% of the time over the last decade. Five and six year-old fish dominate returns. Recent total production observed in Canadian-origin Yukon River Chinook salmon stocks is well below past years: averaging around 71,000 over the last ten years compared to 150,000 in the 1980s and 1990s. Assessment of Porcupine Chinook continues (limited data).				
<b>YUKON COHO</b>	Porcupine CU	<b>4000</b> (ESC. 5-year AVG)			<b>Data Deficient</b>
	Very little is known about Coho Salmon stock status within Canadian portions of the Yukon River drainage. Data from the U.S. portion of the drainage suggest returns to the drainage in the last five years have been near the long term average; however, no assessment programs are currently undertaken in Canada and the current stock status is unknown. It is known that coho salmon primarily return as 4-year-olds and overlap in run timing with fall chum salmon.				
<b>YUKON CHUM</b>	Mainstem – includes 5 CUs	<b>182,000</b> (ESC. AVG. 2006+)		<b>87,000</b> (70,000 - 104,000) Escapement Target (S <sub>MSY</sub> )	<b>135,000 – 190,500</b>
	The spawning escapement of Canadian-origin Yukon River mainstem Chum salmon in 2020 was among the lowest on record, at 23,500. Runs are typically dominated by four year-old fish, followed by five year-old fish; much lower-than-expected returns of four year-old fish in 2020 contributed to the poor run. The current mainstem spawning escapement goal endorsed by the Yukon River Panel is 70,000 – 104,000 Chum salmon, which has been met every year in the past decade except 2020.				
	Porcupine – includes 2 CUs	<b>46,000</b> (ESC. 1972 – 2020 AVG) <b>22,000</b> (ESC. 5-year AVG)		<b>35,500</b> (22,000 - 49,000) Escapement Target (S <sub>MSY</sub> )	<b>1-2</b>
The spawning escapement of Fishing Branch River Chum salmon in 2020 was also historically low, at 4,795. The current spawning escapement goal for the Porcupine River (as assessed at the Fishing Branch River) endorsed by					

	the U.S./Canada Yukon River Panel is 22,000-49,000 Chum salmon. Returns over the last five years have been well below expected and the minimum escapement goal was not achieved in three of the last five years.	
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TRANSBOUNDARY AREA

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
ALSEK SOCKEYE	Alsek	<b>96,000</b> (ESC. 10-year Avg.)		<b>29,700</b> (esc. Goal range 24,000 – 33,500)	<b>40,000</b>
	Klukshu	<b>13,000</b> (ESC. 10-year Avg.)		<b>9,700</b> (esc. Goal range 7,500 – 11,000)	<b>10,000</b>
	Based on brood year escapements below the MSY target range and stock-recruitment relations from historical records, a below average, but within the escapement goal range run is expected. This aggregate stock is dominated by lake and river type age 5 fish. 2021 Outlook Category is 2.				
ALSEK CHINOOK	Alsek	<b>5400</b> (ESC. 10-year Avg.)		<b>4,700</b> (esc. Goal range 3,500 – 5,300)	<b>4000</b>
	Klukshu	<b>1,500</b> (ESC. 10-year Avg.)		<b>1,000</b> (esc. Goal range 800 – 1,200)	<b>1000</b>
	Based on brood year escapements that were both above and below average but near the MSY target range and recent sibling survival data, an average run within the escapement goal range is expected. Alsek Chinook are stream type dominated by 5- and 6-year olds.				
ALSEK COHO	Alsek CU				<b>2</b>
	Only a partial weir count is carried out. Brood year counts were slightly below average. Run is dominated by 4 year olds				
STIKINE SOCKEYE	Tahltan	<b>67,000:</b> <b>38,000</b> (wild) <b>28,000</b> (enhanced) (ESC. 10-year Avg.)		<b>24,000</b> (18,000 to 30,000) Escapement Target (S <sub>MSY</sub> )	<b>28,000:</b> <b>9000</b> (wild) <b>19,000</b> (enh.)
	Mainstem	<b>41,000</b> (ESC. 10-year Avg.)		<b>30,000</b> (20,000 to 40,000) Escapement Target (S <sub>MSY</sub> )	<b>28,000</b>
	Based on a combination of primary brood year smolt counts and sibling-based predictions, a below average run is anticipated for 2021 but above escapement goals. Recent poor marine survival may influence this. This is an aggregate stock of lake and river type 5 year olds.				
STIKINE CHINOOK	Aggregate includes 2 CUs	<b>18,500</b> (ESC. 10-year Avg.)		<b>17,400</b> (14,000 - 28,000) Escapement Target (S <sub>MSY</sub> )	<b>9,900</b> (5400-14,200)
	2021 run is forecast to be well below the 10-year average of 19,200 and below the escapement goal range of 14,000 – 28,000. The anticipated run				

**APPENDIX 10: 2021 SALMON OUTLOOK**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	size does not provide for directed fisheries. Stikine Chinook are stream type dominated by 5- and 6-year olds.				
<b>STIKINE COHO</b>	Stikine CU				<b>Data Deficient</b>
	Reliable brood year escapement data are limited and ancillary observations are sometimes contradictory.				
<b>TAKU SOCKEYE</b>	Aggregate includes 4 CUs	<b>144,000</b> (ESC. 10-year Avg.)		<b>58,000</b> (Esc. Goal Range 40,000 - 75,000)	<b>140,000</b>
	Enhanced (Tatsamenie)	<b>8000</b> (ESC. 10-year Avg.)	n/a		<b>6000</b>
	Enhanced (Trapper)				<b>300</b>
	Based on stock-recruitment data, the 2021 run is expected to be near the 10 year average of 154,100 but well over the management objective of 58,000. This is an aggregate stock of lake and river type 5 year olds.				
<b>TAKU CHINOOK</b>	Aggregate includes 3 CUs	<b>17,400</b> (ESC. 10-year Avg.)		<b>25,500</b> (19,000 - 36,000) Escapement Target (S <sub>MSY</sub> )	<b>10,300</b> (6,100 to 14,500)
	2021 is expected to again be well below the 10-year average of 19,400 and well below the escapement goal range of 19,000-36,000. The anticipated run size does not provide for directed fisheries. Taku chinook are stream type dominated by 5 and 6 year olds.				
<b>TAKU COHO</b>	Aggregate includes 3 CUs	<b>97,000</b> (ESC. 10-year Avg.)		<b>70,000</b> (50,000 - 90,000) Escapement Target (S <sub>MSY</sub> )	<b>94,000</b>
	Based on preliminary smolt abundance in 2020 combined with recent smolt-to-adult survival rates, an average run above the management target of 70,000 is expected for 2021. Run is dominated by 3 year olds.				
<b>TRANSBOUNDARY CHUM</b>	Taku Chum CU				<b>Data Deficient</b>

**NORTH COAST AREA**

**HAIDA GWAI**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>HAIDA GWAI SOCKEYE</b>	Aggregate includes 10 CUs	1990-present avg. spawners ~ 25000	None	Under development for several CUs	<b>2</b> (low to average)
	Low to average returns for systems that were surveyed in 2020 (Copper, Yakoun, Awun, Naden, total count for 4 biggest systems was ~15K).				
<b>HAIDA GWAI PINK – ODD</b>	Aggregate includes 6 CUs (even and odd year)				<b>n/a</b>
	Haida Gwaii stocks are primarily even year stocks with little to no returns in odd years.				
<b>HAIDA GWAI CHINOOK</b>	Aggregate includes 2 CUs				<b>Data Deficient</b>
	No recent assessments of Yakoun Chinook.				
<b>HAIDA GWAI COHO</b>	Aggregate includes 3 CUs				<b>Data Deficient</b>
	Limited assessments since 2002. Returns to enumeration sites such as Tlell and Deena have been generally good over the past decade, with weaker than average escapement observed at Tlell and the Deena in 2020.				
<b>HAIDA GWAI CHUM</b>	Aggregate includes 5 CUs				<b>Data Deficient</b>
	Haida Gwaii Chum stocks have been consistent over the past decade with poor productivity and returns in Area 2E and moderate productivity in Area 2W. Chum returns to Tasu Sound have generally had good productivity with returns achieving management targets in most years over the past decade. Terminal fishing opportunities in Tasu Sound dependent on good marine survival.				



**SKEENA AND NASS RIVERS**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
<b>NASS SOCKEYE</b>	<b>Aggregate includes 7 CUs</b>	<b>261,790</b> (Avg. ESC, 1982+)		250,000 (Escapement Target)	<b>Model 1 (5-yr Avg): 328,000</b> (181,000 to 596,000)  <b>Model 2 (Sibling): 386,000</b> (177,000 to 861,000)  Terminal RTC
	2020 was the lowest return to the Nass since 1992, and below average returns expected for 2021. Forecast TRTC range from 177-861K.				
<b>SKEENA SOCKEYE</b>	<b>Aggregate (wild and hatchery)</b>	<b>2,584,000</b> (Avg. Return 1973+)	<b>Under review</b>	<b>Under review, esc target is 1,050,000, 400,000 lower operational control point</b>	<b>Model 1 (5-yr Avg): 1,258,913</b> (679,966 to 2,300,799)  <b>Model 2 (Sibling): 1,696,972</b> (796,679 to 3,614,662)
	Skeena – Wild Aggregate includes 30 CUs	Variable	Under review	Included in Skeena aggregate, under review	
	Overall, expecting a low to average return in 2021. Return rates for Skeena - Wild are more variable than Babine Lake – Enhanced. Extremely poor returns for lower Skeena sockeye CUs, average returns for some middle and upper Skeena systems, poor for others. Generally poor abundance is forecast in 2020 for wild age-4 Sockeye based on poor age-3 returns in 2020. Stronger age-5 returns expected in 2020 based on higher than expected age-4 returns in 2020. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components.				
	Babine Lake - Enhanced		Under review	Spawning channel capacity = 470,000	
	Overall, expecting a moderate return in 2021 unless age-4 Sockeye return stronger than expected. Low age-4 returns expected in 2021 based on very low age-3 returns in 2020. Stronger abundance forecast in 2021 for age-5 Sockeye based on modest age-4 returns in 2020.				
<b>MAINLAND COASTAL SOCKEYE</b>	Areas 3 to 6				<b>2</b>
	Very low escapements relative to average for all coastal and lower Skeena sockeye systems, and for Area 6 sockeye systems				
<b>NASS PINK</b>	Aggregate includes 5 CUs				<b>2</b>
	The Nass pink return is expected to be below average (2). The brood year return was below 25% but better emergence conditions may lead to a slight increase.				
<b>SKEENA PINK</b>	Aggregate includes 3 CUs				<b>1 to 2</b>

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	The Skeena pink return is expected to be “well below average” (1) to “below average” (2). The brood year return was below 25% but better emergence conditions may lead to a slight increase				
NASS CHINOOK		<b>31,000</b> (TRTC 1994-2020)		15,000 (ESC target)	<b>32,000</b> (18,000 to 56,000) Terminal RTC
	The 2021 return is uncertain after record low escapements in 2017. Preliminary forecast is for 24,000 return to Canada (Nisga’a Fish & Wildlife). There is generally low productivity among stream-type stocks in the north-west				
SKEENA CHINOOK	Aggregate includes 12 CUs	<b>72,000</b> (GSI mark-recapture based on KLM Petersen estimates 1984-2020)			<b>2</b>
	Kitsumkalum Indicator Stock	13,200 (KLM Petersen mark-recapture 1984-2020)			
	Below average returns are expected for both summer and spring timed Skeena Chinook. The 2021 return is highly uncertain after record low escapements in 2017 and 2020. There is generally low productivity among stream-type stocks in the north-west				
NASS COHO	Aggregate includes 3 CUs				<b>1-2</b>
	Total escapement is expected to be below average in 2021. The 2020 run size was well below average with low productivity and marine survival evident in the preceding years.				
SKEENA COHO	Aggregate includes 4 CUs				<b>1-2</b>
	Lower productivity over previous years is forecasted based on low returns in 2020 for both interior and coastal coho populations and continuance of lower marine survivals.				
SKEENA - NASS CHUM	Nass CU	<b>13,632</b> (1950-Present)	none	Under Review. MEG is 72,000	<b>2</b>
	Below average (2). Some very low returns in dominant brood year but better ocean conditions in recent years.				
	Skeena CU Aggregate includes 2 CUs				<b>1</b>
	Well below average (1). All brood returns have been at or below 25% (note: data limited)				

**CENTRAL COAST**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>MAINLAND COASTAL SOCKEYE</b>	Areas 7 and 8				<b>Variable – Data deficient, 1, 2</b>
	Most systems in areas 7 and 8 are data deficient. Average returns relative to recent period (2000+) for systems that were surveyed in Area 8 (Atnarko, Koeeye, Kadjudis, Namu). Atnarko sockeye returns are well below historic and population is in recovery.				
<b>RIVERS / SMITH SOCKEYE</b>	Rivers – Aggregate includes 2 CUs (Wannock River and Owikeno Lake)	272,000 (Avg. ESC, 2000+)	Under development	None	<b>2</b>
	2020 return to Rivers Inlet based on DIDSON-ARIS estimate was lower than in recent years. Low to average returns are expected in Areas 9 and 10. Docee Fence (Area 10/Smith Inlet/Long Lake) sockeye is not operational, no escapement information for this system available since 2017.				
	Smith – Aggregate includes x CUs	62,000 (Avg. ESC, 2000+)			<b>Data Deficient</b>
<b>CENTRAL COAST PINK</b>	Area 6	821,999 (odd year)		MEG - 1,447,000	<b>2</b>
	Area 7	288,232 (odd year)		MEG – 444,720	<b>1</b>
	Area 8	908,042 (odd year)		MEG – 1,520,400	<b>1</b>
	Area 9	174,250		MEG – 342,450	<b>1</b>
	Area 10			MEG – 65,600	<b>Data deficient</b>
	Low returns are expected in Area 7 and average to above average returns in Area 8. The odd year Bella Coola/Atnarko stock exceeded escapement target in 2017. Odd year returns are expected to be above average if marine survival is good.				
<b>CENTRAL COAST CHINOOK</b>	Atnarko Indicator Stock	<b>15,500</b> (Maximum likelihood model 1990-2020)		<b>5009 (Atnarko wild) Escapement Target (SMSY)</b>	<b>2</b>
	These stocks are generally depressed and this pattern is expected to continue or worsen given generally low productivity among stocks in the north-west. Assessments are of poor quality.				
	Areas 7 and 8 –				<b>3 / Data Deficient</b>
	2021 Bella Coola returns are expected to be below average based on returns in recent years. Other assessments are of poor quality.				
Areas 9 and 10 –					

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
	Aggregate includes 5 CUs				<b>3 / 2 / Data Deficient</b>
	Wannock River Chinook returns are expected to be average. The spring-run stocks including the Owikeno tributary stocks and Chuckwalla/Kilbella stocks are expected to be below average based on recent trends; however, assessments are of poor quality or are no longer conducted.				
<b>CENTRAL COAST COHO</b>	Areas 5 and 6 – Aggregate includes 4 CUs				<b>2 (Low)</b>
	Lower productivity over previous years is forecasted based on low Area 6 returns and continuance of lower marine survivals.				
	Areas 7 to 10 – Aggregate includes 4 CUs				<b>2 (Low)</b>
	Lower productivity over previous years is forecasted based on low returns in 2020 for both interior and coastal coho populations and continuance of lower marine survivals. However, there is very little data to review to develop an overall assessment.				
<b>CENTRAL COAST CHUM</b>	Area 5	17,480		MEG – 22,000	<b>1</b>
	Area 6	165,409		MEG – 134,000	<b>1 – 2</b>
	Area 7	196,659		MEG – 311,950	<b>1</b>
	Area 8	162,000			<b>3</b>
	Area 9	30,981		MEG – 150,700	<b>1 (data limited)</b>
	Area 10	17,807			<b>1 – 2 (data limited)</b>
	Wild brood year escapements were generally good in Area 8 but low in other areas. Returns of enhanced stocks remain dependent upon variable ocean survivals				

**SOUTH COAST AREA**

**WEST COAST VANCOUVER ISLAND**

Stock Management Unit	Conservation Unit /Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
<b>WCVI - BARKLEY SOCKEYE</b>	<b>Somass Aggregate (GCL + SPL)</b>	<b>740,000</b> (Avg. Run Size 1977+)		<b>170,000</b> Run Size – lower operational control point	<b>350,000</b>
	Great Central Lake CU	400,000 (Avg. Run Size 1977+)	29,290 LBB		<b>3</b>
	Sproat Lake CU	340,000 (Avg. Run Size 1977+)	41,350 LBB		<b>3</b>
	For the 2021 return, the two main contributing brood years are 2016 and 2017 and the two main contributing smolt years are 2018 and 2019. Brood abundance was above average in 2016 and low in 2017. Smolt abundance was high in 2018 and low in 2019. Based on ocean indicators, marine survival rates for the 2018 and 2019 smolt years appear to be low. Given the considerations above, expectations are for a moderate Somass Sockeye return. The low returns in the last two years were mostly attributed to poor freshwater and marine survival despite the large returns of 2015 and 2016.				
	Henderson Lake CU	34,000 (Avg. Run Size 1978+)	5000 LBB	9% max. harvest rate at run sizes <15,000	<b>&lt;15,000</b>
	For the 2021 return, the two main contributing brood years are 2016 and 2017 and the two main contributing smolt years are 2018 and 2019. Brood abundances were moderate in both 2016 and 2017. Smolt abundance continues to be low. Based on ocean indicators, marine survival rates for the 2018 and 2019 smolt years may be low. The key factors influencing this outlook are the low spawner abundances in the main contributing brood years (9,700 Sockeye in 2016; 22,000 Sockeye in 2017; Table 4) for the 2021 return, as well as low marine survival rates experienced by these two brood years. Therefore, expectations are for a continued low Henderson sockeye return in 2021.				
<b>WCVI - OTHER SOCKEYE</b>	22 CUs are associated with this stock management unit.				<b>Data Deficient</b>
	Assessment data are not available to forecast others systems. However, WCVI populations tend to covary. Therefore, expectations are for low-to-moderate returns based on the outlooks for Somass and Henderson.				
<b>WCVI PINK</b>	3 CUs are associated with this stock management unit.				<b>Data Deficient</b>

Stock Management Unit	Conservation Unit /Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	Since the collapse of WCVI pinks in the mid-1960s there has been negligible catch and only opportunistic assessment of returns during assessment of other species. The available data suggest WCVI pink salmon populations continue to persist at very low relative to historic levels with high variability.				
<b>WCVI CHINOOK</b>	Southwest Vancouver Island CU			10 – 15% maximum exploitation rate in key 'pre-terminal' CDN fisheries	<b>1</b>
	Nootka and Kyuquot CU				
	Northwest Vancouver Island CU				
	Recent year escapements of WCVI Chinook natural populations remain low. There has been improvement in Kyuquot (NWVI wild indicators) in recent years. Less improvement in Clayoquot (SWVI wild indicators) which remains the biggest concern; and specifically improvement is almost all in the Bedwell where low level enhancement seems to be resulting in improved returns. Survival rates of natural production is thought to be less than half that of hatchery production; similarly productivity remains relatively low. WCVI wild Chinook remain a stock of concern.				
	Somass/Robertson (Hatchery)	68,000 (Avg terminal run 1995-2020)	n/a	39M eggs (spawner target is adjusted for expected age/sex composition)	<b>133,000</b> (98,000-167,000)
	Conuma Hatchery	37,000 (Avg terminal run 1995-2020)	n/a	10,000 ESC target but varies to ensure escapement of eggs associated with an average 10,000 escapement.	<b>33,000</b> (19,000-35,000)
	Nitinat Hatchery	25,000 (Avg terminal run 1995-2010)	n/a	10,000 ESC including brood stock	<b>27,000</b> (18,000-35,000)
	WCVI Other Hatchery Supplemented (e.g. Burman R, Sarita R.)	Varies by individual river; see local plans for details.	Work is underway to develop lower bench marks (C. Holt lead).	Varies by individual river; see local plans for details.	<b>(3)</b> <b>43,000</b> (28,000-56,000)
Overall returns in 2021 will likely be similar to 2020 which was higher than average abundance in the SWVI and near average abundance in NWVI. Observed returns of earlier age classes suggest an above average marine survival rate for the 2016 brood year (age 5 in 2021), above average survival the 2017 brood year (age 4 in 2021) and maybe average survival for the 2018 brood year (age 3 in 2021). Age 3 returns were higher than expected in most WCVI areas in 2020; over 50% in the Somass return and also high % males in					

Stock Management Unit	Conservation Unit /Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	Conuma and Nitinat. This suggests a potential for an above average return of eggs in 2021 (means lower escapement goals in the harvest – hatchery directed systems).				
<b>WCVI COHO</b>	3 CUs are associated with this stock management unit.				<b>3</b>
	Information to forecast Coho returns is limited. Therefore, there is considerable uncertainty in this assessment. 2020 had a poor return along most of the WCVI; for example, escapement through Stamp Falls was in the bottom 20% of all returns since 2000. For 2021, most of the return will originate from the 2018 brood year that went to sea in 2020. Robertson Hatchery coho jacks were higher than average in 2020 suggesting improvement in 2021 with average returns expected. For most WCVI areas, Coho spawning populations have been relatively stable.				
<b>WCVI CHUM</b>	Area 23 (Barkley) – Southwest Vancouver Island CU	<b>69,000</b> (Avg. Return, 1995+)		48,000 Run size – lower operational control point, 15% max harvest rate	<b>38,000</b> (6,000-70,000)
	Area 24 (Clayoquot) – Southwest Vancouver Island CU	<b>57,000</b> (Avg. Return, 1995+)		42,000 Run size – lower operational control point, 15% max harvest rate	<b>23,000</b> (13,000-33,000)
	Area 25 (Nootka) – Southwest Vancouver Island CU	<b>41,000</b> (Avg. Return, 1995+)		26,000 Run size – lower operational control point, 20% max harvest rate	<b>14,000</b> (5,000-24,000)
	Area 25 (Esperanza Inlet) – Southwest Vancouver Island Cu	<b>49,000</b> (Avg. Return, 1995+)		24,000 Run size – lower operational control point, 15% max harvest rate	<b>82,000</b> (25,000-139,000)
	Area 26 (Kyuquot) – Southwest Vancouver Island CU	<b>60,000</b> (Avg. Return, 1995+)		25,000 Run size – lower operational control point, 15% max harvest rate	<b>46,000</b> (15,000-76,000)
	Area 27 (Quatsino Sound) – Northwest Vancouver Island CU				<b>Data Limited</b>
	Area 25 (Conuma Hatchery) – Southwest	<b>88,000</b> (Avg. Return, 1995+)			<b>22,000</b> (12,000 to 32,000)

Stock Management Unit	Conservation Unit /Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 FORECAST/ OUTLOOK
	Vancouver Island CU				
	Nitinat Hatchery	<b>491,000</b> (Avg. Return, 1995+)	n/a	225,000 Run size – lower operational control point	<b>163,000</b> (23,000 to 303,000)
	Recent returns of WCVI Chum have been depressed in most areas relative to average abundances. Returns of WCVI Chum in 2021 will likely be below average to average in most areas. Brood years 2016, 2017 and 2018 will contribute to the 2021 return as age 5, 4 and 3, respectively. The 2016 brood year had an above average return in most areas and we expect an above average contribution of age 5s in 2021. The 2017 and 2018 brood year returns were below average abundances, and the 2018 and 2019 sea entry years resulted in below average to average survival. This will limit both the age 3 and 4 (dominant age class) contributions to the 2021 return. The recent stock status of wild WCVI Chum has generally been poor with spawning abundance for wild indicator stocks frequently below upper biological benchmarks. In addition, hatchery production has declined in recent years; particularly for the Conuma hatchery in PFMA 25 (Tlupana Inlet).				

**EAST COAST VANCOUVER ISLAND/MAINLAND INLETS**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>ECVI / MAINLAND SOCKEYE</b>	Nimkish	60,000 median spawners			<b>2</b>
	Sockeye returns to this system in 2020 were well below average. For the 2021 return, the two main contributing brood years are 2016 and 2017 and the two main contributing smolt years are 2018 and 2019. Brood abundance was above average in 2016 and below average in 2017. Based on ocean indicators, marine survival rates for the 2018 and 2019 smolt years appear to be low (poor returns of local pink and coho stocks that out-migrated in 2018 and 2019). Given the considerations above, expectations are for a below average Nimkish Sockeye return. Brood years contributing to the 2021 return were 2016 (74K) and 2017 (30K).				
	Area 16 (Sakinaw)	<b>117</b> (Avg. Return, 1995+)	2,440	4,470	<b>1</b>
	Of the 33,442 smolts that left Sakinaw Lake in 2018 a total of 85 adult Sockeye returned in 2020. Marine survival continues to be extremely low; for the 2018 ocean entry year, the smolt-to-adult survival improved to 0.14% for hatchery-origin and 0.31% for natural-origin smolts. Smolt production increased to 75,823 in 2019 although just over 1,000 were from natural production. If marine survival is near the 4-year average, a total of 47 adults are expected; 2 natural origin and 45 from captive brood fry releases. 2021				



Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
	escapement could increase to 111 fish if marine survival is consistent between 2018 and 2019 ocean entry years.				
	Other (Areas 11 to 13)	Heydon: 2,600 median spawners Quaste: 2,200 median spawners			<b>2</b>
	Expectations for other populations such as Quatse, Heydon and Phillips are similar to Nimpkish.				
<b>ECVI / MAINLAND PINK</b>	Areas 11 to 13 - Odd	Reconstructed Median Returns Southern Fjords (Even): 1.6 million Southern Fjords (Odd): 613K Nahwitti (Odd): 12K			<b>1</b> (NEVI and Area 12 Mainland Inlets)
	Georgia Strait - Odd	Strait of Georgia (Odd): 536K Strait of Georgia (Even): 142K			<b>3</b> (Southern portion of area on ECVI)
	<p><b>Even Year:</b> 2020 saw varied returns throughout South Coast with poor returns in Northern Vancouver Island and generally improved/strong returns to the systems from Adam River south to Campbell River on the Island. Very poor (well below average) returns to Area 12 Mainland Inlets and very strong recovery and returns observed on the Philips River in Area 13 Mainland Inlets. In river return timing of pinks was much earlier than normal in many systems (i.e. Quinsam)</p> <p><b>Odd Year:</b> In 2019, returns were similar to what was observed in 2020, with very poor escapements in Northern Vancouver Island and across to the Mainland and much better returns to the lower portions of Area 12 and into 13 on the Island. It is anticipated that we will likely see a similar distribution of abundance as the last 2 years. Expectations for 2021 are well below average returns to NEVI and Mainland Inlets and average returns to the Southern Portions of the area on ECVI. Pink fry outmigration numbers from Quinsam in 2020 (~15 million) was the third largest abundance since 1997 and should convert to strong returns in 2021.</p> <p>Historically, Pink returns to this area have been highly variable and expectations continue to be highly uncertain.</p>				
<b>MAINLAND INLET CHINOOK</b>	This aggregate includes 4 CUs				<b>Data Deficient</b>
	Includes Homathko and Klinaklini				
<b>UPPER GEORGIA</b>	Quinsam River Fall Run	<b>9850</b> (AVG. Terminal			<b>3</b>

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>STRAIT CHINOOK</b>		Run Index, 1979+)			
	2020 saw above average escapements to most systems monitored on Northern Vancouver Island. Hatchery returns at Quinsam were well above average, and other systems such as Nimpkish, Adam and the Salmon all showed signs of improving escapements. Expectations in 2021 are for continued improved escapements especially if Chinook harvest regulations to reduce impacts on Early timed Fraser Chinook continue.				
<b>MIDDLE GEORGIA STRAIT CHINOOK</b>	Puntledge and Big Qualicum Rivers Fall Run Enhanced	<b>14,385</b> (AVG. Terminal Run Index, 1995+)	7,193		<b>3</b>
	Following a strong return of 17,000 in 2019, just under 10,000 fish returned to the Puntledge River in 2020. Returns to the Big Qualicum River were above the four year average of 6,980 at 12,235. Stable production levels and modest survivals for several hatchery indicators suggest average to above average returns are likely for 2021.				
<b>LOWER GEORGIA STRAIT CHINOOK</b>	Cowichan River Fall Run Unenhanced (<20% hatchery origin)	<b>6,826</b> (AVG. Terminal Run Index, 1982+)	3,413	<b>6500 (Cowichan) Escapement Target (S<sub>MSY</sub>)</b>	<b>2</b>
	Adult Chinook returns to the Cowichan River in 2020 exceeded the target escapement of 6,500 naturally spawning adults for the fifth consecutive year. The number of jacks in the population was high; similar to observations in 2017 which produced strong returns of three year olds in 2018 and four year olds in 2019. The 2021 outlook is for average to above average returns but this may be altered depending on final escapement estimates and age composition. Wild production continues to drive the escapement with the proportion of hatchery fish in the population estimated at 10% for all age classes in 2020.  A similar rebuilding trend has not been observed in the Nanaimo River where counts remain low and stable (<5,000). 2021 escapement is expected to remain low and stable.				
<b>GEORGIA STRAIT SPRING AND SUMMER CHINOOK</b>	Nanaimo and Puntledge Summer Enhanced	<b>1,712</b> AVG. Terminal Run Index, 2004+)			<b>2</b>
	Several surveys of spring/summer Chinook holding areas in the Nanaimo River were conducted producing a count of 583 fish in 2020 which was up from 267 in 2019. Puntledge summer Chinook were below the 4-year average of 820 fish at just over 400. Most of the reduction can be attributed to reduced smolt releases in preceding years. Rebuilding efforts for these				

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
	populations are continuing. At these levels, rebuilding will take several generations even with improved survival				
<b>JOHNSTONE STRAIT / MAINLAND INLET COHO</b>	Area 12				<b>2</b>
	Returns showing some improvement– but still below long term average escapements in many systems surveyed. Keogh- preliminary escapement (874) is an improvement over the previous 4 years but lower than the long term average. Estimated escapement has steadily increased from that observed in 2016 (230), despite relatively stable but high juvenile recruitment, indicating improving marine survival. The return in 2020 stems from an above average smolt abundance of 72K. 2020 out migration was also strong (87K). Expectations in 2021 are for this improved survival to continue but still below average returns. The Area 12 forecast for 2021 is 31% higher than the brood returns in 2018. Coho abundance in this region can be characterized as ‘well below average’.				
	Area 13 - North				<b>2</b>
	Hatchery indicators for this outlook unit are Quinsam and Big Qualicum. Both systems saw average, or slightly better than average returns. General observations to date suggest better than forecasted returns across the area. Village Bay Creek on Quadra Island is being monitored by video and has observed higher than expected numbers of Coho through the fence. The wild indicator is Black Creek (included below in the Georgia Strait OU). The Area 13 forecast is 9% higher than the 2018 observed indices. Coho abundance in this region can be characterized as ‘well below average’				
<b>STRAIT OF GEORGIA COHO</b>	Quinsam				<b>2</b>
	Big Qualicum				
	Black Creek				
	Hatchery indicators for this Outlook Unit are the Quinsam and Big Qualicum rivers.2020 adult returns to the Big Qualicum are well above the four year average of 8,600 at over 22,300. An unplanned reduction in smolt output in 2018 produced a low return of 2,600 fish in 2019. Production levels are back to normal and 2021 returns are expected to be average to above average. The wild indicator is Black Creek. 2020 estimate of 1,935 adults through fence is an improvement over the 2017 brood year (1,333 adults). 2020 escapement is below the long-term average but was expected based on poor marine forecasts and below average smolt production in 2019 (~40K). Fewer jacks returned in 2020 than seen in recent years (1,690) but still making up a large proportion of the total return. Improvement to marine survival are evident from 2019 to 2020 and it is anticipated that will continue. Smolt production in 2020 (83.1K) is significantly above the long-term average which be contributing to the 2021 return. The 2021 forecast for the three indicators is for a continuation of the low marine survival levels seen in recent years.				
	Johnstone Strait Area and Mainland Inlets				<b>2</b>

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
INNER SOUTH COAST CHUM - Non-Fraser	(Areas 11 to 13)				
	<p>Summer run Chum Salmon stocks in 2020 appear to have done poorly relative to recent years and remained below average throughout the area. This will likely continue through 2021.</p> <p>Fall run Chum returns in 2020 are still being assessed; however, abundance appears to be below average in most systems surveyed. Productivity of these stocks has declined over the last 4 years and has been attributed to poor marine conditions for salmon. There is some indication that survivals have been better in the Southern range of the distribution of Inside Southern Chum.</p> <p>For the 2021 return, below average parental brood abundances in both 2017 and 2018 and a 4 year decline in Chum productivity will likely mean below average return of fall Chum in 2021. Recovery initiatives continue for the Nimpkish Chum Stock within this area.</p> <p>Expect variability in Chum returns.</p>				
	Jervis/Narrows Inlet (Brittian, Deserted, Skwawka, Tzoonie, Vancouver)	<b>51,151</b> (Avg. Return, 2004+)		85,000	<b>12,200</b> (Like Last Year)
	Mid-Vancouver Island (Puntledge, Big Qualicum, Little Qualicum)	<b>225,697</b> (Avg. Return, 1995+)		230,000	<b>23,400</b> (Like Last Year)
	Nanaimo River	<b>61,288</b> (Avg. Return, 2004+)		40,000	<b>43,800</b> (Like Last Year)
	Cowichan River	<b>177,032</b> (Avg. Return, 2006+)		160,000	<b>157,000</b> (Like Last Year)
	Goldstream River	<b>27,070</b> (Avg. Return, 2000+)		15,000	<b>22,300</b> (Like Last Year)
	<p>Preliminary escapement data for 2020 suggest well below target escapements for systems in mid to northern Georgia Strait and Jervis/Narrows Inlet. Returns to Nanaimo, Cowichan and Goldstream were near or slightly above target.</p> <p>For 2021, abundance is expected to follow a similar pattern with stocks in the southern part of Georgia Strait such as Cowichan, Nanaimo, and Goldstream forecast near escapement targets. Mid-Island systems (Puntledge, Little</p>				

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
	Qualicum, Big Qualicum) are expected to remain well below target levels. Jervis/Narrows Inlet stocks are forecast to be below target abundance.				

**LOWER AND INTERIOR FRASER AREA**

**FRASER SOCKEYE SALMON**

Quantitative forecasts for Fraser Sockeye stocks are produced annually. The 2021 forecasts were presented to the Fraser River Panel at the Pacific Salmon Treaty meeting in February.

To generate outlooks specific to each Outlook Unit, the brood year escapement was compared to the abundance-based benchmarks calculated for the recent Wild Salmon Policy re-evaluation where available and the recent median escapement (or cycle line escapement for cyclic stocks). Where stock recruitment data exists for non-cyclic stocks, the lower abundance-based benchmark is calculated using the Ricker model and corresponds to  $S_{GEN}$ , while the upper abundance-based benchmark is 80% of  $S_{MSY}$ .

**AVERAGE AGGREGATE RETURN (ALL CYCLES, ALL STOCKS): 7,812,200**

**AGGREGATE FRASER SOCKEYE FORECAST 2021 (ALL STOCKS): 1,259,000 (299,000 to 5,231,000)**

**Stock management Unit: EARLY STUART**

**Average aggregate return (all cycles): 286,600**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>Early Stuart</b> (CU: Takla-Trembleur-EStu) - Cyclical: Yes	31,600			WSP – RED COSEWIC – END	<b>18,000</b> (8000 – 47,000)
Below average returns are expected for this CU. The brood-year effective total spawners (ETS; 12,870) was below the WSP lower benchmark for ETS (97,682). Brood-year effective female spawners (EFS; 7,136) was below the long-term cycle line average EFS (95,066) and below the recent cycle line average EFS (29,958). This stock was heavily impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.					

Stock management Unit: EARLY SUMMER

Average aggregate return (all cycles): 516,000

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST / OUTLOOK
<b>LOWER FRASER</b>					
<u>Upper Pitt River</u> (CU: Pitt-ES) - Cyclical: No	83,900	10,627 LBB		WSP – Green COSEWIC – NAR	<b>40,000</b> (14,000 – 108,000)
<p>Moderate-to-good returns are expected for this CU. Historically, the five-year-old component has contributed substantially to this population, especially for this cycle line. Both the 2017 and 2016 brood-year effective total spawners (ETS; 23,612 and 35,329, respectively) were above the WSP lower benchmark ETS (10,627); the 2017 ETS were below the upper benchmark (26,845) while the 2016 ETS were above the upper benchmark.</p> <p>As well, the 2017 and 2016 brood-year effective female spawners (EFS; 13,297 and 18,401, respectively) were both above the recent average EFS (11,546). Relative to the long-term EFS (13,445), the 2017 brood-year EFS were barely below average while the 2016 brood-year EFS were above average.</p> <p>Note these comparisons include the Upper Pitt River spawning channel escapements to be consistent with Grant et al (2020).</p>					
<u>Chilliwack</u> (CU: Chilliwack-ES) - Cyclical: Yes*				WSP – AM/GR COSEWIC – NAR	<b>10,000</b> (4,000 – 44,000)
<p>*While this stock exhibits cyclical returns, limited data preclude cycle-specific benchmarks (Grant et al 2020). Historically, the five-year-old component has contributed a considerable amount of the population for this cycle line. The uncertainty in both the age structure and relevant benchmarks for comparison is reflected in the outlook status.</p> <p>Moderate to below-average returns are expected for this CU. The four-year-old (2017) effective total spawners (ETS; 6,525) was below the WSP lower benchmark (8,000), but the five-year-old (2016) ETS (52,761) was above the WSP upper (16,000) benchmark. Likewise, the 2017 effective female spawners (EFS; 2,536) was below both the long-term (5,147) and recent (3,074) average EFS, while the 2016 EFS (30,138) was above both long-term and recent averages.</p> <p>Given that 2020 (i.e., the 2016 cycle line) was the dominant return, this CU is expected to have a sub-dominant return in 2021.</p>					
<u>Nahatlatch River</u> (CU: Nahatlatch-ES) - Cyclical: No	1400 (median esc)			WSP – Amber COSEWIC – SC	<b>8,000</b> (2,000 – 32,000)
<b>SOUTH THOMPSON</b>					
(CU: Shuswap-ES)				WSP – Amber COSEWIC – NAR	

**APPENDIX 10: 2021 SALMON OUTLOOK**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST / OUTLOOK
Two populations represent this CU, but they share one set of benchmarks. - Cyclical: Yes & Yes	Collectively, below-average returns are expected for this CU given that both the Scotch Creek effective total spawners (ETS; 4,859) and the Seymour River ETS (3,160) together were below the WSP lower benchmark (40,035). Scotch Creek brood-year effective female spawners (EFS; 2,356) was also below the long-term average (2,999) and the recent average EFS (4,666) for this cycle line. Seymour River brood-year EFS (1,675) was also below the long-term (3,693) and recent average EFS (5,210) for this cycle line.				<b>6,000</b> (1,000 – 19,000)
Misc. (ESHU)					
<b>MID AND UPPER FRASER</b>					
(CU: Anderson-Seton-ES) - Cyclical: No		3700 LBB		WSP – AM/GR COSEWIC – NAR	<b>2</b>
Moderate-to-below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 5,942) was above the WSP lower benchmark for ETS (3,662), while the brood-year effective female spawners (EFS; 3,204) was below the long-term (4,340) and recent average EFS (6,230). It is important to note that these comparisons include the Gates Spawning Channel, but as of January 2020 the channel operations are discontinued which may influence interpretation of these trends moving forward.					
(CU: Nadina-Francois-ES) - Cyclical: No	77,500	21,694 LBB		WSP – AM/GR COSEWIC – NAR	<b>19,000</b> (6000 – 68,000)
Moderate returns are expected for this CU. Historically, the five-year old component has contributed moderately to this cycle line. While the 2017 effective total spawners (ETS; 4,429) were below the WSP lower benchmark (21,694), the 2016 ETS (25,589) were above it (but below the upper benchmark of 68,273). Likewise, the four-year-old (2017) effective female spawners (EFS; 2,323) was below both the long-term (9,439) and recent average EFS (14,646). However, the five-year-old (2016) EFS (16,110) was above both long-term and recent mean EFS. These comparisons include the Nadina spawning channel escapement estimates to be consistent with Grant et al (2020).					
CU: Bowron-ES) - Cyclical: No	68,700	5200 LBB		WSP – RED COSEWIC – END	<b>400</b> (100 – 1000)
Below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 244) was below the WSP lower benchmark for ETS (5,249). The brood-year effective female spawners (EFS; 122) was also below the long-term (3,998) and recent average EFS (2,137). This stock was heavily impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.					
Taseko-ES	250 (median esc)			WSP – RED COSEWIC – END	<b>100</b> (30 – 300)
Reliable return data are not available for this CU, thus no WSP benchmarks are available (see Appendix). Low returns are typically expected for this CU. Brood-					

**APPENDIX 10: 2021 SALMON OUTLOOK**

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Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST / OUTLOOK
	<p>year effective female spawners (EFS; 10) was below the long-term average EFS (1,215) and below the recent average EFS (158). Limited sample size precludes statements about the age structure of sockeye in Taseko Lake. This stock was heavily impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.</p>				



Stock management Unit: **SUMMER RUN**

Average aggregate return (all cycles): **3,953,500**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>Harrison River</b> (CU: Harrison (River-Type)-S) - Cyclical: No	138,400	39,900 LBB		WSP – Green COSEWIC – NAR	<b>21,000</b> (3000 – 120,000)
	Low-to-moderate returns are expected for this CU. Historically, this population can have a considerable three-year-old component. The four-year-old (2017) effective total spawners (ETS; 48,953) was above the WSP lower benchmark for ETS (38,928), while the three-year-old (2018) ETS (14,998) was below it. The 2017 effective female spawners (EFS; 29,391) was below both the long-term (29,934) and recent average EFS (90,120), as was the 2018 EFS (8,171).				
<b>Raft River</b> (CU: Kamloops-ES) - Cyclical: No	29,800	5000 LBB		WSP – Amber COSEWIC – SC	<b>8000</b> (2000 – 31,000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 3,933) was below the WSP lower benchmark for ETS (4,958). Brood-year effective female spawners (EFS; 2,269) was also below the long-term (4,288) and recent average EFS (6,072). This population occasionally has a five-year-old component, but it is variable and inconsistent, thus was not considered.				
<b>Quesnel</b> (CU: Quesnel-S) - Cyclical: Yes	1,369,900	172,300 LBB		WSP – RED/AM COSEWIC – END	<b>285,000</b> (69,000 – 1,425,000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (ETS; 105,880) was below the WSP lower benchmark for ETS (180,491). Brood-year effective female spawners (EFS; 59,636) was also below the long-term (443,226) and recent average EFS (177,775). These comparisons include the Horsefly River spawning channel escapements. This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.				
<b>Stellako River</b> (CU: Francois-Fraser-S) - Cyclical: No	463,300	24,400 LBB		WSP – AM/GR COSEWIC – SC	<b>68,000</b> (21,000 – 229,000)
	Good returns are expected for this CU. Brood-year effective total spawners (ETS; 89,387) was above the WSP lower benchmark for ETS (24,256) but below the upper benchmark (122,612). However, brood-year effective female spawners (EFS; 49,425) was below the long-term (55,446) and recent average EFS (88,305). This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.				
<b>Chilko</b> (CUs: Chilko-S and Chilko-ES) - Cyclical: No	1,435,000	64,220 LBB		WSP – Green COSEWIC – NAR	<b>311,000</b> (71,000 – 1,366,000)
	Good to above-average returns are expected for this CU. Brood-year effective total spawners (ETS; 356,268) was above the WSP lower benchmark (64,220) and above the upper benchmark (353,863) for ETS. However, brood-year effective female spawners (EFS; 212,956) was below the long-term (223,927)				

	and recent average EFS (343,492). The smolt brood returning as adults in 2021 was the 5th highest on record, with 62.6 million smolts recorded leaving Chilko Lake in the spring of 2019. These comparisons include the historical Chilko River spawning channel escapement. This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.			
<b>Late Stuart</b> (CU: <i>Takla-Trembleur-Stuart-S</i> ) - Cyclical: Yes	526,000	103,300 LBB		WSP – RED/AM COSEWIC – END
	Moderate to below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 142,409) was above the WSP lower benchmark for ETS (112,600), but below the upper benchmark (622,626). However, brood-year effective female spawners (EFS; 80,081) was below the long-term (220,413) and recent average EFS (89,712) for this cycle-line. These comparisons include the historical Chilko River spawning channel escapement. This stock was impacted by the Big Bar landslide in 2019 and 2020 return years, and is expected to continue to suffer additional en-route mortality associated with the slide.			<b>285,000</b> (62,000 – 1,241,000)

**Stock management Unit: LATE RUN**

**Average aggregate return (all cycles): 3,056,100**

Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>Cultus Lake</b> (CU: <i>Cultus-L</i> ) - Cyclical: No	31,600			WSP – RED COSEWIC – END	<b>900</b> (200 – 4000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 421) was below the WSP lower benchmark for ETS (15,454). Brood-year effective female spawners (EFS; 274) was below the long-term (841) and recent average EFS (450). The smolt brood returning as adults in 2021 was composed of 7070 marked (hatchery-origin) and 4796 unmarked (lake-origin) individuals which is extremely low relative to past outmigration.				
<b>Portage Creek</b> (CU: <i>Seton-L</i> ) - Cyclical: No	39,600	2,200 LBB		WSP – RED COSEWIC – END	<b>2000</b> (400 – 9000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 1,033) was below the WSP lower benchmark for ETS (2,193). Brood-year effective female spawners (EFS; 441) was below the long-term (4,022) and recent average EFS (3,202).				
<b>South Thompson</b> (CU: <i>Shuswap-L</i> ) - Cyclical: Yes	2,320,200	429,400 LBB		WSP – AM/GR COSEWIC – NAR	<b>35,000</b> (8000– 149,000)
	Below-average returns are expected for this CU. Brood-year effective total spawners (EFS; 13,767) was far below the cycle-specific WSP lower benchmark for ETS (713,769). Brood-year effective female spawners (EFS; 8,445) was below the long-term (9,185) and recent average EFS (32,098). These comparisons include the historical Adams River spawning channel escapements.				

**APPENDIX 10: 2021 SALMON OUTLOOK**

<b>Conservation Unit</b>	<b>Average Return (all cycles)</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>WSP / COSEWIC STATUS</b>	<b>2021 FORECAST/ OUTLOOK</b>
<b>Birkenhead River</b> <i>(CU: Lillooet-Harrison-L)</i> - Cyclical: No	335,000	15,700 LBB		WSP – Amber COSEWIC – SC	<b>22,000</b> (5000 – 95,000)
Moderate returns are expected for this CU. Historically, this population has a considerable five-year-old component. Both the 2017 and 2016 brood-year effective total spawners (ETS; 17,668 and 27,564) were above the WSP lower benchmark (15,685) but below the upper benchmark (81,023). However, both the 2017 and 2016 brood-year effective female spawners (EFS; 9,900 and 13,474) were below the long-term (40,822) and recent average EFS (17,418).					
<b>Weaver Creek</b> <i>(CU: Harrison (U/S)-L)</i> - Cyclical: No	329,700	10,700 LBB		WSP – AM/GR COSEWIC – SC	<b>74,000</b> (23,000 – 235,000)
Moderate returns are expected for this CU. Brood-year effective total spawners (EFS; 28,855) was above the WSP lower benchmark (10,731), but below the upper benchmark (84,597). Brood-year effective female spawners (EFS; 14,382) was below the long-term average EFS (21,081) but above the recent average EFS (6,514). These comparisons include the Weaver Creek spawning channel escapements to be consistent with Grant et al (2020).					
<b>Big Silver Creek</b> <i>(CU: Harrison (D/S)-L)</i> - Cyclical: No				WSP – AM/GR COSEWIC – SC	<b>3</b>
Reliable return data are not available for this CU, thus no WSP benchmarks are available. Moderate to good returns are expected for this population. Brood-year effective female spawners (EFS; 3,072) was above the long-term (1,668) and recent average EFS (2,844).					
<b>Widgeon Slough</b> <i>(CU: Widgeon (River-Type))</i> - Cyclical: No				WSP – RED COSEWIC – END	<b>1</b>
Reliable return data are not available for this CU, thus no WSP benchmarks are available (see Appendix). Below average returns are expected for this CU. The 2017 effective female spawners (EFS; 83) was below the long-term average EFS (324) and the recent average EFS (94). This population may have contribution from the 3-year-old component, but this is uncertain due to small population and sample sizes over time. For reference, the 2018 EFS (68) was below the long-term average EFS and below the recent average EFS.					

FRASER PINK

Conservation Unit	Average Return	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
Fraser - Odd only (CU: Fraser River)	11,500,000				<p><b>3,009,000</b> (p50)</p>
<p>Since juvenile enumeration did not take place in Spring 2020, the only information we have to assess stock status comes from escapement and return in 2019. Escapement in 2019 (8,307,419) was above historical average (6,187,390). 2019 returns (8,858,203) were below historical average (11,492,861), owing to exceptionally low escapement in 2017 (3,392,159). While Fraser Pink salmon do not have associated Wild Salmon Policy benchmarks, and have not been assessed by COSEWIC, there is an escapement target of 6,000,000 when returns are above 7,059,000. When returns are below 7,059,000, exploitation rate declines with decreasing return abundance linearly from 15% to 0%. When returns are above 20,000,000 there is an exploitation rate cap of 70%. These fisheries reference points supply some insight into stock status. 2019 returns and escapements satisfied both the “lower” reference point of 7.059 million, and the escapement goal of 6,000,000. It should be noted that Pink salmon enumeration methods (used both for escapement and returns) have changed substantially over time, and therefore historical values may not be comparable to recent estimates of escapement and return. Therefore, stock status should be approached with caution.</p>					

FRASER CHINOOK

Stock Management Unit	Conservation Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
<b>SPRING RUN 4<sub>2</sub> CHINOOK SALMON</b>	<b>Aggregate SMU</b>	<b>16,511</b> (Terminal Run, 1979+)		<b>22,146</b> Escapement Target (S <sub>MSY</sub> )		<b>9,138</b> (3,386 to 17,650) Terminal Run
	CK-17 Lower Thompson	<b>6360</b> (ESC, 5yr Avg.)	4613		WSP – Red COSEWIC – END.	
	CK-16 South Thompson-Bessette Creek	<b>66</b> (ESC, 5yr Avg.)	222		WSP – Red	
	Expectations are for continued depressed abundance due to low parental escapements in 2017, ongoing unfavourable marine and freshwater survival conditions and low productivity. The 2020 escapement estimate was below the parent brood escapement in 2016, and for those systems that escapement estimates are available, escapement was below the recent average. (2019 Outlook Category was 1)					
<b>SPRING RUN 5<sub>2</sub> CHINOOK SALMON</b>	<b>Aggregate SMU</b>	<b>36,985</b> (Terminal Run, 1979+)		<b>42,165</b> Escapement Target (S <sub>MSY</sub> )		<b>17,588</b> (10,637 to 25,372) Terminal Run
	CK-04 Lower Fraser	<b>278</b> (ESC, 5yr Avg.)	347		COSEWIC – Special Concern	
	CK-08 Middle Fraser- Fraser Canyon	<b>24</b> (ESC, 5yr Avg.)	230		WSP – Data D. COSEWIC – END	
	CK-10 Middle Fraser	<b>2339</b> (ESC, 5yr Avg.)	5327		WSP – Red COSEWIC – Threat.	
	CK-12 Upper Fraser	<b>162</b> (ESC, 5yr Avg.)	5277		WSP – Red COSEWIC – END	
	CK-18 North Thompson	<b>8387</b> (ESC, 5yr Avg.)	935		WSP – Red COSEWIC – END	
	Expectations are for continued low abundance related to depressed parental escapements and continuing unfavourable marine and freshwater survival					

Stock Management Unit	Conservation Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST/ OUTLOOK
	conditions and low productivity. The 2020 escapement estimate was below parental brood escapements in 2015 and similar to the recent average. (2019 Outlook Category was 1)					
<b>SUMMER RUN 5<sub>2</sub> CHINOOK SALMON</b>	<b>Aggregate SMU</b>	<b>36,732</b> (Terminal Run, 1979+)		<b>23,567</b> Escapement Target (S <sub>MSY</sub> )		<b>14,490</b> (8,514 to 20,176) ~Cont'~ Terminal Run
	CK-05 Lower Fraser – Upper Pitt	<b>60</b> (ESC, 5yr Avg.)	256		WSP – Data D. COSEWIC – END	
	CK-06 Lower Fraser	<b>63</b> (ESC, 5yr Avg.)	325		WSP – Data D. COSEWIC – Threat.	
	CK-09 Middle Fraser - Portage	<b>68</b> (ESC, 5yr Avg.)	346		WSP – Red COSEWIC – END	
	CK-11 Middle Fraser	<b>9147</b> (ESC, 5yr Avg.)	5871		WSP – Amber COSEWIC – Threat.	
	CK-14 South Thompson	<b>875</b> (ESC, 5yr Avg.)	964		WSP – Amber	
	CK-19 North Thompson	<b>1907</b> (ESC, 5yr Avg.)	1829		WSP – Red COSEWIC – END	
	Expectations are for continued overall low abundance related to low parental escapements, low marine and freshwater survival, and low productivity. The 2020 escapement estimate was below parental brood escapements in 2015 and below the recent average. (2019 Outlook Category was 1).					
<b>SUMMER RUN 4<sub>1</sub> CHINOOK SALMON</b>		<b>93,242</b> (Terminal Run, 1977+)		<b>120,322</b> Escapement Target (S <sub>MSY</sub> )		<b>108,611</b> (61,523 to 161,376) Terminal Run
	CK-13 South Thompson	<b>97,611</b> (ESC, 5yr Avg.)	23,469		WSP – Green COSEWIC – Not at Risk	

**APPENDIX 10: 2021 SALMON OUTLOOK**

<b>Stock Management Unit</b>	<b>Conservation Unit</b>	<b>Average Run / Avg. Spawners</b>	<b>LRP / LBB</b>	<b>Management Target</b>	<b>WSP / COSEWIC STATUS</b>	<b>2021 FORECAST/ OUTLOOK</b>
	CK-15 Shuswap River	<b>23,185</b> (ESC, 5yr Avg.)	2,096		COSEWIC – Not at Risk	
	CK-07 Maria Slough	<b>343</b> (ESC, 5yr Avg.)	15		Not assessed.	<b>1</b>
<p>Expectations are for the prefishery abundance to exceed spawner escapement objective at the Lower Shuswap indicator stock. The 2020 escapement estimate was above the parental brood escapement in 2016 and above the recent average for all locations except for Maria Slough where abundance was extremely low. (2019 Outlook Category was 1/4).</p>						
<b>FALL RUN 4<sub>1</sub> CHINOOK SALMON</b>	<b>Aggregate</b>	<b>131,822</b> (Terminal Run, 1977+)				
	(P)Hatchery Exclusion-Lower Fraser River	<b>26,600</b> (ESC, 1975+)	n/a (hatchery stock)		Not assessed.	<b>39,593</b> (esc.)
	CK::Lower Fraser River-fall timing (white) - Harrison	<b>83,600</b> (ESC, 1975+)	<b>15,318</b>	<b>75,100</b> Escapement Target (S <sub>MSY</sub> )	WSP – Green COSEWIC – Threat.	<b>35,150</b> (esc.)
	<p>The 2020 Harrison (natural) preliminary escapement estimate was similar to the parental brood escapement in 2016, and below the recent average and escapement goal. The 2020 Chilliwack (hatchery) escapement estimate was 35,795 adult spawners which was also similar to the 2016 brood estimate of 34,586 spawners. Current marine conditions and stock productivity appear to be unfavourable, with escapement estimates only meeting the escapement objective for the Harrison River once in the past 9 years. Chilliwack hatchery production, marine survival, and recent fishery exploitation are expected to return sufficient abundance to achieve hatchery production objectives.</p>					

FRASER COHO

STOCK MANAGEMENT UNIT	Conservation Unit / Sub Unit	Average Return	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 FORECAST /OUTLOOK
Interior Fraser Coho	Interior Fraser – Aggregate includes 5 CUs	34,727 (esc. 1998 – 2019)				43,882 (36,969 to 52,087)
		The preliminary estimate of the 2020 pre-fishery abundance for the Interior Fraser Aggregate was 81,100, 107% higher than the 2020 forecast and 60% higher than the 2019 pre-fishery abundance of 50,850. The 2021 forecast of pre-fishery abundance for the Interior Fraser Aggregate is 43,882 Coho with an 80% forecast range of 36,969 – 52,087. (2019 Outlook Category was 1)				
Lower Fraser Coho	Lower Fraser – Aggregate includes 3 CU					1
		The observed 2020 marine survival from the Inch Creek Hatchery indicator was 7.9% which was higher than the previous year (+85%) and was much higher than the forecast level (+297%). There was a substantial increase in the FW Terminal fishery in the Nicomen/Norrish Rivers, possibly due to Covid-19 travel restrictions. The retrospective analysis showed that the best performing model has remained the NPGO climate index. The 2021 forecast for marine survival for this indicator is 2.3%, a decrease (-71%) from the observed level in 2020. (2019 Outlook Category was 1)				



FRASER CHUM

Stock Management Unit	Conservation Unit	Average Return (all cycles)	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 OUTLOOK
Inner South Coast Chum - Fraser	Lower Fraser CU			There is a management goal of 800,000 wild spawners.		2
		<p>Fraser River Chum Salmon spawning escapement in 2017 fell below the 800,000 goal for the first time since 2010. Returns in 2021 will be dominated by 4 year old brood from the 2017 escapement (660,000 spawners). With the exception of the unusually high escapement in 2016 (1.98 mil spawners), spawning escapement has trended down since the 2012 return. Spawning escapement in 2019 was estimated at 300,000 Chum; this is the lowest recorded escapement in over 20 years.</p> <p>The October 22, 2020 in-season estimate of the Fraser Chum terminal return was 1.08 million fish with an 80% probability the terminal return would be between 0.70 and 1.7mil Chum. Escapement assessments in 2020 are currently underway but early indications are the terminal return will be close to the lower end of the range. An estimate of the 2020 spawning escapement will be available by April 2021</p>				

HOWE SOUND / BURRARD INLET

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
PINK	Part of the Southern Fjords odd and even CUs				Data Deficient
CHINOOK	Part of the South Coast – Southern Fjords CU				Data Deficient
	Some years with good information for the Indian River.				
Strait of Georgia Coho	Howe Sound – Burrard Inlet CU				Data Deficient

**APPENDIX 10: 2021 SALMON OUTLOOK**

<b>INNER SOUTH COAST CHUM – Non-Fraser</b>	Howe Sound – Burrard Inlet CU				<b>Data Deficient</b>
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**BOUNDARY BAY**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	2021 Outlook
<b>CHINOOK</b>	Part of the South Coast – Southern Fjords CU				<b>Data Deficient</b>
	Data available from the Little Campbell fence program.2020 return was about 650 fish.				
<b>COHO</b>	Boundary Bay CU				<b>Data Deficient</b>
<b>INNER SOUTH COAST CHUM – Non-Fraser</b>	Boundary Bay CU				<b>Data Deficient</b>

**OKANAGAN**

Stock Management Unit	Conservation Unit / Sub-Unit	Average Run / Avg. Spawners	LRP / LBB	Management Target	WSP / COSEWIC STATUS	2021 Outlook
<b>OKANAGAN SOCKEYE</b>	Osoyoos			58,730 adults at Wells Dam or 29,365 as peak counts in the terminal index area		77,000 – 94,000 (esc)
	<p>The 2017 brood year (BY) escapement of 4,287 (peak live plus dead terminal count) achieved &lt;15% of the current Canadian domestic target for this CU (29,365 as peak live plus dead in the terminal index area). Returns of Okanagan Sockeye adults to the Columbia and Okanagan rivers in 2021 will be derived from smolt cohorts from brood years 2016-2018 that migrated seaward in spring 2018 (returning as 5-year-olds), 2019 (returning as 4-year-olds) and 2020 (returning as 3-year olds). Although year-specific smolt-to-adult survival values for these specific cohorts are not available as yet, Okanagan Sockeye marine survival variations are known to be similar to Barkley Sound sockeye in that above- and below-average survivals occur in association with either cold-ocean (La Niña) or warm ocean (El Niño) events, respectively. Examination of the association between historic smolt-to-adult return (SAR) variations and <a href="#">NOAA Fisheries “stop-light” ocean condition indicators</a> (including the Oceanic Niño Index (ONI)) suggests that the</p>					

	<p>2018 and 2020 (but not 2019) sea-entry smolts were likely to have experienced a modest improvement in survival rates, relative to the low (&lt;2%) SAR applied to 2015-2017 smolt out-migration years. Applying a 3.6% SAR to smolt cohorts for the 2018 and 2020 sea-entry years, and 2% SAR to the 2019 sea-entry year, yields an estimate of approximately 258,000 adults contributing to the 2021-2023 return years. Allocation of this production to specific return years based on average age-at-return values for Okanagan Sockeye suggests a total return in 2021 of 77,000 age-4 and age-5 Okanagan wild-origin fish, which typically comprise 91% of adult returns. Production of hatchery-origin fish from Skaha Lake may increase these returns by 10-20% for an overall maximum return of 94,000 adult Sockeye of Okanagan origin in 2021.</p>					
<p><b>OKANAGAN CHINOOK</b></p>	<p>Okanagan Summer</p>	<p><b>27 (esc. 2009- 2019)</b></p>	<p>1000</p>		<p>COSEWIC - END</p>	<p>1</p>
	<p>Expectations for 2021 are for continued depressed abundance related to low parental escapements, low marine and freshwater survival, low productivity, and low hatchery production. The COSEWIC identified the status as endangered (2017).</p>					

## APPENDIX 11: 2021 PSSI COMMERCIAL FISHERY CLOSURES

As part of immediate conservation measures under the [Pacific Salmon Strategy Initiative \(PSSI\)](#), the Minister announced several new commercial fishery closures for the 2021 season to protect stocks of conservation concern. These closures are an initial step toward long-term conservation closures beginning in 2022, which will be considered following consultation with affected groups. The impacts from the long-term closure will be mitigated by a commercial licence retirement program and other initiatives to support transformation of the fishery.

For commercial fisheries that are closed, DFO intends to manage other fisheries to allow stocks of concern to reach spawning grounds consistent with the conservation intent of the closures and allocation priorities.

2021 Northern Salmon Commercial Fishery Closures

Fishery	Area	Group	Gear Type
North Coast Mixed Stock Coho	1-3, 101-106, 142	Area F	Troll
Nass Sockeye	3	Area C	Gill net
Nass Sockeye	3	Nisga'a Treaty	Gill net
Nass Chinook	3	Nisga'a Treaty	Gill net
Area 8 Chum (Major Streams incl. Bella Coola)	8	Heiltsuk First Nation CSAF Demonstration	Gill net
Area 8 Chum (Major Streams incl. Bella Coola)	8	Area A	Seine
Area 8 Chum (Major Streams incl. Bella Coola)	8	Area C	Gill net