

PACIFIC REGION  
FINAL

---

# INTEGRATED FISHERIES MANAGEMENT PLAN

## JUNE 1, 2019 - MAY 31, 2020

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SALMON  
SOUTHERN BC



Genus *Oncorhynchus*



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada

Canada

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

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

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# INDEX OF WEB-BASED INFORMATION

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## FISHERIES AND OCEANS CANADA GENERAL INFORMATION

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Our Vision, Latest News, Current Topics

Twitter:

DFO Pacific: [@DFO\\_Pacific](#)

En Français: [@MPO\\_Pacifique](#)

### ACTS, ORDERS, AND REGULATIONS

<http://www.dfo-mpo.gc.ca/acts-loi-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

<http://waves-vagues.dfo-mpo.gc.ca/waves-vagues/>

Fisheries and Oceans Canada online library catalogue

## **PACIFIC SALMON TREATY**

<http://www.psc.org>

Background information; full text of the treaty

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## **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

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## **RECREATIONAL FISHERIES**

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

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## **COMMERCIAL FISHERIES**

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## **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**

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/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

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Fax: 613-990-1866

TTY: 1-800-465-7735

## **SALMON**

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

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## **FRASER AND INTERIOR AREA RESOURCE MANAGEMENT AND STOCK ASSESSMENT**

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

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## **NORTH COAST RESOURCE MANAGEMENT**

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

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

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

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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**

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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)**

[http://www.registrelep-sararegistry.gc.ca/species/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/species/default_e.cfm)

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

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## GLOSSARY AND LIST OF ACRONYMS

A comprehensive glossary is available online at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/glossary-eng.html>

### LIST OF ACRONYMS USED IN THIS PLAN:

ACRONYM	PHRASE
AABM	Aggregate Abundance-Based Management
AAROM	Aboriginal Aquatic Resource and Oceans Management
AHC	Area Harvest Committee
AFS	Aboriginal Fisheries Strategy
ATP	Allocation Transfer Program
B <sub>MSY</sub>	Biomass at Maximum Sustainable Yield
CCTAC	Canadian Commercial Total Allowable Catch
CTAC	Canadian Total Allowable Catch
CEDP	Community Economic Development Program
COHO ABM	Coho Abundance-Based Management
COSEWIC	Committee for the Status of Endangered Wildlife in Canada
CPUE	Catch Per Unit Effort
CSAB	Commercial Salmon Advisory Board
CSAP	The Centre for Scientific Advice Pacific
CSAS	The Canadian Science Advisory Secretariat
CSAF	Commercial Salmon Allocation Framework
CU	Conservation Unit

ACRONYM	PHRASE
CWT	Coded Wire Tag
DBE	Difference Between Estimates
DIDSON	Dual Frequency Identification Sonar
DU	Designatable Unit
EO	Economic Opportunity
ER	Exploitation Rate
ESSR	Excess Salmon to Spawning Requirements
FNFC	First Nations Fishery Council
FOS	Fishery Operating System
FRP	Fraser River Panel
FSC	Food, Social and Ceremonial
GN	Gill Net
HA	Harvest Agreement
HG	Haida Gwaii
iARC	Internet Annual Recreational Catch survey
ITQ	Individual Transfer Quota
IHPC	Integrated Harvest Planning Committee
IFR	Interior Fraser River
iREC	Internet Recreational Effort and Catch survey
ISBM	Individual Stock-Based Management
ISC	Inside Southern Chum



ACRONYM	PHRASE
LAER	Low Abundance Exploitation Rate
LGS	Lower Strait of Georgia
LRP	Lower Reference Points
MA	Management Adjustment
MCC	Marine Conservation Caucus
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
MU	Management Unit
MVI	Mid Vancouver Island
NMCA	National Marine Conservation Area Reserve
NOLS	National On-line Licensing System
NWA	National Wildlife Area
PA	Precautionary Approach
pDBE	Proportional Difference Between Estimates
PICFI	Pacific Integrated Commercial Fisheries Initiative
PFMA	Pacific Fisheries Management Areas
pMA	Proportional Management Adjustment
PSC	Pacific Salmon Commission
PSM	Pre-Spawn Mortality
PST	Pacific Salmon Treaty
RCA	Rockfish Conservation Area

ACRONYM	PHRASE
<b>SARA</b>	Species at Risk Act
<b>SCC</b>	First Nations Salmon Coordinating Committee
<b>SEG</b>	Sustainable Escapement Goal
<b>SEP</b>	Salmonid Enhancement Program
<b>SFAB</b>	Sport Fishing Advisory Board
<b>S<sub>GEN</sub></b>	Spawner abundance required to get to S <sub>MSY</sub> in 1 generation
<b>SHMF</b>	Selective Hatchery Mark Fishery
<b>S<sub>MSY</sub></b>	Spawners at Maximum Sustainable Yield
<b>SN</b>	Seine
<b>TAC</b>	Total Allowable Catch
<b>TAM</b>	Total Allowable Mortality
<b>TR</b>	Troll
<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 Southern 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 2019/2020**

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### **KEY CHANGES FOR THE 2019/20 SOUTHERN BC SALMON IFMP**

#### **PACIFIC SALMON RETURNING IN 2019 EXPERIENCED SEASONALLY WARMER THAN AVERAGE TEMPERATURES THROUGHOUT THEIR LIVES:**

Overall, environmental conditions have been warmer than average in the Northeast Pacific Ocean and in British Columbia and the Yukon affecting all life stages of Pacific salmon returning in 2019. Responses of individual salmon populations will vary spatially. However, salmon populations have experienced broadly similar conditions over the past few years, leading to the assumption that salmon responses and the resultant 2019 return abundances might resemble those observed in recent years. These recent observations have included below average survival for most Fraser Sockeye, Chinook, Chum, and Pink stocks, coast-wide declines and smaller body sizes and decreases in age-at-maturity for Chinook, and overall greater variability in salmon production. See Section 2.2.1 for further details.

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

On April 16, the Government of Canada announced new fisheries management measures to conserve Fraser River Chinook (see news release: <https://www.canada.ca/en/fisheries-oceans/news/2019/04/government-of-canada-takes-action-to-address-fraser-river-chinook-decline.html>).

In November 2018, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assessed the status of 16 Southern British Columbia (BC) Chinook Designatable Units (DUs). Of these, 13 DUs are Fraser River Chinook: 7 are assessed as Endangered, 4 as Threatened, 1 as Special Concern and only 1 was deemed Not at Risk (for details see: <https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife/assessments/wildlife-species-assessment-summary-nov-2018.html>). In addition, productivity of many of these populations has declined to the point where fewer offspring are returning compared to the parent generation and the populations will continue to decline even in the absence of fishery mortalities unless conditions improve.

Highly precautionary fishery restrictions are intended to provide a high degree of protection to at risk Fraser Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook returning in 2019. The management target is to reduce overall Canadian fishery mortalities on these populations to near 5% (note: actual outcomes may vary around this target given uncertainties in the data). Expected fishery mortalities are not intended to be a management target and the objective is to allow as many fish to pass through to the spawning grounds as possible. Fishery impacts are expected to

include incidental Chinook mortalities in Fraser River Chinook and Sockeye test fisheries, limited Chinook retention or bycatch retention in Fraser River First Nation FSC fisheries, release mortalities, and incidental mortalities during Chinook-directed fisheries beginning after July 15. For Summer 4<sub>1</sub> and Fall 4<sub>1</sub>, the precautionary fishery measures that have been announced are expected to substantially reduce Canadian fishery mortalities on these management units by at least 25%.

Achieving these conservation objectives is the highest priority and requires significant actions in commercial troll, recreational and First Nations fisheries in times and areas where at risk Fraser Chinook may be encountered. Fraser Spring 4<sub>2</sub> and Spring 5<sub>2</sub> Chinook return to spawn from early March through late July, with migration peaks in June through the lower Fraser River. Summer 5<sub>2</sub> Chinook have later timing and return to the Fraser River to spawn from late June to August with a peak in late July.

Management measures to address conservation concerns for Fraser Chinook will likely be required for several years; further discussion with First Nations and advisory groups will occur on management measures that will be required in 2020.

Detailed management objectives are outlined in Section 6. See Section Species Specific Salmon Fishing Plans [13.1](#) for more information.

## **SOUTHERN RESIDENT KILLER WHALES (SRKW) - SALMON FISHERY MANAGEMENT MEASURES TO SUPPORT CHINOOK SALMON PREY AVAILABILITY**

The Government of Canada is taking important steps to protect and recover the SRKW population, in keeping with direction provided in Species at Risk Act (SARA) recovery documents. In May 2018, the Minister of Fisheries and Oceans and Minister of Environment and Climate Change determined the SRKW population faces an imminent threat to its survival and recovery. Building on the Whales Initiative (2018), the Government announced a suite of new measures focused on broadening and strengthening protection for the SRKW on October 31, 2018, including:

- Protecting and recovering Chinook salmon stocks (the primary prey for SRKW);
- Continuing to identify and protect new areas of critical habitat;
- Advancing feasibility work on killer whale sanctuaries;
- Expanding vessel slow-downs and vessel monitoring systems; and
- Developing underwater noise management plans. [3]

**Fishing Restrictions for 2019 to address prey availability:**

On May 10, 2019, the Government of Canada announced a suite of measures to be implemented in the summer of 2019 to help address the key threats of lack of prey, and acoustic and physical disturbance. As such, Fisheries and Oceans Canada, effective Aug. 1, 2019 will be putting in place a combination of fishing restrictions and voluntary measures that will support prey availability for Southern Resident killer whales, including:

Area-based closures in key foraging areas for recreational and commercial salmon fisheries, (rules for other fisheries in these areas will remain unchanged) which will take effect after the Chinook conservation non-retention measures end (July 31, 2019) and will remain in place through the end of October, including:

- Strait of Juan de Fuca (Areas 20-3, 20-4): Recreational and commercial salmon closures in effect in key foraging areas from July 15 or August 1, depending on the sub-area, until October 31.
- Gulf Islands (portions of Areas 18-9, 18-4, 18-5, 18-2): Recreational and commercial closures in effect in key foraging areas from August 1 until October 31.

Fisheries and Oceans Canada will trial bubble closures in the vicinity of killer whales in three “Enhanced Management Areas” known to be important for Southern Resident killer whales: the Strait of Juan de Fuca, the Gulf Islands, and the mouth of the Fraser River. All commercial and recreational fish harvesters would be expected to temporarily stop fishing activities when killer whales are within 1 km between May and the end of October. Many of these areas in which it will apply were subject to area based closures in 2018.

These areas in which these measures are in place will reduce competition for Chinook salmon between fish harvesters and the killer whales, while still providing opportunities for non-salmon recreational and commercial fisheries.

**Interim Sanctuary Zones for 2019 to address Acoustic and Physical Disturbance:**

Interim sanctuary zones, off the South-west coast of Pender Island and south-east end of Saturna Island, will also limit fishing activity and vessel traffic from June 1 until October 31, subject to exceptions including emergency vessels and vessels engaged in indigenous food, social and ceremonial fisheries. These areas are important foraging areas and are intended to create spaces of refuge for the whales on an interim basis pending further feasibility assessment work on a longer term sanctuary approach. The interim sanctuary zone at Swiftsure will expand the scope of an existing and longstanding fishery closure to apply to all commercial and recreational fisheries. Vessel restrictions will be put in place using the Interim Order power of the Minister of Transport under the *Canada Shipping Act*.

### **General Vessel Measures for 2019 address Acoustic and Physical Disturbance**

Recognizing the important role that smaller vessels play, to address all vessel traffic, including recreational boats, whale watching vessels, and fishing vessels, the Government of Canada is introducing a suite of measures starting June 1, 2019:

- A new mandatory 400-metre approach distance to all killer whales in the Southern Resident killer whale critical habitat will take effect. Exceptions for commercial whale watching companies to allow viewing of transient or Biggs killer whales at the existing 200-metre approach distance may be authorized if they enter an agreement with the Minister of Transport.
- When safe to do so, vessel operators are asked to turn off their echo sounders and turn engines to neutral idle if a whale is within 400 metres.
- In the three “Enhanced Management Areas” all vessels are asked to reduce their speed to less than 7 knots if they are within 1 km of killer whales.

Technical Working Groups will continue to meet through June 2019 to discuss proposals for longer-term measures that will support SRKW recovery.

### **INTERIOR FRASER RIVER (THOMPSON AND CHILCOTIN) STEELHEAD**

Spawning escapement of Interior Fraser River (IFR) Steelhead has been on a downward trend for many years, with recent years’ escapements reaching the lowest on record. In February 2018, COSEWIC completed an Emergency Assessment on Thompson and Chilcotin Steelhead as per S.28 (1) of the Species at Risk Act (SARA) and found that both the Thompson and Chilcotin Designatable Units (DUs) were *Endangered*. This assessment triggered an emergency listing process for these populations to determine whether or not to list these Designatable Units under SARA on an emergency basis.

On July 11, 2019, the Minister of Fisheries announced that Cabinet had decided not to list these populations under the Species at Risk Act, opting to implement measures to recover these stocks through existing regulatory mechanisms under the recently amended Fisheries Act. In conjunction with the Province of British Columbia, the Minister announced the development of a conservation action plan for Thompson and Chilcotin Steelhead Trout to:

- reduce mortality and increase survival of Thompson and Chilcotin Steelhead returning to rivers to spawn;
- improve freshwater conditions through habitat protection and restoration; and,
- increase science and monitoring activities.

In the coming year, DFO will protect Interior Fraser River Steelhead from incidental fishing mortality occurring in salmon fisheries through an expansion of the window closure approach implemented in 2018. Moving window closures will be put in place for all commercial salmon fisheries located along the migratory route of Thompson and Chilcotin River Steelhead, including Southern BC marine waters and the Fraser River and tributaries downstream of Thompson and Chilcotin River Steelhead spawning areas.

- The closure window for commercial gillnet and seine fisheries (including purse seine, beach seine, and shallow seine gear) will be 42 days, while troll fisheries will be closed for 27 days.
- Recreational salmon fisheries within the Fraser River and tributaries (including areas immediately off the Fraser River mouth), will also be closed for a moving window period of 42 days.
- First Nations' Food, Social, and Ceremonial (FSC) salmon fisheries occurring within the Fraser River and tributaries downstream of Thompson and Chilcotin River Steelhead spawning areas will be closed for a 27-day moving window.
- Marine recreational and marine FSC salmon fisheries will not be affected by these measures.
- Additionally, any salmon fisheries occurring in terminal areas that are not considered to overlap with the migratory pathway of Thompson and Chilcotin Steelhead will not be subject to these closures.

Interior Fraser River Steelhead window closure dates by area are outlined in Appendix 9, and implementation details are provided for all affected fisheries in Section 13. Appendix 9 also contains a list of terminal fishing areas that are proposed to be exempted from the moving window closures in 2019, as they are not considered to be within the probable migratory route for returning Interior Fraser River Steelhead.

## **INTERIOR FRASER COHO**

As outlined in Chapter 5 of the Pacific Salmon Treaty (PST), allowable exploitation rates (ERs) for Canada and the U.S. are identified based on the status of Coho management units (MUs). Canada is responsible for determining the status level for Canadian MUs and setting the corresponding ER caps for both parties.

In 2018, based on the results of the science advice and recommendations from a domestic consultation process, Canada updated the PST management approach based on the status of Interior Fraser River (IFR) Coho MU using an integration of marine survival rates (with break points at 3% and 6%) and spawner abundance. Under this approach, ER caps will be set at 20%,



30% and 45% for Low, Moderate and Abundant status. Canada will be required to confirm the status of Interior Fraser River Coho MU in March of each year. Additional background information as well as a summary report from domestic consultations may be found here: <http://www.pac.dfo-mpo.gc.ca/consultation/smon/pst-coho-tsp/index-eng.html>.

Status determination and corresponding ER caps are not contemplated for the Strait of Georgia and Lower Fraser MUs at this time, due to insufficient data. However, we may revisit this approach in the future.

In addition, Canada or the U.S. may choose to manage to a lower ER based on domestic fisheries management considerations as has been done domestically for Coho in previous years (domestically this has been an ER cap of 3%-5%). Domestic management decisions will be discussed through the annual process to develop the Integrated Fisheries Management Plans (IFMPs).

For 2019, Interior Fraser River Coho will remain in the Low status zone which would permit Canada and the United States to manage up to a 20% exploitation rate (with a cap of 10% for each party) under the PST. The Department plans to manage domestic fisheries using a precautionary approach to management of southern BC fisheries with management measures in place similar to those in place prior to 2014. Under this approach, fisheries impacts would be limited to incidental, bycatch or release mortalities in most areas and in recent years this was expected to result in a 3-5% Canadian domestic exploitation rate.

For further information see Section [6.5](#).

## **FRASER RIVER PINK**

Fraser River Pink Salmon return almost entirely in odd numbered calendar years only. For the 2019 Escapement Plan please refer to the Fraser River Pink section of the Southern Pink Salmon Fishing Plan in Section [13](#).

## **FRASER RIVER SOCKEYE**

For the 2019 Escapement Plan, Harvest Rate Calculations and proposed window closure dates to start the season; please refer to the Fraser River Sockeye section of the Southern Sockeye Salmon Fishing Plan in Section [13](#) for more information. In addition, updated ESSR fishery guidelines and a proposed framework are identified to assist in consideration of additional harvests on specific populations in terminal fishery areas.

## **PACIFIC SALMON TREATY UPDATE**

Following months of negotiations, the Pacific Salmon Commission (PSC), made up of representatives from Canada and the U.S., reached agreement on proposed changes to five “fishing chapters” in Annex IV of the Pacific Salmon Treaty (PST). In August 2018, the PSC provided their recommendation to the Governments of Canada and U.S. for review and ratification. The Government of Canada is now in the process of ratifying the new agreement with a view to beginning implementation on January 1, 2019. This will create a new 10-year conservation and harvest sharing arrangement under the PST.

The revised versions of Annex IV, Chapters 1, 2, 3, 5, and 6 (plus current text for Chapters 4, 7, and 8) have been posted at: <https://www.psc.org/publications/pacific-salmon-treaty/>. Please note that Chapters 1, 2, 3, 5, and 6 are not yet formally in force, but the Parties have agreed to provisionally apply them as of January 1, 2019.

## **COMMERCIAL SALMON ALLOCATION FRAMEWORK**

\*Please see [Appendix 6](#) for details of CSAF demonstration fisheries proposed for 2019.

Additional information on the work completed since 2013 can be found at the following link: <http://www.pac.dfo-mpo.gc.ca/consultation/smon/saf-crrs/index-eng.html>

# **I OVERVIEW**

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## **I.1 INTRODUCTION**

The Southern BC Salmon Integrated Fisheries Management Plan (IFMP) covers the period June 1, 2019 to May 31, 2020.

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 [2](#) 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 have been 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 covers fisheries in tidal and non-tidal waters from Cape Caution south to the BC/Washington border, including the Fraser River watershed ([Appendix 6: Updates to the Commercial Salmon Allocation Framework](#)).

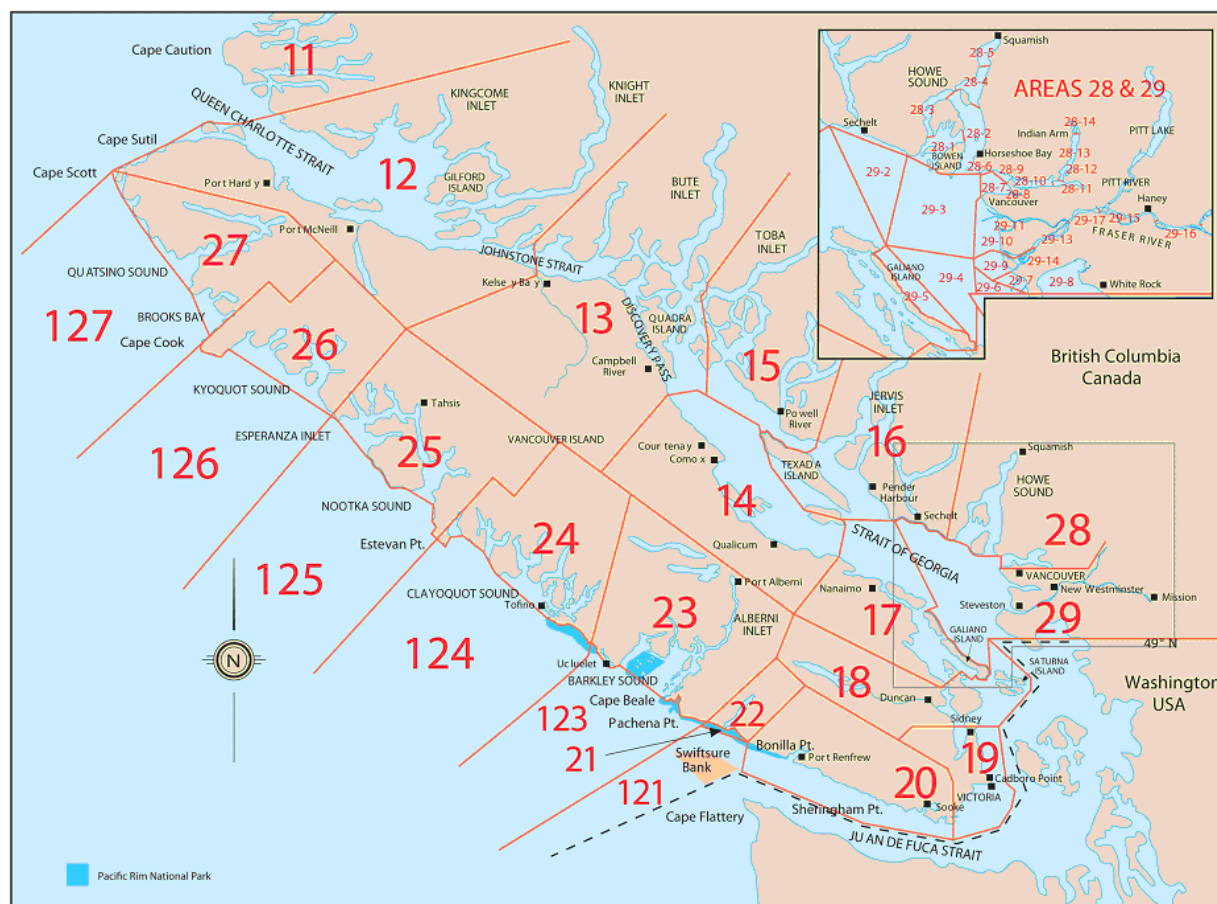


Figure I.4-1: Management Areas for Southern BC

## 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 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, or at 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 2019/2020 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 stamps are used to fund salmon restoration projects supported by the non-profit Pacific Salmon 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 mesh size and the way in which nets are suspended in the water allows nets to target on 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.

## **I.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.

### **I.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:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/pol/index-eng.html>

*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: <http://www.pac.dfo-mpo.gc.ca/publications/pdfs/wsp-eng.pdf>

To further communicate the work the Department is doing in support of the policy, on October 11, 2018, Canada's Minister of Fisheries and Oceans and the Canadian Coast Guard – the Honourable Jonathan Wilkinson - released the *Wild Salmon Policy 2018-2022 Implementation Plan*. This collaboratively developed plan was consulted on broadly throughout fall 2017, and lays out seven overarching approaches to implementation and 48 specific activities that will be achieved over the next five years. The plan is organized under three key themes: Assessment; Maintaining and Rebuilding Stocks; and Accountability. In 2019, the first annual report on progress will be released.

For a copy of the *Wild Salmon Policy*, the *Wild Salmon Policy 2018-2022 Implementation Plan*, *Highlights* of work done from 2005-2017, and information on what we heard during consultations and response, please see: <http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/wsp-pss/index-eng.html>

*An Allocation Policy for Pacific Salmon*, announced in 1999, contains principles to guide the management and allocation of the Pacific salmon resource between First Nations, commercial and recreational harvesters, and forms the basis for general decision guidelines outlined in Section 7 of this plan. ]

Starting in 2019, the Department is initiating a review the Salmon Allocation Policy (1999) according to the direction of the BC Supreme Court in the recent BC Supreme Court decision in *Ahousaht Indian Band and Nation v Canada (Attorney General)*, 2018.

The review will be based on a collaborative approach that respects the nation-to-nation relationship with Indigenous peoples, and engages stakeholders, in a way that will advance reconciliation and a sustainable, integrated fishery in BC. It is expected that this process will take multiple years to complete with work over 2019 focused on collaborating with the First Nations, and the commercial and recreational salmon fishing sectors to outline the scope of the review and develop a Terms of Reference to help guide discussions.

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. The document can be found on the DFO Pacific Region website at:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/sfab-ccps/docs/rec-vision-eng.pdf>

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 (SFF) 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 SFF provides planning and operational tools that allow these goals to be achieved in a clear, predictable, transparent, inclusive manner, and provides the foundation for new conservation policies to implement the ecosystem and precautionary approaches to fisheries management.

For more information on the Sustainable Fisheries Framework and its policies, please visit:

<http://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/overview-cadre-eng.htm>

## **I.6.2 FIRST NATIONS AND CANADA'S FISHERIES**

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. 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:

- Improving relations with First Nations
- Providing a framework for the management of the First Nations fishery in a manner that was consistent with the Supreme Court of Canada's 1990 *Sparrow* decision
- Greater involvement of First Nations in the management of fisheries
- Increased participation in commercial fisheries (Allocation Transfer Program (ATP))

The AFS continues to be the principal mechanism that supports the development of relationships with First Nations including the consultation, planning and implementation of



fisheries, and the development of capacity to undertake fisheries management, stock assessment, enhancement and habitat protection programs.

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

As part of the reform of Pacific fisheries, DFO is looking for opportunities to increase First Nations participation in commercial fisheries through an interest-driven business planning process. New planning approaches and fishing techniques will be required to ensure an economically viable fishery. In recent years some First Nations inland demonstration fisheries have occurred in order to explore the potential for inland fisheries targeting terminal runs of salmon. The Department is also working with First Nations and others with an interest in the salmon fishery to improve collaboration in the planning of fisheries and to improve fisheries monitoring, catch reporting and other accountability measures for all fish harvesters.

### **1.6.3 PACIFIC INTEGRATED COMMERCIAL FISHERIES INITIATIVE (PICFI)**

The Pacific Integrated Commercial Fisheries Initiative (PICFI) was announced in 2007 and is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority, First Nations' aspirations to be more involved are supported and the overall management of fisheries is improved.

PICFI has supported fisheries reforms by targeting on the following outcomes:

- 1) Greater stability of access for commercial harvesters through increasing FN participation in commercial fisheries;
- 2) Increased compliance with fishing rules, greater confidence in catch data through strengthened fisheries monitoring, catch reporting and enforcement, and improved collection and storage of catch information; and
- 3) Collaborative management mechanisms for all harvest sectors, including the growing aboriginal commercial participants.

In its first 5 years, the Government of Canada committed \$175 million to implement the initiative. To continue to build on the progress achieved to date and to continue promoting the integration of commercial fisheries, Economic Action Plan 2014 announced a two-year renewal of PICFI, with resources of \$22.05M per year. The 2016/17 federal budget supported a one-year renewal of the PIFCI program at the same funding level (\$22.05M) until March 31, 2017. Budget 2017 proposed to provide \$250 million over five years, and \$62.2 million ongoing, to Fisheries and Oceans Canada to renew and expand the successful Pacific and Atlantic integrated commercial fisheries initiatives and to augment Indigenous collaborative management programming. In Budget 2017, it was announced that PICFI is to receive permanent long term funding of \$22.05M annually. Beginning 2018/2019, a \$600K Aquaculture Development Source (ADS) funding envelope was launched to support aquaculture projects under PICFI.

#### **1.6.4 FISHERY MONITORING AND CATCH REPORTING**

A complete, accurate and verifiable fishery monitoring and catch reporting program is required to successfully balance conservation, ecosystem and socio-economic and other management objectives. Across all fisheries, work is being undertaken to improve catch monitoring programs by clearly identifying information requirements based on ecosystem risk and their supporting rationale for each specific fishery and evaluating the current monitoring programs to identify gaps. Managers and harvesters will annually work together to address those gaps.

The Department finalized the “Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries” (the Framework) in 2012. The Framework outlines how consistent ecological risk assessment criteria can be applied to all fisheries to determine the level of monitoring required, 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 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. Current status of the salmon risk assessments can be found in Appendix 8.

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.

As of February 2019, the Department is in the process of finalizing a draft national Fishery Monitoring Policy. That 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:

[www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework\\_monitoring-cadre\\_surveillance/page-1-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-eng.html)

## **I.7 CONSULTATION ON 2019/2020**

This plan incorporates the results of consultations and input from First Nations, recreational and commercial harvesters and conservation organizations. In addition to bilateral meetings and submissions received on the proposed plan, the Integrated Harvest Planning Committee (IHPC), and First Nations groups and organizations provide opportunities for these parties to come together to discuss issues and concerns related to the management of salmon. Potential significant changes to provisions in the IFMP will be identified to the parties prior to implementation. However there may be circumstances such as in season forecast updates when changes may need to be made without prior notification.

Fisheries and Oceans Canada is committed to working with Indigenous peoples on planning and management of the salmon fisheries through existing and emerging bilateral and regional processes and relationships based on the recognition of rights, respect, cooperation and partnership. Fisheries and Oceans Canada will also continue to consult with recreational and commercial harvesters, and conservation organizations to seek IFMP input and to further plan and co-ordinate fishing activities.

Further information on salmon consultations, including terms of reference, IHPC 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>

## **I.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](#).

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).

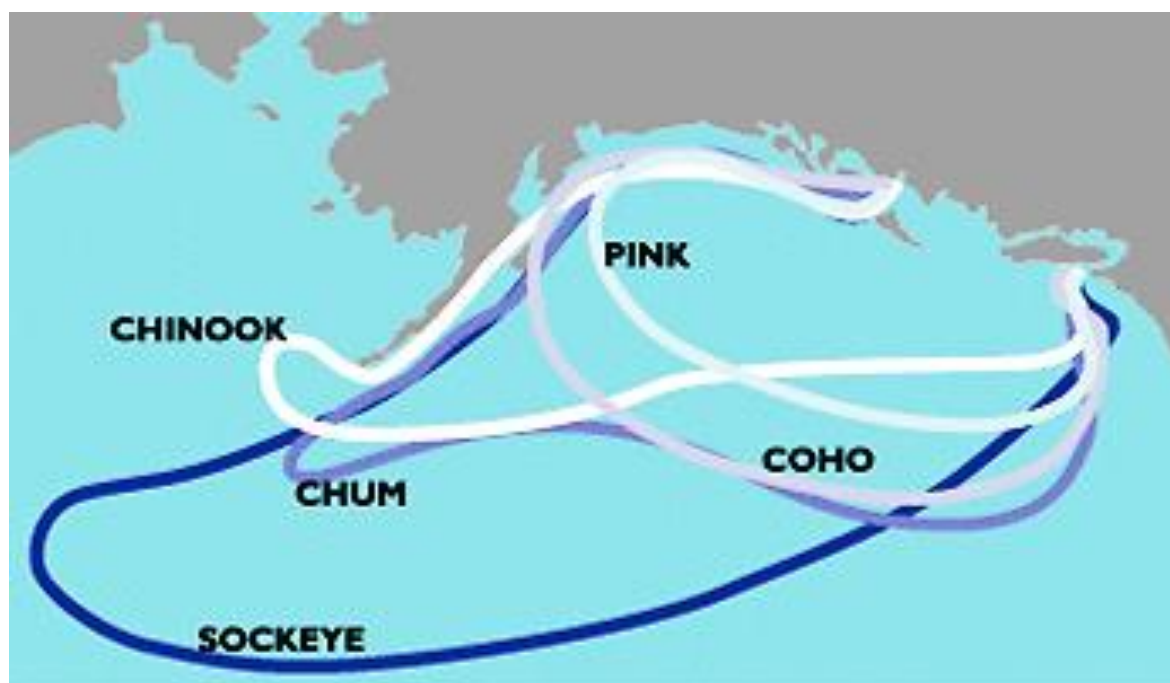


Figure 2.1-1: Generalized habitat of British Columbia Pacific salmon species in the North Pacific Ocean.

## 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 2019 SALMON RETURNS**

Global temperatures have been steadily increasing over the last century<sup>1</sup>. Temperatures are expected to continue this warming trend, and in British Columbia are predicted to reach a median temperature increase of 2.5°C by 2080<sup>2</sup>. The Yukon has warmed twice as fast as southern latitudes in Canada in the past 50 years, and temperatures are projected to increase by a further 2.0°C in the next 50 years<sup>3,4</sup>. Local air and water temperatures have been particularly warm in recent years<sup>1,2</sup>, which can have direct effects on Pacific salmon stocks and the habitats they use throughout their lives.

Most Pacific salmon returning to spawn in 2019 reared as juveniles in the Northeast Pacific Ocean between 2016 and 2019, depending on their life-history and age-at-maturity. The notable 'warm blob' heat wave in the Northeast Pacific Ocean was present from the latter half of 2013 to the fall of 2016<sup>5</sup> just prior to the ocean entry timing of most of these fish. Sea-surface-temperatures (SST) during this period were 3-5°C above seasonal averages, and extended down to depths of 100 m<sup>5</sup>. Concurrently, a strong El Niño event occurred in late 2015 to early 2016, further increasing temperatures to the hottest observed throughout the 137-year time-series.

The El Niño transitioned to cooler La Niña conditions by the end of 2016<sup>6</sup>. Although SSTs in the Northeast Pacific cooled in 2016, warm subsurface temperatures persisted at depths of 100-200 m until early 2018<sup>6,7</sup>. Any reprieve from these warm ocean temperatures was short lived, as warm temperature anomalies in Northeast Pacific and Bering Sea have again been observed, starting in the summer of 2018<sup>8</sup>. Therefore, Pacific salmon returning in 2019 would have spent most of their marine residence in warmer than average temperatures.

While physical oceanographic conditions of the Northeast Pacific reverted back to more typical observations in 2016, biological conditions continued to reflect a warmer ocean. Reduced stratification of the water column and increased upwelling of nutrients to surface water occurred in 2016. In 2017, winter mixing returned to 2011-2013 levels, suggesting that there was a normal nutrient supply in the NE Pacific<sup>6, 7</sup>. Along the southwest coast of Canada in 2017, the timing and magnitude of the upwelling-favourable winds and currents would have supported average to below-average upwelling-based productivity<sup>9</sup>. In both 2016 and 2017, the zooplankton community continued to exhibit characteristics consistent with warmer ocean temperatures. Samples indicated fewer lipid-rich subarctic and boreal copepods, and a greater abundance of lipid-poor southern copepods in 2016, with slight improvements in 2017<sup>10, 11</sup>. The recent observations of warming ocean conditions in 2018 could reverse the improvements observed in 2017, again decreasing the proportion of lipid-rich northern copepods.

Most Pacific salmon returning to spawn in 2019 incubated as eggs, and depending on the life-history and age-at-maturity reared as juveniles in freshwater between 2014 and 2017. The Pacific Climate Impacts Consortium (PCIC) reported warmer than average air temperatures in British Columbia in recent years<sup>12</sup>, which coincided with the warm conditions observed in the Northeast Pacific Ocean<sup>5, 8</sup>. Warm temperatures in rivers and lakes affected all life history stages of the 2019 Pacific salmon returns, through impacts to adults migrating upstream, egg incubation, juvenile rearing, and smolt downstream migration.

Warmer than average temperatures in freshwater pose particular challenges to adult salmon that migrate upstream during summer months in southern latitudes, when temperatures can exceed thermal tolerance levels for salmon. 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<sup>13, 14, 15, 16, 17</sup>. Summer river temperatures were particularly warm between 2014 and 2017, exceeding thermal optimal ranges for some salmon populations, such as adult Sockeye that migrate in the summer in the Fraser watershed<sup>12, 13, 14</sup>. Warmer temperatures also coincided with drought conditions and low water levels in some Northern BC systems, influencing spawning habitat and fish distribution (C. Carr-Harris, DFO, pers. comm.).

Higher temperatures can influence timing of the hatching of eggs<sup>18</sup> and fry outmigration<sup>19</sup> and also fry swim performance<sup>15</sup>. On a positive note, warm temperatures can improve juvenile growth rates when prey are not limiting<sup>20, 21</sup>, and also increase the length of the growing season in some areas<sup>22</sup>. Salmon population responses to changes in temperature are population specific and will vary by region, (D.A. Patterson, DFO, pers. comm.).

Spring freshets in various BC rivers, and ice-off in higher latitude or altitude lakes occurred earlier than normal in recent years. Smolt outmigration was several weeks earlier than

previously observed in areas that are monitored<sup>23</sup>. Temperature affects downstream survival of juvenile salmon by influencing both the optimal smoltification window<sup>24</sup> and swim performance<sup>20</sup>. However, the overall influence on juvenile survival is less clear. Depending on the outmigration timing of juveniles, discharge conditions experienced by individual salmon populations will vary, and their responses to these conditions can also vary. For example, higher discharge decreases water clarity, which can decrease juvenile predation risk<sup>25,26</sup>; however, the resulting higher volume of suspended sediments also can have a direct negative effect on juvenile salmon causing mortality and reduced disease resistance<sup>27</sup>. For a number of BC Interior watersheds, the loss of forest canopy due to fires, pine beetle, and logging has compounded the intensity of spring runoff, which is anticipated to reduce salmon productivity in these freshwater systems (R.E. Bailey, DFO, pers. comm.).

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## 2.3 ABORIGINAL TRADITIONAL KNOWLEDGE (ATK)/TRADITIONAL ECOLOGICAL KNOWLEDGE (TEK)

As defined herein, both Indigenous Knowledge Systems (IKS) and Traditional Ecological Knowledge (TEK) are cumulative knowledge gathered over generations and encompass regional, local and spiritual connections to ecosystems and all forms of plant and animal life. IKS is the accumulated knowledge and experiences held by Aboriginal peoples and communities, while TEK is local knowledge held by any community, including industry, academia, and public sectors. While qualitatively different, both types of knowledge are regionally and locally specific and often can be utilized to improve management processes. The value of IKS and TEK is reflected in the requirements for both to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and all coastal management decision-making processes. IKS and TEK are 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. Government and the scientific community acknowledge the need to access and incorporate IKS and TEK in meaningful and respectful ways. However, 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 TEK into the strategic planning process. The Department is exploring best practices to develop an approach for incorporating IKS and TEK 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 Aboriginal 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.

## **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:

- 1) 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.
- 2) 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).
- 3) 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 preliminary qualitative outlook of status for salmon management, the Salmon Outlook, for planning purposes prior to formal forecasts of abundance. The Preliminary Salmon Outlook for the current year is available on the DFO website: <http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/index-eng.html>. Formal salmon abundance forecasts are generally completed by April.

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. <http://www.pac.dfo-mpo.gc.ca/science/oceans-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.asp>
- 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 SHARED STEWARDSHIP ARRANGEMENTS

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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> 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.

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. 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](#).

DFO consults with Aboriginal groups when fisheries management decisions may potentially affect them in accordance with S. 35 of the *Constitution Act, 1982*, relevant case law, and consistent with Departmental policies and considerations. In addition to supporting good governance, sound policy and effective decision-making, Canada has statutory, contractual and common law obligations to consult with Aboriginal groups. For example, the Crown has a legal duty to consult and if appropriate, accommodate, when the Crown contemplates conduct that

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<sup>1</sup> As defined in the Atlantic Fisheries Policy Review (AFPR):  
<http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/afpr-rppa/framework-cadre-eng.htm>

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).

Consultation and engagement with First Nations takes place at a number of levels and through a variety of processes. For example, 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 example, the Aboriginal Aquatic Resource and Oceans Management (AAROM) program supports Aboriginal groups in coming together to participate effectively in advisory and decision-making processes used for aquatic resource and oceans management.

Other processes, such as the First Nations Salmon Coordinating Committee (SCC) and the Forum on Conservation and Harvest Planning, also facilitate dialogue between First Nations and DFO. In the case of the Forum, representatives of First Nations from the Fraser Watershed and marine approach areas (e.g. Vancouver Island) and DFO meet to discuss stock and fisheries information, identify issues and develop management approaches to help meet FSC needs of First Nations as they relate to Fraser salmon species. This type of engagement is critical with respect to migratory species such as Fraser salmon where management approaches in one area can have significant implications for management or fisheries in other areas. In the case of the First Nations SCC, First Nations representatives from 13 geographical areas within BC meet with DFO resource management to discuss priority issues among BC First Nations as they relate to salmon. SCC priorities include advancing First Nations concerns related to salmon, access to salmon for FSC needs across the province and working to improve First Nations commercial opportunities in salmon fisheries.

Engagement between DFO and First Nations also takes place through a number of bilateral and “integrated” (multi-interest) advisory processes, management boards, technical groups and roundtable forums.

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/>).

## 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), rather it focuses on activity. 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 South Coast.

### 4.1 ABORIGINAL FISHERIES

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.

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 South Coast are provided in Section [10.2](#). In the region in 2018-2019, there were 82 AFS agreements, representing 159 First Nations conducting FSC harvests that contain provisions relating to salmon management including, but not limited to, FSC fishery arrangements. Among the areas, Fraser Interior had 27 agreements, North Coast had 20, South Coast had 32, and the Yukon had 3. An additional 17 First Nations are provided communal licences for FSC fishing, but do not have AFS agreements.

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, and Tla'amin Nation Final Agreement) have been ratified in British Columbia.<sup>2</sup> For information on Tsawwassen First Nation, Maa-nulth First Nations and Tla'amin Nation fisheries please see Section [10.5](#).

## 4.2 RECREATIONAL FISHERY

Recreational fishing for salmon may occur to provide food for personal use, as a leisure activity, or as a combination of the two. These activities provide non-quantified 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.

Based on the most recent Survey of Recreational Fishing in Canada (2010), tidal water recreational fishing led to over \$689 million dollars in expenditures and major purchases in British Columbia. Respondents reported that salmon accounted for roughly 63% of the fish

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<sup>2</sup> Details of concluded final agreements can be found at:  
<https://www.aadnc-aandc.gc.ca/eng/1402584983606/1402585060047>

caught and 65% of the fish kept. Recreational fishing effort in the South Coast that was directed toward salmon accounted for an estimated 42% of all angler expenditures, or \$289 million.<sup>3</sup>

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. 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 several year over year 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 2014. Sharp increases in the sale of licences to both residents and non-residents in the 2015/16 season resulted in the largest annual licence sales in at least 16 years. In the 2016/17 season, sales included over 331 thousand licences and 247 thousand salmon stamps.

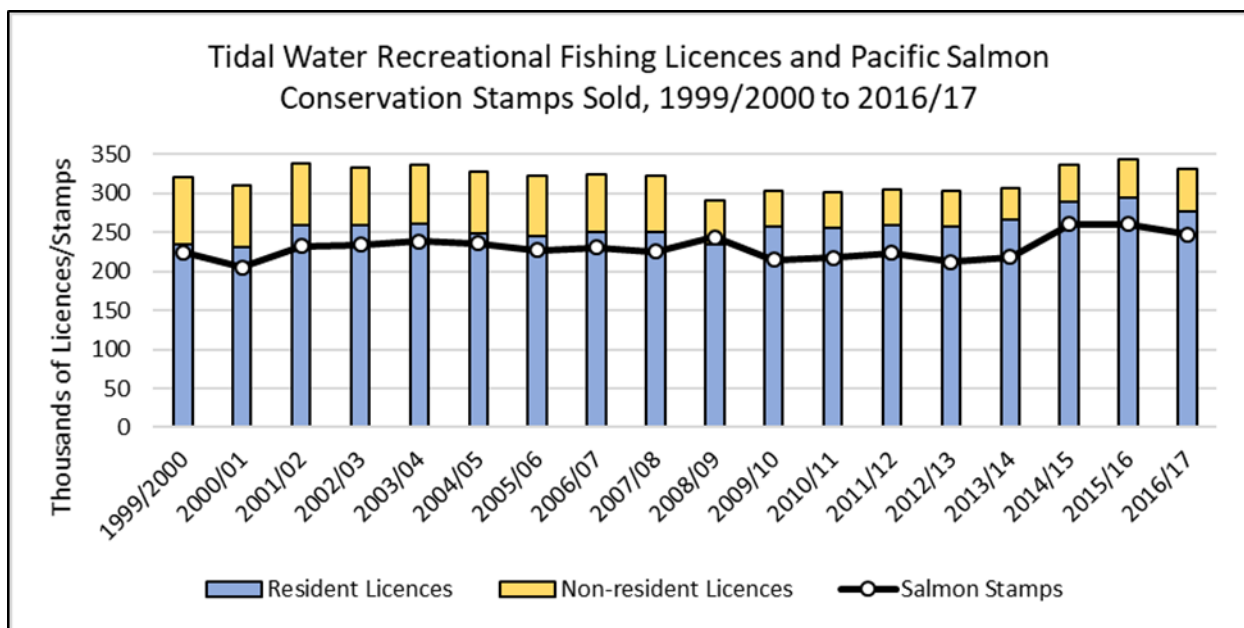


Figure 4.2-1: Tidal Water Recreational Fishing Licences and Pacific Salmon Conservation Stamps Sold, 1999/00 to 2016/17

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

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).

<sup>3</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.

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 2012). While resident anglers have the largest expenditures, recreational fishing by non-residents adds money to the provincial economy. In 2010, non-resident direct expenditures (including fishing packages) and investments totaled \$139,772,544 (2010 dollars). 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>4</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>5</sup>. A further 19% would have shortened their stay in the province.

	2000			
	Direct Expenses*	Packages	Investments	Total
Resident	\$ 132,541,159.85	\$ 21,316,825	\$ 238,863,192	\$ 392,721,177
Canadian nonresident	\$ 28,954,992	\$ 24,803,927	\$ 29,504,129	\$ 83,263,048
Other nonresident	\$ 62,584,071	\$ 51,397,057	\$ 14,775,795	\$ 128,756,923
Total	\$ 224,080,223	\$ 97,517,809	\$ 283,143,116	\$ 604,741,147
	2005			
	Direct Expenses	Packages	Investments	Total
Resident	\$ 157,375,516.04	\$ 44,316,442	\$ 274,110,155	\$ 475,802,113
Canadian nonresident	\$ 35,432,857	\$ 41,459,989	\$ 13,025,827	\$ 89,918,674
Other nonresident	\$ 50,783,457	\$ 68,195,312	\$ 8,509,694	\$ 127,488,463
Total	\$ 243,591,830	\$ 153,971,744	\$ 295,645,676	\$ 693,209,250
	2010			
	Direct Expenses	Packages	Investments	Total
Resident	\$ 197,927,777	\$ 50,135,233	\$ 314,717,439	\$ 562,780,448
Canadian nonresident	\$ 32,843,079	\$ 24,942,920	\$ 18,536,662	\$ 76,322,661
Other nonresident	\$ 33,003,549	\$ 28,721,219	\$ 4,992,473	\$ 66,717,241
Total	\$ 263,774,405	\$ 103,799,372	\$ 338,246,574	\$ 705,820,350

Figure 4.2-2: Recreational Fishing Direct and Package Expenditures and Investments, in constant (2010) dollars

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

Figure 4.2-2 (above) shows the expenditures by resident and non-resident anglers from 2000 to 2010, adjusted to reflect constant 2010 dollars. Though recreational fishing continues to be important to the BC economy, the rate of growth is slowing: total expenditures and investments grew by nearly 15% from 2000 to 2005, but by only 2% from 2005 to 2010. This slowdown is due

<sup>4</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>5</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.

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 47% between 2005 and 2010. Expenditure on fishing packages by resident anglers has increased considerably over the past decade; in real terms, it increased by over 135% between 2000 and 2010 and BC residents are now the primary consumers of fishing trip packages in the province. South Coast salmon accounted for roughly 18% of expenditures on fishing trip packages in British Columbia in 2010. 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>

## **4.3 COMMERCIAL FISHERY**

### **4.3.1 HARVEST SECTOR**

In BC, the salmon fishery is a limited access fishery, mostly managed as a competitive fishery<sup>6</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 2012 and 2017, salmon contributed an average of 16% of the landed value and 14% of the total volume of BC wild caught seafood (DFO Official Catch, 2012-2017). The real value, in 2017 constant dollars (2017\$) ranged from a high of \$123.0 million in 2014 to a low of \$33.3 million in 2012 (Figure 4.3-1, below).

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<sup>6</sup> Other names for this style of fishery include derby and Olympic style fishery

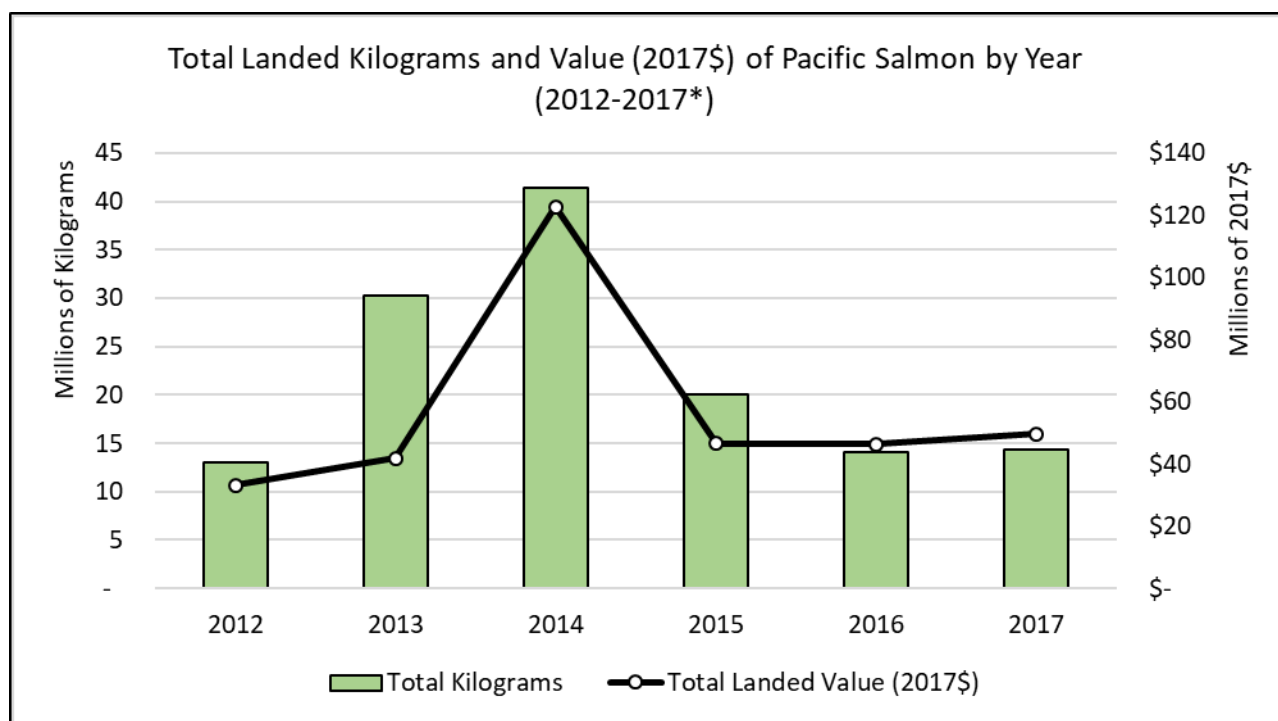


Figure 4.3-1: Total Landed Kilograms and Value (2017\$) of Pacific Salmon by Year (2012-2017\*)

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

\*Estimates for 2017 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.

On average over that period, Sockeye was the most important species in terms of landed value, followed by Chinook and Chum (Figure 4.33-4-4 below).

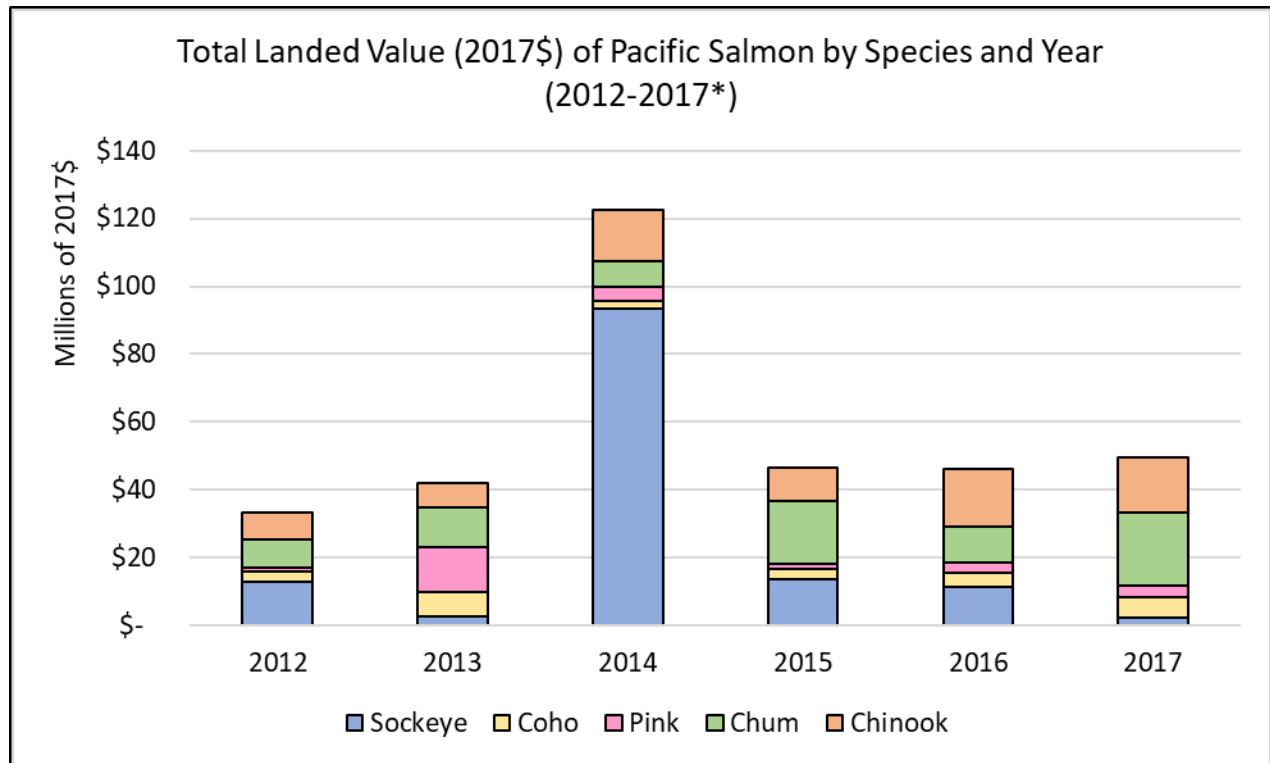


Figure 4.3-2: Total Landed Value (2017\$) of Pacific Salmon by Species by Year (2012-2017\*)

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

\*Estimates for 2017 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.

Between 2012 and 2017, the South Coast fishery was responsible for an average of 48% of the total volume of salmon landings and 47% of the total landed value. The record Fraser River Sockeye run in 2014 meant that the South Coast accounted for 79% and 72% of the landed value and landed volume in that year, respectively. In average 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.

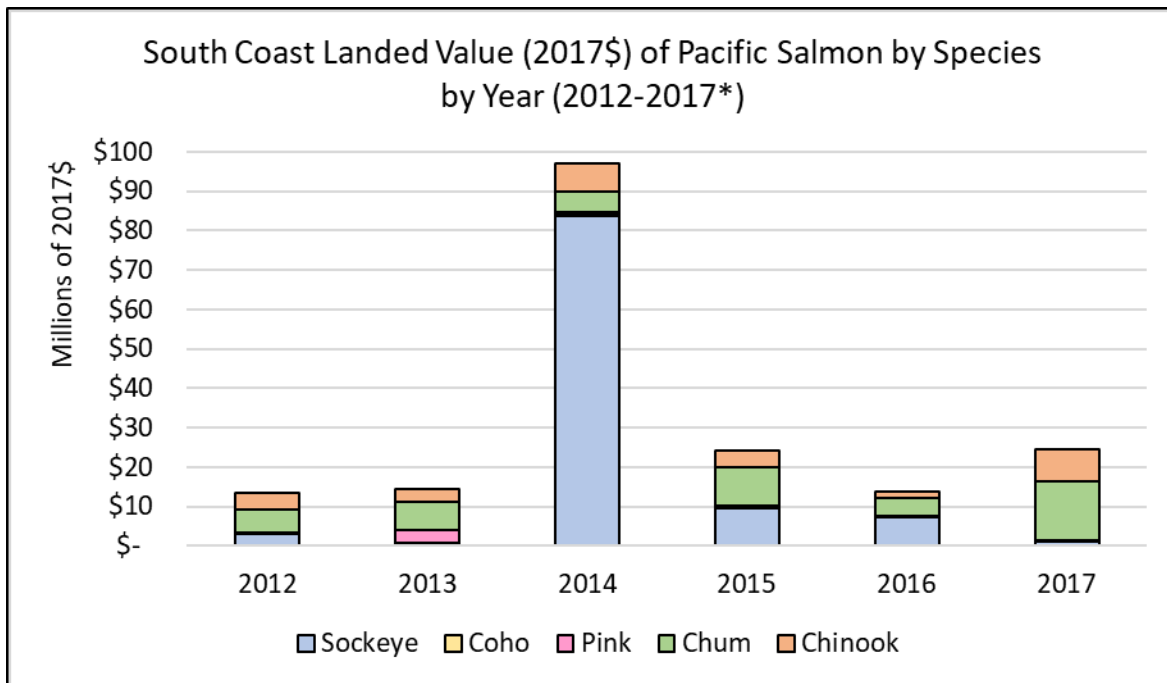


Figure 4.3-3: South Coast salmon value by species, 2012-2017\* (in 2017\$)

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

\*Estimates for 2017 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. A 2007 snap shot of the financial performance of the fleet indicated negative overall returns for gill net and seine fleets in the absence of diversification into other fisheries (Nelson, 2009); this was reiterated in the 2009 financial snapshot (Nelson, 2011). The results also suggested a positive financial performance for the troll fleet, which was enhanced further by participation in other fisheries. It should be noted that these analyses of the Pacific’s commercial fisheries occurred in years of particularly low harvest of high-value species for the salmon fisheries and are not representative of the salmon fleet’s performance over the past decade. The salmon fleet’s financial performance is best reviewed over several years, given the fisheries significant annual swing in harvest. Detailed tables for each fleet (gill net, seine and troll) are available within both documents (Nelson, 2009 & 2011), and are available by licence area (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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

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 2018, 158 communal commercial salmon licence eligibilities were issued to First Nations under the AFS and ATP, 46 were issued under PICFI, 255 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. For additional information please see section 10.5.

### 4.3.2 PROCESSING SECTOR

In the last five years, 2012-2016, wild salmon accounted for an average of 25% of the total wholesale value from the processing of wild caught seafood in BC (SYIR, 2012-2016).

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. Applying this to 2017 DFO logbook information, processing of salmon species delivered about \$4.4M (Chum), \$0.4M (Sockeye), \$1.5M (Pink), \$0.7M (Chinook), \$0.8M (Coho) in processing sector labour wages (Figure 4.3-4:).

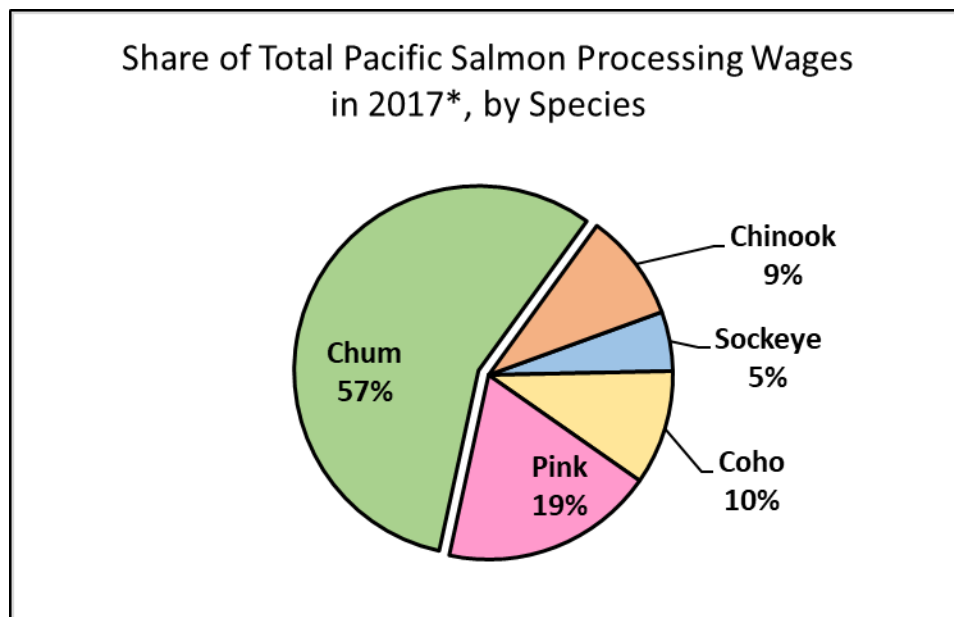


Figure 4.3-4: Share of the total value of processing wages in 2017 (per salmon species) Source: GS Gislason and Associates (2017), DFO Official Catch

\*Estimates for 2017 are to be treated as preliminary.

While Chum is the most processed salmon species by volume and total value of processing sector labour wages among all BC wild salmon, 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 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 (75%). 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).

## **4.4 EXPORT MARKET**

The province of British Columbia benefits from strong seafood exports that in 2017 were valued at about \$1.3 billion, a 3% decrease when compared to 2016.<sup>7</sup> This total value was realized via combination of seafood that was supplied by domestic wild harvest and aquaculture as well as raw seafood imports (Sector Snapshot 2017: BC Agrifood & Seafood). Chum, Chinook and Sockeye salmon were among the most widely exported wild salmon species in 2017 (by volume). They constituted 50%, 25% and 8% of the total volume of wild salmon exports from BC respectively. In 2017 Chum was shipped to 28 countries, with US and China being the biggest importers of this salmon species (by value). Pink salmon was exported to 14 countries, with China and Thailand constituting the most significant importers (by value), and Sockeye was exported to 14 countries, with the US and Japan with being the biggest Sockeye importers (by value).

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<sup>7</sup> BC Ministry of Agriculture - Agriculture, Seafood & Agrifood Snapshot 2016, 2017:  
<https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles>

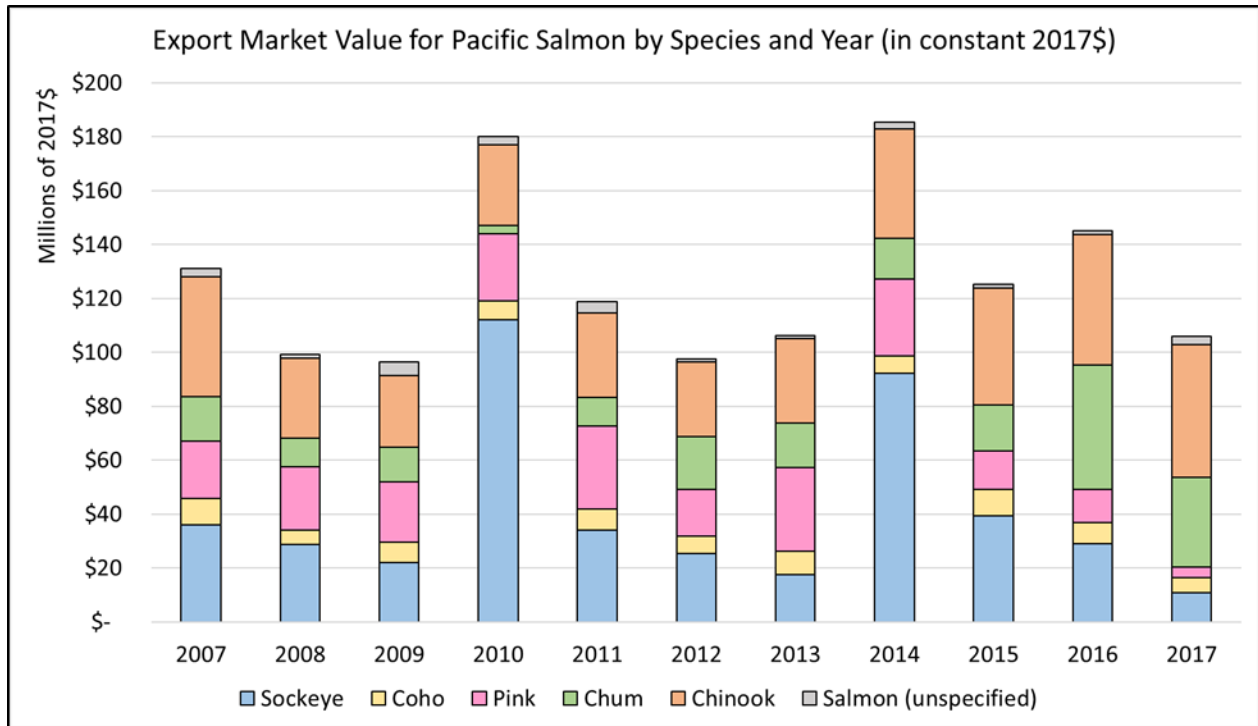


Figure 4.4-1: Total value of wild salmon exports (in 2017 constant dollars), 2007-2017

Source: Statistics Canada EXIM database accessed on January 21, 2019.

**Note:** this total includes all exports of wild Pacific salmon and excludes 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 (2012 to 2017), BC exported wild salmon to 63 countries. The US accounted for about 53% of the total export value in that period, followed by Japan (10%) and China (7%). The United Kingdom was the fourth biggest individual importer of BC wild salmon in that period (7%). For more details, please refer to Figure 4.4-2 below.

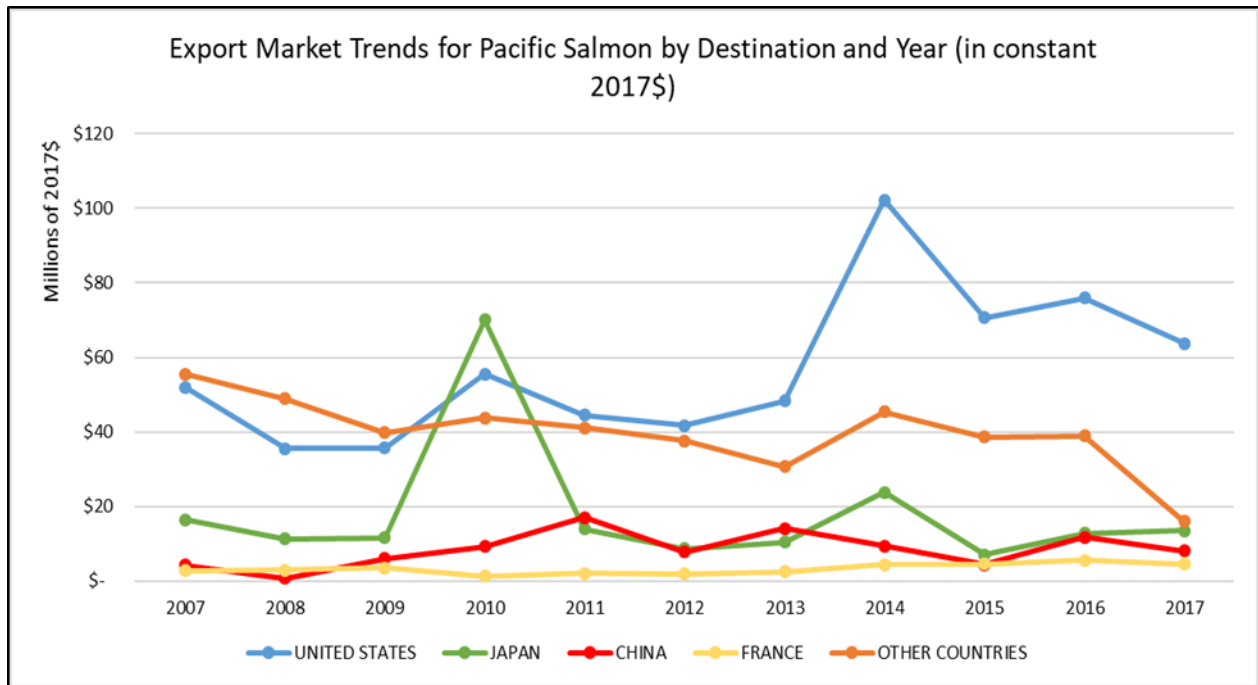


Figure 4.4-2 Total value of wild salmon exports from BC per main importers, 2007-2017 (in 2017\$)

Source: Statistics Canada EXIM database accessed on January 21, 2019.

The value of all wild caught salmon exports in 2007-2017 averaged \$126M (in 2017\$). In that period, on average, Sockeye accounted for about 29% of this value; Chum for 15%, Pink for 17%; Chinook (spring) for 30%; Coho for about 6% and 2% originated from the sale of unspecified salmon.

Figure 4.4-3 below shows the proportions of Pacific Salmon exported by value (in 2017\$) by destination country in 2017. In 2017, approximately \$105.9m worth of wild Pacific salmon was exported from BC and the Yukon. Of this, about 60% of the total export value of Pacific salmon is attributable to the United States (\$63.8m), 13% to Japan (\$13.5m), 8% to China (\$8.1m), 4% to France (\$4.5m), 3% to Italy (\$3.2m), and the remaining 12% to all other countries (\$12.9m).

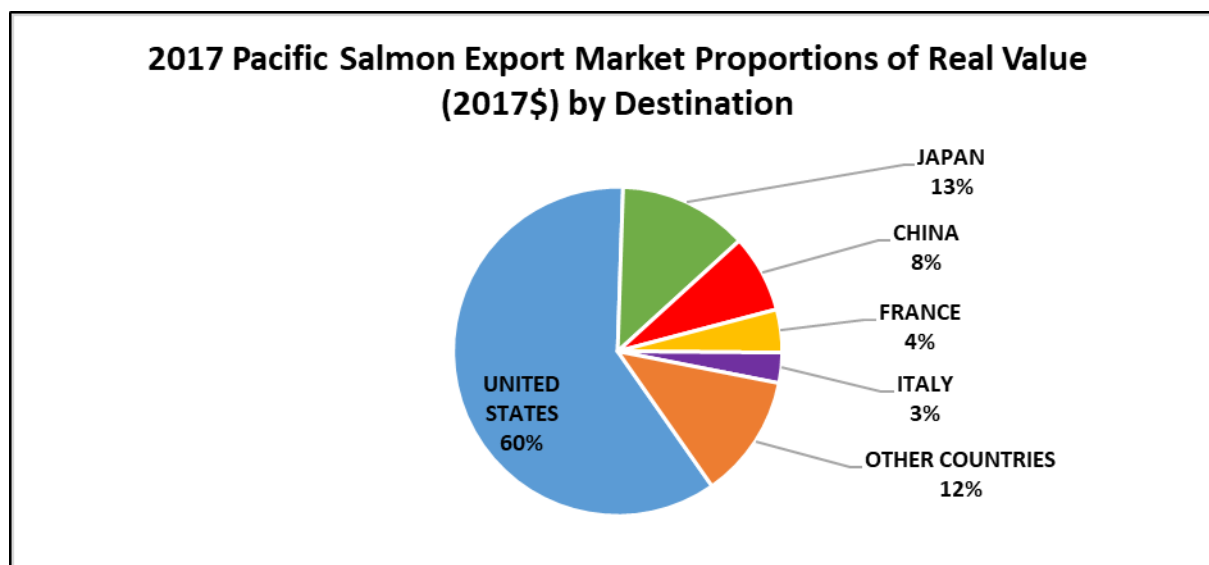


Figure 4.4-3 Proportions of total value of wild salmon exports from BC by main destination countries in 2017 (in 2017\$)

Source: Statistics Canada EXIM database accessed on January 21, 2019.

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## 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

The goal of Canada's Policy for Conservation of Wild Pacific Salmon (WSP), which was released in 2005, is to restore and maintain healthy and diverse salmon populations and their habitats for the benefit and enjoyment of the people of Canada in perpetuity. To further communicate the work the Department is doing in support of the policy, on October 11, 2018, Canada's Minister of Fisheries and Oceans and the Canadian Coast Guard – the Honourable Jonathan Wilkinson - released the *Wild Salmon Policy 2018-2022 Implementation Plan*. This collaboratively developed plan was consulted on broadly throughout fall 2017, and lays out seven overarching approaches to implementation and 48 specific activities that will be achieved over the next five years. The plan is organized under three key themes: Assessment; Maintaining and Rebuilding Stocks; and Accountability. In 2019, the first annual report on progress will be released.

For a copy of the *Wild Salmon Policy*, the *Wild Salmon Policy 2018-2022 Implementation Plan*, *Highlights* of work done from 2005-2017, and information on what we heard during consultations and response, please see: <http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/salmon-saumon/wsp-pss/index-eng.html>

### 5.2 INTERNATIONAL COMMITMENTS

#### 5.2.1 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) does not expire until December 31, 2019 and negotiations are underway within the Commission.

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 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 2014 amendments adopted by the Parties were 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 will be the final year under the current arrangement with changes to the Chapter 4 language to be implemented for the 2020 season.

**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 2020 fishing season to inform the Parties with respect to future management actions or recommended conservation measures. For southern-origin stocks (those originating 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.

## **5.3 OCEANS AND HABITAT CONSIDERATIONS**

### **5.3.1 OCEANS ACT**

In 1997, the Government of Canada enacted the Oceans Act. This legislation provides a foundation for an integrated and balanced national oceans policy framework 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.

On June 15, 2017, Bill C-55 was proposed to amend the Oceans Act, to facilitate the Marine Protected Area designation process, without impacting sound science or public opportunity for input. The changes would allow for interim ocean protection during the 7-10 year MPA designation process, require the application of the precautionary principle in decision making, and strengthen enforcement powers and fines to align with current provisions in other legislation, such as the Environmental Enforcement Act.

For more information on the Oceans Act and Canada's Ocean Strategy, please visit:

<http://www.dfo-mpo.gc.ca/oceans/publications/cos-soc/page1-eng.html>

For information on the proposed amendments to the Ocean's Act, please visit: <http://www.dfo-mpo.gc.ca/oceans/conservation/act-loi-eng.html>

### **5.3.2 CANADA'S MARINE AND COASTAL AREAS CONSERVATION MANDATE**

In October 2017, the Government of Canada announced that it has reached its first milestone of protecting 5% of marine and coastal areas. The federal government remains committed to protecting 10% of Canada's marine and coastal areas by 2020. The 2020 target is both a domestic target (Canada's Biodiversity Target 1) and an international target as reflected in the Convention on Biological Diversity's Aichi Target 11 and the United Nations General Assembly's 2030 Agenda for Sustainable Development under Goal 14. The 2017 and 2020 targets are collectively referred to as Canada's marine conservation targets. More information on the background and drivers for Canada's marine conservation targets is available <http://www.dfo-mpo.gc.ca/oceans/conservation/index-eng.html>.

On the Pacific coast, between now and 2020, Canada will be:

- advancing the work already underway in areas progressing towards establishment including the Scott Islands marine National Wildlife Area;
- exploring opportunities for establishing new, large Oceans Act MPAs in pristine offshore areas;

- identifying existing and establishing new “other effective area-based conservation measures” based on advice provided by the Canadian Science Advisory Secretariat (such as fisheries closures), particularly to protect sensitive sponge and coral concentrations; and,
- examining how to facilitate the designation process for Oceans Act MPAs, without sacrificing science or the public’s opportunity to provide input.

Where applicable, management measures established for Salmon have been identified to contribute to Canada’s marine conservation targets. More information on these management measures and their conservation objectives are provided in the following sections.

The Cold-water Coral and Sponge Conservation Strategy is available on the internet at: [www.pac.dfo-mpo.gc.ca/oceans/protection/oth-aut-eng.html](http://www.pac.dfo-mpo.gc.ca/oceans/protection/oth-aut-eng.html)

Pacific Canada’s State of the Ocean Annual Reports are available on the internet at: <http://dfo-mpo.gc.ca/oceans/publications/index-eng.html#state-ocean>

### **5.3.3 PACIFIC NORTH COAST INTEGRATED MANAGEMENT AREA**

Endorsed in February 2017, the Pacific North Coast Integrated Management Area (PNCIMA) Plan was developed, in collaboration with the Province of British Columbia, First Nations and stakeholders to help coordinate various ocean management processes and to complement existing processes and tools including IFMPs. High level and strategic, the plan provides direction on integrated, ecosystem-based and adaptive management of marine activities and resources in the planning area as opposed to detailed operational direction for management. The plan outlines an ecosystem-based management (EBM) framework for PNCIMA that has been developed to be broadly applicable to decision-makers, regulators, community members and resource users alike, as federal, provincial and First Nations governments, along with stakeholders, move together towards a more holistic and integrated approach to ocean use in the planning area.

The endorsement of the PNCIMA plan supports the Government of Canada’s commitment to collaborative oceans management for the Pacific North Coast and provides a joint federal-provincial-First Nations planning framework for conservation and the management of human activities in the Pacific North Coast. The plan includes marine protected area network development as a planning priority. An electronic copy of the plan is available online at: <http://www.pncima.org>

### 5.3.4 MARINE PROTECTED AREA NETWORK PLANNING

The Oceans Act mandates DFO's Minister with leading and coordinating the development and implementation of a national network of marine protected areas (MPAs). Nationally, MPA Network planning is proceeding in four priority bioregions under the National Framework for Canada's Network of Marine Protected Areas, including the Northern Shelf Bioregion (NSB). The NSB extends from the top of Vancouver Island (Quadra Island/ Bute Inlet) and reaches north to the Canada - Alaska border. This bioregion has the same footprint as PNCIMA.

In the Pacific region, the Department and other federal agencies are collaborating with the Government of B.C. and Pacific North Coast First Nations to develop a MPA network for the NSB. The planning process in the NSB is guided by the Canada-BC MPA Network Strategy (2014) and the National Framework for Canada's Network of Marine Protected Areas. Stakeholders and local governments are participating in the planning process through advisory committees at regional and sub-regional scales, workshops, and sector meetings.

Through the Network Action Plan, the MPA Network planning process will identify areas for protection. These areas will be established and implemented on a priority basis through a variety of legislative or regulatory tools.

More information on MPA Network Planning can be found at: <http://mpanetwork.ca>

### 5.3.5 MARINE PROTECTED AREAS (MPAS)

DFO is also responsible for designating Marine Protected Areas (MPAs) under Canada's *Oceans Act*. Under this authority, DFO has designated three MPAs in the Pacific Region.

MPA regulations and management plans articulate any restrictions on activities taking place within the MPA, where applicable.

**Endeavour Hydrothermal Vents (EHV) MPA:** The EHV MPA was designated in 2003. The hydrothermal vents lie in waters 2,250 m deep 250 km southeast of Vancouver Island. There is occasional commercial fishing in the MPA, and pelagic fishing is not considered to be in conflict with the objectives of the MPA. Any licensed fishing in the MPA takes place very near the ocean surface and will continue as it does not significantly impact the hydrothermal vents ecosystem. More information can be found online at: <http://www.dfo-mpo.gc.ca/oceans/mpa-zpm/endeavour-eng.html>

#### **SGaan Kinghlas-Bowie Seamount (SK-B) MPA**

The SK-B MPA, designated under Canada's *Oceans Act* in 2008, is 180 km west of Haida Gwaii rising from a depth of over 3,000 m to within 24 m of the sea surface, making it one of the

shallowest seamounts in the north Pacific, and the shallowest in Canada. The MPA comprises the S<sub>C</sub>aan K<sub>I</sub>nglas – Bowie, Hodgkins and Davidson Seamounts of the Kodiak-Bowie seamount chain and has a total area of approximately 6,131 square kilometres.

The SK-B MPA has been established to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem, including and the surrounding waters, seabed, and subsoil.

The MPA is cooperatively managed by DFO and the Council of the Haida Nation (CHN) through the SK-B Management Board (the Board), which was established under a Memorandum of Understanding (MOU), signed in 2007. The Board has equal representation from DFO and the CHN and operates on a consensus basis in developing recommendations to Canada and the Haida Nation on the management and planning of the MPA. Under the MOU, the Board is mandated to develop a management plan for the MPA. To fulfil this mandate, the Board collaborates with stakeholders by requesting and considering advice from the integrated, cross sector SK-B Advisory Committee.

Since 2018, DFO and the CHN have been co-developing the SK-B MPA Management Plan which is now near completion. The Plan is intended to guide the conservation and protection of the SK-B Seamount ecosystem and support the development of a monitoring plan for the MPA. Key elements of the Plan include: cooperative governance, management framework, conservation and management goals and objectives; and implementation priorities.

Commercial fishing activities within the MPA have been managed through the Integrated Fisheries Management Plan process. In January 2018, the Government of Canada and the Haida Nation agreed to increase the level of protection at the SK-B MPA by closing all bottom-contact fishing. This closure shows a precautionary management approach to protection of sensitive benthic habitats in support of the MPA objectives. This decision has resulted in the MPA being closed to all commercial fishing activities. The decision also applies to bottom-contact recreational and aboriginal fisheries. This decision also aligns with the DFO recent decision to close bottom contact fishing on all seamounts in the Offshore Pacific Area of Interest (AOI) and manage impacts to coral and sponges in the Hecate Strait and Queen and Charlotte Sound Glass Sponge Reefs Marine Protected Areas.

**Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA:** The Hecate Strait and

The HS/QCS MPA, designated under the *Oceans Act* in February 2017, is located in the Northern Shelf Bioregion of the Pacific Region, southeast of Haida Gwaii, North and South of the entrance to the Douglas Channel. The reefs are made up of large colonies of glass sponges and are estimated to be 9,000 years old. They are located at depths of 140 m to 240 m below the surface. The MPA is comprised of three individual areas known as the Northern Reef, the two Central Reefs, and the Southern Reef. Together these three areas cover approximately 2,410 km<sup>2</sup>.

The HS/QCS MPA has been established to conserve the biological diversity, structural habitat, and ecosystem function of the glass sponge reefs. The slow growth and fragility of these sponges make the reefs particularly vulnerable to damage and disturbance since recovery may take tens to several hundreds of years. Due to the highly sensitive nature and structure of the reefs, human activities in and around the reefs could pose a risk to the structural habitat, biological diversity and ecosystem function of the reefs. Each glass sponge reef has a Core Protection Zone (CPZ) (two CPZ in the Central Reef), a Vertical Adaptive Management Zone (VAMZ), and an Adaptive Management Zone (AMZ).

The CPZ contain the sponge reefs and are designed to provide the highest level of protection to the reefs. The Core Protection Zone consists of the seabed, the subsoil to a depth of 20m and the water column above the seabed to a depth of 100 m below the sea surface for the Northern Reef, 120 m for the Central Reef (Zones A and B), and 146 m for the Southern Reef. The VAMZ consist of the water column that extends above the Core Protection Zones to the sea surface. The AMZ consist of the seabed, subsoil and waters of the Marine Protected Areas (i.e., Northern, Central, and Southern Reefs) that are not part of the CPZ or the VAMZ.

The HS/QCS MPA Regulations, it is prohibited to:

carrying out any activity that disturbs, damages, destroys or removes any living marine organism or any part of its habitat or is likely to do so; or carrying out any scientific research or monitoring, or an educational activity, unless it is part of an activity plan that has been approved by the Minister.

There are exceptions to these prohibitions that identify activities that may be allowed to occur in the MPA in certain zones. The following activities are allowed in the MPA:

- Certain fishing activities in the AMZ and VAMZ. Fishing activities will be managed in accordance with integrated fisheries management plans, annual variation orders, regulations and license conditions in a manner consistent with the conservation objective of the MPA. In order to protect the sponge reefs, additional fisheries management measures for bottom contact and midwater trawl fisheries are currently required throughout the MPA.);
- Navigation activities throughout the MPA; however, anchoring is not allowed in the CPZ;
- The laying, maintenance or repair of cables in the AMZ;
- Activities carried out for public safety, public health, national defense, national security, law enforcement or in response to an emergency; and
- Scientific research, monitoring and educational activities that have been approved by the Minister.

Under the HS/QCS MPA Regulations, the CPZ are closed to all commercial, recreational, and Aboriginal fishing. Anchoring and cable installation, maintenance, and repair are also prohibited in the CPZ.

Management measures under the *Fisheries Act* restricting bottom contact and mid water trawl fishing activity in the MPA were implemented as of February 21, 2017. The VAMZ and AMZ are currently closed to all commercial bottom contact fishing activities for prawn, shrimp, crab, and groundfish (including halibut), as well as for midwater trawl for hake. These closures will be in effect until further notice. For more detail on the fishery closure within the Hecate Strait and Queen Charlotte Sound Glass Sponge Reef MPA, please review the FN0198 Fishery Notice.

A management plan will be developed for the MPA and will seek to align the plan with relevant IFMPs. The management plan will be developed in collaboration with First Nations and in consideration of advice from an advisory committee, stakeholders through existing processes, and the public. This management plan will elaborate on the conservation and management objectives for the MPA and will address matters such as monitoring, enforcement and compliance.

Further details on the locations of these areas can be found in the relevant harvest plan appendices to this IFMP and at: <http://dfo-mpo.gc.ca/oceans/mpa-zpm/hecate-eng.html>.

**Offshore Pacific Area of Interest:** In May 2017, DFO announced a new Area of Interest (AOI) within the Offshore Pacific Bioregion off the coast of British Columbia, with the intention of making it one of Canada's largest MPAs by 2020. This Offshore Pacific AOI is an important



part of DFO's national approach to achieve the Government of Canada's Marine Conservation Targets to increase Canada's marine and coastal protected areas to 10% by 2020.

The Offshore Pacific AOI is located in the southern portion of the Offshore Pacific Bioregion extending from the continental shelf break, west of Vancouver Island, to the Exclusive Economic Zone (EEZ) boundary with an area of approximately 140,000 km<sup>2</sup>. At its closest point, the AOI is approximately 80 km from the west coast of Vancouver Island, but on average is 100-150 km off the coast and extends south to the Canada-US border. The Offshore Pacific AOI will protect ecologically and biologically significant areas (EBSAs), including seamounts and hydrothermal vents.

An Offshore Pacific AOI Advisory Committee has been established to provide a forum for engagement for the AOI and provide feedback on the proposed design of the potential MPA and the associated management approach. The interim conservation objective of the AOI is to contribute to the protection and conservation of the unique seafloor features and the ecosystems they support in Canada's Offshore Pacific Bioregion, and was established based on discussions with DFO Science. This interim conservation objective will be reviewed and adjusted based on consultations with DFO Science, the Province of British Columbia, Indigenous groups, and the AOI Advisory Committee, and will anchor the development of the potential MPA.

In advance of potential MPA designation, fishery closures to restrict commercial and recreational bottom-contact fishing activities within the Offshore Pacific AOI were announced in October 2017. At approximately 83,000 km<sup>2</sup> in size, the closure marked an important step towards reaching Canada's marine conservation targets of protecting 5% of Canada's marine and coastal areas by 2017 and 10% by 2020. The closure will protect and conserve unique seafloor features, including seamounts and hydrothermal vents, identified through a Canadian Science Advisory Secretariat process as well as a number of species of regional importance, including corals, sponges, and other endemic or rare species.

The closure boundary was informed by available science and input received during consultations with First Nations, federal and provincial government agencies, industry and conservation organizations, and supports the AOI's interim conservation objective of contributing to the protection and conservation of the unique seafloor features and the ecosystems they support in Canada's Offshore Pacific Bioregion. More specific details of the closure will be provided through fisheries notices shortly. These closures will focus on bottom-contact fisheries in respect of the interim conservation objective for the AOI.

More information on the Offshore Pacific AOI can be found on the internet here:

<http://www.dfo-mpo.gc.ca/oceans/aoi-si/offshore-hauturiere-eng.html>.

**Race Rocks Area of Interest:** Work is ongoing to consider MPA designation for the Race Rocks area off Rocky Point south of Victoria (currently designated as a Provincial Ecological Reserve).

More information on integrated management planning, Pacific Region MPAs and Pacific MPA planning under Canada's *Oceans Act* can be found at the following link:

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

### **5.3.6 NATIONAL MARINE CONSERVATION AREAS**

#### **GWAII HAANAS**

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site is a 5000 km<sup>2</sup> land-and-sea protected area in the southern part of Haida Gwaii (formerly the Queen Charlotte Islands), approximately 100 kilometres off the north coast of British Columbia. The Haida Nation designated the area a Haida Heritage Site in 1985. The terrestrial part of Gwaii Haanas was designated a National Park Reserve by the Government of Canada soon after, and Canada and the Haida Nation have been managing the area cooperatively since 1993. In 2010, the Gwaii Haanas marine area was designated a National Marine Conservation Area Reserve.

Gwaii Haanas is managed by the Archipelago Management Board (AMB), a cooperative body made up of three representatives of the Council of the Haida Nation and three representatives of the Government of Canada (Fisheries and Oceans Canada (1) and Parks Canada (2)). The AMB is guided by the *Gwaii Haanas Agreement* (1993) and the *Gwaii Haanas Marine Agreement* (2010), which describes how Canada and the Haida Nation will manage Gwaii Haanas cooperatively.

In November 2018, following an extensive consultation process, a new management plan for Gwaii Haanas was approved by Canada and the Haida Nation. The Gina 'Waadluxan KilGuhlGa Land-Sea-People plan includes a shared vision, guiding principles based on Haida cultural values, goals and objectives, and zoning for the land and the sea. The plan will be in place for the next decade.

To develop the zoning plan, key ecological and cultural features were identified using a range of ecological data and traditional knowledge. A set of design considerations, which included minimizing socio-economic impacts, was used to develop an initial zoning proposal. This proposal was reviewed with stakeholder groups including the commercial and recreational fishing sectors and major changes were made to the zoning plan based on advice the AMB received.

The final zoning plan includes several areas of strict protection, where commercial and recreational fishing is prohibited. The zoning plan can be found at:

<https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations/gestion-management-2018>

The implementation of these closures may take some time. However, steps are being taken to undertake this work and each closure will be communicated via Fishery Notice as it is implemented.

A monitoring plan will be developed to assess the effectiveness of zoning in achieving ecological and cultural objectives. Regular monitoring within and outside of strict protection zones will illustrate ecosystem responses and facilitate adaptive management of the Gwaii Haanas marine area.

Implementation of the Land-Sea-People plan will also involve cooperative management of fisheries using an ecosystem-based management framework, and monitoring activities will be supported through partnerships. For more information on Gwaii Haanas and the Archipelago Management Board, visit [www.parkscanada.gc.ca/gwaiihaanas](http://www.parkscanada.gc.ca/gwaiihaanas).

Users of the Gwaii Haanas marine area should be aware that adjacent land is managed under the authority of the Canada National Parks Act and its regulations and, as specified in the Gwaii Haanas Agreement (1993), there is "no extraction or harvesting by anyone of the resources of the lands and non-tidal waters of the Archipelago for or in support of commercial enterprise" (s3.3). There are specific requirements for visiting the terrestrial portion of Gwaii Haanas, and advanced planning is necessary. Please contact the Gwaii Haanas administration office at 1-877-559-8818 for further information.

The Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan is available here: <https://www.pc.gc.ca/en/pn-np/bc/gwaiihaanas/info/consultations>.

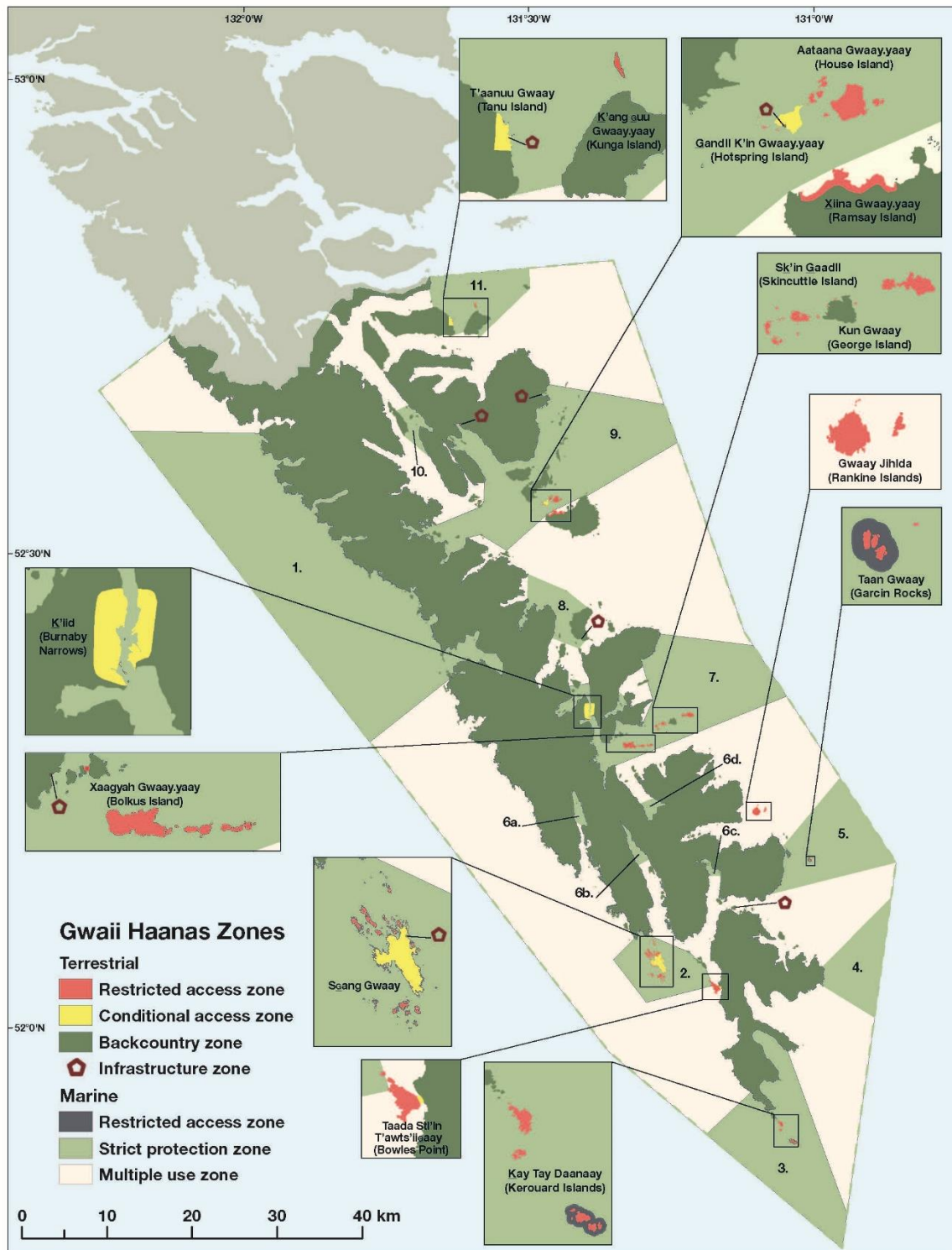


Figure 5.3-1: Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site (Current closures)

Until the new zoning plan is implemented and communicated through subsequent Fishery Notices, the following commercial and recreational closures remain in effect:

(1) Burnaby Narrows

Those waters of Subareas 2-13 and 2-16 inside a line commencing at 52°23.049 minutes N and 131°23.438 minutes W east to 52°23.077 minutes N and 131°22.908 minutes W, following the southern shoreline of Kat island east to 52°23.107 minutes N and 131°22.274 minutes W, then east to 52°23.295 minutes N and 131° 21.34 minutes W, following the western shoreline of Burnaby Island south to 52° 20.951 minutes N and 131°20.509 minutes W, then west to 52°20.733 minutes N and 131°21.072 minutes W, and then north following the eastern shoreline of Moresby Island back to the point of commencement. [Burnaby Narrows]

(2) Louscoone Estuary

Those waters of Subareas 2-33 and 2-34 north of a line drawn from 52°11.836 minutes N and 131°15.658 minutes W east to 52°12.271 minutes N and 131°14.594 minutes W. [Louscoone Estuary]

(3) Flamingo Estuary

Those waters of Subarea 2-37 north of a line drawn from 52°14.456 minutes N and 131°22.234 minutes W southeast to 52°14.246 minutes N and 131°21.489 minutes W. [Flamingo Estuary]

(4) Gowgaia Estuary

Those waters of Subarea 2-41 east of a line drawn from 52°24.944 minutes N and 131°32.138 minutes W southeast to 52°24.238 minutes N and 131°32.024 minutes W. [Gowgaia Estuary]

(5) Cape Saint James

Those waters of Subareas 2-19, 102-3, 130-3 and 142-1 inside a line commencing at 51°56.523 minutes N and 131°01.522 minutes W, southwest to 51°55.627 minutes N and 131°02.574 minutes W, then southeast to 51°52.5 minutes N and 130°57.919 minutes W, then south to 51°51.676 minutes N and 130°57.805 minutes W, the southeast to 51°50.349 minutes N and 130°56.442 minutes W, then northeast to 51°51.062 minutes N and 130°54.717 minutes W, then north to 51°53.888 minutes N and 130°55.608 minutes W, then northwest to 51°58.671 minutes N and 130°59.464 minutes W, and then west to 51°58.743 minutes N and 131°00.606 minutes W, and then following the southern shore of Kunghit Island west to the point of commencement. [Cape Saint James]

(6) SGang Gwaay

Those waters of Subareas 2-31 and 142-1 inside a 3km radius from the center point on Anthony Island located at 52°05.655 minutes N and 131°13.178 minutes W. [SGang Gwaay]

## **SOUTHERN STRAIT OF GEORGIA**

Parks Canada, in partnership with the Government of British Columbia, launched a feasibility assessment for a National Marine Conservation Area Reserve (NMCAR) in the southern Strait of Georgia in 2004. Since then, consultations with First Nations, key stakeholders, communities and the public have occurred. Informed by those discussions, a proposed boundary for consultation was announced by the provincial and federal Ministers of Environment in 2011.

Since 2011, the two governments have been consulting with First Nations, local governments and industry. A preliminary concept is currently being developed to help advance consultations on the feasibility assessment. If the results of the feasibility assessment indicate that establishment of a NMCAR is practical and feasible, an establishment agreement between the Governments of Canada and British Columbia will be negotiated and an interim management plan developed. If the NMCAR is determined to be feasible, further consultations related to establishment agreements and Indigenous rights will also take place with First Nations. Commercial and recreational fishing sectors, communities, landowners, recreation and environmental organizations and other stakeholders will also have opportunities to provide input to the development of the interim management plan.

Parks Canada information on the proposed NMCAR in the southern Strait of Georgia is available on the internet at: <https://www.pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/dgs-ssg>

### **5.3.7 MARINE NATIONAL WILDLIFE AREAS**

The Scott Islands Marine National Wildlife Area (NWA) is the first protected marine area established by Environment and Climate Change Canada (ECCC) under the Canada Wildlife Act. Established in 2018, the marine NWA covers 11 546 km<sup>2</sup> around the Scott Islands located off the northwestern tip of Vancouver Island. The five Scott Islands, which are already protected by the Province of British Columbia (BC), and surrounding marine environment make up one of the most productive and biologically diverse ecosystems on the Canadian Pacific coast, particularly for seabirds. The conservation objective of the marine NWA is to conserve migratory seabirds and species at risk as well as the habitats, ecosystems, and marine resources that support them.

ECCC leads the Scott Islands marine NWA planning and management and works with other federal departments with responsibilities in the marine environment including DFO, Transport

Canada (TC) and Natural Resources Canada. Fishing and shipping within the marine NWA will continue to be managed by DFO and TC respectively. The Scott Islands Protected Marine Area Regulations, in conjunction with additional measures by DFO and TC to address fishing and shipping related concerns in the area, will provide the regulatory framework for the management of human activities within the marine NWA.

The Quatsino First Nation, the Tlatlasikwala First Nation, and the Province of BC have expressed interest in participating in the collaborative management of the marine NWA, and discussions are ongoing to develop a management agreement for the area. ECCC and management partners will collaboratively develop a management plan for the area. A final management plan is expected in 2019, which will consider advice and input from an advisory committee with technical and scientific working groups, stakeholders through existing processes, and the public.

ECCC will continue to work collaboratively with DFO to implement voluntary and regulatory measures under the marine NWA management plan as well as the Integrated Fisheries Management Plans to mitigate fishing impacts. This will include measures to improve information on seabird prey habitat impacts and measures to mitigate seabird bycatch as well as initiatives by the existing ECCC-DFO-Pacific Seabird Bycatch Working Group.

In support of the conservation objectives of the Scott Islands mNWA, DFO is consulting on new regulations under the Fisheries Act to restrict certain fisheries that pose a risk to seabirds. The proposed regulations would prohibit fishing for three key forage fish species that serve as a key food source for seabirds—Pacific sand lance, Pacific saury, and North Pacific krill—as well as prohibit groundfish bottom trawling in portions of the marine NWA, consistent with existing fisheries closures. The regulations could also restrict fishing activities that may be deemed to pose a risk to the conservation objectives of the area, based on the best available science, such as salmon gill net and seine. For further information on this, please contact Aleria Ladwig at [Aleria.ladwig@dfo-mpo.gc.ca](mailto:Aleria.ladwig@dfo-mpo.gc.ca).

More information on the Scott Islands marine NWA can be found at:

<https://www.canada.ca/en/environment-climate-change/services/national-wildlife-areas/locations/scott-islands-marine.html>

The Scott Islands Protected Marine Area Regulations can be found at:

<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-119/index.html>



### **5.3.8 ROCKFISH CONSERVATION AREAS**

Between 2003 and 2007, DFO established 164 Rockfish Conservation Areas (RCAs) in the Pacific Region for the long-term protection and conservation of a portion of inshore rockfish populations and their habitat.

DFO is currently undertaking a multi-year review of the conservation effectiveness of RCAs. A review of RCAs is timely as it has been more than ten years since they were established. In addition, some RCAs potentially could qualify as Other Effective Area Based Conservation Measures (OEABCMs) and contribute to Canada's Marine Conservation Target of protecting ten percent of marine waters by 2020.

The RCA Review has three areas of focus:

- RCA Boundary/Location Review – an assessment of ecological attributes in RCAs to help prioritize those RCAs that may have lower conservation benefit to rockfish;
- Risk assessment of permitted human activities in RCAs;

These two reports will be published through the Canadian Science Advisory Secretariat (CSAS) and will subsequently inform the Review.

- Engagement with First Nations and stakeholders. The conservation effectiveness of RCAs might be improved by adjusting boundaries or through relocation, changing management measures, conducting more research, and increasing monitoring and compliance. RCAs in the Northern Shelf Bioregion have been selected for the first phase of engagement starting in the fall of 2018. Engagement in other bioregions will occur in subsequent years.

Information on Rockfish Conservation Areas is available online at: <http://dfo-mpo.gc.ca/rockfish-conservation> or for further information on this, please contact Neil Ladell at [Neil.Ladell@dfo-mpo.gc.ca](mailto:Neil.Ladell@dfo-mpo.gc.ca).

### **5.3.9 STRAIT OF GEORGIA AND HOWE SOUND GLASS SPONGE REEF MARINE REFUGES**

Effective April 1st, 2019 all commercial, recreational and Aboriginal 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 new closures are in addition to the nine areas closed to all commercial, recreational and Aboriginal FSC bottom-contact fishing activities in the Strait of Georgia and Howe Sound in 2015. Nine remaining areas in Howe Sound require ground-truthing to assess their ecological significance and may be closed in the future.

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

Current closure locations and more information is available at <http://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html>

### **5.3.10 COMMITTEE ON THE STATUS OF ENDANGERED WILDLIFE SPECIES ASSESSMENTS**

The Committee on the Status of Endangered Wildlife 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.

With the implementation of SARA, COSEWIC has been established as an independent body of experts responsible for identifying and assessing wildlife species considered being at risk. This is the first step towards protecting wildlife species 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 qualify for legal protection and recovery under SARA.

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

[http://www.cosewic.gc.ca/eng/sct1/searchform\\_e.cfm](http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm)

### **5.3.11 SPECIES AT RISK ACT**

The *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”. More information on SARA can be found at:

<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.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 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.

Endangered, threatened, and special concern marine species in Pacific region currently listed under SARA can be found at: <http://www.dfo-mpo.gc.ca/species-especes/listing-eng.htm>

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

## **BIRDS**

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

## **FISH**

- 6) [Basking Shark](#) – Endangered
- 7) [Bluntnose Sixgill Shark](#) – Special Concern
- 8) [Green Sturgeon](#) – Special Concern
- 9) [Longspine Thornyhead Rockfish](#) – Special Concern
- 10) [Rougheye Rockfish Types I & II](#) – Special Concern
- 11) [Tope \(Soupfin\) Shark](#) – Special Concern
- 12) [White Sturgeon](#) – Upper Fraser Designatable Unit – Endangered
- 13) [White Sturgeon](#) – Upper Columbia Designatable Unit – Endangered

- 14) [White Sturgeon](#) – Nechako Designatable Unit – Endangered
- 15) [White Sturgeon](#) – Kootenay River Designatable Unit – Endangered
- 16) Yelloweye Rockfish [Inside](#) and [Outside](#) populations – Special Concern

## MAMMALS

- 17) [Blue Whale](#) – Endangered
- 18) [Fin Whale](#) – Threatened
- 19) [Grey Whale](#) – Special Concern
- 20) [Harbour Porpoise](#) – Special Concern
- 21) [Humpback Whale](#) – Threatened
- 22) Killer Whale – [Northern Resident Population](#) – Threatened
- 23) Killer Whale – [Southern Resident Population](#) – Endangered
- 24) Killer Whale – [Offshore Population](#) – Threatened
- 25) Killer Whale – [Transient Population](#) – Threatened
- 26) [North Pacific Right Whale](#) – Endangered
- 27) [Sea Otter](#) – Special Concern
- 28) [Sei Whale](#) – Endangered
- 29) [Steller Sea Lion](#) – Special Concern

## REPTILES

- 30) [Leatherback Sea Turtle](#) – Endangered

## SHELLFISH

- 31) [Northern Abalone](#) – Endangered
- 32) [Olympia Oyster](#) – Special Concern

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

**FISH**

- 33) Bocaccio Rockfish – assessed as Endangered
- 34) Canary Rockfish – assessed as Threatened
- 35) Darkblotched Rockfish – assessed as Special Concern
- 36) Eulachon – Fraser River Designatable Unit – assessed as Endangered
- 37) Eulachon – Central Pacific Coast Designatable Unit – assessed as Endangered
- 38) Eulachon – Nass/Skeena Rivers Designatable Unit – assessed as Special Concern
- 39) North Pacific Spiny Dogfish – assessed as Special Concern
- 40) Salmon, Chinook (Okanagan population) – assessed as Endangered
- 41) Salmon, Coho (Interior Fraser population) – assessed as Threatened
- 42) Salmon, Sockeye (Sakinaw population) – assessed as Endangered
- 43) Salmon, Sockeye (Fraser River Group, 27 Designatable Units) – Eight Endangered, two Threatened, five Special Concern, nine Not at Risk)
- 44) Steelhead, Thompson – assessed as Endangered
- 45) Steelhead, Chilcotin – assessed as Endangered
- 46) Quillback Rockfish – assessed as Threatened

**MAMMALS**

- 47) Northern Fur Seal – assessed as Threatened
- 48) Grey Whale, North Pacific Migratory population – assessed as Not at Risk (reclassification from Special Concern, single Pacific population)
- 49) Grey Whale, Pacific Coast Feeding population – assessed as Endangered (reclassification from Special Concern, single Pacific population)
- 50) Grey Whale, Western Pacific population – assessed as Endangered (reclassification from Special Concern, single Pacific population)

### 5.3.11.1 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
Interior Fraser Steelhead (Thompson & Chilcotin) – Emergency Assessment	2 EN**	2	January 2018	N/A
Southern BC Chinook (Group I)	8 EN, 4 TH, 1 SC, 3 NAR	16	November 2018	Expected Fall 2019
Interior Fraser Steelhead (Thompson & Chilcotin) – Regular Assessment	Assessment not yet performed	2	Expected November 2019	Expected Fall 2020
Fraser Sockeye (Group II)	Assessment not yet performed	7	Expected November 2019	Expected Fall 2020

Southern BC Chinook (Group II)	Assessment not yet performed	12	TBD	TBD
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EN – Endangered; NAR – Not at Risk

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

\*\* Emergency Assessment, as per SARA S.28 (1).

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>

DFO has co-developed the following conservation strategies for species that were previously declined for SARA listing:

1. *Conservation Strategy for Coho Salmon, Interior Fraser River Populations*: <http://www.dfo-mpo.gc.ca/Library/329140.pdf>
2. *National Conservation Strategy for Cultus Lake Sockeye Salmon (Oncorhynchus Nerka)*: <http://www.dfo-mpo.gc.ca/Library/337479.pdf>
3. *Conservation Strategy for Sockeye Salmon (Oncorhynchus nerka), Sakinaw Lake Population*: <http://waves-vagues.dfo-mpo.gc.ca/Library/347720.pdf>

In addition to these documents, this IFMP identifies specific conservation objectives for these and other salmon stocks, found in Section 6, Fishery Management Objectives for Stocks of Concern.

### 5.3.11.2 THOMPSON AND CHILCOTIN STEELHEAD EMERGENCY SARA LISTING PROCESS

Spawning escapement of Interior Fraser Steelhead has been on a downward trend for several years, with recent years’ escapements reaching historic lows. In January 2018, COSEWIC performed an Emergency Assessment on Thompson and Chilcotin Steelhead under S.28(1) of SARA to assess whether they face an imminent threat to survival, for the purpose of informing an Emergency Listing decision under S.29(1) of SARA. The assessment found that both the Thompson and Chilcotin Designatable Units (DUs) were Endangered, and as such an emergency listing process is underway to determine whether or not to list the DUs under SARA on an emergency basis. Under this process, the Minister of Environment and Climate Change Canada must form the opinion of whether there is an imminent threat to survival of the DU(s); she may base this decision on the COSEWIC assessment or her own information. If she is of the opinion there is an imminent threat, she must, after consultation with every other competent minister, make a recommendation to Governor in Council (GiC) to list the DU(s) on an emergency basis.

Following such a recommendation, GiC would make a listing decision based on information provided by the Minister, and may consider additional information, such as socio-economic impacts and the results of consultations with Indigenous Peoples and stakeholders. The public consultation period occurred from October 1, 2018 to December 2, 2018. Additional available information includes a CSAS Science Advisory Report for the Recovery Potential Assessment of Thompson and Chilcotin Steelhead Trout<sup>8</sup> and Management Scenarios<sup>9</sup>. Further information on fisheries measures under a list scenario can be found in Appendix 9

### 5.3.11.3 SHARK CODES OF CONDUCT

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:

[http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct\\_shark-conduite\\_requin-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct_shark-conduite_requin-eng.html)

Code of conduct for Basking Sharks:

[http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct\\_basking-conduite\\_pelerin-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/shark-requin/conduct_basking-conduite_pelerin-eng.html)

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<sup>8</sup> [http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2018/2018\\_050-eng.html](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2018/2018_050-eng.html)

<sup>9</sup> <http://www.dfo-mpo.gc.ca/species-especies/consultations/steelheadtrout-saumonarcenciel/management-scenarios-gestion/index-eng.html>

#### **5.3.11.4 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 licences have been amended to include a Condition of Licence for Marine Mammals that specify mitigation measures and new reporting requirements.

#### **5.3.11.5 DEPREDAATION**

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. 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 [MarineMammals@pac.dfo-mpo.gc.ca](mailto:MarineMammals@pac.dfo-mpo.gc.ca) or by calling (604) 666-9965. Reporting all incidents will assist DFO and fish harvesters in understanding this problem and help in developing strategies to avoid it.

### **5.3.12 WHALE, TURTLE AND BASKING SHARK SIGHTINGS**

The Department welcomes assistance in the reporting of any whale, Leatherback Sea Turtle or Basking Shark entanglement or sighting. 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).

#### **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
- Species
- Animal alive/dead
- Nature of injury
- Location: Latitude/Longitude coordinates, landmarks
- Pictures/Video taken



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

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

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

Internet: [www.wildwhales.org](http://www.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)

Internet: [www.dfo-mpo.gc.ca/species-especes/sharks/report-eng.html](http://www.dfo-mpo.gc.ca/species-especes/sharks/report-eng.html)

### 5.3.13 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 in Schedule 1 of the *Species at Risk Act*. Broad strategies for recovery are identified in the *Recovery Strategy for 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:

[http://www.sararegistry.gc.ca/document/default\\_e.cfm?documentID=1341](http://www.sararegistry.gc.ca/document/default_e.cfm?documentID=1341).

Critical habitat and its associated features have been identified for both populations in the Recovery Strategy, and are protected from destruction under SARA Section 58(4) and (5) through the issuance of Critical Habitat Orders. 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 Whales \(Orcinus orca\) in Canada \(DFO 2017\)\*](#) follows from 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.

#### 5.3.13.1.1 Key Threat: Lack of Prey

Northern and Southern Resident Killer Whales are dietary specialists and feed primarily on Chinook 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 the summer and fall, the principal prey of SRKW appears to be Chinook and Chum Salmon and throughout the Salish Sea, Chinook salmon have experienced poor returns in recent years. There is less known about the winter and spring diet and winter distribution of the Southern Residents but recent and ongoing research will further our understanding and help further identify 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. Fisheries that occur within the range of the Resident Killer Whales as well as fisheries outside their range that affect Chinook abundance within their range are both potentially implicated.

In addition to continued research on the threat of reduced prey availability, the Action Plan identifies measures to explore potential management actions to address this threat, including:

- a) Take into account both the seasonal (acute) as well as the cumulative (chronic) effects of poor returns for Chinook and other important prey species on Resident Killer Whales when managing fisheries.

- b) Investigate the benefits of strategic salmon fishery planning approaches and management actions to reduce Resident Killer Whale prey competition in specific feeding areas (e.g. modeling, retention limits, fishery area boundary adjustments or closures), and implement where appropriate.
- c) Evaluate the potential impacts of disturbance and prey competition from fisheries on foraging success in key Resident Killer Whale foraging areas.

For the 2018 salmon fishing season, the Department focused on ways to support increased Chinook salmon prey availability in key foraging areas within the SRKW Critical Habitat. The primary objective of the measures was to improve Chinook salmon availability for SRKW by decreasing potential fishery competition, as well as, minimizing physical and acoustic disturbance in key foraging areas to the extent possible. The measures were in place from June 1 to September 30

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

There are numerous chemical and biological pollutants that may directly or indirectly impact resident killer whale, 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. PCBs and certain fire-retardant persistent organic pollutants have been banned in Canada. Canada and U.S. researchers continue to monitor resident killer whale populations.

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

All cetaceans, including Resident Killer Whales, are being subjected to increasing amounts of disturbance from vessels, aircraft and anthropogenic noise. Industrial activities such as: dredging, pile driving, construction, seismic testing, military sonar and other vessel use of low and mid-frequency sonars impact the acoustic environment. 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, but may depend on whether the disturbance is chronic or acute.

The Marine Mammals Regulations under the *Fisheries Act* and prohibitions under *SARA* specifically prohibit the disturbance and harm of killer whales. 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:

<http://www.dfo-mpo.gc.ca/fm-gp/mammals-mammiferes/viewing-observation-eng.html>.

Non-compliance with the *Be Whale Wise* Guidelines may lead to charges under the *Marine Mammal Regulations* and/or SARA.

### 5.3.13.2 SOUTHERN RESIDENT KILLER WHALE

Over the past two years, the Government of Canada has taken important steps to protect and recover the SRKW population, in keeping with direction provided in SARA recovery documents. In May 2018, the Minister of Fisheries, Oceans and the Canadian Coast Guard, and the Minister of Environment and Climate Change Canada (ECCC) determined that the SRKW is facing imminent threats to its survival and recovery. Given the status of the population and ongoing threats to SRKW recovery, DFO implemented a number of measures in 2018, including measures aimed at increasing prey availability and accessibility for SRKW - particularly Chinook Salmon—and reducing threats related to physical and acoustic disturbance in key foraging areas.

Building on the Whales Initiative (2018)<sup>10</sup>, the Government announced a suite of new measures focused on broadening and strengthening protection for the SRKW on October 31, 2018, including:

- Protecting and recovering Chinook salmon stocks (the primary prey for SRKW);
- Continuing to identify and protect new areas of critical habitat;
- Advancing feasibility work on killer whale sanctuaries;
- Expanding vessel slow-downs and vessel monitoring systems; and
- Developing underwater noise management plans.<sup>11</sup>

In order to help inform these measures, federal Departments convened five new Technical Working Groups (TWGs):

- Prey availability and accessibility (led by DFO);
- Identification/development of proposed SRKW sanctuaries (led by DFO);

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<sup>10</sup> Whales Initiative: Protecting the Southern Resident Killer Whale  
(<https://www.tc.gc.ca/en/campaigns/whales-initiative-protecting-southern-residen-killer-whale.html>)

<sup>11</sup> Government of Canada taking further action to protect Southern Resident Killer Whales  
(<https://www.canada.ca/en/fisheries-oceans/news/2018/10/government-of-canada-taking-further-action-to-protect-southern-resident-killer-whales.html>)

- Vessel noise measures related to large commercial vessels (co-led by Transport Canada, TC);
- Additional vessel noise measures (led by TC); and
- Contaminants (led by Environment and Climate Change Canada, ECCC).

These Working Groups include technical and subject matter experts from First Nations communities, stakeholders and other levels of government. The groups have been tasked with providing recommendations to Ministers and Departments on a range of measures to address key threats to the SRKW population, including recommendations for immediate action in the 2019 season, and recommendations for longer-term recovery actions.

Advice from the Technical Working Groups was provided in early March 2019. DFO, TC, and ECCC then undertook further consultation with First Nations, commercial and recreational harvesters, environmental interest groups and the public on potential management measures for the 2019 season, including through existing fisheries advisory processes.

On May 10, 2019, the Government announced a suite of new measures to be implemented this summer that help address the key threats of lack of prey, and acoustic and physical disturbance. Additional information on these measures can be found at: <https://www.canada.ca/en/fisheries-oceans/news/2019/05/government-of-canada-announces-enhanced-measures-for-protecting-british-columbias-southern-resident-killer-whales.html>

Further to that announcement, on May 27, 2019, the Government of Canada issued an Interim Order under the Canada Shipping Act, effective on June 1, 2019, to help protect whales from vessel disturbance. <https://www.canada.ca/en/transport-canada/news/2019/05/government-of-canada-issues-interim-order-and-signs-agreement-with-whale-watching-association-to-further-support-recovery-of-southern-resident-kill.html>

Under this Interim Order, as of June 1, 2019:

All vessels are prohibited from approaching any killer whale within a 400-metre distance. This prohibition applies throughout the Southern Resident killer whale critical habitat. Vessels are prohibited from entering areas newly designated as Interim Sanctuary Zones. Some exemptions are provided for emergency response vessels and vessels/Indigenous persons engaged in certain activities. These zones are located at Swiftsure Bank, off the east coast of Saturna Island, and the south-west coast of North Pender Island, as follows:

1. Saturna Island

Those portions of Subareas 18-5 and 18-11 off Saturna Island inside a line commencing on the shoreline of Saturna Island at 48°47.033'N and 123°03.550'W [North Boundary of East

Point(shoreline)] northeasterly to a point in water at 48°47.300'N and 123°03.000'W [Tumbo Channel], thence northeasterly to a point in water at 48°47.666'N and 123°02.416'W [Northwest Corner(Boiling Reef)], thence southeasterly to a point in water at 48°47.550'N and 123°02.000'W [Northeast Corner(Boiling Reef)], thence southwesterly to a point in water at 48°46.933'N and 123°02.666'W [Boundary Pass], thence southwesterly to a point in water at 48°46.600'N and 123°03.166'W [Narvaez Bay Boundary Following the Traffic Separation Scheme(TSS)], thence southwesterly to a point in water at 48°46.450'N and 123°03.650'W [Narvaez Bay Boundary Following the TSS], thence southwesterly to a point in water at 48°46.300'N and 123°04.200'W [Southeast Corner (Narvaez Bay)], thence northwesterly to a point in water at 48°46.416'N and 123°04.533'W [Southwest Corner (Narvaez Bay)], thence northeasterly to a point along the shoreline of Saturna Island at 48°46.766'N and 123°03.916'W [South Boundary of East Point(shoreline)], and thence following the eastern shoreline back to the point of commencement. [Saturna Island Interim Sanctuary Zone]

## 2. Swiftsure Bank

Those portions of Subareas 121-1 and 121-2 inside a line commencing at a point in water located at 48°34.000'N and 125°06.000'W [Northwest Boundary] due east to a point in water located at 48°34.000'N and 124°54.200'W [Northeast Boundary], thence southeasterly to a point in water at 48°32.100'N and 124°49.518'W [Southeast Boundary], thence due west to point in water located at 48°32.100'N and 125°01.843'W [Southwest Boundary], and thence northwesterly back to the point of commencement. [Swiftsure Bank Interim Sanctuary Zone]

## 3. Pender Island

That portion of Subarea 18-4 west of Pender Island inside a line commencing at a point in water at 48°44.166'N and 123°13.900'W [Southeast Boundary (Wallace Point)] due east to a point in water located at 48°44.166'N and 123°15.550'W [Southwest Boundary (Swanson Channel)], thence northwesterly to a point in water at 48°46.050'N and 123°19.516'W [Northwest Boundary (Swanson Channel)], thence due east to point in water at 48°46.050'N 123°18.383'W [Northeast Boundary(South of Thieves)]

DFO has implemented fishing closures in the below areas to correspond with vessel prohibitions under the Canada Shipping Act.

As of June 1, 2019, the following closures are in place:

1. WCVI

Subareas 20-3 and 20-4

2. Gulf Islands (Pender Islands)

Those portions of Subareas 18-2, 18-4 and 18-9 inside a line drawn from a point located along Wallace Point on North Pender Island at 48°44.173' north latitude and 123°13.956' west longitude southwesterly across Swanson Channel to a point located on the shoreline of Moresby Island at 48°43.765' north latitude and 123°18.476' west longitude, thence northwesterly along the shoreline to Parkin Point located at 48°43.885' north latitude and 123°18.666' west longitude, thence northwesterly to northeastern extremity of Beaver point on Saltspring Island at 48°46.518' north latitude and 123°21.997' west longitude, thence northerly to a point in water located at 48°46.838' north latitude and 123°21.979' west longitude, thence northeasterly to a point along the eastern shoreline of Prevost Island at 48°49.258' north latitude and 123°21.265' west longitude, thence northerly and westerly along the shoreline to 48°49.475' north latitude and 123°21.319' west longitude, thence northerly and westerly along the shoreline around Portlock Point to 48°49.944' north latitude and 123°21.468' west longitude, thence northerly across Trincomali Channel to a point west of Collinson Point on Galiano Island at 48°51.580' north latitude and 123°21.376' west longitude, then easterly along the shoreline to 48°51.583' north latitude and 123°21.128' west longitude, thence across Active Pass to Helen Point on Mayne Island at 48°51.449' north latitude and 123°20.719' west longitude, thence southerly along the shoreline to the western extremity of Dinner Point at 48°49.983' north latitude and 123°19.663' west longitude, thence southerly, across to Stanley Point on North Pender Island located at 48°49.199' north latitude and 123°19.544' west longitude, and thence southerly and easterly along the shoreline of North Pender Island back to the point of commencement.

3. Gulf Islands (Saturna Island)

The portions of Subareas 18-4 and 18-5 inside a line drawn from Murder Point on Saturna Island located at 48°45.811' north latitude and 123°09.318' west longitude easterly and northerly along the shoreline to a point south of East Point at 48°46.867' north latitude and 123°02.915' west longitude, thence southwesterly to a point in water at 48°46.634' north latitude and 123°03.117' west longitude, thence southwesterly to a point in water intersecting with the international boundary with the United of America at 48°44.866' north latitude and 123°04.638' west longitude, thence southwesterly along the international boundary with the United States

of America to a point in water located at 48°42.928' north latitude and 123°11.505' west longitude, thence northeasterly in a straight line back to the point of commencement.

These closures apply to:

- All salmon by gill net, purse seine net and hook and line;
- The above closures do not apply to individuals or vessels being used to fish or food, social or ceremonial purposes, or for domestic purposes pursuant to a treaty, under a licence issued under the Aboriginal Communal Fishing Licence Regulations.

The Interim Order and corresponding fishery closures will be in place until October 31, 2019.

Voluntary SRKW Measures:

Given the imminent threats whales are facing, the Government is also asking vessel operators to respect the following voluntary measures:

Respect a "Go Slow" zone around whales by reducing speed to less than 7 knots when within 1,000 metres of a whale in the Enhanced Management Areas that have been identified through the Gulf Islands, the Strait of Juan de Fuca and the Mouth of the Fraser River; and

Reduce noise by turning echo sounders off when not in use and turning engines to neutral idle when within 400 metres of a whale.

### **5.3.13.3 MARINE MAMMAL PROTECTION ACT**

In 2016, the US published new regulations (80 FR 54390) implementing the Marine Mammal Protection Act (MMPA) import provisions pertaining to the reduction of marine mammal bycatch in foreign commercial fishing operations. Every four years, the US publishes information on all fisheries that export to the US in the List of Foreign Fisheries (LFF). A harvesting nation intending to export fish and fish products to the US after January 1, 2022, must apply to the US National Oceanic and Atmospheric Administration (NOAA) for a comparability finding for each of its commercial fisheries listed in the LFF.

To receive a comparability finding for a fishery, the US MMPA import provisions mandate that the harvesting nation 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 bycatch estimates from at-sea observer programs and management/mitigation measures.

DFO will be working closely with the commercial fishing industry and other stakeholders to facilitate the process under these new regulatory requirements in the US. Further information



regarding the US-MMPA import provisions can be obtained by contacting your Regional Fisheries Coordinator or the DFO Marine Mammal Unit (MMU) (Contact: Lee Harber, Marine Mammal Advisor; [Lee.Harber@dfo-mpo.gc.ca](mailto:Lee.Harber@dfo-mpo.gc.ca)).

The Government of Canada recognizes that Southern Resident killer whales face imminent threats to their survival and recovery, and has implemented additional measures to save these endangered marine mammals.

#### **5.3.13.4 AMENDED MARINE MAMMAL REGULATIONS**

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 200m from all Killer Whales. The amended regulations also provide clarification on what it means to disturb a marine mammal, including feeding, swimming or interacting with them; moving it (or enticing/causing it to move); separating a marine mammal from its group or going between it and a calf; trapping marine mammals between a vessel and the shore, or between boats; as well as tagging or marking it.

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](mailto:Paul.Cottrell@dfo-mpo.gc.ca)).

#### **5.3.14 ENVIRONMENT CANADA ASSESSING THE IMPACT OF SALMON GILL NET FISHING ON LOCAL SEABIRD POPULATIONS**

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)

### **5.3.15 AQUACULTURE MANAGEMENT**

#### **REGULATORY REGIME:**

In December 2010 the Pacific Aquaculture Regulations 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.

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 Front Counter 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 the DFO web pages:

<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 on-going 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/consultation/aquaculture/index-eng.html>

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

### **AQUACULTURE MANAGEMENT ADVISORY COMMITTEES:**

Aquaculture Management Committee Meetings (AMACs) engage the aquaculture industry, First Nations, and other stakeholders in development of IMAPs and on-going feedback relevant to the management of Aquaculture.

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

### **5.3.16 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 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, stock assessment, 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 plan 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), larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). Not included are smaller

Public Involvement Projects (PIPs) that are focused toward stewardship, stock rebuilding or educational activities and do not release large numbers of fish that would affect fisheries. There are two datasets available at the link below:

- 1) Post-Season Production from the 2017 brood year (i.e. 2018 releases, and #'s on hand for 2019 release)
- 2) Draft SEP Production Plan, which include proposed targets for the 2019 brood year. The Production Plan dataset is preliminary, and the final version will be available upon the final publication of the IFMP in June 2019.

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

Significant production changes for 2019 are incorporated into the *Enhancement Information* in each Species Overview of the Section [13](#) Fishing Plans.

### **5.3.17 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.

## **6 FISHERY MANAGEMENT OBJECTIVES FOR STOCKS OF CONCERN**

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### **6.1 LOWER STRAIT OF GEORGIA CHINOOK**

**The objective for Lower Strait of Georgia (LGS) Chinook is to continue rebuilding through a comprehensive set of fishery, hatchery, and habitat related actions.**

The Cowichan River is the primary indicator of marine survival and exploitation for the LGS fall Chinook. Returns in 2009 declined to 1,260 adults but have been increasing steadily with the 2018 total return of 16,472 adults.  $S_{msy}$  for this population is currently 6,500 adults which has been exceeded for three consecutive years. In addition, the 2018 age 2 (jack) return is estimated to be 6,582 which is well outside the ten year average of 1,330. The proportion of hatchery fish within the population has averaged 24% since 1988 but was estimated at 9.5% in 2018 based on adipose clips suggesting wild fish are driving the recent increases in abundance. Returns to the Big Qualicum were near the 4 year average while more than 10,000 fish were enumerated at the Puntledge River (1.5X the 12 year average) for the second year in a row suggesting marine survival has likely improved for both hatchery and wild fish. LGS Chinook are harvested in terminal area fisheries by First Nations, mixed stock commercial troll fisheries off the west coast of Vancouver Island and recreational fisheries off the west coast of Vancouver Island, in the Strait of Juan de Fuca, in the Strait of Georgia and in Johnstone Strait. Fishery restrictions introduced in recent years include PST reductions to the WCVI troll total allowable catch, restrictions in Victoria sport, spot closures in the Strait of Georgia, and terminal area sport closures from Nanaimo to Saanich. In light of proposed management actions to protect SRKW and Fraser Chinook, reductions to recreational catches are expected to occur throughout the SOG. These in combination with average to above average escapements provided an opportunity to review both spot and terminal area closures; spot closures in the Northern Strait of Georgia will not be in effect in 2019 due to the significant overlap with management measures directed at Fraser bound Chinook, however all terminal area closures will remain in effect for the 2019 season. A management framework that considers abundance levels, triggers and associated fishery management measures is being developed consistent with the Southern BC Chinook strategic planning and the Wild Salmon Policy. Other measures underway are alternative release strategies for hatchery Chinook, based on recent work that showed large in-river, post-release mortalities, and a comprehensive watershed based recovery initiative involving partners such as First Nations, NGOs and local governments.

## 6.2 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%. Within the 10% exploitation rate objective, the northern troll fishery will be managed 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; as a result WCVI wild Chinook continue to be stocks of concern.

Management actions will continue to be required consistent with the exploitation rate objective. Fisheries that this limit applies to are the northern troll, Haida Gwaii recreational, WCVI troll and WCVI recreational. The exploitation rate is estimated 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.

The objective for Area G is to avoid encounters with WCVI Chinook by restricting the troll fishery to offshore areas during the summer period. Specifically, there will be a 5 nautical mile inside boundary in South West Vancouver Island (Areas 123 to 126) and a 2 nautical mile boundary in North West Vancouver Island (Areas 126-4 and 127) during the period when WCVI Chinook return to the West Coast of the island.

As a result of concerns for WCVI Chinook that emerged in the mid-late 1990's a suite of management measures were implemented on the WCVI intended to protect wild WCVI Chinook from recreational fishing pressure. These management measures fluctuated yearly with levels and areas of restriction. In 2000, a recreational fishery "Chinook management corridor", extending one nautical mile offshore from the surfline was put in place along the West Coast of Vancouver Island in order to reduce the exploitation rate on adult female Chinook that migrate along the coastline back to their natal WCVI streams. The surfline is defined in Schedule 1 of the Pacific Fishery Management Area Regulations, 2007. From 2006 to 2015 the suite of management measures remained relatively stable with very few local changes.

Chinook corridor management measures were revised in 2016 and adjusted from size limit management within the corridor to a network of open areas and finfish closures. Additional terminal Chinook non-retention areas were included to protect local stocks as well as areas of increased recreational access was provided where hatchery stock composition was considered to be the highest.

### 6.3 FRASER SPRING 4<sub>2</sub> CHINOOK

**NEW:** For 2019, the management objective is to reduce overall Canadian fishery mortalities on these populations to near 5%.

Substantial reductions in fishery mortalities are required for Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook given their poor stock status, extremely poor productivity and expectations for continued declines in spawner abundance. Any fishery mortalities will worsen spawner declines unless productivity improves.

Expected fishery mortalities are not intended to be a management target and the objective is to allow as many fish to pass through to the spawning grounds as possible. Note: actual fishery mortality outcomes may vary around the target given uncertainties in the data. Fishery impacts are expected to include incidental Chinook mortalities in Fraser River Chinook and Sockeye test fisheries, limited Chinook retention or bycatch retention in Fraser River First Nation FSC fisheries, release mortalities, and incidental mortalities during Chinook-directed fisheries beginning after July 15.

Fisheries management actions are now outlined in Section 13 Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook.

In the 2019 Salmon Outlook, Spring 4<sub>2</sub> Chinook has been classified as stock of concern given ongoing unfavorable marine survival conditions and low productivity. The reconstructed parental brood year (2015) escapement was 13,931.

Fraser Spring 4<sub>2</sub> Chinook have historically been encountered in Fraser River First Nations gill net fisheries, Fraser River and tributary recreational fisheries, marine troll fisheries (e.g. WCVI and North Coast), and recreational fisheries in Southern BC.

For further information on the management of Fraser Spring 4<sub>2</sub> Chinook refer to the Southern Chinook ISBM fishery Section [13.1.3](#) in Section [13](#) Southern Chinook Salmon Fishing Plan.

### 6.4 FRASER SPRING 5<sub>2</sub> AND SUMMER 5<sub>2</sub> CHINOOK

**NEW:** For 2019, the management objective is to reduce overall Canadian fishery mortalities on these populations to near 5%.

Substantial reductions in fishery mortalities are required for Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook given their poor stock status, extremely poor productivity and expectations for continued declines in spawner abundance. Any fishery mortalities will worsen spawner declines unless productivity improves.



Expected fishery mortalities are not intended to be a management target and the objective is to allow as many fish to pass through to the spawning grounds as possible. Note: actual fishery mortality outcomes may vary around the target given uncertainties in the data. Fishery impacts are expected to include incidental Chinook mortalities in Fraser River Chinook and Sockeye test fisheries, limited Chinook retention or bycatch retention in Fraser River First Nation FSC fisheries, release mortalities, and incidental mortalities during Chinook-directed fisheries beginning after July 15.

Fisheries management actions are now outlined in Section [13](#) Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook.

In the 2019 Salmon Outlook, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook stocks have been classified as stock of concern given on-going depressed parental abundance, unfavourable marine survival conditions and low productivity. For the return in 2019, the reconstructed parental brood year (2014) escapement was approximately 82,000 spawners. This value represents the escapement from a run-reconstruction analysis that is conducted annually. That analysis uses the indicator stock escapement estimates and other data to generate an estimate of the total escapement of the Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook stocks (including those streams that are not monitored regularly).

For further information on the management of Fraser Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook refer to the Southern Chinook ISBM fishery Section [13.1.4](#) in Section [13](#) Southern Chinook Salmon Fishing Plan.

## **6.5 INTERIOR FRASER RIVER COHO**

**The objective for Interior Fraser River Coho (including Thompson River Coho) is to manage Canadian fisheries in a highly precautionary manner with fisheries management measures similar to those in place prior to 2014. This approach is expected to achieve an overall exploitation rate in Canadian waters within the 3 – 5% range.**

Assessments of Interior Fraser River Coho salmon stocks in the mid-1990s revealed that alarming declines in spawning populations were occurring in many spawning sites. Low marine survival rates in combination with excessive fishery impacts were identified as key factors in this decline. Beginning in 1997, DFO implemented a number of fishery management measures to reduce the harvest impacts on these stocks, with more severe measures being implemented beginning in 1998. In most years since that time, Canadian fisheries impacting these stocks have been curtailed to limit the exploitation rate to 3 percent or less, with an additional 10 percent permitted in U.S. fisheries (as per the Pacific Salmon Treaty management regime).

Currently, there is no evidence that IFR Coho has departed from the 'low' productivity regime that has persisted since the 1994 return year. Current productivity is still well below that of the relatively high productivity period of 1978-1993.

Despite generally low fisheries impacts, achievement of recovery objectives, as laid out in the Conservation Strategy for Coho Salmon, *Oncorhynchus kisutch*, Interior Fraser River Populations, October 2006 (<http://www.dfo-mpo.gc.ca/Library/329140.pdf>), has not been consistent, suggesting little rationale to move out of the current cautious fisheries management regime.

A further consideration is the poor forecasting ability for IFR Coho. In recent years, there has been weak correspondence between brood-year escapements and subsequent adult returns; therefore, one (or a small number) of strong brood years should not be considered predictive of future strength in returns.

As outlined in Chapter 5 of the Pacific Salmon Treaty (PST), allowable exploitation rates (ERs) for Canada and the U.S. are identified based on the status of Coho management units (MUs). Canada is responsible for determining the status level for Canadian MUs and setting the corresponding ER caps for both parties.

In 2018, based on the results of the science advice and recommendations from a domestic consultation process, Canada updated the PST management approach based on the status of Interior Fraser River (IFR) Coho MU using an integration of marine survival rates (with break points at 3% and 6%) and spawner abundance. Under this approach, ER caps will be set at 20%, 30% and 45% for Low, Moderate and Abundant status. Canada will be required to confirm the status of Interior Fraser River Coho MU in March of each year. Additional background information as well as a summary report from domestic consultations may be found here: <http://www.pac.dfo-mpo.gc.ca/consultation/smon/pst-coho-tsp/index-eng.html>

Table 6.5-1: Pacific Salmon Treaty Low, Moderate and Abundant status determination criteria and exploitation rate caps for the Interior Fraser River Coho Management Unit.

	Low	Moderate	Abundant
<b>Survival</b>	$S \leq 0.03$	Three consecutive years $0.03 < S \leq 0.06$	Three consecutive years $S > 0.06$
		AND	AND
<b>Escapement</b>	Monitored in CUs and subpopulations but no thresholds	Three consecutive years: <ul style="list-style-type: none"> <li>Half of subpopulations in each CU <math>&gt; 1000</math>; or</li> <li>Aggregate MU escapement objective (e.g., 27,000)</li> </ul>	Three consecutive years: <ul style="list-style-type: none"> <li>All IFR Coho subpopulations in each CU <math>&gt; 1000</math>; or</li> <li>Aggregate MU escapement objective (e.g., revised 40,000)</li> </ul>
<b>ER cap (US/Can)</b>	<b>0.20</b> (0.10/0.10)	<b>0.30</b> (0.12/0.18)	<b>0.45</b> (0.15/0.30)

In addition, Canada or the U.S. may choose to manage to a lower ER based on domestic fisheries management considerations as has been done domestically for Coho in previous years (domestically this has been an ER cap of 3%-5%). Domestic management decisions will be discussed through the annual process to develop the Integrated Fisheries Management Plans (IFMPs).

For 2019, Interior Fraser River Coho will remain in the Low status zone, which would permit Canada and the United States to manage up to a 20% exploitation rate (with a cap of 10% for each party) under the PST. The Department is planning a precautionary approach to management of southern BC fisheries with management measures in place similar to those in place prior to 2014. Under this approach, fisheries impacts would be limited to incidental, bycatch or release mortalities in most areas and in recent years this was expected to result in a 3-5% Canadian domestic exploitation rate.

Management measures to protect Interior Fraser River Coho will be applied from May to September when these populations are expected to be encountered in Southern BC waters.

These measures are also expected to limit impacts on other Coho populations in Southern BC, including Lower Fraser River Coho and Strait of Georgia Coho populations.

Management measures may be considered for fisheries in the following areas and times to limit overall impacts on Interior Fraser Coho consistent with annual management objectives:

- West Coast Vancouver Island (WCVI) troll (commercial and First Nations) and recreational fisheries in offshore areas from late May until early September,
- Commercial net and recreational fisheries in the Juan de Fuca Strait from June until early October,
- Commercial, recreational and First Nations fisheries in Johnstone and Queen Charlotte Straits from early June until mid-September,
- Commercial, recreational and First Nations fisheries in the Strait of Georgia from June until early October,
- Commercial, recreational and First Nations fisheries both off the mouth of, and in, the Fraser River from early September until mid-October, and
- Commercial, recreational and First Nations fisheries in the Fraser River upstream of Sawmill Creek from mid- to late September until late October.

For planning purposes, Interior Fraser Coho fishing mortality is estimated pre-season using a series of models that integrate assumptions about anticipated Coho encounters, fishing effort levels, an estimate of the proportion of Interior Fraser River Coho stocks within the total encounters based on past data, and an average release mortality rate. A post-season estimate of exploitation rate is developed from the same models but using any actual information on encounter rates and fishing effort collected during the fishing season. These models are expected to undergo further review by CSAS but work is not yet complete.

## **6.6 CULTUS LAKE SOCKEYE**

**Cultus Lake Sockeye will be managed within the constraints of the exploitation rate identified for the Late Run aggregate. The maximum allowable exploitation rate for Cultus Lake Sockeye will be the greater of a) the low abundance exploitation rate (LAER) identified for Late Run Sockeye, or b) the exploitation rate that is consistent with continued rebuilding of the population based on in-season information on returns and potential numbers of effective spawners. The exploitation rate on Cultus Lake Sockeye is intended to allow for fisheries on more abundant co-migrating stocks while allowing for the Cultus population to increase in abundance. For Late Run Sockeye, management will be based on an abundance-**

based Total Allowable Mortality (TAM) as outlined in the Fraser Sockeye escapement plan; see Section [13](#) – Southern Sockeye Salmon Fishing Plan ([13.5](#)) under the Fraser Sockeye section.

The recovery objectives as outlined in the National Conservation Strategy for Cultus Lake Sockeye Salmon (*Oncorhynchus nerka*) (Cultus Lake Sockeye Recovery Team, 2009) are as follows:

- **Objective 1**  
Ensure the genetic integrity of the population by exceeding a four year arithmetic mean of 1,000 successful adult spawners with no fewer than 500 successful adult spawners on any one cycle.
- **Objective 2**  
Ensure growth of the successful adult spawner population for each generation (that is, across four years relative to the previous four years), and on each cycle (relative to its brood year) for not less than three out of four consecutive years.
- **Objective 3**  
Rebuild the population to the level of abundance at which it can be de-listed (i.e., designated Not at Risk) by COSEWIC.
- **Objective 4**  
Over the long term, rebuild the population to a level of abundance (beyond that of Objective 3) that will support ecosystem function and sustainable use.

Objective 1 secures genetic variability, Objective 2 ensures the population is growing, and Objective 3 achieves de-listing by COSEWIC – the change in designation from *Endangered* to *Not at Risk*. Once the population is de-listed, conservation objectives should be consistent with (i.e., not less than) those specified for other Sockeye populations. Objective 4 proposes candidate benchmarks that correspond to our current understanding of the dynamics of Cultus Sockeye.

The full conservation strategy is online at:

<http://www.dfo-mpo.gc.ca/Library/337479.pdf>.

Cultus Lake Sockeye is a component of the Late Run Fraser River Sockeye aggregate which is typically harvested in southern BC waters in August and September.

The returns of Sockeye salmon to Cultus Lake have been particularly low relative to historic averages. To work toward rebuilding this population, Late Run Sockeye fishery management actions were implemented to reduce fishery exploitation levels on this stock. Enhancement measures have included fry and smolt releases as well as a captive brood program. The captive

brood program reared fish from brood years 2000 to 2009, at which time the program was phased out – the last progeny of captive brood fish were released in October, 2014. A hatchery supplementation program continues. Total juvenile releases have been reduced to approximately 30% of levels achieved during the captive breeding program years. Freshwater measures in the past have included: predator control (removal of adult northern pikeminnow in Cultus Lake), removal of Eurasian watermilfoil and various research that includes spawning habitat quality assessments, limnology and fry surveys, contaminant assessment, etc. An overview on the recovery activities and the status of Cultus Lake Sockeye to 2009 can be found in the Status of Cultus Lake Sockeye Salmon (Bradford et al., 2010), available on-line at: [http://www.dfo-mpo.gc.ca/CSAS/Csas/publications/resdocs-docrech/2010/2010\\_123\\_e.pdf](http://www.dfo-mpo.gc.ca/CSAS/Csas/publications/resdocs-docrech/2010/2010_123_e.pdf)

All Canadian fisheries that could harvest Cultus Lake Sockeye will be impacted by the need to limit exploitation on this stock. This includes:

- Closures in all fisheries with the possibility of impacting Cultus or Late Run fish when harvest limits for this stock group have been reached.
- Restrictions to First Nations fisheries in Queen Charlotte and Johnstone Straits, Strait of Georgia, Strait of Juan de Fuca, West Coast of Vancouver Island and the lower Fraser River, downstream of the Vedder River. However, where surpluses are identified, first priority will be accorded to First Nations for opportunities to harvest fish for FSC purposes.
- Restrictions to recreational salmon fisheries in southern BC will include Sockeye non-retention in specific locations when Cultus Lake Sockeye are present and allowable harvest limits have been reached.
- Closures to commercial salmon fisheries in southern BC when Late Run Sockeye are present, or expected to be present, in the area as it will not likely be possible to identify the run size of Cultus Lake Sockeye in-season due to relative low abundances of Cultus Lake Sockeye compared to other co-migrating Sockeye stocks. These closures will come into effect when allowable harvest limits for this stock group have been reached. Fisheries directed at other stocks or species of salmon will be subject to Late Run/Cultus constraints.

Several lines of research have been undertaken to increase our understanding of the impacts of human activities on the Cultus Lake ecosystem and to monitor the status of Cultus Lake Sockeye salmon. Beginning with the 2013 brood year (i.e., 2014 fry release); enhancement activities to supplement juvenile production have been implemented at lower levels compared to the captive brood program years.

Release targets for the enhancement program are approximately 150,000 fed fry (summer) into the Lake, 50,000 fed fry (fall) into the Lake, and 25,000 smolts (spring) into Sweltzer Creek near the outlet of Cultus Lake.

Within the Fraser River upstream of the Fraser/Vedder confluence, recreational and First Nations fisheries for Fraser Sockeye during Cultus migration timing will be managed based on Late Run constraints as Cultus Lake Sockeye have exited the Fraser River.

For harvest constraints on the Late Run Sockeye stock group aggregate refer to Fraser Sockeye section of Section [13](#) – Southern Sockeye Salmon Fishing Plan ([13.5](#)).

## **6.7 SAKINAW LAKE SOCKEYE**

**The objective for Sakinaw Lake Sockeye is to stop their decline and re-establish a self-sustaining, naturally spawning population.**

In the 2019 Salmon Outlook, Sakinaw Lake Sockeye has been classified as a stock of concern given continued very low survival (both in fresh and marine waters) and low escapements in recent years.

This objective will not be achieved until spawner abundance relative to previous brood years increases for at least 3 out of 4 consecutive years and there are no fewer than 500 natural spawners annually.

To maximize our chances in achieving this objective, a captive brood stock program designed to maintain genetic integrity and minimize inbreeding was initiated in 2001. Achieving this objective also meant that mortality, including fishing mortality, needed to be minimized, as much as practicable.

Sakinaw Lake is located in the Strait of Georgia north of Sechelt. Migration timing data on Sakinaw Lake Sockeye is limited. Current data suggests Sakinaw Lake Sockeye have a prolonged migration period commencing in Johnstone Strait in late May to July and arriving at the entrance to Sakinaw Lake in northern Strait of Georgia in July and August. Given this timing pattern, Sakinaw Lake Sockeye are most vulnerable to harvest directed at Fraser River Sockeye stocks in July extending into mid-August.

Most fisheries that have potential to intercept Sakinaw Lake Sockeye will continue to be delayed prior to the last week of July to ensure a significant portion of the return has passed through major fisheries in Johnstone Strait. The plan will provide for:

- Restrictions in First Nations FSC fisheries in Johnstone Strait will be restricted to gill net and troll only until July 25 and until August 15 in the northern Strait of Georgia.

- Recreational fisheries in Queen Charlotte Strait, Johnstone Strait, and northern Strait of Georgia will be closed to Sockeye retention until July 25. The waters near the mouth of Sakinaw Creek in Area 16 will be closed to fishing all season. In addition, there will be Sockeye non-retention restrictions in Area 16 until August 15 at which time Sockeye retention opportunities are expected to be available in Sabine Channel.
- Commercial fisheries in Queen Charlotte Strait and Johnstone Strait will be closed until July 25 and in the northern Strait of Georgia (including Sabine Channel) until August 15.

Recovery planning efforts to ensure rebuilding of this stock will continue to be supported. In addition to harvest related measures, there will be continued efforts made to improve the habitat (debris removal from spawning areas), investigations into the impacts of predation (seals, otters and lamprey) and enhancement work. Eggs are incubated in nearby hatchery facilities and the resulting fry are adipose clipped and released in the lake. The captive brood program will continue as a form of insurance to reduce the possibility of extirpation.

In 2018, 3 adult Sockeye returned to Sakinaw Lake from 78,878 smolts that left in 2016. The combined hatchery and natural origin marine survival estimate of 0.004% (0.14% for natural) is a growing concern as linear declines have been observed since 2011 for captive brood and 2013 for wild smolts. Expectations for 2019 are for another low return considering less than 35,000 smolts were enumerated in 2017 (8 year average is 100k). If marine survival remains the same for the 2017 ocean entry year, 7 adults are forecast to return in 2019. If the declining marine survival trend continues to follow the trend we may not see any adults return this summer.

## **6.8 NIMPKISH SOCKEYE**

**The objective is to minimize the impact of Canadian fisheries during periods of low abundance.**

The Nimpkish River has generally experienced low Sockeye escapements since the early 1990s. In recent years, the river has shown some improvements in Sockeye returns, with escapements of 139,000 and 154,000 Sockeye in 2010 and 2011 respectively. Since 2010, returns continued to show improvement over the prior years with consistently above average returns until 2017. The Sockeye escapement estimate in 2017 (~30K) was a below average return at abundance levels similar to numbers seen prior to 2010. In 2018, improved escapements were observed with approximately 84,000 Sockeye estimated past the DIDSON counter. The escapement target for Nimpkish Sockeye is currently under review, but the optimum based on lake capacity and fertilization ranges from 260,000-290,000.



Nimpkish Sockeye are encountered in Queen Charlotte Strait and Queen Charlotte Sound typically during June and July. In order to protect this stock, time and area closures may be implemented for First Nations, commercial, and recreational fisheries in the approach waters to the Nimpkish River (including the river). Other than test fisheries, marine waters north of Lewis Point on Vancouver Island (Subareas 11-1, 11-2 & 12-5 to 12-19) are scheduled to be closed to Sockeye retention in all fisheries until late July. However, marine waters north of Lewis Point may open to Sockeye retention in marine FSC fisheries prior to late July if in-season abundance of Nimpkish Sockeye is higher than expected and no other weak stock constraints exist. If in-season abundance permits, some First Nations FSC harvest may also occur within the Nimpkish River.

The Department is currently working with the Namgis First Nation on the development of an in-season assessment program in the lower river and some FSC harvest may occur in years of higher abundance.

At this time, no directed commercial or recreational fisheries are anticipated for Nimpkish Sockeye.

## **6.9 INTERIOR FRASER RIVER STEELHEAD**

Spawning escapement of Interior Fraser River (IFR) Steelhead has been on a downward trend for many years, with recent years' escapements reaching the lowest on record. In February 2018, COSEWIC completed an Emergency Assessment on Thompson and Chilcotin Steelhead as per S.28 (1) of SARA and found that both the Thompson and Chilcotin Designatable Units (DUs) were *Endangered*. Threats to Steelhead include poor ocean survival, reduced freshwater habitat quality, bycatch release mortalities from fisheries targeting Pacific salmon, and release mortalities from recreational catch and release fisheries targeting adult Steelhead. This assessment triggered an emergency listing process for these populations to determine whether or not to list the DUs under SARA on an emergency basis.

On June 28, 2019, the Minister of Fisheries announced that Cabinet had decided not to list these populations under the Species at Risk Act, opting instead to implement measures to recover these stocks through existing regulatory mechanisms under the recently amended Fisheries Act. In conjunction with the Province of British Columbia, the Minister announced the development of a conservation action plan for Thompson and Chilcotin Steelhead Trout to:

- reduce mortality and increase survival of Thompson and Chilcotin Steelhead returning to rivers to spawn;
- improve freshwater conditions through habitat protection and restoration; and,
- increase science and monitoring activities.

### **2019 Fisheries Management Measures to Support Recovery of Steelhead**

In the coming year, DFO will protect Interior Fraser River Steelhead from incidental fishing mortality occurring in salmon fisheries by expanding the window closure approach implemented in 2018. Moving window closures will be put in place for all commercial salmon fisheries located along the migratory route of Thompson and Chilcotin River Steelhead, including Southern BC marine waters and the Fraser River and tributaries downstream of Thompson and Chilcotin River Steelhead spawning areas.

- The closure window for commercial gillnet and seine fisheries (including purse seine, beach seine, and shallow seine gear) will be 42 days, while troll fisheries will be closed for 27 days.
- Recreational salmon fisheries within the Fraser River and tributaries (including areas immediately off the Fraser River mouth), will also be closed for a moving window period of 42 days.
- First Nations' Food, Social, and Ceremonial (FSC) salmon fisheries occurring within the Fraser River and tributaries downstream of Thompson and Chilcotin River Steelhead spawning areas will be closed for a 27-day moving window.
- Marine recreational and marine FSC salmon fisheries will not be affected by these measures.
- Additionally, any salmon fisheries occurring in terminal areas that are not considered to overlap with the migratory pathway of Thompson and Chilcotin Steelhead will not be subject to these closures.

Details of closure dates and areas that will be implemented in 2019 are outlined in Appendix 9, and details are provided for all affected fisheries in Section 13. Appendix 9 also contains a list of terminal fishing areas that are proposed to be exempted from the moving window closures in 2019, as they are not considered to be within the probable migratory route for returning Interior Fraser River Steelhead.

The responsibility for conservation and recovery of Interior Fraser River Steelhead is shared with the Province of British Columbia. The Government of Canada and the Province of British Columbia are committed to working collaboratively to address threats, reduce fish mortality, and promote growth for these populations. In 2019, the Province of British Columbia will continue to implement measures to limit impacts of provincially managed recreational trout fisheries on Thompson and Chilcotin Steelhead. Additional actions to be taken by the Province to support recovery of these populations are being developed in conjunction with DFO, as part of the conservation action plan for Thompson and Chilcotin Steelhead Trout.

## 6.10 NIMPKISH CHUM

**Objective:** To rebuild this Chum salmon population from the serious declines encountered in recent years through an evaluation of limiting factors and the development of a recovery plan.

The Nimpkish River has seen a steady decline in abundance of Chum since 1996. Initial observations indicated the decline perpetuated through that 4 year brood cycle (2000, 2004) and in more recent years other cycle lines have been affected. Currently DFO working with 'Namgis First Nation are developing a recovery plan for this population. This will include an assessment of limiting factors/threats associated with this population and an evaluation of various gaps in our understanding of the productivity of this stock. Options to improve ongoing supplementation through enhancement activities will be a major component of this recovery.

Based on the late migration timing of Nimpkish Chum (peak in river by mid to late November), it is assumed that the impact from Inner South Coast Fall Chum fisheries would very low.

At this time, no directed commercial or recreational fisheries are anticipated for Nimpkish Chum.

## 6.11 INSHORE ROCKFISH

**2019/2020: 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.**

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.

There are 164 Rockfish Conservation Areas (RCAs) in place within BC waters. Fish harvesters are reminded prior to fishing to check with the local DFO office to verify RCA and other closures currently in effect. Details of the current RCA process can be found in Section 5.3.8. Information on Rockfish Conservation Areas is available online at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/rca-acis/index-eng.html> or for further information on this, please contact Neil Ladell at [Neil.Ladell@dfo-mpo.gc.ca](mailto:Neil.Ladell@dfo-mpo.gc.ca).

### **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. Appendix 9 of 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.

## 7 GENERAL DECISION GUIDELINES, ACCESS AND ALLOCATION

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 ALLOCATION GUIDELINES

Allocation decisions are made in accordance with *An Allocation Policy for Pacific Salmon*: <http://www.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 7.1-1: 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.

All harvest groups have recommended that the Department consult on bycatch/incidental harvest allocations. However, 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.

### **7.1.1 FIRST NATIONS – FOOD, SOCIAL AND CEREMONIAL (FSC)**

*An Allocation Policy for Pacific Salmon* provides that after requirements for conservation, the first priority in salmon allocation is to FSC for harvest opportunities under communal FSC licences issued to First Nations, and to treaty rights for harvest opportunities for domestic purposes (consistent with Treaty Final Agreements). 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 areas 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.

### **7.1.2 FIRST NATIONS ECONOMIC OPPORTUNITY AND INLAND DEMONSTRATION FISHERIES**

For a more detailed description of Aboriginal commercial fishing opportunities please refer to Section [13](#) – Species Specific Salmon Fishing Plans.

### **7.1.3 RECREATIONAL FISHERIES**

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 5 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.

#### **7.1.4 COMMERCIAL FISHERIES**

*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. For example, in the case of Late Run Fraser River Sockeye, the Department may choose to close marine fisheries (seine, gill net and troll) and open river fisheries (gill net) to take advantage of a low abundance of Cultus or Late Run Sockeye and a significantly larger run size of Summer Run Sockeye.

#### **7.1.5 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.

## **7.2 ACCESS AND ALLOCATION OBJECTIVES**

### **7.2.1 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 Southern and Fraser Panels of the PSC and those results are published post-season.

### **7.2.2 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:

<http://www.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 [7.1](#).

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

### **7.2.3 FIRST NATIONS OBJECTIVES**

**The objective is 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 allocation in accordance with the Allocation Policy for Pacific Salmon.**

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

DFO consults with Aboriginal groups when allocation decisions may potentially affect them in accordance with S. 35 of the *Constitution Act, 1982*, relevant case law, and consistent with Departmental policies and considerations.

Feedback from consultation sessions is relied on to measure the performance of First Nations objectives.

#### **7.2.4 RECREATIONAL AND COMMERCIAL OBJECTIVES**

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

A primary objective in the recreational fishery is maintaining the opportunity and expectation to catch fish in a predictable manner. In the commercial fishery, the objective is to improve the economic performance of fisheries, to provide certainty to participants, and to optimize harvest opportunities. However, stocks of concern will continue to constrain opportunities in many fisheries resulting in less than optimal opportunities. Both fisheries will be managed to achieve maximum benefits where possible in accordance with conservation and allocation objectives.

### **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 closure 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.

All sectors have responded positively to the growing conservation consciousness. First Nations have embraced the principles of selective fishing by adopting more selective fishing gear, as often these types of gear reflect a traditional way of fishing. The commercial fishing sector has developed its own Canadian Code of Conduct for Responsible Fishing Operations. Over 80% of Canada's fishing organizations have signed on and ratified the Code that is overseen by a Responsible Fishing Board. Similarly, the recreational fishery in the Pacific Region developed a Code of Conduct. In addition, DFO has worked with the Sport Fishing Institute (SFI) on a Tidal Angling Guide certification program. The Sport Fishing Institute of BC (SFI) and go2, the resource for people in tourism, have developed an Industry Training Authority approved Tidal

Angling Guide (TAG) certification program. First of its kind in North America, this program encompasses Transport Canada requirements including the Small Vessel Operator Proficiency certification (SVOP). The SVOP and other certificates are federal requirements for non-pleasure, passenger carrying vessels operating on the BC coast.

#### **7.3.4 POST-RELEASE MORTALITY RATES**

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 employ the mortality rates reported by the PSC (2007).

Table 7.3-1: Post-Release Mortality Rates

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

Fishery	Pre 2001 Post-Release Rates (for historical comparison)	Post 2001-Release Rates
<b>Commercial tooth tangle net 3.5" mesh</b>	n/a	10% Sockeye, 15% Coho

\*Recent work by researchers from Carleton University and 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 indicate that short-term release mortality rates are less than the current 70% estimate. For the 2017 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*:

- I. Voluntary **compliance promotion** through education, stewardship and stakeholder engagement;
- II. Intelligence-led **monitoring, control and surveillance** activities;
- III. 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 Fisheries 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 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 follow below:

### 9.1 2018/2019 POST SEASON REVIEW FOR STOCKS OF CONCERN

NOTE: The objectives shown in **bold** below is the wording from the previous year's Integrated Fisheries Management Plan.

#### 9.1.1 LOWER STRAIT OF GEORGIA CHINOOK

**2018/2019: The objective for Lower Strait of Georgia (LGS) Chinook was to continue rebuilding through a comprehensive set of fishery, hatchery, and habitat related actions.**

The Cowichan River is the primary indicator of marine survival and exploitation for the LGS fall Chinook.

In 2018, Chinook returns to the Cowichan River were well above target, continuing the upward trend since the low point in 2009. The preliminary estimated return was 22,624 (all ages) plus 430 taken for Cowichan River Hatchery brood. Approximately 29% of the natural spawners (6,582) are estimated to be age 2+ ('jacks') while age 3 fish represented the largest portion of the escapement at 10,953. Hatchery production present in the return was estimated at 9.5% based on observations of adipose clips at the fence. This level of return is in the WSP Green zone. The upper WSP abundance benchmark ( $S_{msy}$ : spawners at maximum sustained yield) is 6,500 adults and the lower benchmark ( $S_{gen}$ : spawners required to get to  $S_{msy}$  within 1 cycle) is approximately 1,300 Chinook. This is the second consecutive year since 1997 that the adult natural spawner total was above the  $S_{msy}$ .

For the Cowichan indicator stock, the most recent 5 year (2014-2018) average total fishery mortality is 58% (range 46%-75%) including an average of 55% (range 43%-72%) in Canadian ocean fisheries, 3% (range 1-4%) in U.S. fisheries, and an average 8% (range 5-17%) in all terminal river fisheries. Cowichan Chinook are regularly caught in rivers other than the Cowichan River. The preliminary estimate for Nanaimo River fall run Chinook return in 2018 is similar to 2017 at 3,782 adults and 1,434 jacks. A high rate of pre-spawn mortality occurred in 2016 due to ich but was not observed in 2017 or 2018. In addition, 291 summer run Chinook were observed in the upper river including 183 adults and 105 jacks. This was expanded to a peak live plus dead estimate of 456 adults including brood removals (114).

### **9.1.2 WEST COAST OF VANCOUVER ISLAND (WCVI) CHINOOK**

**2018/2019: The objective for West Coast of Vancouver Island (WCVI) Chinook was to manage Canadian ocean fisheries (specified below) to an exploitation rate of 10%. The objective for North Coast Chinook was to manage in accordance with the allocation policy, and to manage the northern troll fishery to a WCVI Chinook exploitation rate of 3.2%.**

Management actions continued in 2018 for WCVI Chinook. Exploitation rates are determined post-season from Coded Wire Tag (CWT) data gathered from these fisheries. The exploitation rate limit includes Chinook kept, as well as an estimate of fishing related mortalities of released fish.

The time and area management actions for the WCVI troll fishery are designed to maintain negligible impact on returning natural WCVI Chinook stocks. The WCVI troll fishery was limited to well off shore of the surf line (5 miles in southern Areas and 2 miles in Area 127) during the time when WCVI stocks are returning to their natal streams. Size limit and harvest restrictions were in place for the WCVI recreational fishery from July 15 to September 1 (NWVI) and August 1 to September 15 (SWVI) to protect returning WCVI origin Chinook stocks. Changes to the management of the recreational fishery within the management corridor were implemented in 2016 and have continued since, changing from size limit management to a network or open or closed areas. In more terminal in-shore areas, conservation measures included a combination of maximum size limits, Chinook non-retention areas and finfish closures depending on the level of concern for local stocks.

The Northern troll, Haida Gwaii Sport, WCVI Troll, WCVI Sport fisheries exploitation rate for the 2018 season was 16%. The objective was to manage the aggregate of Northern troll, Haida Gwaii Sport, WCVI Troll, WCVI Sport fisheries to a total of 10% measured by CWT.

### 9.1.3 FRASER RIVER SPRING 4<sub>2</sub> CHINOOK

**2018/2019: The objective for Fraser Spring 4<sub>2</sub> Chinook was to conserve these populations by continuing to minimize incidental harvests in Canadian ocean fisheries and to continue fisheries management measures in the Fraser River to limit overall impacts and support rebuilding.**

Specific fishery management actions are implemented annually to protect the Spring 4<sub>2</sub> Chinook management unit. The evaluation of these actions is based, in part, on the exploitation rate analysis provided by fishery for CTC indicator stocks. This annual analysis uses coded-wire tag (CWT) recoveries from indicator stocks to represent the impacts on all stocks within the management unit. The CWT indicator stock for the Spring 4<sub>2</sub> management unit is Nicola River.

**Table 9.1-1: Percent distribution of Nicola River Spring AEQ total fishing mortalities and escapement to represent unmarked fish, when recoveries with incomplete data were assumed to have been caught in a mark-selective fishery.**

Catch Year	Estimated # of CWTs	AABM Fisheries				ISBM Fisheries				Cdn. Ocean Net				Terminal Fraser River				Nicola/Thompson Sport <sup>8</sup>	US ISBM Fisheries				Escapement	Canadian Total Mortality		
		SEAK	Net & Sport	NBC	WCVI	Cdn. Juan de Fuca <sup>5</sup>	Johnstone Strait	Straits of Georgia	WCV	NBC	Cdn. Ocean Net <sup>1</sup>	Cdn. Ocean Troll <sup>1</sup>	Mainstem Sport	Shuswap Sport	Chilliwack Sport	Comm. Net <sup>1</sup>	FSC <sup>1,4</sup>		Troll <sup>3</sup>	Net	Sport <sup>5</sup>	Esc.		Marine	All	
1989	1318	0.0%	0.0%	0.5%	1.1%	1.1%	0.0%	7.4%	0.0%	5.0%	0.0%	0.0%	0.5%	0.0%	1.0%	0.0%	1.5%	8.1%	4.3%	1.0%	1.1%	2.0%	65.7%	15.5%	30.3%	
1990	281	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	11.4%	2.0%	12.2%	1.8%	0.0%	5.3%	60.1%	4.6%	32.7%	
1991	1363	0.2%	0.5%	0.0%	0.2%	4.5%	0.0%	4.5%	0.4%	0.4%	0.0%	0.0%	0.6%	0.5%	2.8%	0.0%	0.0%	4.4%	4.1%	9.0%	0.9%	0.1%	1.8%	65.0%	11.2%	31.5%
1992	559	0.0%	0.0%	5.5%	0.0%	5.5%	0.0%	4.7%	1.8%	1.8%	0.0%	0.0%	0.9%	2.7%	0.7%	0.0%	0.0%	6.7%	0.6%	5.6%	5.7%	0.0%	7.0%	50.8%	22.9%	36.5%
1993	1241	0.0%	0.0%	3.2%	0.0%	5.6%	1.2%	1.9%	1.7%	3.3%	0.0%	0.0%	1.4%	0.0%	2.7%	0.0%	0.0%	2.6%	1.4%	8.1%	1.9%	0.0%	3.2%	61.8%	18.4%	33.0%
1994	2066	0.0%	0.0%	0.3%	0.0%	4.0%	0.4%	2.7%	0.0%	0.8%	0.0%	0.0%	0.2%	0.0%	0.5%	0.2%	0.0%	7.3%	0.1%	1.2%	0.3%	0.0%	0.0%	81.9%	8.4%	17.7%
1995	1877	0.0%	0.0%	0.3%	0.6%	1.7%	0.5%	1.5%	0.2%	1.3%	0.0%	0.0%	1.3%	0.0%	1.7%	0.0%	0.2%	1.8%	0.5%	2.9%	0.1%	0.0%	0.4%	85.0%	7.5%	14.5%
1996	69	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	16.8%	0.0%	0.0%	0.0%	81.2%	0.0%	18.8%
1997	224	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%	0.0%	0.0%	6.3%	0.4%	1.4%	0.0%	0.0%	11.2%	71.9%	8.9%	17.0%
1998	418	0.0%	0.0%	0.0%	4.8%	0.0%	0.0%	1.2%	0.0%	1.7%	0.0%	0.0%	1.0%	0.0%	2.6%	0.0%	0.0%	14.4%	0.8%	9.2%	0.0%	0.0%	0.0%	64.4%	8.6%	35.6%
1999	2424	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.1%	0.0%	0.2%	6.6%	0.8%	0.0%	0.0%	89.4%	0.7%	9.8%
2000	1771	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	3.6%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	4.3%	0.4%	7.5%	0.0%	0.0%	0.0%	80.2%	6.5%	19.8%
2001	2263	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	3.4%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%	2.5%	1.0%	5.8%	0.8%	0.0%	0.0%	83.9%	4.3%	15.4%
2002	2319	0.0%	0.0%	1.5%	0.3%	0.6%	0.0%	0.8%	0.0%	0.3%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.3%	0.4%	0.4%	3.6%	0.8%	0.0%	0.2%	90.6%	3.8%	8.4%
2003	1810	0.2%	0.0%	2.8%	0.0%	0.9%	0.6%	1.8%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%	0.3%	3.3%	0.1%	0.5%	0.6%	0.0%	0.0%	85.0%	7.0%	14.3%
2004	441	0.0%	0.0%	2.3%	0.0%	2.0%	0.0%	1.4%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	21.9%	0.9%	0.0%	0.0%	67.3%	8.2%	31.7%
2005	413	0.0%	0.0%	1.5%	0.0%	3.9%	0.0%	3.6%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	3.0%	0.0%	0.0%	12.1%	0.3%	14.2%	0.5%	0.0%	0.0%	58.1%	12.1%	41.8%
2006	432	0.0%	0.0%	1.6%	0.0%	1.6%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	8.9%	0.4%	13.5%	0.5%	0.0%	0.7%	69.4%	6.0%	29.5%
2007	157	0.0%	0.0%	0.0%	0.0%	6.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	18.1%	0.4%	30.8%	1.3%	0.0%	0.0%	39.5%	6.4%	60.3%
2008	624	0.0%	0.0%	1.4%	0.6%	0.0%	0.0%	1.4%	0.0%	2.6%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	1.0%	2.4%	0.4%	11.0%	2.2%	0.5%	0.3%	76.0%	6.1%	21.0%
2009	293	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	8.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.0%	0.0%	0.0%	3.4%	0.7%	18.3%	3.4%	0.0%	2.8%	45.9%	8.5%	47.9%
2010	2328	0.4%	0.0%	1.5%	0.2%	0.0%	0.1%	0.3%	0.7%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	4.3%	0.8%	0.0%	0.2%	90.7%	3.3%	7.9%
2011	683	0.0%	0.0%	0.9%	0.0%	0.0%	0.4%	2.5%	0.7%	1.2%	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.3%	3.9%	2.0%	0.0%	1.8%	83.7%	5.7%	12.4%
2012	723	0.0%	0.0%	0.6%	0.8%	0.0%	0.0%	1.8%	1.2%	1.1%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.1%	0.6%	17.2%	8.7%	0.0%	0.0%	67.2%	5.5%	24.1%
2013	1466	0.0%	0.0%	1.2%	0.0%	0.2%	0.0%	2.8%	0.0%	1.2%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	1.6%	3.3%	0.0%	1.2%	87.7%	5.6%	7.7%
2014	436	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	1.0%	9.8%	1.6%	0.0%	0.0%	83.7%	3.0%	14.7%
2015	1549	0.0%	0.0%	0.3%	0.2%	0.3%	0.0%	2.3%	0.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	10.1%	0.9%	0.2%	0.8%	83.4%	3.8%	14.8%
2016	973	0.2%	0.0%	1.7%	0.0%	0.9%	0.0%	6.0%	2.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	10.3%	1.0%	0.0%	0.0%	76.5%	11.3%	22.3%
2017	1086	0.0%	0.0%	1.0%	0.0%	1.2%	0.0%	0.9%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	7.7%	1.8%	0.0%	0.0%	85.6%	4.6%	12.5%
2018	919	0.0%	0.0%	0.0%	0.3%	1.0%	0.0%	1.5%	0.5%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	18.2%	1.4%	0.2%	0.0%	75.2%	4.5%	23.2%

Footnotes:

1. Canadian Ocean Net includes Juan de Fuca net, Johnstone Strait net, Northern net, Central net and WCVI net.
2. Canadian ocean troll includes Central and any other Canadian troll fisheries not listed.
3. Imputed CWT recoveries from Fraser Run Reconstructed catch, escapement CWT density, and 2015 relationship between recoveries based on CWT sampling and run reconstruction for 2000, 2005-2009 (yellow shaded).
4. The CWT data for all Fraser net fisheries was combined for the CTC CWT cohort analysis. The estimated CWT recoveries were used to prorate the CTC analysis into FN FSC and commercial categories for 2011-2018.
5. No adjustments have been made for any mark selective fisheries.

Information on the total Chinook mortality distribution for the previous season is typically updated in April of the following year.

The 2018 CTC spawner abundance for the aggregate (including Bonaparte) was the lowest on record. The near final escapement estimate for the aggregate is 2,101. In addition to overall low returns for all systems in this aggregate, the Bonaparte Fishway suffered a collapse in 2018 resulting in a loss of almost the entire return to this system.

#### **9.1.4 FRASER SPRING 5<sub>2</sub> AND SUMMER 5<sub>2</sub> CHINOOK**

**2018/2019: The objective for Fraser Spring and Summer (age 5<sub>2</sub>) Chinook was to conserve these populations consistent with the management zones outlined in Section 13 Southern Chinook Salmon Fishing Plan (13.1) under the Southern ISBM Chinook section (13.1.3).**

The abundance of Spring and Summer 5<sub>2</sub> Chinook returning to the Fraser River is estimated in-season based on Chinook catch observed in the Albion test fishery. In 2018, the combined Spring and Summer 5<sub>2</sub> aggregate terminal run size was estimated at 35,360 Chinook (95% PI: 21,000 to 61,000). This estimate, provided on June 19th, resulted in a Zone 1 management approach.

The post-season terminal run size estimate (based on outputs from the Fraser River Run Reconstruction model) for 2018 is 23,631.

The preliminary 2018 CTC index of spawning escapement, as enumerated using various stock assessment techniques is not yet available. This value represents the escapement to a subset of the total number of populations, which are surveyed annually to provide a reliable index of the escapement for use by the Chinook Technical Committee of the Pacific Salmon Commission.

Estimates of exploitation rates are not available for these populations as there is not a current CWT indicator for these management units.

#### **9.1.5 INTERIOR FRASER RIVER COHO**

**2018/2019: The objective for Interior Fraser River Coho (including Thompson River Coho) was to manage Canadian fisheries in a highly precautionary manner with fisheries management measures similar to those in place prior to 2014. This approach is expected to achieve an overall exploitation rate within the 3–5 % range.**

The near final spawning escapement estimate of Interior Fraser River Coho salmon for 2018 was approximately 35,200, similar to pre-season expectations, and greater than the brood escapement of 12,900 in 2015. The preliminary 3-year geometric mean spawner abundance for 2016-2018 is projected to be approximately 38,000; which is approaching the 40,000 long-term conservation objective.

### 9.1.6 CULTUS LAKE SOCKEYE

**2018/2019:** For 2018, early planning and development of the IFMP through consultation processes identified the high likelihood that the short term minimum recovery objectives (1 and 2) for Cultus Lake Sockeye would not be met, due to the low pre-season forecast range and environmental factors. At run sizes at or less than the p50 forecast level, the maximum allowable exploitation rate for Cultus Lake Sockeye would be limited to the low abundance exploitation rate (LAER) of 20% and for run sizes at or greater than the p75 forecast level the LAER would increase to 30%. The exploitation rate on Cultus Lake Sockeye was intended to allow for fisheries on more abundant co-migrating stocks and species.

The Department consulted in-season with First Nations and stakeholders on an updated management approach for Late Run and Cultus Lake Sockeye. Given the predicted large return of Late Run Sockeye, (i.e., in an Adams dominant year) managing to the LAER of 20 to 30% could result in a significant loss of fishing opportunities for First Nations, commercial and recreational fishers. In addition, Science provided preliminary advice regarding the status of Cultus Lake and the lake's inability to support production of wild Sockeye. Ultimately, the exploitation rate for Cultus Lake Sockeye was increased to the Late Run allowable exploitation rate (~43%) pending projected returns were deemed sufficient to meet hatchery brood stock objectives.

Brood targets were defined by Science in conjunction with SEP. For the migration period, SEP retained the required number of adults to meet genetic integrity requirements while also allowing some Sockeye to migrate into the lake to spawn naturally.

The preliminary 2018 post-season exploitation rate estimate for Cultus Lake Sockeye is approximately 50%. This estimate may change dependent on post season run size assessment evaluations. The preliminary escapement to the Sweltzer fence of 508 Cultus Lake Sockeye includes 339 through the fence plus an additional 169 retained for enhancement. The escapement to the fence was just over 10% of the brood year escapement of 4,631 (including brood stock).

### 9.1.7 SAKINAW LAKE SOCKEYE

**2018/2019:** The objective for Sakinaw Lake Sockeye was to stop their decline and re-establish a self-sustaining, naturally spawning population.

Less than two adult Sockeye returned to Sakinaw Lake, each year, over a four year period (2006-2009). Captive brood-based fry have been released to enhance Sakinaw Lake Sockeye since 2007. These second generation captive brood fish from Rosewall Hatchery were able to find the historic spawning beaches which had been cleaned and cleared of small debris in preparation

for their arrival. Recent year escapements, hatchery fry releases, and the number of smolts counted out of the lake are highlighted in [Table 9.1-1](#). The use of captive brood-based enhancement has prevented the extirpation of this stock in the wild; although, if current marine survival conditions continue, we will not reach the recovery objective in the near term.

In 2018, 3 adult Sockeye returned to Sakinaw Lake from 78,878 smolts that left in 2016. The combined hatchery and natural origin marine survival estimate of 0.004% (0.14% for natural) is a growing concern as linear declines have been observed since 2011 for captive brood and 2013 for wild smolts. Expectations for 2019 are for another low return considering less than 35,000 smolts were enumerated in 2017 (8 year average is 100k). If marine survival remains the same for the 2017 ocean entry year, 7 adults are forecast to return in 2019. If the declining marine survival trend continues to follow the trend we may not see any adults return this summer.

Table 9.1-2: Recent year escapements, hatchery fry releases and smolts counted leaving Sakinaw Lake, by brood year.

Brood year	Adult escapement	Hatchery fry releases (brood year +1, X1000)	Smolts leaving the lake (brood year +2)		Predominant return year (brood year +4)
			Hatchery origin	Natural origin	
2013	114	320	16,465	632	2017
2014	452	645	78,156	722	2018
2015	695	329	30,088	4,783	2019
2016	171	256	33,442	11,860	2020
2017	12	530			2021
2018	3				2022

### 9.1.8 NIMPKISH SOCKEYE

**2018/2019: The objective was to minimize the impact of Canadian fisheries during periods of low abundance.**

Since 2015, DFO has worked with the 'Namgis First Nation on the development of a lower river assessment program for Nimpkish Sockeye. The objective of the program was to develop high quality estimates of Sockeye abundance entering the Nimpkish River to support in-season management of this stock. The program involved the installation of two deflection weirs in the lower river to concentrate the migration of Sockeye to areas that could be monitored and recorded using a DIDSON acoustic system. This assessment program continued in 2018.

In 2018, there were directed First Nation FSC, commercial and recreational Fraser River Sockeye fisheries in Johnstone Strait and Queen Charlotte Strait. The First Nation FSC fishery was closed to sockeye retention above the Lewis Point boundary until the end of July. The first commercial opening and marine recreational sockeye retention did not occur until August 1<sup>st</sup>,

after the Lewis point boundary was lifted. Typically, by the end of July most of the returning Nimpkish Sockeye have migrated through the marine approach waters and have entered the Nimpkish River system.

Final evaluation of the Nimpkish return in 2018 are not finalized, but preliminary results show escapements were above average (~84K) an significant improvement over the low return observed in 2017.

#### **9.1.9 INTERIOR FRASER RIVER STEELHEAD**

Based on their migration timing, Interior Fraser River Steelhead are assumed to be encountered primarily in fisheries targeting Southern Chum, but also to some extent Late-run Fraser Sockeye, Fraser Pinks, and various Southern BC Chinook populations that return in the fall months. The aggregate run of Thompson, Chilcotin and other Interior Fraser River summer Steelhead stocks normally peak in Johnstone Strait and Juan de Fuca Strait in late September. The peak of the run in the lower Fraser River test fishing area near Fort Langley is in mid-October and the run normally extends through the month of October and into mid-November at that location.

Returns of Interior Fraser River Steelhead continued to be poor in 2018. Post-season spawning escapement estimates for the 2018 return (which spawned in the spring of 2019) were provided in a memo from the Province of B.C. on July 11, 2019. Spawning escapement estimates were 216 for the Thompson River population, and 120 for the Chilcotin River population. Recommended recovery targets for these populations are 938 for Thompson River population and from 562 to 744 for the Chilcotin River population. The time series of spawning escapement for Interior Fraser steelhead from 1971 to 2019 (return migration years 1970 to 2018) is shown in Figure 9.1-1.

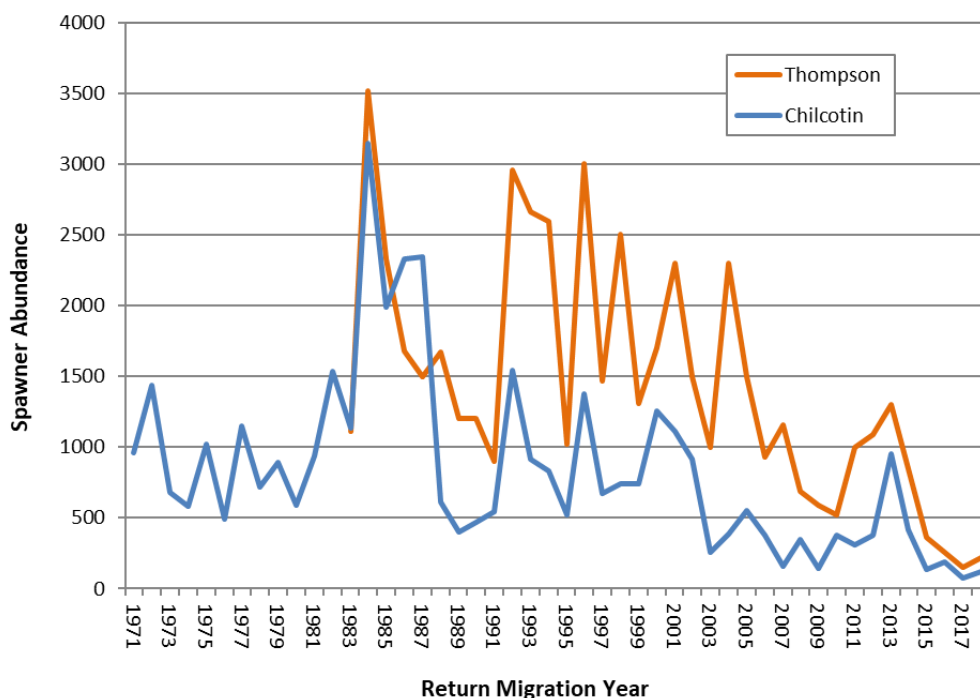


Figure 9.1-1: Historic trend of Interior Fraser Steelhead spawner abundance\*

\*Note that Steelhead spawn in the spring following the year of their return migration. For example, Steelhead that migrated in 2017 did not spawn until the spring of 2018. Field programs that estimate the number of spawners are completed summer in the year following return migration.

### 9.1.10 INSHORE ROCKFISH

**2019/2020: 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 updated science information, the Department has implemented stepped reductions of total Bocaccio harvest from the estimated total catch mortality of 137 metric tonnes (MT) in 2012 to a mortality cap of 75 MT over 3 years (2013-14 to 2015-16). 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). The Department established management measures in 2012 for Yelloweye Rockfish (inside population) intended to restrict total mortality to 15 tonnes, an amount that is believed to promote stock rebuilding consistent with the stated objective. The rockfish rebuilding plan is further described in the Integrated Fisheries Management Plan for Groundfish.



The Department is working collaboratively with all fishing interests to achieve for 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;
- Improving fishery monitoring and catch reporting of rockfish by species;

## **9.2 2018/2019 POST SEASON REVIEW FOR ACCESS AND ALLOCATION OBJECTIVES**

### **9.2.1 INTERNATIONAL OBJECTIVES**

**2018/2019: 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**

**2018/2019: 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.**

While fisheries were managed to address conservation objectives, they 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.

### **9.2.3 FIRST NATIONS OBJECTIVES**

**2018/2019: 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.**

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

Harvest opportunities for First Nations FSC fisheries in the South Coast and Fraser River in 2018 in many cases did not meet expectations and were affected by conservation measures that restricted opportunities, particularly for Fraser Chinook and Sockeye. As in recent years, restrictions were implemented to protect 90% of the Early Stuart component through a rolling window closure as well as limited opportunities targeting all other Fraser River Sockeye given low returns. Restrictions were also in place to protect Spring and Summer run Fraser Chinook, Interior Fraser River Coho, Sakinaw Lake and Nimpkish River Sockeye, Interior Fraser River Steelhead and to minimize impacts upon WCVI Chinook and Lower Strait of Georgia Chinook. Closures to protect Interior Fraser River Coho also benefited lower Fraser Coho which were also a stock of concern. FSC and treaty fisheries targeting Somass Sockeye stocks were generally successful, success in other WCVI FSC fisheries were variable.

#### **9.2.4 RECREATIONAL AND COMMERCIAL OBJECTIVES**

**2018/2019: 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. The performance of the commercial allocation plan will be reviewed following the 2018 season.

### **9.3 2018/2019 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 SOUTHERN BC FIRST NATIONS FISHERIES**

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### **10.1 CATCH MONITORING AND 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 2000's 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 (1) 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 in 2018 to 16 First Nation's currently using AHMS throughout the Region, with 6 First Nations still using MS Access databases. 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:

- 1) 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
- 2) 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:

- 1) 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.
- 2) 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.
- 3) 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. That 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:

[www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework\\_monitoring-cadre\\_surveillance/page-1-eng.html](http://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-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 Southern Coastal First Nations are typically multi-species and are issued on an annual basis. Shorter duration amendments to licences are also issued on occasion. For Fraser River First Nations, licences are typically of shorter duration, and are issued to provide for specific First Nations' salmon fisheries openings. In several "terminal" or "near terminal" areas of the upper Fraser and Thompson Rivers, licences are generally longer-term and based on in-season assessment information.

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 the Fraser River and Southern 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 arrangements, 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

	South Coast First Nations *	Lower Fraser Area First Nations * #	Mid/Upper Fraser First Nations	Total
<b>Sockeye Fraser River</b>	266,850	434,000	350,000	1,050,850
<b>Sockeye Non-Fraser River</b>	15,600**	0	20,000	35,600
<b>Coho</b>	Directed harvest may be permitted in specific areas or terminal systems where abundance permits based on in-season assessment. Restrictions on retention of Coho caught incidentally during fisheries on more abundant species or stocks where IFR Coho are present.			
<b>Pink</b>	48,850	129,800	2,000	174,150
<b>Chum</b>	139,000	92,800	500	230,800
<b>Chinook</b>	26,760	25,300	18,000	70,060
<b>Total Salmon</b>	<b>497,060</b>	<b>681,900</b>	<b>389,000</b>	<b>1,561,460</b>

\* Note: Tsawwassen and Tla'amin Treaty domestic fishery allocations are not included here.

# Note: these harvest targets are initial amounts prior to any negotiated comprehensive fisheries agreement between some Lower Fraser First Nations and DFO for economic opportunities.

\*\* Note: The 15,600 total non-Fraser Sockeye amount does not include MNA treaty allocation or the FSC quantum in the Tsu-ma-uss agreement.

### 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.



Negotiations to provide economic opportunities to First Nations in Barkley Sound and the lower Fraser River will be undertaken as in recent years. Economic opportunity fisheries will be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. 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.

In the lower Fraser, DFO will work with First Nations and commercial harvesters to develop an approach to an integrated commercial fishery based on the principles of transparency, accountability and collaboration. Specific elements of this approach will include defined harvest shares, enhanced catch monitoring and compliance programs, some initial work on a traceability program and improved collaboration amongst harvesters.

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 2019, 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. The demonstration fisheries proposed are described in [Appendix 6](#).

## **10.4 SPECIAL PROJECTS OR INITIATIVES**

### **10.4.1 FORUM ON FRASER SALMON CONSERVATION AND HARVEST PLANNING ARRANGEMENTS**

In January 2008, Fisheries and Oceans staff initiated a series of meetings with First Nations throughout the South Coast and the Fraser River watershed to discuss possible management approaches for the upcoming season in the case that there are insufficient salmon returns to meet FSC requirements. A similar process has occurred in subsequent years with the aim of furthering discussions on management principles and approaches for Fraser salmon, with meetings generally occurring in January, March and April of each year. A Forum planning committee, with Terms of Reference, consists of the following members (including alternates): one DFO Aboriginal Affairs Advisor, one DFO Resource Manager; the chair of the Fraser River Aboriginal Fisheries Secretariat, two Fraser River First Nations members; and two Island and

Marine Aquatics Working Group members as well as the DFO and FN co-chairs of the Joint Technical Working Group.

## 10.5 TREATY FISHERIES

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. Under the Treaties, Fisheries Operation Guidelines (FOG) set out the operational principles, procedures and guidelines needed to assist Canada, BC, Tsawwassen, Maa-nulth, and Tla'amin First Nations in implementing Fisheries Chapters of their respective treaties and managing Treaty salmon fisheries on an annual basis. The FOG's provide guidance on how management decisions, with respect to treaty fisheries, will be made via the Joint Fisheries Committee (JFC), how abundance is estimated, biological and harvesting considerations, fisheries monitoring and catch reporting requirements, etc. Each year the JFC, established under each treaty, makes recommendations to the Minister on the issuance of specific 'Harvest Documents' to licence the salmon fishery for Domestic (food, social and ceremonial) harvests.

More information on the Treaties can be found at:

Tsawwassen First Nations Final Agreement:

<http://www.aadnc-aandc.gc.ca/eng/1100100022706/1100100022717>

Maa-nulth First Nations Final Agreement:

<http://www.aadnc-aandc.gc.ca/eng/1100100022581/1100100022591>

Tla'amin Final Agreement:

<http://www.aadnc-aandc.gc.ca/eng/1397152724601/1402079284345>

More information on the Treaty process can be found at:

<http://www.BCtreaty.net/>

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

## II SOUTHERN BC RECREATIONAL FISHERIES

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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*, the 'Conditions of Licence', as printed to your licence document, advice regarding licence requirements, such as catch recording and species restrictions such as catch limits. 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>

New for 2019, the annual aggregate limit for Chinook salmon was reduced to ten (10) coast-wide in all tidal waters to support conservation of at risk Chinook stocks.

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. 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. The app accesses data made available through the Government of Canada's Open Data Portal Initiative; learn more at <http://open.canada.ca/en/open-data>.

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 Regional Recreational Fisheries Coordinator Carole Eros (604) 666-7089.

### II.1 FISHERY MONITORING AND CATCH REPORTING INITIATIVES

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 (see sec. 1.6.4). 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.

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. Creel surveys for boat based angling in marine waters are the main source of recreational catch and effort information in the highest risk fisheries.

This requirement also includes responding to email requests through the monthly Internet Recreational Effort and Catch - iREC – survey, which started in 2012. Continuing from 2018/19, fishers that are randomly selected for the iREC survey are now 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 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.

A separate online survey - the Internet Annual Recreational Catch (iARC) survey - annually requests catch records of 20,000 licence holders. In this survey licence holders are asked to provide the catch records as written on their licences for Chinook, lingcod, and halibut. Information on this survey is available at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/irec/iarc-eng.html>

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. In addition to paper log 'books', the Department has developed a Recreational Electronic Logbook (Rec E-Log) as a tool to record catch and other fishing information and to report this information to the

Department. Data recorded is retained by the client for reference and is sent to DFO for further analysis.

In 2017, in southern BC tidal waters the number of fisher records of catch, whether creel survey interviews, iREC respondents, logbook/E-log submissions are detailed below.

Table 11.1-1: BC Tidal water number of fisher records of catch

Item	Number obtained in 2017/2018
Creel survey interviews	13,003
iREC & iARC survey responses (Region wide)	32,162 & 6,276
Guide logs	6,876

### 11.1.1 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

### 11.1.2 RECREATIONAL ELECTRONIC LOGBOOKS

The development of an improved catch monitoring regime, including reporting standards, will continue to be a priority in the management of recreational fisheries. Since 2007 the Department has been working with 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. In 2019/20, the Department will continue to collaborate with the Sport Fishing Institute and the local Sport Fishing Advisory Boards to review options for the use of a Recreational Electronic Logbook Program with these identified groups.

- 1) Rec E-log data collected is retained by the client for reference and sent to DFO for further analysis. Depending on location and business needs, there are up to three components to the Rec E-Log. On Water or Mobile Component – This component can be installed on any smartphone device (Blackberry/Android and iPhone). Catch and other fishing information, is captured by GPS location at sea, by individual fishers. Data can be sent from the device or exported to the Lodge Component.
- 2) Dockside Component – Captures catch and other fishing information at the dock as fishers and guides return from fishing.
- 3) Lodge Component – Data from the On Water and Dockside components are exported to this application. Uploaded data can be reviewed for correctness and a number of printed reports can be generated. The application has a mapping

component, which allows catches to be displayed for those with a GPS location.

Data from this component can be easily sent to the Department.

Development of all components is now complete. In 2019/20, the Department will continue to collaborate with the Sport Fishing Institute and the local Sport Fishing Advisory Boards to develop a deployment strategy for the application(s).

## 12 SOUTHERN BC COMMERCIAL FISHERIES

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### 12.1 CATCH MONITORING AND REPORTING INITIATIVES

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*.

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." 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

In 2013, a number of catch monitoring programs were developed to address deficiencies that have been identified with the minimum requirements. These programs will continue in 2019 with revisions to update approaches and potentially include additional areas and objectives. While all fisheries will be required to meet catch monitoring requirements over time, fisheries identified for the programs at this time are; Area E Gill net: Sockeye (Fraser River) and Area G Troll: Chinook (WCVI). Details on the catch monitoring programs are being discussed with Area Harvest Committee representatives and will be communicated via [fishery notices](#) and the 2018 Conditions of Licence.

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

In 2019, Fisheries and Oceans Canada will use designated 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:

- i) Making the fish readily accessible to the CWT samplers;
- ii) Providing samplers with a suitable work area; and
- iii) 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 Doug Herriott at 250-756-7383.

### 12.2.1 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.

**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

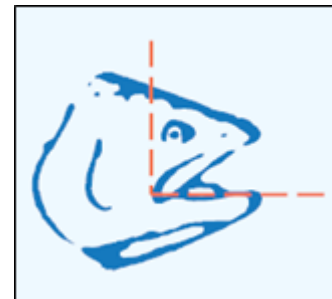


Figure 12.2-1: Fish Head CWT Portion

- 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 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 from retaining salmon heads during the 2018 fishing season. This fisheries notice is expected to be released prior to the opening of the fishery.

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. In 2018, the Department may adjust this requirement by introducing exemptions for a reduction in the number of vessels that retain salmon heads.

For complete head retention requirements, vessel masters freezing their catch at sea should refer to their conditions of license.

## 12.3 IMPLEMENTATION

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, 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 food, social and ceremonial 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 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](#).

Catch monitoring improvements continue to be a priority in the management of all salmon fisheries. DFO in consultation with harvest sectors and First Nations will focus efforts on improvements to current catch monitoring and reporting requirements and standards.

## **12.4 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 – 2019 PERIOD**

Over the course of 2019, DFO will be engaging with harvesters and in particular the CSAB to review existing sharing arrangements between fleets. Should any recommendations come forward on the commercial allocation implementation plan, they will be described and consulted on in advance of the 2020 fishing season through the existing IFMP process. DFO staff are currently working with the CSAB and SCC on how best to engage in discussions and what supporting information is required.

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. An earlier review could have been considered if circumstances warranted by majority agreement of the commercial salmon advisory board.

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 production 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.**

## 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% <sup>*</sup>	3.0% <sup>*</sup>	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):

<sup>\*</sup> 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):

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>



<b>Central</b>	6 to 10	*	100.0% <sup>b</sup>	* <sup>c</sup>
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## &lt;&lt; NEW PRODUCTION AREA STARTED IN 2015 &gt;&gt;

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):

\* 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
<b>South- Inside</b>	11 to 20, 29	1.0% <sup>e</sup>	3.0%	90.0% <sup>f</sup>	0.0%	6.0%
<b>South - WCVI AABM Chinook</b>	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
<b>South- WCVI Inside</b>	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>i</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

## 12.5 TEST FISHING

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.

[Table 12.5-1](#) outlines the potential Southern BC salmon test fisheries for 2019. These include: Fraser Panel projects for Fraser River Sockeye; Albion Chinook/Chum gill net; Skeena gill net all salmon species, Johnstone Strait Chum seine and Barkley Sound Sockeye seine. For 2019, a final Fraser Sockeye and Pink test fishing plan will be confirmed by the Fraser River Panel prior to the start of the season. Test fisheries and dates in this table may change pre-season. Actual test fishing dates may change in-season based on assessments of abundance and return timing.

The Department plans to continue the Chinook assessment fishery on the M<sup>a</sup>uq<sup>W</sup>in / Brooks Peninsula beginning in mid-July.

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.

New in 2019, the Pacific Salmon Commission Southern Boundary Restoration and Enhancement Fund approved a DFO proposal to conduct a gill net calibration study for the Round Island test fishery. The objectives of the study are to compare trends in selectivity, catchability and catch composition between the current 60 mesh multi-strand gill net and a 90 mesh Alaska Twist gill net. The four year study will start in 2019 with the outcome to replace the current multi-strand gill net with the Alaska Twist gill net after calibrating the catchabilities for the Alaska Twist net based on the historical catchabilities with the multi-strand net.

Table 12.5-1: Potential 2019 Test Fisheries\*

Test Fisheries, Southern B.C. Salmon	Proposed Proponent	Test Fishery Purpose	Proposed dates <sup>a</sup>		Advisory process <sup>b</sup>
			Start	End	
<b>Area 20 GN</b>	PSC Secr.	Fraser Sockeye	10-Jul	13-Aug	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 20 SN</b>	PSC Secr.	Fraser Sockeye and Pink	24-Jul	08-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Cottonwood GN</b>	PSC Secr.	Fraser Sockeye	12-Jul	15-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Whonnock GN</b>	PSC Secr.	Fraser Sockeye	24-Jun	28-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Gulf TR<sup>d</sup></b>	PSC Secr.	Fraser Sockeye	13-Aug	5-Sept	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 12 SN</b>	A- Tlegay/Namgis	Fraser Sockeye and Pink	23-Jul	7-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 13 SN</b>	A- Tlegay/Namgis	Fraser Sockeye and Pink	25-Jul	3-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 12 GN (Round Island)</b>	A- Tlegay/Namgis	Fraser Sockeye	11-Jul	11-Aug	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 12 GN (Naka Creek)</b>	A- Tlegay/Namgis	Fraser Sockeye	18-Jul	30-Jul	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 4B,5, GN</b>	PSC Secr.	Fraser Sockeye	17-Jul	26-Jul	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Area 7 Reefnet<sup>d</sup></b>	PSC Secr.	Fraser Sockeye	18-Jul	07-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC
<b>Qualark</b>	PSC Secr.	Fraser Sockeye	02-Jul	30-Sep	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC

Test Fisheries, Southern B.C. Salmon	Proposed Proponent	Test Fishery Purpose	Proposed dates <sup>a</sup>		Advisory process <sup>b</sup>
<b>Albion GN</b>	3-way transitional <sup>e</sup>	Fraser Chinook/ Chum	21-Apr	23-Nov	FN Fr. Forum <sup>c</sup> /IHPC
<b>Barkley Sound SN</b>	Hupacasath/ Tseshaht	Somass Sockeye	TBD	TBD	A23 Round Table (primary)/IHPC
<b>Mquq<sup>w</sup>in/ Brooks Peninsula</b>	Kyuquot Checkleset	WCVI Chinook	TBD	TBD	WCVI FNs/Area G/ IHPC
<b>Area 12 SN</b>	A- Tlegay/Namgis	Chum	TBD	TBD	Fraser Panel (primary) FN Fr. Forum <sup>c</sup> /IHPC/Chum Working Group

\* For 2019, a final Fraser Sockeye and Pink test fishing plan will be confirmed by the Fraser River Panel prior to the start of the season. Test fisheries and dates in this table may change.

<sup>a</sup> All dates subject to change based on in-season factors. In-season information from initial TFs important to determining timing of subsequent TFs.

<sup>b</sup> Advisory process (es) where detailed discussion of test fisheries occurs. This does not preclude discussion and input happening through other process.

<sup>c</sup> FN Fr. Forum = First Nations Forum on Conservation and Harvest Planning

<sup>d</sup> Dates reflect a “potential window of operation”, not a start and end date.

<sup>e</sup> 3-way arrangement between proponent, DFO and test fisherman

Salmon Test Fishery - Pacific Region Webpage:

<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/salmon/testfish/default.htm>

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.

## **12.6 LICENSING**

### **12.6.1 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 (7:00 AM to 8:00 PM Eastern, Monday to Friday).

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.

### **LICENCE RENEWAL**

In order to retain the privilege to be issued a commercial licence in the future, it is critical that you renew your licence and pay the applicable licence renewal fees through the online system on an annual basis, whether fishing takes place or not. Should the licence not be renewed by March 31st of the next calendar year, the licence eligibility will cease to exist and DFO will be unable to consider any licence issuance requests in the future.

### **12.6.2 LICENCE CATEGORY**

A salmon licence, category A, N or FA, is required to commercially harvest salmon. Salmon, category A, licence eligibilities are limited entry and vessel-based. Category FA and N licence eligibilities are party based and must be designated to a commercially registered fishing vessel that meets established length restrictions. Category N licence eligibilities are held by the Northern Native Fishing Corporation (NNFC). Category FA is communal commercial licence eligibilities where 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.

### 12.6.3 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.

### 12.6.4 LICENCE RENEWAL FEES

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.

	Vessels under 9.14m	Vessels 9.14m and over	Seine Vessels
<b>Aboriginal Individual</b>	\$ 380.00	\$ 650.00	\$ 2,670.00
<b>Non-Aboriginal</b>	\$ 430.00	\$ 710.00	\$ 3,880.00

There is no annual licence renewal fee for communal commercial category FAG, FAT, and FAS licences.

### 12.6.5 LICENCE ISSUANCE

Renewal of a Category A licence and payment of the 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, 2020 will cease and licence issuance requests will be unable to be considered in future.

Upon the Department receiving the required payment, and information, the licence will be issued and notification will be sent via email to advise Licence Holders that a change has been

made to the licence holder's online account. The 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: <http://www.dfo-mpo.gc.ca/fm-gp/sdc-cps/products-produits/request-demande-eng.htm>).

Prior to annual application, vessel owner(s)/licence eligibility holders are required to:

- 1) Meet any Ministerial conditions placed on the licence eligibility
- 2) 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).
- 3) the designated vessel's overall length does not exceed the maximum vessel length of the category FAG, FAT, FAS licence eligibility

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, 2020.

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 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.



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.

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.

Please visit Salmon page for further information at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/fisheries-peches/licence-permis-eng.html>

## **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 will be needed to deliver on this requirement in 2018.

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 will be needed to deliver on this requirement in 2018. 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:

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

### **12.6.6 FISHER IDENTIFICATION NUMBER**

Unique Fish Harvester Identification Numbers (FINs) are assigned to all Pacific commercial harvesters. Once the FIN is issued to a fish harvester, it does not change from year to year

## **12.7 MANDATORY HARVEST LOG AND IN-SEASON CATCH REPORTING PROGRAM**

### **12.7.1 COMMERCIAL HARVEST LOGS**

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 2019:

**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 2019 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 2019 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.

## **12.8 NON-RETENTION SPECIES**

There will be non-retention of Chinook and Coho in most southern BC commercial fisheries with the exception of some Area E (Fraser River) and Area G (WCVI) fisheries where retention of Chinook and possibly hatchery-marked Coho may be permitted. In addition, some terminal opportunities may be provided in areas such as the WCVI (Area D) where surpluses of Coho and Chinook may be identified. If the forecast for Fraser Late Chinook is below the escapement goal range, non-retention in any Area E Chum directed fisheries may be considered. Non-retention of steelhead will be in effect in all commercial fisheries.

There are also local and, at times, seasonal restrictions on various other salmon species. Please refer to the Fishery Notice that is released prior to every commercial fishery to determine any locally restricted species, or any in-season updates to the above.

## **12.9 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.
- Hail in and Hail out requirements through the designated service provider Specific locations and times at which landing of fish is permitted.
- 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.

## **12.10 SELECTIVE FISHING/CONSERVATION MEASURES**

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.

### **12.10.1 OTHER CONSERVATION MEASURES**

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](#) – Northern and 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.

### **12.10.2 ROCKFISH CONSERVATION MEASURES IN SALMON TROLL**

#### **BOCACCIO**

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. The Department has worked with fishing interests to develop measures that will reduce Bocaccio catch and enable stock rebuilding over the long term.

The Bocaccio mortality cap for the salmon troll fishery is 3.6 tonnes and beginning in 2013/2014, the salmon troll fishery has been 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.

Subsequent to the introduction of the rebuilding plan, in November 2013, COSEWIC reassessed Bocaccio as “Endangered”. As such, the federal government is required to consider listing Bocaccio under SARA. This work will include engagement with stakeholders and First Nations.

## **YELLOWEYE**

Based on updated science information, the Department has set out a near term 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).

Taking into consideration advice provided by fishing interests, the Department has introduced management measures to make steps towards the mortality cap described above and is continuing to have discussions to define more comprehensive plans for achieving the 100 MT mortality cap. As retention of Yelloweye is already prohibited in the salmon troll fishery the Department is focusing on improved reporting and avoidance of Yelloweye in this fishery.

Additional information is available in Appendix 9 of the Groundfish IFMP, which will be linked in the final salmon IFMP once available.

## **12.11 COMMERCIAL FISHERIES**

Details regarding specific commercial fisheries are contained in the Section [13](#) - Species Specific Salmon Fishing Plans.

## **12.12 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 2019 are included in [Appendix 6](#).

#### **12.12.1 TRANSITION OF FIRST NATION INLAND DEMONSTRATION FISHERIES TO REGULAR COMMERCIAL FISHERIES**

In 2014, an independent review and evaluation of the Pacific Integrated Commercial Fishing initiative (PICFI) was completed by Malatest and Associates and a number of recommendations were made. A full copy of the report is available at:

<http://www.dfo-mpo.gc.ca/ae-ve/evaluations/15-16/6B172-eng.html>

Recommendation four was related to development a transition strategy moving demonstration fisheries to regularized fisheries. In response to the review, the Department has developed a transition strategy for the in-river First Nation demonstration component of PICFI. The Department identified criteria to be incorporated into an evaluation framework which will enable the transition of Inland First Nations Demonstration fisheries to regular commercial fisheries in the future.

The Department outlined next steps to support a transition strategy which was described in Appendix 8 of the 2018-2019 South Coast Integrated Fisheries Management Plan. The transition strategy has been approved to proceed on a case by case basis of successful inland demonstration fisheries developed thru the Pacific Integrated Commercial Fishery Initiative (PICFI). The evaluation criteria in the strategy will assess their sustainability and ability to meet management objectives, including the ability to harvest fish allocations, conservation objectives and fishery management requirements. If the criteria are met, the transition to an ongoing commercial fishery would occur and will be defined in an Access Agreement. This work is

intended to improve consistency and transparency in how the Department assesses, implements, and reviews demonstration fisheries while supporting integrated commercial fisheries consistent with the vision and principles of Pacific Fishery Reform. If further information is required, contact Resource Manager Dale Michie – [dale.michie@dfo-mpo.gc.ca](mailto:dale.michie@dfo-mpo.gc.ca)

## **12.13 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 2019 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
- a) Area A-H fleets or portions of fleets or individual licences
- b) Marine Demonstration Fishery participants
- c) In-river Demonstration Fishery participants
- d) First Nations with one or more Area A-H licences
- e) 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 be 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.

# I3 SPECIES SPECIFIC SALMON FISHING PLANS

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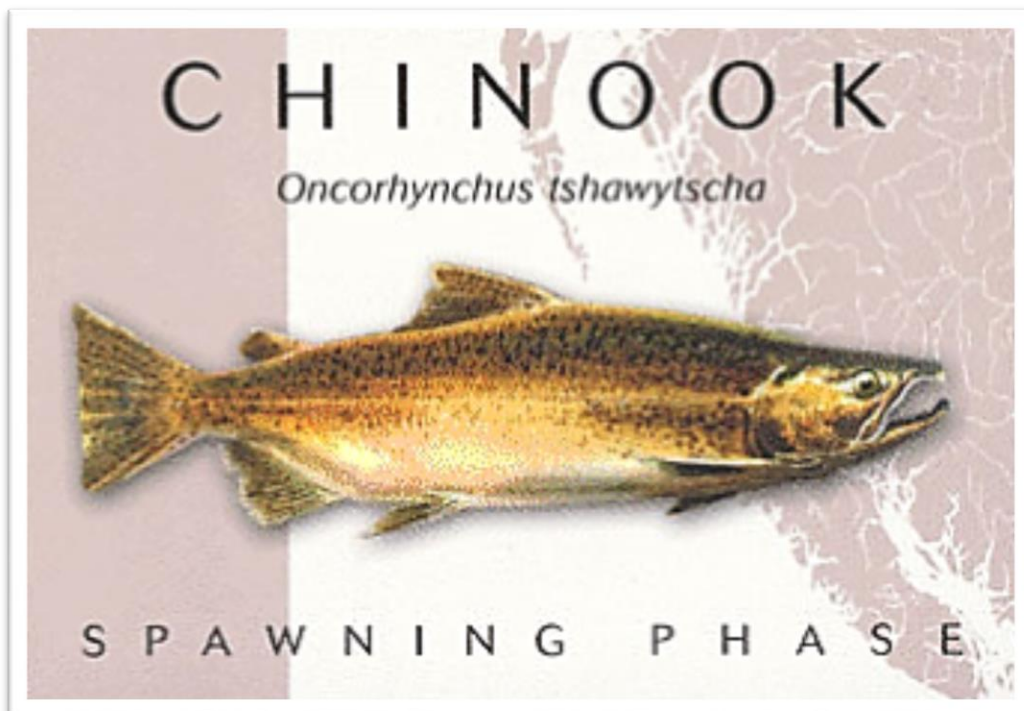
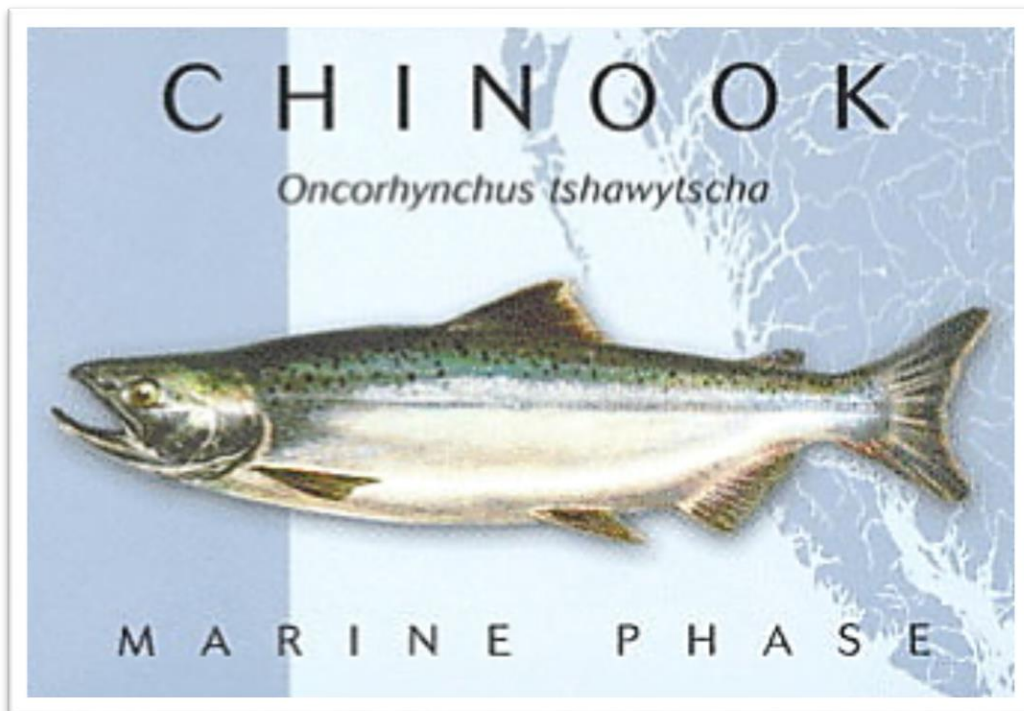
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### 13.1.1 SOUTHERN CHINOOK OVERVIEW

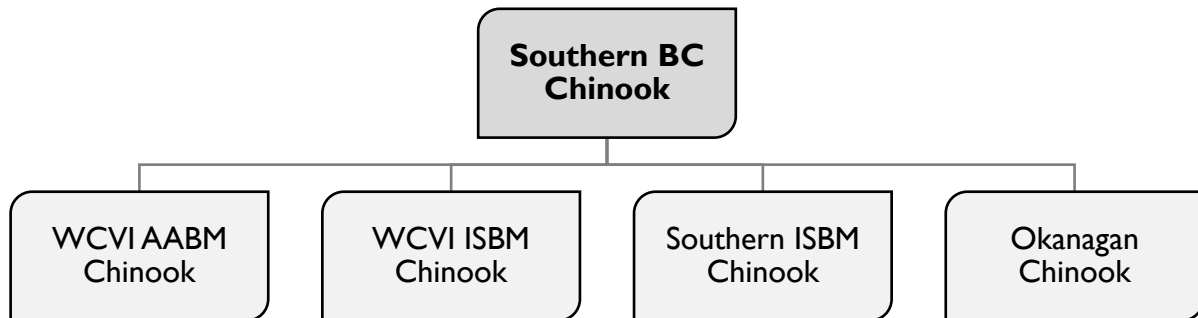


Figure 13.1-1: Overview of Southern BC Chinook

#### OVERVIEW OF SOUTHERN BC CHINOOK CONSERVATION CONCERNS:

Large-scale patterns of environmental change and increased environmental variability have been associated with broad declines in productivity of Chinook salmon across their range in recent decades. Potential effects of recent events, such as the persistence of the warm ocean water ‘blob’ which formed in the North Pacific in 2014 and moved onshore in 2015, and El Niño conditions in early 2016, have lowered expectations for returns of Chinook Salmon in 2019.

A CSAS Science response (Science Information to Support Consultations on BC Chinook Salmon Fishery Management Measures in 2018) is available here: [http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2018/2018\\_035-eng.pdf](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2018/2018_035-eng.pdf)

To address Fraser Chinook conservation concerns for the 2019 season, the Department is implementing a precautionary approach for Fraser River Chinook populations (including Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, Summer 5<sub>2</sub>, and Fall 4<sub>1</sub>) to support conservation and promote rebuilding. These measures are planned in addition to existing fishery management measures already in place.

#### GENERAL OVERVIEW

Chinook salmon fisheries in BC are managed under the umbrella of the Pacific Salmon Treaty (PST). Domestic considerations are also in place for stocks of concern, allocation between sectors of the fishery, 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 outlines the abundance-based management framework established under the 1999 Agreement for management of Chinook fisheries. This chapter expired in 2018 and renewed provisions are in effect as of January 1, 2019.

Further explanation and the text of the Chinook salmon agreements can be found on the PSC website at:

<http://www.psc.org/publications/pacific-salmon-treaty/>

Chinook salmon fisheries under the PSC are accounted for during the Chinook year which begins on October 1 in one calendar year, to September 30 in the next calendar year.

Two types of fisheries are identified in the PST under 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 will most affect fishing opportunities include: conservation, Canada's constitutional obligations to First Nations, the WSP, and *An Allocation Policy for Pacific Salmon*, and the *Policy for Selective Fishing in Canada's Pacific Fisheries*.

## **OVERVIEW: AABM FISHERIES**

AABM fisheries are mixed stock fisheries that intercept and catch migratory Chinook from many Canada- and U.S.-origin populations.

In southern BC, AABM applies to the following waters on the WCVI:

- The West Coast of Vancouver Island (WCVI) troll fishery in Areas 21, 23 to 27, and Areas 121, 123 to 127
- The outside recreational fishery in the following areas and times:  
Areas 21, 23 and 24 and Areas 121, 123, 124 during the period October 16 through July 31, plus that portion of Areas 21, 121, 123, 124 outside of a line one nautical mile seaward of the surfline, during the period August 1 through October 15

Areas 25, 26, 27 and Areas 125, 126, 127 during the period October 16 through June 30, plus that portion of Areas 125, 126, 127 outside of a line one nautical mile seaward from the surfline, for the period July 1 through October 15.

These fisheries are managed to an annual total allowable catch based on a forecast abundance index (AI) of the aggregate of stocks that contribute to the fishery.

All other areas and times are managed as ISBM fisheries.

## **OVERVIEW ISBM FISHERIES**

In response to conservation concerns for Chinook in both countries, several changes were made to PST Chapter 3 (Chinook), including targeted harvest reductions in both Canadian and U.S. fisheries and 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 or CYER). The agreement identifies reductions of up to 12.5% from 2009-2015 levels for specified Canadian and U.S. indicator populations in Canadian ISBM fisheries.

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 southern BC include First Nations fisheries in both marine and fresh waters, recreational fisheries, WCVI seine and gill net, and Fraser River gill net.

## **SOUTHERN CHINOOK ENHANCEMENT INFORMATION**

The major DFO operation enhancement facilities that produce Chinook are:

- **Marine Waters:**
  - Big Qualicum River hatchery
  - Capilano River hatchery
  - Conuma River hatchery
  - Little Qualicum River hatchery
  - Nitinat River hatchery
  - Puntledge River hatchery
  - Quinsam River hatchery
  - Robertson Creek hatchery
  - Tenderfoot Creek hatchery
- **Fraser River Watershed:**

- Chehalis River hatchery
- Chilliwack River hatchery
- Shuswap River hatchery
- Spius Creek hatchery

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). Not included are smaller Public Involvement Projects (PIPs) that are focused toward stewardship, stock rebuilding or educational activities and do not release large numbers of fish that would affect fisheries.

There are two datasets available: **Post-Season Production** from the 2017 brood year (i.e. 2018 releases, and numbers on hand for 2019 release), and the **Production Plan**, which includes proposed targets for the upcoming 2019 brood year. These are available at the following website: <http://www.pac.dfo-mpo.gc.ca/sep-pmvs/projects-projets/ifmp-pgip-eng.html>

### **SOUTHERN BC CHINOOK – SEP PROPOSALS FOR 2019**

- Southern Resident Killer Whale – Recovery Plan Support
  - DFO has committed to targeted strategic enhancement of high priority Chinook stocks to increase the amount of prey available to SRKW. Enhancement for SRKW prey threat abatement was only considered where there is current facility capacity, hatchery-wild interactions could be managed, there are minimal impacts to international harvest management agreements, and focuses on stocks where there is a scientifically supportable expectation of success.
  - The most feasible and cost-effective enhancement option to increase prey abundance for SRKW is Fraser Fall Chinook. This high priority stock is currently enhanced at multiple DFO facilities, several of which have the capacity to increase production.
  - Chilliwack River hatchery Chinook has the highest survivals of any Chinook stock in the province. In addition, unlike many other Chinook stocks, Fraser Falls are locally distributed in the marine environment, making them available as SRKW

prey items throughout the year. The following enhanced production was adjusted to support SRKW recovery:

- Chilliwack fall Chinook:
  - 2018 brood year:
    - smolt 0+ release target increase in-season from 1M → 1.25M
  - 2019 brood year:
    - smolt 0+ release target increase from 1.25M → 2M
- Fraser chinook stock recovery efforts
  - Enhancement feasibility pilot projects have been taking place (Portage Cr), or are currently being implemented (Nahatlatch R, Bonaparte R, Maria Slough) to aid in chinook stock recovery efforts in the Fraser.

### 13.1.2 WCVI AABM CHINOOK

#### 13.1.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

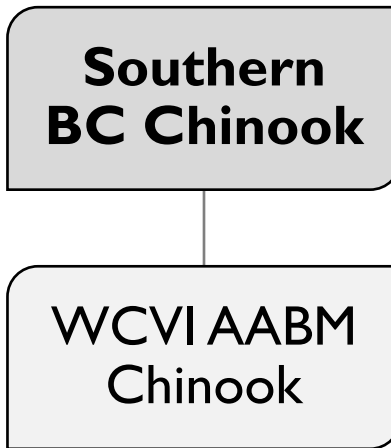


Figure 13.1-2: Overview of WCVI AABM Chinook

The AABM fishery includes commercial and First Nations fisheries catching Chinook salmon in Pacific Fishery Management Areas 21, 23 to 27, 121, and 123 to 127. AABM recreational Chinook fisheries take place annually in offshore WCVI Areas 121 to 127 and seasonally (prior to June and after September) in inshore Areas 21 and 23 to 27. Catch and effort peaks in Areas 121 to 127 during the months of June –August, and effort is largely abundance driven and weather-dependent.

The WCVI AABM Chinook fishery targets Canadian and U.S. origin wild and enhanced Chinook populations that migrate past the WCVI. The main components of the harvest are U.S. origin Chinook, however, most southern BC Chinook conservation units can also be encountered in this area. While some Chinook harvested in the WCVI AABM fishery are returning to spawn in WCVI watersheds, most of these Chinook are migrating to Washington, Oregon, or other parts of southern British Columbia to spawn.

#### 13.1.2.2 STOCK ASSESSMENT INFORMATION

##### 13.1.2.2.1 Pre-season

The PST Chinook Technical Committee (CTC) provides a final calibration of the Chinook Model annually. That calibration is provided in April each year, and provides Abundance Indices (AI) for the three AABM fishing areas: WCVI, South East Alaska (SEAK), and Northern BC (NBC). Table 1 in PST Chapter 3 converts the AI to the Total Allowable Catch (TAC) for each AABM

fishing area for the fishing year from the previous October 1 until September 30 in the year of the calibration.

Effective January 1, 2019 the renegotiated PST terms were put into effect including an up to a 12.5 per cent reduction in the West Coast Vancouver Island AABM Total Allowable Catch (TAC). The level of reduction is based on the Abundance Index. The allowable catches for the AABM fisheries are included in Table 13.1.1 below.

Table 13.1-1 Pre-season Abundance indices and associated allowable catches for the October 1, 2018 to September 30, 2019 AABM fisheries

	SEAK	NBC	WCVI
<b>Abundance Index</b>	3.38 (CPUE Index)	0.96	0.61
<b>Allowable Catch</b>	140,323	124,800	79,900

#### 13.1.2.2.2 In-season

There is currently no in-season assessment of abundance completed for Canadian AABM fisheries. All Canadian fisheries are managed based on the pre-season AI and associated pre-season TACs.

#### 13.1.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

An AABM fishery is an abundance-based regime that constrains catch or total mortality to a numerical limit computed from either a pre-season forecast or an in-season estimate of abundance, from which a harvest rate index can be calculated, expressed as a proportion of the 1979 to 1982 base period.

AABM fisheries are managed annually so as not to exceed the specified TAC. In addition, domestic conservation concerns may reduce overall harvests below the PST allowable TAC.

When there is a TAC identified for the AABM management area, targeted Chinook fisheries are planned for First Nations, recreational, and commercial sectors.

The commercial TAC is calculated by subtracting the expected Food, Social and Ceremonial (FSC) catch of 5,000, the Maa-nulth treaty entitlement (calculated annually based on the TAC), a share for the Five Nations to exercise their Aboriginal right fish and sell fish (calculated annually based on the Canadian TAC), and the expected recreational catch. This year, the expected AABM recreational catch for planning purposes is 50,000 consistent with observed catches in recent years.

Adjustments to the commercial harvest level may be made in-season in response to differences between expected and observed recreational catches.

### 13.1.2.1 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO AABM CHINOOK FISHERIES

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a comprehensive, precautionary approach to the management of all fisheries in Southern BC that are likely to impact this stock of concern. A 27-day rolling window closure will be applied in 2019 to commercial troll fisheries, according to the dates and areas outlined in Table 13.1-3 below. 2019 IFR Steelhead measures will not extend to marine FSC and recreational fisheries.

AABM fisheries may be managed to avoid domestic stocks of concern outlined in Table 13.1-2.

Table 13.1-2: Risk of Impact on Stocks of Concern

Fishery Period	Risk of impact on stocks of concern
<b>Nov – Feb</b>	Low risk. Fisheries in October are outside the migration period and area for several stocks of concern, including Interior Fraser River Coho, WCVI Chinook, Fraser River Spring 4 <sub>2</sub> , Fraser River Spring, Summer 5 <sub>2</sub> Chinook, and Interior Fraser River Steelhead. Catch will be comprised of fish returning in subsequent calendar year or later. The majority of the Chinook catch will be of stocks of U.S. and lower Fraser River origin.
<b>Mar – May</b>	High risk. Specific concerns for Fraser River Spring 4 <sub>2</sub> , Fraser River Spring and Summer 5 <sub>2</sub> Chinook. Increased incidence of Lower Strait of Georgia (LGS) Chinook especially in May.
<b>June – mid-Sep</b>	High risk. Potential concern for impacts on Fraser River Spring 4 <sub>2</sub> , Fraser River Spring and Summer 5 <sub>2</sub> Chinook in June and July. Monitoring of Coho encounters beginning in early to mid-June is required. Stocks of concern, including Interior Fraser River Coho are present. Risk increases as Coho recruit to fishery. Concerns for impacts on returning local WCVI Chinook stocks. Concerns for impacts on LGS Chinook.

Fishery Period	Risk of impact on stocks of concern
Mid-Sep – Oct	High risk. WCVI Chinook may be avoided by area restrictions. Concerns for impacts on LGS Chinook and Interior Fraser Coho impacts are reduced because they are at the end of their migration out of WCVI area. Concerns for Interior Fraser Steelhead in this period.

Table 13.1-3: Summary of management actions anticipated in AABM Chinook fisheries to limit impacts on stocks of concern.

Stock of Concern	First Nations FSC and Treaty Fishery	Recreational Fishery	Commercial Fishery
WCVI Chinook	Harvest levels outlined in harvest documents and communal licences	On-going terminal area restrictions for wild stocks of concern  Management measures may include a combination of daily limits, annual limits, size limits, fin fish closures and salmon non-retention areas.	WCVI - Time and area closures on WCVI (i.e. avoid inshore fisheries during the time period July to September)  Northern BC - measures in the North Coast troll fishery to limit ER to 3.2%
Fraser River Spring 4 <sub>2</sub> Chinook	Offshore WCVI First Nations fisheries closed to Chinook retention from April 19 – July 14.	Offshore WCVI recreational fisheries closed to Chinook retention from April 19 – July 14	Time and area closures and effort limits  Area G: Closed until August 1.
Fraser River Spring and Summer 5 <sub>2</sub> Chinook	Offshore WCVI First Nations fisheries closed to Chinook retention from April 19 – July 14.	Offshore recreational fisheries closed to Chinook retention from April 19 – July 14	Time and area closures and effort limits.  Area G: Closed until August 1  Area F: Chinook non-retention until August 20



### 13.1 SOUTHERN CHINOOK SALMON FISHING PLAN

Stock of Concern	First Nations FSC and Treaty Fishery	Recreational Fishery	Commercial Fishery
<b>Lower Strait of Georgia Chinook</b>	Harvest levels outlined in Harvest documents and communal licences	Catch limits and minimum size limits  Measures will vary by area	AABM harvest rate reductions have reduced impact on LGS Chinook  Time and area closures (Areas south of Estevan Pt. closed in March and April)  Reduced harvest levels in period March to June
<b>South Coast Coho (Interior Fraser River Coho management objective)</b>	Harvest levels outlined in Harvest documents and communal licences. Bycatch retention may be considered during fisheries for other species.	Coho retention limited to selective hatchery mark fishery (SHMF) in most areas. Retention of wild Coho in inside waters on the WCVI may be considered subject to presence of IFR Coho and local abundance of WCVI Coho.	Considerations for Coho retention after mid-September in WCVI troll fisheries when stocks of concern have migrated out of the area.

### 13.1 SOUTHERN CHINOOK SALMON FISHING PLAN

Stock of Concern	First Nations FSC and Treaty Fishery	Recreational Fishery	Commercial Fishery
<b>Thompson and Chilcotin River Steelhead</b>	No impacts on WCVI FSC fisheries anticipated	No impacts to WCVI recreational fisheries anticipated	<p>27-day moving window closure for Area G troll fisheries in A123 to A127 and portions of Area 26 and Area 27:</p> <p>Area 123 closed September 16 to October 12</p> <p>Area 124 closed September 13 to October 9</p> <p>Area 125 closed September 11 to October 7</p> <p>Area 126 and a portion of Area 26 (26-11) closed September 8 to October 4</p> <p>Area 127 and portions of Area 27 (27-1, 27-2 westerly of a line from Cape Parkins (50 26.6395 N, 128 02.8157 W) to Kwakiutl Point (50 21.0552 N, 127 59.4362 W), 27-4 to 27-6) closed September 6 to October 2</p>

### 13.1.2.2 ALLOCATION AND FISHING PLANS

#### 13.1.2.2.1 First Nations Fisheries

WCVI Areas 123-127 seaward of 1 nautical mile outside of the surfline are Chinook non-retention for all First Nations Fisheries from April 19-July 14 in efforts to address conservation concerns for Fraser River Chinook salmon.

##### *Food Social and Ceremonial*

WCVI FSC fisheries for AABM Chinook will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

An amount of 5,000 Chinook are set aside annually from the WCVI AABM TAC as an expected catch for WCVI First Nations.

Refer to Section 10.2 for Communal Licence Harvest Target Amount in Southern BC/Fraser River First Nations Fisheries. Note that AABM and ISBM Chinook amounts are combined.

##### *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*

WCVI Treaty fisheries for AABM Chinook will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

##### *Maa-nulth Fisheries (Domestic)*

The Domestic allocations for salmon under the Maa-nulth First Nations Final Agreement are “an amount of Ocean Chinook Salmon equal to 1,875 pieces plus 1.78% of the Ocean Chinook Salmon Canadian Total Allowable Catch.”

For the 2019/2020 Chinook year the Maa-nulth allocation of Ocean Chinook is 3,297.

### ***Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht / Muchalaht, and Tla-o-qui-aht First Nations) Multi-species Fishery***

The Five Nations Multi-species fishery for AABM Chinook will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

#### **13.1.2.2.2 Recreational Fisheries**

The AABM recreational fishery includes all catch in northwest WCVI (Areas 25 to 27, 125 to 127) from October 16 to June 30, and the catch outside of the surfline (about one nautical mile offshore) from July 1 to October 15, plus all the catch in southwest WCVI (Areas 21, 23, 24, 121, 123, and 124) from October 16 through July 31, and the catch outside one nautical mile offshore from August 1 to October 15.

WCVI Areas 121, 123-127 seaward of 1 nautical mile outside of the surfline are Chinook non-retention from April 19-July 14 in efforts to address conservation concerns for Fraser River Chinook salmon. These areas will return to normal limits with normal regulations in place on July 15.

As in all areas, recreational harvesters must purchase a fishing licence from DFO.

Updates to recreational fisheries are provided via Fishery Notice and published on the recreational fisheries website at:

<http://www.bcsportfishingguide.ca>

#### ***Allocation***

For planning purposes an expected catch of 50,000 pieces is set aside for the recreational AABM fishery. If the recreational harvest is forecast in-season to be less than or greater than 50,000, the commercial TAC will be adjusted to account for the expected difference.

### *Recreational Conservation Measures*

WCVI recreational fisheries for AABM Chinook will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

As a result of concerns for WCVI Chinook that emerged in the mid-late 1990's a suite of management measures was implemented on the WCVI intended to protect wild WCVI Chinook from recreational fishing pressure. These management measures fluctuated yearly with levels and areas of restriction. In 2000, a recreational fishery "Chinook management corridor", extending one nautical mile offshore from the surfline was put in place along the West Coast of Vancouver Island in order to reduce the exploitation rate on adult female Chinook that migrate along the coastline back to their natal WCVI streams. The surfline is defined in Schedule 1 of the Pacific Fishery Management Area Regulations, 2007. From 2006 to 2015 the suite of management measures has remained relatively stable with very few local changes.

Management measures were modified in 2016 to focus fisheries on zones of high hatchery production, ensure small systems are provided protection through terminal finfish closures, and simplify regulations for improved compliance, enforceability, assessment, and angler education.

The WCVI Chinook management measures introduced in 2016 remains in effect. Minor modifications may be considered in the pre-season planning process.

### *Fishery Monitoring and Catch Reporting*

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

#### **13.1.2.2.3 Commercial Fisheries**

AABM commercial Chinook fisheries take place annually and may be permitted in Areas 23 to 27, and Areas 123 to 127.

Within the bounds of the PST provisions, commercial troll Chinook fisheries will be managed to limit impacts on domestic stocks of concern, including Fraser River Spring 4<sub>2</sub> Chinook, Fraser River Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook, WCVI wild Chinook, LGS Chinook, and Interior Fraser River Coho, and Interior Fraser River Steelhead.

Fraser River Spring 4<sub>2</sub> Chinook, Fraser River Spring and Summer 5<sub>2</sub> Chinook stocks are present off the WCVI during the spring and summer period, most prevalently when they landfall on

their migration back to the Fraser River. To protect returning Fraser Chinook stocks of concern, the Area G troll fishing will not occur until August 1, 2019.

A 27-day rolling window closure to the Area G troll fishery will also be implemented in 2019 to protect Interior Fraser River Steelhead. Areas and dates for this window closure are listed in Table 13.1-4. Terminal fisheries targeting terminal abundance that are understood to not be on the migration route of IFR Steelhead may be excluded from 2019 conservation measures. See Appendix 9 for details on these proposed terminal areas.

Table 13.1-4: Interior Fraser River Steelhead 27-day Rolling Window Closure Dates by Area for the Area G Troll Fishery.

Area Details	Start	End
Area 123	16-Sep	12-Oct
Area 124	13-Sep	9-Oct
Area 125	11-Sep	7-Oct
Area 26-11	8-Sep	4-Oct
Area 126	8-Sep	4-Oct
Areas 27-1 and 27-2 westerly of a line from Cape Parkins (50 26.6395 N, 128 02.8157 W) to Kwakiutl Point (50 21.0552 N, 127 59.4362 W), 27-4 to 27-6)	6-Sep	2-Oct
Area 127	6-Sep	2-Oct

LGS Chinook identified by coded-wire tagged Cowichan River Chinook are broadly distributed in time and area along the WCVI. A number of management approaches have been utilized in previous troll fisheries to limit impacts on LGS Chinook. It is anticipated that the substantial reduction in commercial harvests under the 2009 and 2019 PST agreements should continue to provide sufficient protection for LGS Chinook. In addition, the fishery will be managed to disperse harvests throughout the fishing year to afford further protection to this stock of concern.

WCVI wild Chinook continues to be a stock of concern. As a result, management measures consistent with previous years will be implemented to protect this stock. The objective for commercial troll fisheries will be to avoid encounters with WCVI Chinook by restricting the troll fishery to offshore areas during the summer period. Specifically, there will be a 5 nautical mile inside boundary in Areas 123 to 126 and a 2 nautical mile boundary in Area 127 and Subarea 126-4 during the period when WCVI Chinook return to the West Coast of the island. If

further restrictions are required for conservation purposes, zone/area and time closures may be implemented.

### *Allocation*

Table 13.1-5: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South - WCVI AABM Chinook	23 to 27, 123 to 127	*	*	0.0%	100.0% <sup>g</sup>	0.0%

Notes on Chinook allocations:

\* bycatch provisions

<sup>g</sup> this is WCVI AABM Chinook fishery

The commercial TAC is calculated by deducting the Maa-nulth treaty allocation (see above for formula), 5,000 expected catch for FSC, the Five Nations Multi-species Fishery share (calculated annually based on the Canadian TAC), and 50,000 expected recreational catch from the overall Chinook WCVI AABM TAC.

### *WCVI AABM Commercial Chinook Fishing Plan*

#### *Area G Troll Fishing Plan*

Additional management measures for Fraser River Chinook conservation have been implemented for 2019. For the Area G Troll fishery, no fishing will occur prior to August 1, 2019.

Additional conservation measures for Interior Fraser River Steelhead will also be implemented in 2019 in the form of a 27-day rolling window closure to the Area G troll fishery. See Table 13.1-4 for areas and dates.

The following fishing plan is subject to change to account for domestic stocks of concern passing the WCVI. Fishery openings are planned to distribute harvests proportionately over all fishery periods subject to constraints to protect stocks of concern.

**October to March 15:** Stock composition data indicate the majority of fish harvested during this period are U.S. origin stocks rearing off the WCVI. With the exception of LGS Chinook, which may also rear off the WCVI, other Canadian Chinook stocks of concern are not vulnerable to the fishery during this period. Interior Fraser Steelhead measures are in effect on the WCVI in parts of October. See Table 13.1-4 for details.

During the period from October 1 to March 15, a precautionary harvest level will be set to reflect the preliminary nature of the TAC and the low catch per unit effort that typically occurs at this time of year.

**March 16 to April 18:** Stock composition data indicate the relative abundance of Fraser bound Chinook in the fishery begins to increase in March and April. Fraser River Spring 4<sub>2</sub> Chinook is stock of concern. Fraser River Spring 4<sub>2</sub> Chinook appear to migrate off the continental shelf seaward of the WCVI troll harvest area, rather than along the vicinity of the shoreline. However, a portion of the stock is vulnerable to the offshore troll fishery on their return migration.

A time-area closure will be maintained from March 16 to April 18 to avoid interception of Fraser River Spring 4<sub>2</sub> Chinook.

**April 19 to June 15:** Stock composition data indicate the relative abundance of Fraser and Columbia Chinook in the fishery increases during this period. Many of the Fraser and Columbia origin stocks vulnerable to the fishery during this period are relatively abundant. With the exception of LGS Chinook and Fraser River Spring 4<sub>2</sub> Chinook in SWVI through early May, other Canadian Chinook stocks of concern are not generally vulnerable to the fishery at this time. However, from mid-to-late June, there is increasing potential for interception of stocks of concern including Fraser River Spring and Summer 5<sub>2</sub> Chinook and Interior Fraser River Coho.

During the period from April 19 to June 15, the harvest is managed by an effort based model. From April 19 through April 30 the boat day cap is 250 boat days. In addition, Area 124 does not open for fishing until May 1 and Area 123 does not open until May 7. These management actions are implemented to avoid interception of Fraser River Spring 4<sub>2</sub> Chinook and reduce release rates for sub-legal Chinook. In 2019, for May 1 through May 31 the boat day cap is 1,000 boat days.

Dependent on the status of Fraser River Spring 4<sub>2</sub> Chinook, Fraser River Spring and Summer 5<sub>2</sub> Chinook stocks further management measures may be implemented during this fishing period including area closures. For Zone 1 management, the boat day cap of 650 boat days from the June period will be moved to April/May fishing period and the Area G fishery will be limited to a maximum of 1,900 vessel days for the period between April 19 and May 31. To provide additional protection for Fraser River Chinook stocks in 2019, no fisheries will occur prior to August 1, 2019

**June 16 to late July:** Through July, stock composition data indicate the relative abundance of Fraser and U.S. bound Chinook (Puget Sound, Columbia, Oregon stocks) in the fishery remains high during this period. Many of these stocks are relatively abundant. However, opportunities for harvest in July are limited due to increasing interception of Interior Fraser River Coho. As



well, starting in 2007/08, a time–area closure for the WCVI troll was implemented from June 16 to July 31 to provide protection for Fraser River Spring and Fraser River Summer 52 Chinook. In 2011 an impact assessment on Fraser River Spring and Fraser River Summer 52 Chinook was undertaken to determine if troll fisheries could be scheduled in the last week of July in WCVI areas. The assessment supported troll opportunities in Areas 125 to 127, commencing July 24. To provide additional protection for Fraser River Chinook stocks in 2019, no fisheries will occur prior to August 1, 2019

**Late July to early August:** Through August, stock composition data indicate the relative abundance of Fraser and U.S. bound Chinook (Puget Sound, Columbia, Oregon) in the fishery remains high during this period.

Fraser River Spring and Fraser River Summer 52 Chinook are less vulnerable to the fishery at this time. However, opportunities for harvest in August may be limited due to increasing interception of Interior Fraser River Coho.

During this period, the fishery will be managed to minimize mortality on Interior Fraser River Coho through: i) a maximum interception of Coho and ii) the mandatory use of plugs. As well, the fishery will be managed to minimize mortality of WCVI origin Chinook through the use of closures during time and areas where WCVI Chinook stocks are prevalent.

**September:** Stock composition data indicate the majority of Chinook stocks vulnerable to the fishery during this period are bound for the Fraser River, Puget Sound and the Columbia River. Vulnerable stocks of concern include Interior Fraser River Coho and WCVI Chinook, which are present until about mid-September. After mid-September, Interior Fraser River Coho are not vulnerable to the fishery and options for the retention of Coho bycatch during the Chinook fishery may be considered. The September fishing period permits the harvest of remaining WCVI AABM TAC as the Chinook year ends on September 30.

Any harvest opportunities prior to mid-September may be managed to avoid interception of Interior Fraser River Coho and WCVI Chinook. Interior Fraser Steelhead measures are in effect on the WCVI during parts of September. See Table 13.1-4 for details.

### ***Fishery Monitoring and Catch Reporting***

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

### *Harvest Agreements*

There are no Harvest Agreements for AABM Chinook.

### *Economic Opportunities*

There are no EO fisheries for AABM Chinook.

#### **13.1.2.2.4 ESSR Fisheries**

There are no ESSR fisheries for AABM Chinook.

### 13.1.3 WCVI ISBM CHINOOK

#### 13.1.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT.

This section of the plan covers First Nations, recreational and commercial fisheries for Chinook salmon in all waters along the WCVI and terminal areas that are not defined as AABM fisheries under the Pacific Salmon Treaty.

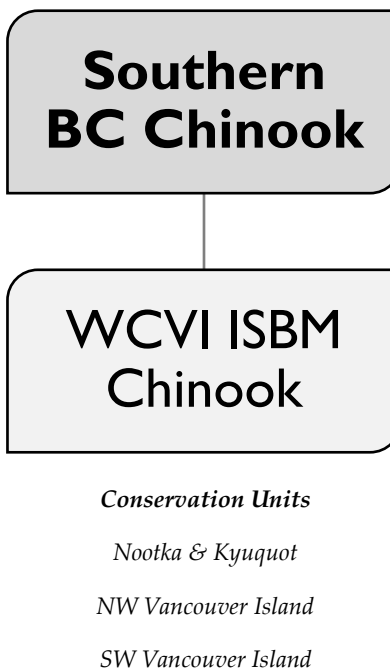


Figure 13.1-3: Overview of WCVI ISBM Chinook

#### 13.1.3.2 STOCK ASSESSMENT INFORMATION

The integrated biological status of WCVI Chinook CUs was assessed CSAS as part of a review of Southern BC Chinook CUs. The integrated biological status of the Nootka and Kyuquot CU was assessed as RED, SW Vancouver Island CU was RED, and NW Vancouver Island CU was “to be determined” pending development of methods for sites where enhanced sites are predominant.

The Science Advisory Report is available at:

[http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016\\_042-eng.html](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016_042-eng.html)

#### 13.1.3.2.1 Pre-season

The forecast terminal return of adult Stamp/RCH chinook to Barkley Sound and Alberni Inlet in 2019 is approximately 130,000 (range 97,000 to 165,000). The predicted adult age composition is 2%, 85% and 13% of 3, 4 and 5-year old fish, respectively.

Marine survival rates for the other major hatcheries and some other WCVI stocks appeared to be significantly higher than the survival estimated for the Robertson Creek Hatchery (RCH) CWT Indicator Stock for the 2009 through 2011 brood years. Therefore in recent years, returns to some of the WCVI other hatchery stocks were relatively abundant compared to Area 23. However, for the five most recent brood years (2012 to 2016) survival rate estimates from the RCH CWT Indicator Stock appear to be more representative of WCVI chinook as a whole. Therefore, general expectations are for a moderate, or average, return of adult chinook to the WCVI area. Similar to Area 23, directed fishery opportunities are expected in WCVI terminal areas dominated by hatchery stock m

Conuma Hatchery: The expected terminal return of Conuma Hatchery chinook to Area 25 is 20,000 (range 12,000 to 29,000) with an age composition of 25%, 60% and 15% age 3, 4 and 5-year old fish, respectively.

Nitinat Hatchery: The expected terminal return of Nitinat Hatchery chinook to Area 22 is 20,000 (range 14,000 to 27,000) with an age composition of 10%, 55% and 35% age 3, 4 and 5-year old fish, respectively.

Other WCVI Stocks: The expected terminal return of other WCVI index stocks is 27,000 (19,000 to 36,000) with an age composition of 7%, 78% and 15% age 3, 4 and 5-year old fish, respectively.

The Other WCVI forecast return results are largely from index stocks that are enhanced. However, in most recent years, spawner abundances of wild indicator stocks within WCVI Conservation Units have been below provisional upper biological benchmarks and, in the case of the SWVI Conservation Unit, often below the lower biological benchmark in many years. Therefore, fisheries within Canada are managed to limit mortality on wild WCVI Chinook.

#### 13.1.3.2.2 In-season

Where available, in-season abundance estimates will be reviewed in a timely manner to permit consideration of additional terminal fishing opportunities that may arise in-season for WCVI Chinook.

### *Brooks Peninsula*

A small test fishery near the M̓uq̓w̓in / Brooks Peninsula occurred in 2017 and 2018 as one component of a Pacific Salmon Commission (PSC) high priority Chinook project to improve the precision and accuracy of annual WCVI Chinook return estimates. This test fishery is planned again for 2019.

#### **13.1.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

In response to conservation concerns for Chinook in both countries, several changes were made to PST Chapter 3 (Chinook), including targeted harvest reductions in both Canadian and U.S. fisheries and 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). The agreement identifies reductions of up to 12.5 per cent from 2009-2015 levels for specified Canadian and US indicator populations in Canadian ISBM fisheries.

The Area 23 Harvest Committee is a forum that includes representatives from the Tseshaht, Hupacasath and Maa-nulth First Nations, the Nuuchah-nulth Tribal Council, the Area B and D Harvest Committee, local Sport Fishing Advisory Committees, local municipal governments, the provincial government and DFO. The Area 23 Harvest Committee is developing a Somass Chinook local integrated fishery management plan that will define the escapement targets and harvest rates under various run sizes. The Decision Guidelines in this IFMP will be updated once the detailed local plan has been completed through the Area 23 Harvest Committee.

The Area 25 Harvest Committee is a forum that includes representatives from the Ehattesaht, Mowachaht/Muchalaht, and Nuchatlaht First Nations, the Area D Harvest Committee, the local Sport Fishing Advisory Committee, the Nootka Sound Watershed Society, local municipal governments and DFO. The Area 25 Roundtable is developing a detailed local management plan for Chinook in Nootka Sound and Esperanza Inlet. The Decision Guidelines in this IFMP will be updated once the detailed local plan has been completed through the Area 25 Harvest Committee.

ISBM Chinook fisheries will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

### 13.1.3.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO WCVI ISBM CHINOOK FISHERIES

Table 13.1-6: Actions to protect wild Chinook stocks

First Nations Fishery	Recreational Fishery	Commercial Fishery	Five Nations Multi-species Fishery
Harvest documents and Communal licence harvest targets  Conservation measures under discussion.	Time and area closures, including: - Finfish closures - Salmon non-retention areas - Chinook non-retention areas - Maximum size limits  Daily, possession and annual limits  Measures will vary by area	Time and area closures during the July to October period	Harvest documents and communal commercial licence harvest targets  Potential time and area closures during the July to October period  Conservation measures under discussion  Measures will vary by area

### 13.1.3.5 ALLOCATION AND FISHING PLANS

#### 13.1.3.5.1 First Nations Fisheries

##### *Food Social and Ceremonial*

First Nations target Chinook stocks for FSC purposes throughout the WCVI.

Refer Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River First Nations Fisheries. Note that AABM and ISBM Chinook amounts are combined.

##### *Specific Conservation Measures for First Nations Fisheries*

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Protective measures may be considered in terminal areas, particularly Area 24, to reduce harvest impacts on wild Chinook. Potential measures will be the subject of discussion with First Nations communities prior to development of fishing plans.

### ***Treaty Fisheries***

#### ***Maa-nulth Fisheries (Domestic)***

The Domestic allocations for Chinook salmon under the Maa-nulth First Nations Final Agreement are as follows:

An amount of terminal Chinook salmon equal to:

- 200 pieces, when the return of terminal Chinook salmon is critical;
- 1,500 pieces, when the return of terminal Chinook salmon is low;
- 2,000 pieces, when the return of terminal Chinook salmon is moderate; and
- 2,600 pieces, when the return of terminal Chinook salmon is abundant.

#### ***Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht / Muchalaht, and Tla-o-qui-aht First Nations) Multi-species Fishery***

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

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.

### 13.1.3.5.2 Recreational Fisheries

ISBM recreational Chinook fisheries in the WCVI take place annually in inshore Areas 21 to 27. ISBM periods in Areas 21 to 24 are August 1 to October 15, and in Areas 25 to 27 are July 15 to October 15. Chinook caught in these areas outside of this time period are accounted for as part of the AABM fishery catch. Catch and effort typically peaks in these areas during the months of July and August, and effort is largely abundance driven.

The minimum size limit for Chinook in recreational ISBM fisheries is 45 cm and the annual limit for Chinook is 10. The maximum daily limit for Chinook is 2, and the possession limit is 4. Updates to recreational fisheries are provided via Fishery Notice and published on the recreational fisheries website at:

<http://www.bcsportfishingguide.ca>

#### *Recreational Fisheries Specific Conservation Measures*

Conservation measures for ISBM fisheries are designed largely to protect wild Chinook returning to the WCVI. Decisions on these management measures are primarily made pre-season and go into effect based on stock outlook and expected returns. In-season changes can also be made based on local Chinook returns to rivers. Harvests largely target hatchery production and management measures are designed to minimize impact on wild WCVI Chinook populations.

#### *Fishery Monitoring and Catch Reporting*

Catch monitoring programs, including seasonal creel surveys, logbooks and the internet recreational effort and catch survey (iREC), are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

### 13.1.3.5.3 Commercial Fisheries

#### *Allocation*

Table 13.1-7: Commercial Allocation Implementation Plan for the 2015–2019 period

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>h</sup>Area 23 sharing arrangement currently 33.3% seine: 66.7% gill net.



<sup>1</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>2</sup>winter troll fishery

### ***WCVI ISBM Commercial Chinook Fisheries***

Commercial fisheries for WCVI ISBM Chinook do not occur in areas that will be impacted by 2019 Interior Fraser River Steelhead management measures.

#### ***Area D Gill Net Potential Fisheries***

**Mid-August to Early September - Area 23:** Based on the pre-season forecast for Robertson Creek Hatchery directed fishing opportunities are being planned.

**Mid-August - Area 25:** Based on the pre-season forecast for Conuma Hatchery of 20,000 directed commercial fisheries are not being planned at this level. The terminal return will be re-evaluated based on in-season information and commercial opportunities may occur if the terminal run size is increased.

#### ***Area B Seine Potential Fisheries***

**Mid-August to Early September -** Based on the pre-season forecast for Robertson Creek Hatchery, directed fishing opportunities are being planned.

### ***Fishery Monitoring and Catch Reporting***

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

Any potential Area B fishery in Area 23 would be conducted as a pooled fishery with 100% dockside monitoring program.

### *WCVI ISBM Chinook First Nations Economic Opportunity Fisheries*

#### *Economic Opportunities*

Economic opportunities for Somass First Nations (Tseshaht and Hupacasath First Nations) are expected as in recent years. Economic opportunity fisheries will be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. 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.

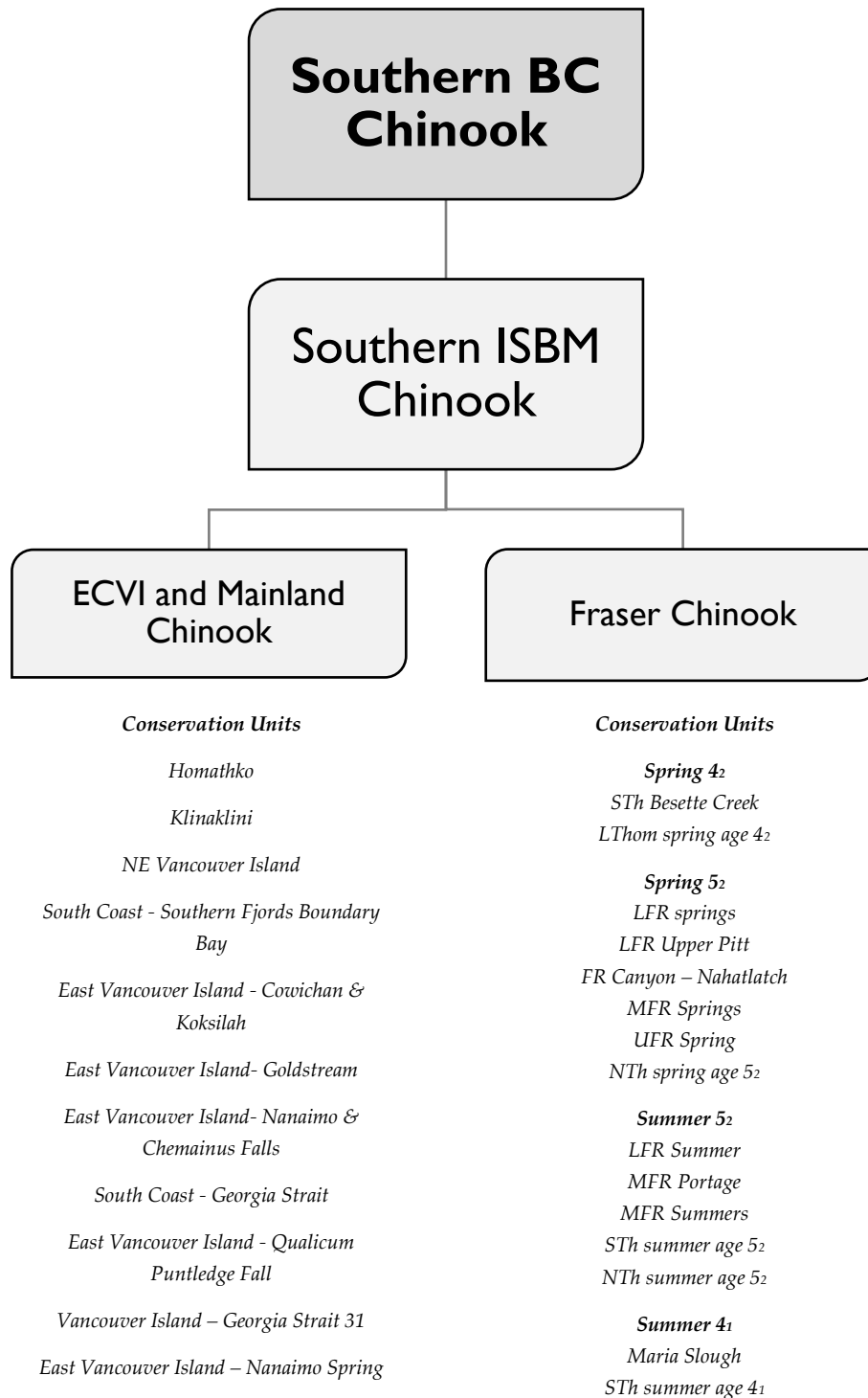
Economic opportunity fisheries for WCVI ISBM Chinook do not occur in areas that will be impacted by 2019 Interior Fraser River Steelhead management measures.

#### **13.1.3.5.4 ESSR Fisheries**

There is the potential for ESSR fisheries at the Conuma, Robertson and Nitinat hatcheries as well as Burman River when broodstock collection targets will be met. These fisheries are implemented in collaboration with local First Nations and DFO hatchery staff. ESSR fisheries for other enhanced streams may be considered where excess escapements can be identified in-season.

## 13.1.4 SOUTHERN ISBM CHINOOK

## 13.1.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT



*Shuswap River summer age 4<sub>1</sub>*  
*Upper Adams River*  
*Fraser Fall 4<sub>1</sub>*  
*LFR fall whites*

Figure 13.1-4: Overview of Southern ISBM Chinook

ISBM management regimes apply to all Chinook salmon fisheries subject to the Pacific Salmon Treaty that are not AABM fisheries. These include marine and freshwater salmon fisheries from northern British Columbia to northern Oregon coast. ISBM fisheries in Southern BC include First Nations, recreational, and commercial net fisheries (e.g. Fraser River gill net).

### Fraser Chinook

For management purposes, Fraser Chinook stocks will be managed using the Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, Summer 5<sub>2</sub>, Summer 4<sub>1</sub> and Fraser Fall 4<sub>1</sub> management units employed under the PST process to align fisheries management objectives with indicator stocks, escapement, catch, and exploitation rate data used in the PST process. The relationship between current PST management units, COSEWIC designatable units (DUs), Wild Salmon Policy conservation units (CUs) and spawning locations is shown in the Table 13.1-8.

### Fraser Spring 4<sub>2</sub> Chinook

Spring 4<sub>2</sub> Chinook return to spawn from early March through late July and migration peaks in June in the lower Fraser River. These populations primarily mature as adults at age 4 (90%) with lower numbers maturing at age 5 (7%) and occasionally at age 3 (3%).

Coded-wire tagged (CWT) Nicola River Chinook released from the Spius Creek Hatchery is the PST exploitation rate indicator stock used to assess survival and exploitation rates of Spring 4<sub>2</sub> Chinook in Canadian and U.S. fisheries. Based on CWT recoveries from fisheries, Fraser Spring 4<sub>2</sub> Chinook have historically been encountered in Fraser River First Nations gill net fisheries, Fraser River and tributary recreational fisheries, marine troll fisheries (e.g. WCVI and North Coast), and recreational fisheries in the Strait of Juan de Fuca and Strait of Georgia, with lower rates in other marine recreational fisheries.

There are no pre-season or in-season abundance forecasts developed for this aggregate.

### Fraser Spring and Summer 5<sub>2</sub> Chinook

Spring 5<sub>2</sub> Chinook return to the Fraser River to spawn from early March through late July and migration peaks in late June in the lower Fraser. Summer 5<sub>2</sub> Chinook have later timing and

return to the Fraser River to spawn from late June to August with a peak in late July. These populations primarily mature as adults at age 5 (approx. 70%) and age 4 (approx. 20%) with lower numbers at age 3 and age 6.

Currently, there is no PST indicator stock for these management units; however, information from past CWT recoveries (e.g. Dome Creek, a discontinued Spring 5<sub>2</sub> indicator) from these populations indicates that Spring 5<sub>2</sub> Chinook have been encountered in many of the same areas as Spring 4<sub>2</sub> Chinook. Summer 5<sub>2</sub> Chinook are also encountered in the same areas, but relative impacts between fisheries may differ given the approximately 1 month later migration timing of these Summer 5<sub>2</sub> stocks.

There are no pre-season forecasts for this group but in-season abundance for the combined Spring 5<sub>2</sub> and Summer 5<sub>2</sub> aggregate is determined based on catch per unit of effort (CPUE) in the Albion test fishery in the lower Fraser River. Details of the modelling approach can be found in a CSAS document published here: [http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2012/2012\\_150-eng.html](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2012/2012_150-eng.html)

### **Fraser Summer 4<sub>1</sub> Chinook**

The Summer 4<sub>1</sub> Chinook Management Unit consists of several populations which spawn almost exclusively within the Thompson River watershed, and migrate through the lower Fraser River from mid-July to mid-September.

Within this stock group, CWTs from the Lower Shuswap River indicator stock are used to monitor survival and exploitation. Other systems of the aggregate are assessed visually, and work is underway to calibrate their escapement estimates. There are no pre-season or in-season abundance forecasts developed for this aggregate.

### **Fraser Fall 4<sub>1</sub> Chinook**

Fall 4<sub>1</sub> Chinook spawn mostly in the Harrison and Chilliwack watersheds and return to the Lower Fraser between mid-August and mid-November, with the majority of the run migrating through this area from mid-September to mid-October. Harrison is the only Fraser River Chinook population for which quantitative forecasts are produced. The median estimate for 2019 is an escapement of 87,762.

### **ECVI and Mainland Inlets**

Chinook populations in the upper part of the Strait of Georgia include both ocean- and stream-type Chinook that spawn in systems from Northeast Vancouver Island down to Campbell River and across to the Mainland Inlets.

Within this stock group, CWTs from the Quinsam River indicator stock are used to monitor survival and exploitation. In the Mainland Inlet area, Phillips River, also an enhanced system, is monitored and being developed into an indicator stock. Only a few other systems are monitored consistently for escapement in this area, including the Nimpkish River. There are no pre-season or in-season abundance forecasts developed for this unit.

Chinook populations in the lower Strait of Georgia are dominated by ocean-type life history (Nanaimo Springs are the lone Stream Type) and fall run timing (summers runs exist in Puntledge and Nanaimo, and a spring run in Nanaimo). A summer run may exist in Cowichan as well. Mean generational time is 3 or 4 years. Most populations are enhanced to some level. There are major DFO facilities on the Puntledge, Big Qualicum, Little Qualicum, Tenderfoot and Capilano Rivers. Smaller facilities enhance stocks in the Sliammon, Lang, Chapman, Seymour, Little Campbell, Oyster, Tsable, Tsolum, Englishman, Nanaimo, Chemainus, Cowichan and Goldstream rivers. Most of these systems are monitored for spawner abundance. The rivers at the head of the Mainland Inlets are not well assessed.

Coded-wire tag indicators include Cowichan and Big Qualicum (Fall run timing) and Puntledge (summer run timing). Pre-season forecasts are not produced for these systems. Some are monitored in-season and reported weekly in a bulletin.

#### **13.1.4.2 STOCK ASSESSMENT INFORMATION**

In November 2018, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) released the results for an assessment of 16 southern BC Chinook designatable units (DUs). Of these units, 13 DUs originate in the Fraser River with 7 DUs assessed as endangered, 4 threatened and 1 special concern; Southern Thompson Ocean Summer Chinook were deemed not at risk. For the other 3 DUs outside the Fraser River, 1 DU (East Vancouver Island Stream Spring; Nanaimo River) was assessed as endangered and 2 Southern Mainland DUs were data deficient. Status information is summarized in Table 13.1-8 and at

<https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife/assessments/wildlife-species-assessment-summary-nov-2018.html>

COSEWIC is expected to submit these assessments to the Government of Canada via the annual report which is anticipated in the fall 2019. This annual report will initiate the formal process to consider whether or not these DUs will be listed under the Species at Risk Act (SARA).

COSEWIC assessment of the remaining southern BC Chinook populations is also planned for 2019 with an expected report on the status of these DUs in fall 2020.

### 13.1 SOUTHERN CHINOOK SALMON FISHING PLAN

Table 13.1-8: Relationship between current Pacific Salmon Treaty fishery management units, COSEWIC designatable units (DUs), Wild Salmon Policy (WSP) conservation units (CUs) and spawning locations.

Fishery Management Unit	Designatable Unit	COSEWIC Assessment	CU and WSP Status	Spawning Locations
			no colour = TBD gray = Data Deficient  orange = red/amber	
Spring 4 <sub>2</sub> Chinook	DU14 BC South Thompson Stream Summer	<i>Endangered</i>	CK-16 STh Bessette Creek	Bessette Creek, Creighton Creek; Duteau Creek; Harris Creek
	DU15 BC Lower Thompson Stream Spring	<i>Not assessed</i>	CK-17 Lower Thompson Spring	Bonaparte River; Coldwater River; Deadman River; Louis Creek; Nicola River; Spius Creek
Spring 5 <sub>2</sub>	DU3 BC Lower Fraser River Stream Spring	<i>Special Concern</i>	CK-04 LFR Spring	Birkenhead
Chinook	DU4 BC Lower Fraser River Stream Summer (Upper Pitt)	<i>Endangered</i>	CK-05 LFR Upper Pitt	Pitt River-Upper
	DU7 BC Middle Fraser River Stream Spring	<i>Endangered</i>	CK-08 FR Canyon-Nahatlatch	Anderson, Nahatlatch
	DU9 BC Middle Fraser River Stream Spring	<i>Threatened</i>	CK-10 MFR Spring	Cariboo River-upper; Chilako River; Chilcotin River upper; Chilcotin River-lower; Cottonwood River; Horsefly River; Narcosli Creek; Naver Creek; West Road River and others

### 13.1 SOUTHERN CHINOOK SALMON FISHING PLAN

Fishery Management Unit	Designatable Unit	COSEWIC Assessment	CU and WSP Status	Spawning Locations
			no colour = TBD gray = Data Deficient orange = red/amber	
	DU11 BC Upper Fraser River Stream Spring	<i>Endangered</i>	CK-12 UFR Spring	Bowron River; Dome Creek; East Twin Creek; Fraser River-above Tete Jaune; Forgetmenot Creek; Goat River; Holliday Creek; Holmes River; Horsey Creek; Humbug Creek; Kenneth Creek; McGregor River; McKale River; Morkill River; Nevin Creek; Ptarmigan Creek; Slim Creek; Small Creek; Snowshoe Creek; Swift Creek; Torpy River; Walker Creek; Wansa Creek; West Twin Creek; Willow River; and others
	DU16 BC North Thompson Stream Spring	<i>Endangered</i>	CK-18 NTHOM Spring	Albreda River; Blue River; Finn Creek; Lyon Creek; Mad River
Summer 5: Chinook	DU5 BC Lower Fraser River Stream Summer	<i>Threatened</i>	CK-06 LFR Summer	Big Silver Creek; Chilliwack/Vedder River; Cogburn Creek; Douglas Creek; Green River; Lillooet River; Sloquet Creek; Tipella Cr.
	DU8BC Middle Fraser River Stream Fall	<i>Endangered</i>	CK-09 MFR Portage	Portage
	DU10 BC Middle Fraser River Stream Summer	<i>Threatened</i>	CK-11 MFR Summer	Bridge River; Cariboo River lower; Chilko River; Endako River; Kazchek Creek; Kuzkwa River; Nechako River; Quesnel River; Seton River; Stellako River; Stuart River; and others



### 13.1 SOUTHERN CHINOOK SALMON FISHING PLAN

Fishery Management Unit	Designatable Unit	COSEWIC Assessment	CU and WSP Status	Spawning Locations
			no colour = TBD gray = Data Deficient orange = red/amber	
	DU13 BC South Thompson Stream Summer	<i>Not assessed</i>	CK-14 STh Summer age 5 <sub>2</sub>	Eagle River; Salmon River
	DU17 BC North Thompson Stream Summer	<i>Endangered</i>	CK-19 NTHOM Summer	Barriere River; Clearwater River; Lemieux Creek; Mahood River; Mann Creek; North Thompson River; Raft River
Summer 4 <sub>1</sub> Chinook	DU6 BC Lower Fraser River Ocean Summer	<i>Not assessed</i>	CK-07 Maria Slough Summer	Maria Slough
	DU12 BC South Thompson Ocean Summer	<i>Not At Risk</i>	CK-13 STh Summer age 4 <sub>1</sub>	Adams River; Little River; South Thompson River; Lower Thompson River; Lower Shuswap, Middle Shuswap
			CK-15 Shuswap River Summer	
Fraser Fall 4 <sub>1</sub> Chinook	DU2 BC Lower Fraser River Ocean Fall	<i>Threatened</i>	CK-03 LFR Fall	Harrison
ECVI and Mainland Chinook	DU19 BC East Vancouver Island Stream Spring	<i>Endangered</i>	CK-23 East Vancouver Island – Nanaimo Spring	Nanaimo River - Upper

The integrated biological status of Southern BC Chinook CUs has been assessed by CSAS. The Science Advisory Report is available at:

[http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016\\_042-eng.html](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2016/2016_042-eng.html)

Status evaluations were completed and an integrated biological status designation identified for 15 of the 35 CUs. Of these, 11 were assigned a Red status, one was assigned a Red/Amber status, one was assigned an Amber status and two were assigned a Green status. For another nine of the 35 CUs, an integrated status evaluation was not possible based on the information presented at the workshop. For these CUs, the status designation is “data deficient” and this designation is not expected to change until more information becomes available. For the remaining 11 of the 35 CUs, status evaluations were not completed. Instead, the status of these CUs was classified as “to be determined”. These CUs are a component of units where the enhanced sites are predominant; consensus was not reached on how to derive a WSP status assessment for such units.

Table 13.1-9: Biological Status Designation

*Integrated status evaluation completed at workshop*

Integrated Status	Case #	CU ID	CU Name	Area
RED	1	CK-10	Middle Fraser River_SP_1.3	Fraser
RED	4	CK-18	North Thompson_SP_1.3	Fraser
RED	6	CK-19	North Thompson_SU_1.3	Fraser
RED	11	CK-09	Middle Fraser River-Portage_FA_1.3	Fraser
RED	24	CK-17	Lower Thompson_SP_1.2	Fraser
RED	25	CK-31	West Vancouver Island-South_FA_0.x	WCVI
RED	26	CK-12	Upper Fraser River_SP_1.3	Fraser
RED	29	CK-29	East Vancouver Island-North_FA_0.x	Inner SC
RED	30	CK-32	West Vancouver Island-Nootka & Kyuquot_FA_0.x	WCVI
RED*	3	CK-16	South Thompson-Bessette Creek_SU_1.2	Fraser
RED*	5	CK-01	Okanagan_1.x	Columbia
RED / AMBER	27	CK-14	South Thompson_SU_1.3	Fraser
AMBER	12	CK-11	Middle Fraser River_SU_1.3	Fraser
GREEN(p)	9	CK-03	Lower Fraser River_FA_0.3	Fraser
GREEN	2	CK-13	South Thompson_SU_0.3	Fraser

*Integrated status evaluation not possible based on information presented at workshop*

Integrated Status	Case #	CU ID	CU Name	Area
DD	7	CK-82	Upper Adams River_SU_x.x	Fraser
DD	8	CK-06	Lower Fraser River_SU_1.3	Fraser
DD	10	CK-05	Lower Fraser River-Upper Pitt_SU_1.3	Fraser
DD	28	CK-28	Southern Mainland-Southern Fjords_FA_0.x	Inner SC
DD	31	CK-08	Middle Fraser-Fraser Canyon_SP_1.3	Fraser
DD	32	CK-20	Southern Mainland-Georgia Strait_FA_0.x	Inner SC
DD	33	CK-34	Homathko_SU_x.x	Inner SC
DD	34	CK-23	East Vancouver Island-Nanaimo_SP_1.x	Inner SC
DD	35	CK-35	Klinaklini_SU_1.3	Inner SC

“(p)” means provisional, and identifies cases where some participants held divergent views.

“\*\*” means that CU definition should be reviewed.

*Integrated status evaluation not attempted at workshop due to unresolved methods*

Integrated Status	Case #	CU ID	CU Name	Area
TBD**	13	CK-04	Lower Fraser River_SP_1.3	Fraser
TBD	14	CK-21	East Vancouver Island-Goldstream_FA_0.x	Inner SC
TBD	15	CK-33	West Vancouver Island-North_FA_0.x	WCVI
TBD	16	CK-22	East Vancouver Island-Cowichan & Koksilah_FA_0.x	Inner SC
TBD	17	CK-02	Boundary Bay_FA_0.3	Inner SC
TBD	18	CK-07	Maria Slough_SU_0.3	Fraser
TBD	19	CK-25	East Vancouver Island-Nanaimo & Chemainus_FA_0.x	Inner SC
TBD	20	CK-15	Shuswap River_SU_0.3	Fraser
TBD	21	CK-83	East Vancouver Island-Georgia Strait_SU_0.3	Inner SC
TBD	22	CK-27	East Vancouver Island-Qualicum & Puntledge_FA_0.x	Inner SC
TBD	23	CK-9008	Fraser-Harrison fall transplant_FA_0.3	Fraser

“\*\*” means that CU status should be re-evaluated after review of enhancement level definition.

**13.1.4.2.1 Pre-season**

Table 13.1-10: Stock outlook anticipated in ISBM Chinook fisheries

Management Unit	Stock Outlook for 2019
<b>Fraser Chinook - Spring 4<sub>2</sub></b>	The Outlook is stock of concern. Expectations for 2019 are for continued exceptionally depressed abundance due to low parental escapements in 2015, ongoing unfavorable marine and freshwater survival conditions and low productivity. Escapements in 2018 again declined compared to the parental escapements in 2014. For those systems where escapement estimates are available, escapements were ~12% of the parental escapement and were far below estimated $S_{gen}$ values for Spius, Coldwater and Nicola, despite hatchery supplementation.
<b>Fraser River Spring and Summer 5<sub>2</sub> Chinook</b>	The Outlook is stock of concern. Expectations are for continued exceptionally low abundance related to depressed parental escapements, continuing unfavourable marine and freshwater survival conditions and low productivity. Escapements in 2018 were variable, but on average, for Spring 5 <sub>2</sub> Chinook escapements attained only 50% of parental escapement level. For Summer 5 <sub>2</sub> Chinook, escapements declined compared to parental escapements in 2013, and on average attained approximately 40% of the parental escapement.

Management Unit	Stock Outlook for 2019
<b>Fraser River Summer 4<sub>1</sub> Chinook</b>	The Outlook is low. Marine survival conditions worsened for the 2018 return, and escapements were below parental levels in 2014 for all populations except Little River. Fecundity has been declining for stocks in this management unit, which is contributing to lower productivity than the long term average. Aggregate escapement appears to be ~50% of the parental escapement.
<b>Fraser Lates</b>	The Outlook is low. Current marine conditions and stock productivity appear to be unfavorable, although parental escapement in 2015 at Harrison was above the upper bound of the escapement goal (98,000). Thus, abundance is expected to be about average. Chilliwack hatchery production, marine survival, and recent fishery exploitation are expected to return sufficient abundance to achieve hatchery production objectives. The forecast for 2019 Harrison Chinook is a median estimate of 87,762. A formal forecast for 2019 Harrison Chinook will be available in Spring.
<b>Lower Strait of Georgia Chinook (2018 Outlook)</b>	Lower Strait of Georgia Chinook abundance remains low. Recent returns to Cowichan suggest that rebuilding is continuing and the outlook is for above average returns. Nanaimo returns remain low but stable. Hatchery Chinook returns to major facilities have shown modest increases in recent years and the outlook is for above average returns.
<b>North Vancouver Island/ Johnstone Strait Chinook (2018 Outlook)</b>	Outlook is similar to recent years with wild stocks at low level and hatchery stocks likely near to above target.

### *Harrison Chinook Pre-season Forecast*

The 2018 forecast estimate of the spawner abundance (i.e. returns to the spawning grounds after all ocean and freshwater fisheries harvest and mortalities) for Harrison Chinook is available annually in the spring. The stock has been maturing at younger ages recently, which has contributed to over-forecasting errors for age 4 and age 5 fish lately (i.e. for 2018, the age-4 forecast was nearly double the observed escapement). This stock has had a declining trend in productivity, which has been influenced by the younger maturation pattern and by the pattern

of decreasing size-at-age for age 4 and age 5 female fish. The biologically-based escapement goal range is 75,100 to 98,500 spawners.

Table 13.1-11: Harrison Chinook Forecast

Location	Age 3	Age 4	Age 5	Total
Harrison (80% Confidence Interval)	25,505 (22,412 – 32,279)	51,234 (41,889 – 62,494)	2,019 (1,539 – 2,421)	78,758

Note: Harrison forecasts using sibling cohort regression models have had substantial over-forecast errors in recent years, particularly for age-4 returns, resulting in actual spawner returns less than forecast.

#### 13.1.4.2.2 In-season

##### *Fraser River Spring and Summer 5<sub>2</sub> Chinook*

An assessment of abundance for these management units is determined in-season from the relationship between the cumulative catch per unit effort (CPUE) of Chinook caught in the Albion test fishery from early May to mid-June.

Updates of the predicted return of Spring and Summer 5<sub>2</sub> Chinook to the mouth of the Fraser River, for informational purposes, are generally released in mid-May and early June, with a final in-season update in the third week of June. For 2019, updates of the predicted return will not be released in-season, as management measures will not be updated in-season based on a zoned management approach given conservation concerns for Fraser River Spring and Summer 5<sub>2</sub> Chinook.

#### 13.1.4.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

##### **All ISBM Fisheries**

In response to conservation concerns for Chinook in both countries, several changes were made to PST Chapter 3 (Chinook), including targeted harvest reductions in both Canadian and U.S. fisheries and 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 or CYER). The agreement identifies reductions of up to 12.5 per cent from 2009-2015 levels for specified Canadian and U.S. indicator populations in Canadian ISBM fisheries.

### **Fraser Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook**

Additional management measures for Fraser River Chinook conservation are being implemented for 2019. These management units contain most of the at risk stocks (i.e. 7 Endangered, 3 Threatened and 1 Special Concern). These populations have been affected by very poor productivity, which has resulted in steep declines in spawner abundance. For example, only 490 natural origin Chinook returned to the Nicola River (which are in the Spring 4<sub>2</sub> management unit) in 2018 from a parental generation of 7,122 Chinook. The poor return of wild origin Nicola Chinook in 2018 increases the concern that productivity for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook returning in 2019 could also be very poor as these fish went to sea in the same year as Nicola Chinook and may have been exposed to similar freshwater and marine conditions.

A suite of highly precautionary fishery restrictions are intended to provide a high degree of protection to at-risk Fraser Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook returning in 2019. The management target is to reduce overall Canadian fishery mortalities on these populations to near 5% (note: actual outcomes may vary around this target given uncertainties in the data). Expected fishery mortalities are not intended to be a management target and the objective is to allow as many fish to pass through to the spawning grounds as possible. Fishery impacts are expected to include incidental Chinook mortalities in Fraser River Chinook and Sockeye test fisheries, limited Chinook retention or bycatch retention in Fraser River FN FSC fisheries, release mortalities, and incidental mortalities during Chinook-directed fisheries beginning after July 15. See section 13.1.4.5 for specific conservation measures for each sector.

A zoned management approach will not be used to manage Spring and Summer 5<sub>2</sub> Chinook in 2019.

### **Fraser Summer 4<sub>1</sub> Chinook**

For 2019, the Department has announced a precautionary reduction in fishery mortalities by at least 25% to protect co-migrating Fraser Chinook stocks of concern.

South Thompson Chinook were designated by COSEWIC as Not At Risk; however, productivity ( $R/S < 1$ ) and fecundity has declined for this group since 2015 and there are concerns for the Maria Slough conservation unit given that fewer than 20 spawners returned in 2018. In addition, the migration of Summer 4<sub>1</sub> Chinook overlaps with other Fraser Chinook stocks of conservation concern, particularly Summer 5<sub>2</sub> chinook.

Additional reductions in commercial and recreational fishery harvest opportunities are intended to support priority access for FN FSC fisheries in the Fraser River given expectations

for very limited FSC fishery opportunities in 2019. See section 13.1.4.5 for specific conservation measures for each sector.

For the PST, the Department has implemented an MSY escapement objective of 12,300 for the Lower Shuswap River, which is the CWT indicator stock for Fraser River South Thompson 4<sub>1</sub> Chinook aggregate.

In the 2019 Pacific Salmon Treaty Agreement, the Lower Shuswap River has a management objective of 12,300 adult spawners which corresponds to the spawning escapement that would produce the maximum sustained yield (SMSY). In 2018, the adult spawning escapement was estimated at 17,100 using mark-recapture methods.

Limited directed fishing opportunities may occur on this stock group, provided that fisheries can be designed to limit impacts on co-migrating possible stocks of concern including: Spring 4<sub>2</sub> Chinook, Spring/Summer 5<sub>2</sub> Chinook, Fraser Fall 4<sub>1</sub> Chinook, Fraser River Sockeye, and Interior Fraser Coho.

#### **Fraser Fall 4<sub>1</sub> (Harrison) Chinook**

The PST approved escapement goal for the Fall 4<sub>1</sub> (Harrison) Chinook is a range of 75,100 to 98,500 spawners.

For 2019, the Department has proposed a precautionary reduction in fishery mortalities by at least 25%. Since 2012, the escapement goal has not been achieved, with the exception of 2015, and the COSEWIC designation of status is *threatened*. Given declines in productivity ( $R/S < 1$ ) and recent average fishery mortalities, spawner abundance may not reach the lower bound of the escapement goal range in 2019.

See section 13.1.4.5 for specific conservation measures for each sector.

#### **LGS Chinook**

Conservation concerns for Lower Strait of Georgia (LGS) Chinook stocks will guide fisheries planning. The Cowichan River Chinook stock is an indicator stock of the LGS Chinook aggregate. Escapement trends have shown improvements in recent years.

### **13.1.4.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO INSIDE CHINOOK ISBM FISHERIES**

ISBM fisheries are constrained in order to meet PST obligations and domestic management objectives. In some cases, full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.



Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a comprehensive, precautionary approach to the management of all fisheries in Southern BC that are likely to impact this stock of concern. Within the Fraser River (including Subareas 29-6, 29-7, 29-9, and 29-10), a 42-day closure will apply to commercial gill net, purse seine, beach seine, and shallow seine fisheries (including EO fisheries) and a 27-day closure will apply to commercial troll fisheries. Further, a 42-day closure will apply to Fraser River recreational fisheries and a 27-day closure will apply to Fraser River FSC fisheries. Areas and dates for the window closure are identified in Table 13.1-12, with details of specific management measures contained in fishery descriptions that follow.

Table 13.1-12: IFR Steelhead Rolling Window Closure Dates for Southern ISBM Chinook Fisheries

Fishery Location	27-day window closure (commercial troll fisheries and FSC fisheries)		42-day window closure (commercial gill net, purse seine, beach seine, and shallow seine fisheries and recreational fisheries)	
	Start	End	Start	End
Area 29: 29-6, 29-7, 29-9, and 29-10	28-Sep	24-Oct	21-Sep	1-Nov
Mouth to Mission	28-Sep	24-Oct	21-Sep	1-Nov
Mission to Hope	29-Sep	25-Oct	22-Sep	2-Nov
Hope to Sawmill Creek	3-Oct	29-Oct	26-Sep	6-Nov
Sawmill Creek to Lytton (Thompson Confluence)	5-Oct	31-Oct	28-Sep	8-Nov
Lytton to Texas Creek	8-Oct	3-Nov	1-Oct	11-Nov
Texas Creek to Kelly Creek	10-Oct	5-Nov	3-Oct	13-Nov
Kelly Creek to Deadman Creek	13-Oct	8-Nov	6-Oct	16-Nov
Deadman Creek to Chilcotin River	16-Oct	11-Nov	9-Oct	19-Nov
Chilcotin River	19-Oct	14-Nov	12-Oct	22-Nov
Thompson River – Thompson Confluence to Bonaparte	8-Oct	3-Nov	1-Oct	11-Nov
Thompson River – Bonaparte River to Kamloops Lake	12-Oct	7-Nov	5-Oct	15-Nov

### 13.1.4.5 ALLOCATION AND FISHING PLANS

#### 13.1.4.5.1 First Nations Fisheries

##### *First Nations Food Social and Ceremonial*

###### *Marine Waters*

First Nations target local and passing salmon stocks for FSC purposes throughout the Inner South Coast.

FSC fisheries for Southern ISBM Chinook in marine areas will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

###### *Non-tidal Waters (excluding Fraser River)*

Some First Nations Chinook directed fisheries occur in freshwater systems throughout Southern Inside waters.

FSC fisheries for Southern ISBM Chinook in freshwater areas outside of the Fraser River system will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

###### *Fraser River*

First Nations target Fraser River Chinook for FSC purposes throughout the Fraser River main stem and in many tributary areas.

FSC fisheries in the Fraser River, including Subareas 29-6, 29-7, 29-9, and 29-10, will be affected by 2019 Interior Fraser River Steelhead conservation measures. A 27-day rolling window closure will be applied to FSC fisheries according to the times and areas outlined in Table 13.1-12. These measures will not extend to marine FSC fisheries.

Refer Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River First Nations Fisheries. Note that AABM and ISBM Chinook amounts are combined.

##### *Specific Conservation Measures for First Nations Fisheries*

###### *Lower Strait of Georgia Chinook*

Protective measures may be considered in terminal areas to reduce harvest impacts. Potential measures will be the subject of discussion with First Nations communities, and include processes such as the Cowichan Fisheries Roundtable prior to development of fishing plans.

*Fraser River Chinook*

For Fraser River First Nations fisheries, fishing plans will be developed collaboratively between First Nations and DFO with the objective of maintaining overall fishing pressure at levels that will permit rebuilding of these populations. This will result in limited or reduced fisheries openings or fishing times; actual plans will be announced in-season.

Additional management measures for Fraser River Chinook conservation are being implemented in 2019. First Nations food, social and ceremonial fisheries will be restricted to Chinook non-retention until July 15 with the exception of limited opportunities to harvest small numbers of Chinook for ceremonial purposes in the Fraser River until July 15.

The 5 Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht) rights-based commercial fishery will be delayed until July 15 in areas seaward of 1 nautical mile from the surfline on the West Coast of Vancouver Island. Fishing may be authorized in areas shoreward of 1 nautical mile from the surfline. Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

The Department consults with First Nations on specific fishing plans for FSC fisheries.

*Treaty Fisheries*

Treaty fisheries targeting Chinook within the Fraser River (including Subareas 29-6, 29-7, 29-9, and 29-10) will be subject to closures to protect Interior Fraser River Steelhead as outlined in Table 13.1-12. These measures do not extend to marine Treaty fisheries.

*Tsawwassen Fisheries (Domestic)*

In any year, the Tsawwassen Fishing Right Allocation for Chinook salmon will be determined by an abundance-based formula, based on Canadian Total Allowable Catch that produces an average annual harvest of 625 Fraser River Chinook salmon based on Fraser River Chinook salmon returns for the 1982 to 2004 time period. The Tsawwassen Final Agreement is available at:

<http://www.aadnc-aandc.gc.ca/eng/1100100022703/1100100022704>

*Tla'amin Fisheries (Domestic)*

The Domestic allocations for Chinook under the Tla'amin First Nations Final Agreement are as follows:

**Non-terminal Chinook:** A maximum of 200 Chinook salmon, which are not of terminal origin, caught in the Tla'amin Fishing Area. The Tla'amin Fishing Area for all species of Fish and Aquatic Plants is within portions of Pacific Fisheries Management Areas 14, 15, and 16.

**Terminal Chinook:** A number of Chinook salmon equal to 25% of the Available Terminal Harvest for Chinook salmon stocks that originate from a Terminal Harvest Area, if the Minister determines that there is an Available Terminal Harvest for those stocks. The allocation will be determined by an abundance-based formula.

The Tla'amin Final Agreement is available at:

<http://www.aadnc-aandc.gc.ca/eng/1397152724601/1402079284345>

### ***Fishery Monitoring and Catch Reporting***

#### ***Marine Waters***

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.

#### ***Fraser River***

In the Fraser River watershed, catch monitoring programs are managed through Activity Funding or Comprehensive Fisheries Agreements.

In the lower Fraser River (below Sawmill Creek), monitoring programs implemented typically include landing site or vessel based collection of catch and effort information paired with validation of effort by vessel patrols or overflights. Specific focus has also been placed on sampling of Chinook salmon for mark rate information and coded-wire tags (CWTs) to support the Salmon Head Recovery Program. Catch reports are received by DFO from catch monitoring programs on a weekly basis, within 48 hours of a fishery closing.

For fisheries above Sawmill Creek, catch monitoring programs range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

#### 13.1.4.5.2 Recreational Fisheries

##### *Recreational Conservation Measures All ISBM Fisheries*

Significant Chinook non-retention measures were implemented in most South Coast areas on April 19 to address conservation concerns for Fraser River Chinook salmon. Full non-retention measures extend to July 14 or July 31, depending on the Area, and partial reductions also extend to August 30 in some marine areas. A full list of the management measures implemented by Area is provided below.

ISBM recreational Chinook fisheries in inside waters normally take place from Queen Charlotte Strait south to the Strait of Juan de Fuca throughout the year. Significant areas of catch and effort occur in waters near Port Hardy, Campbell River, the Strait of Georgia and Southern Vancouver Island including Juan de Fuca Strait, with both catch and effort peaking during the summer months.

The minimum size limit for Chinook in Queen Charlotte Strait, Johnstone Strait and the Strait of Georgia is 62 cm. The minimum size limit in waters south of Cadboro Point through Juan de Fuca Strait (Subareas 19-1 to 19-4 and 20-5 to 20-7) is 45 cm. The total annual limit for Chinook is 10 from all tidal waters.

##### Johnstone Strait (Area 12) and Strait of Georgia North (Areas 13-17, 28 and Subareas 29-1 and 29-2)

*April 19 – July 14 – Chinook non-retention*

*July 15 – August 29 – 1 Chinook per day*

*August 30 – December 31 – 2 Chinook per day*

##### Strait of Georgia South and Juan de Fuca Strait (Areas 18, 19 and Subareas 20-3 to 20-7)

*April 19 – July 31 – Chinook non-retention*

*August 1 – August 29 – 1 Chinook per day*

*August 30 – December 31 – 2 Chinook per day*

##### Juan de Fuca Strait (West) Subareas 20-1 and 20-2

*April 19 – July 14 – Chinook non-retention*

*July 15 – December 31 – 2 Chinook per day*

There are a combination of fisheries closures, and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2. and include: from August 1 to October 31, there is no fishing for salmon in Subareas 20-3, 20-4 and portions of Subareas 18-2, 18-4, 18-5, 18-9.

Terminal fishing opportunities at full limits for Chinook may be considered in-season if abundance permits.

Fraser River Mouth (Subareas 29-6, 29-7, 29-9 and 29-10), Fraser River tidal waters (29-11 to 29-17) and the Fraser River in Region 2:

In addition to the measures to protect Chinook outlined below, Interior Fraser River Steelhead conservation measures will be implemented to the Fraser River recreational fishery following the Coho window closure. A 42-day rolling window closure will apply to Fraser River recreational fisheries in the areas and dates listed in Table 13.1-12 (including Subareas 29-6, 29-7, 29-9, and 29-10). These measures do not extend to marine recreational fisheries.

Effective January 1, 2019 until August 23, 2019 – no fishing for salmon

Effective August 23, 2019 to December 31, 2019 – no retention of Chinook salmon.

January 1, 2020 to May 31, 2020 – no fishing for salmon.

Fraser River, Region 3

Fraser River: (some exceptions listed below under tributaries directed on Summer 4-1 in terminal areas)

January 1 through August 16, no fishing for salmon.

South Thompson River: August 16 to Sept. 22 – 4 per day, 2 over 50 cm

Kamloops Lake: August 22 to Sept. 22 – 4 per day, 1 over 50cm

Thompson River: August 22 to Sept. 22 – 4 per day, 1 over 50 cm

*Tributaries*

*Fraser River, Region 5A*

No fishing for salmon.

*Fraser River, Region 7*

No fishing for salmon.

No fishing for salmon, except in the following area where Sockeye fisheries may be permitted if sufficient in-season abundance exists:

Nechako River downstream of the Foothills Bridge - No fishing for salmon Jan 1 to August 26. No fishing for Chinook salmon, August 27 to September 30. No fishing for salmon October 1 to December 31.

Fraser River, Region 8 (Actions similar to 2018 to reduce by 25% to 35% on Fraser summer 4-1 Chinook)

January 1 to Aug 16, no fishing for salmon

Mabel lake: August 16 to Sept. 12 – 4 per day, only 2 over 50 cm

Lower Shuswap River: August 16 to Sept. 12 – 4 per day, only 2 over 50 cm (lower) upstream from white triangular fishing boundary signs upstream of Mara Bridge to Mabel Lake. No fishing 50 meters upstream and downstream of the Trinity Valley Road Bridge from June 15 to Nov. 15.

#### Lower Georgia Strait (LGS) Chinook

Management measures are in place to protect Lower Strait of Georgia Chinook, including the Nanaimo, Chemainus and Cowichan River Chinook stocks. In the past, seasonal time and area closures in specific locations in the northern Strait of Georgia were implemented. Due to the widespread management measures in place for Fraser bound Chinook, these northern Strait of Georgia management measures will not be in place for the 2019 season. The management measures in the approach waters, Nanaimo to Saanich Inlet have been in place in recent years and will remain in place for the 2019 season.

A decision rule matrix for in-river angling opportunities in the Cowichan River will be developed through a subcommittee of the Cowichan Harvest Round Table. This matrix will help define when recreational angling opportunities can be expected and further develop the draft decision guidelines.

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*

### *Marine Waters*

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

### *Fraser Watershed*

Creel surveys are conducted in portions of the lower Fraser River and select tributaries in order to estimate recreational catch and effort for the times and areas surveyed. Typically, the creel survey in the lower Fraser River mainstem begins when the mainstem is opened to recreational salmon fishing; however, over the last number of years, the survey end date has been variable (mid-September to end of November). The creel surveys conducted on the Chilliwack River and Nicomen-Norrish recreational fisheries have remained stable over the last number of years both in times and areas (Chilliwack is surveyed from mid-September to mid-November and Nicomen-Norrish is surveyed from early October to the end of November).

Similar to recent years, catch monitoring programs in the Fraser watershed upstream of Alexandria will range from no monitoring to fisher reported catch to highly intensive creel surveys. The expected effort and catch in a fishery, harvest rate, potential bycatch, and any biological sampling requirements will be taken into account when planning the catch monitoring program for these areas.

#### **13.1.4.5.3 Commercial Fisheries**

There are no directed commercial Chinook fisheries in Southern Inside marine waters and Chinook non-retention is in place in most times and areas.

### *Allocation*

Table 13.1-13: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
<b>South- Inside</b>	11 to 20, 29	1.0% <sup>e</sup>	3.0%	90.0% <sup>f</sup>	0.0%	6.0%

Notes on Chinook allocations (south):

<sup>e</sup>subject review pending completion of southern BC Chinook initiative

<sup>f</sup>directed Fraser Chinook fishery



### ***Southern ISBM Commercial Chinook Fisheries***

Due to concerns for Lower Strait of Georgia stocks, no directed Chinook fisheries are planned and there will be non-retention in fisheries directed at other stocks.

#### ***Area B Seine***

In 2019, a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

#### ***Area D Gill Net***

There will be no directed Chinook fisheries and non-retention is in effect.

#### ***Area E Gill Net***

There will be no directed Chinook demonstration fisheries in the Fraser River in 2019, due to conservation concerns for Fraser Chinook stocks. In years when a Chinook demonstration opportunity is considered, there will also need to be sufficient availability of commercial Sockeye allocation to account for Sockeye bycatch impacts of this fishery. If the pre-season forecast for Fall 4<sub>1</sub> Chinook is well below the lower benchmark there will be no retention of Chinook permitted during Chum-directed fisheries.

#### ***Area H Troll***

There will be no directed Chinook fisheries and non-retention is in effect.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

### *Fishery Monitoring and Catch Reporting*

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

### *Southern ISBM First Nations Commercial Chinook Harvest*

Additional management measures for Fraser River Chinook conservation were approved by the Minister on April 16. These measures will likely preclude a Chinook directed harvest opportunity for the Kamloops Lake demonstration fishery in 2019. If there are clear indications that South Thompson Chinook abundance reaching terminal areas is much higher than anticipated after priority access for First Nations FSC and recreational fisheries has been addressed, the Department will work to determine if it may be possible to develop an in season assessment tools for assessing and managing this fishery to meet Biological objectives and inform harvest opportunities for future years.

### *RiverFresh Wild BC Seafood – In-River Chinook Fisheries*

RiverFresh Wild BC Seafood (RiverFresh) is a Commercial Fishing Enterprise operating under the Shuswap Nation Tribal Council (SNTC) society. The Secwepemc Fisheries Commission (SFC), the fisheries department of the SNTC, is contracted by RiverFresh to provide commercial fishery planning and monitoring services. SFC has been coordinating demonstration fisheries and conducting business feasibility analyses since 2005.

This fishery targets South Thompson 4<sub>1</sub> Chinook salmon. If the fishery were to proceed it would operate until the implementation of the Interior Fraser Coho window closure in the area, as well as follow restrictions to be implemented in 2019 to protect Interior Fraser River Steelhead. A 42-day rolling window closure will apply to commercial gill net fisheries in the Fraser River in the areas and dates listed in Table 13.1-12 (including Subareas 29-6, 29-7, 29-9, and 29-10).

- **Participants:** Skeetchestn Indian Band and other partners to be determined
- **Location of Fisheries:** Kamloops Lake / Little Shuswap Lake

- **Gear Type:** Chinook fishery – 8” mesh set gill net
- **Time Frame:** NOTE: All fishery time frames are estimates and final dates will be determined according to in-season migration timing information
- **Chinook Fishery:** Fishery will target late summer South Thompson (4<sub>1</sub>); potential start date is Early September ending September 23.
- **Allocation:** Chinook fishery – the initial Chinook allocation will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser Chinook based on commercial licences set aside from the Area F troll fishery and accounting for stock composition. The allocation will be determined based on pre-season information on the Area F allocation in the Northern BC AABM fishery and stock composition of south Thompson Chinook. Potential changes may be made in-season if the Area F AABM TAC is revised or to account for potential changes from in- season stock identification information if it is available from the Albion test fishery.
- **Monitoring Plan:** Fishery will be monitored using designated landing sites, electronic logbook system (ELOG) and independent validation of catch at the processing plant and independent validation of releases when required.

#### 13.1.4.5.4 ESSR Fisheries

ESSR fisheries may occur at DFO hatchery facilities that have a surplus of returning hatchery Chinook. In past years, ESSR fisheries have taken place at:

- Capilano Hatchery – Mainland BC
- Chilliwack River Hatchery – Lower Fraser
- Chehalis Hatchery - Lower Fraser
- Puntledge Hatchery – Strait of Georgia
- Qualicum Hatchery – Strait of Georgia
- Nanaimo River – Strait of Georgia

### 13.1.5 OKANAGAN CHINOOK

#### 13.1.5.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

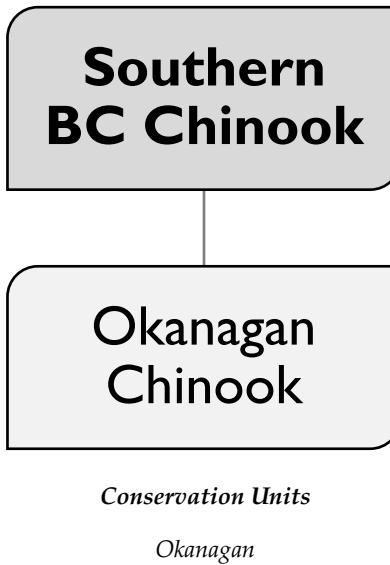


Figure 13.1-5: Overview of Okanagan Chinook

The Okanagan Chinook population is the last remaining Columbia basin stock that resides within Canada and it is geographically and genetically distinct from Chinook populations elsewhere in Canada. The Canadian Okanagan population consists of anadromous salmon that migrate to and from the Pacific Ocean through the Columbia River to Canadian portions of the Okanagan River. The average annual number of Chinook spawning in Canada is less than 50 adults.

The Canadian portion of the Okanagan Chinook population likely has a life history similar to the life history of other Upper Columbia River summer stocks.

#### 13.1.5.2 STOCK ASSESSMENT INFORMATION

Okanagan Chinook stock was reassessed in April 2017 and designated as “endangered” rather than “threatened” as previously assessed by the Committee of Endangered Species and Wildlife in Canada (COSEWIC). The Department is preparing a Recovery Potential Assessment (RPA) which will inform decisions for listing recommendations under the Species at Risk Act (SARA). Consultation on the RPA will take place at a future date.

The WSP biological status of Okanagan Chinook was assessed as in the red zone by CSAS. The Science Advisory Report is available at:

[http://publications.gc.ca/collections/collection\\_2016/mpo-dfo/Fs70-6-2016-042-eng.pdf](http://publications.gc.ca/collections/collection_2016/mpo-dfo/Fs70-6-2016-042-eng.pdf)

#### **13.1.5.2.1 Pre-season**

Expectations for 2019 are for continued depressed abundance related to very low parental escapements, low marine and freshwater survival, and low productivity. Okanagan Chinook are part of the Columbia River Summer Chinook aggregate of which the United States produces a formal forecast.

#### **13.1.5.2.2 In-season**

An electronic counter at Zozel dam at the outlet of Osoyoos Lake can provide a preliminary indication of adult Chinook returns. A high degree of uncertainty exists with this count as an unknown number of fish likely to drop back downstream and spawn in the United States portions of the Okanagan River and/or the Similkameen River. Spawning ground assessments are done on an annual basis by the Okanagan Nation Alliance fisheries staff and are comprised of visual / dead recovery surveys to determine spawner abundance in the Okanagan River and Skaha Lake system.

#### ***Decision Guidelines and Management Actions***

This stock likely has the same life history pattern as other Upper Columbia summer Chinook populations and could be intercepted in fisheries targeting these stocks. In the terminal area in Canada (Osoyoos Lake), this stock may be intercepted in FSC, commercial and recreational Sockeye directed fisheries. There are no Canadian directed fisheries on this stock.

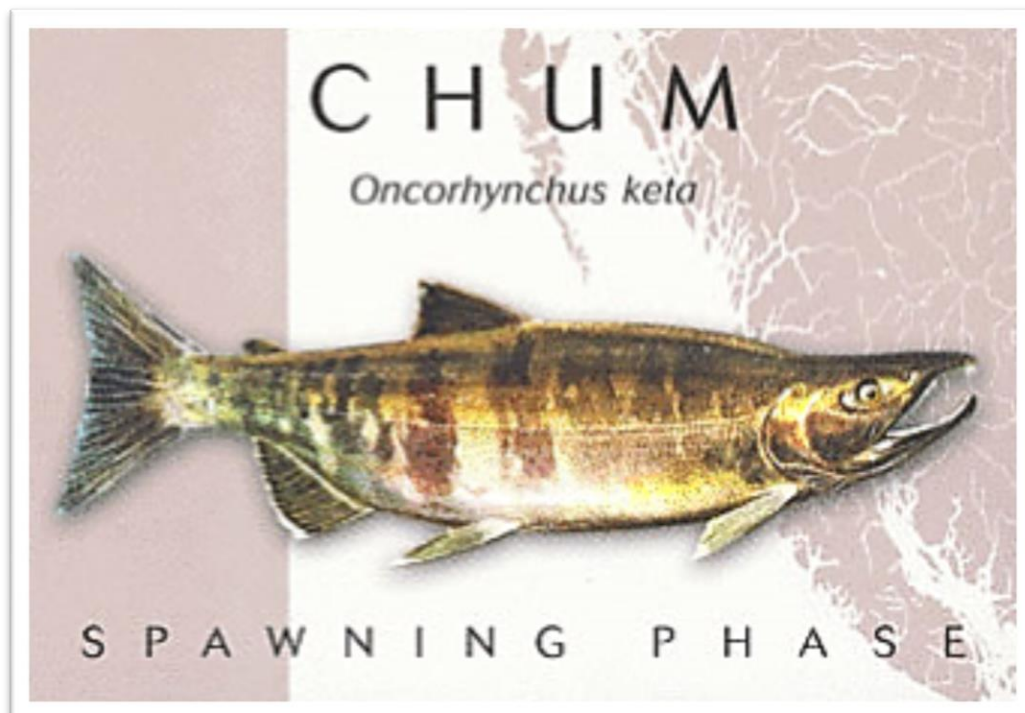
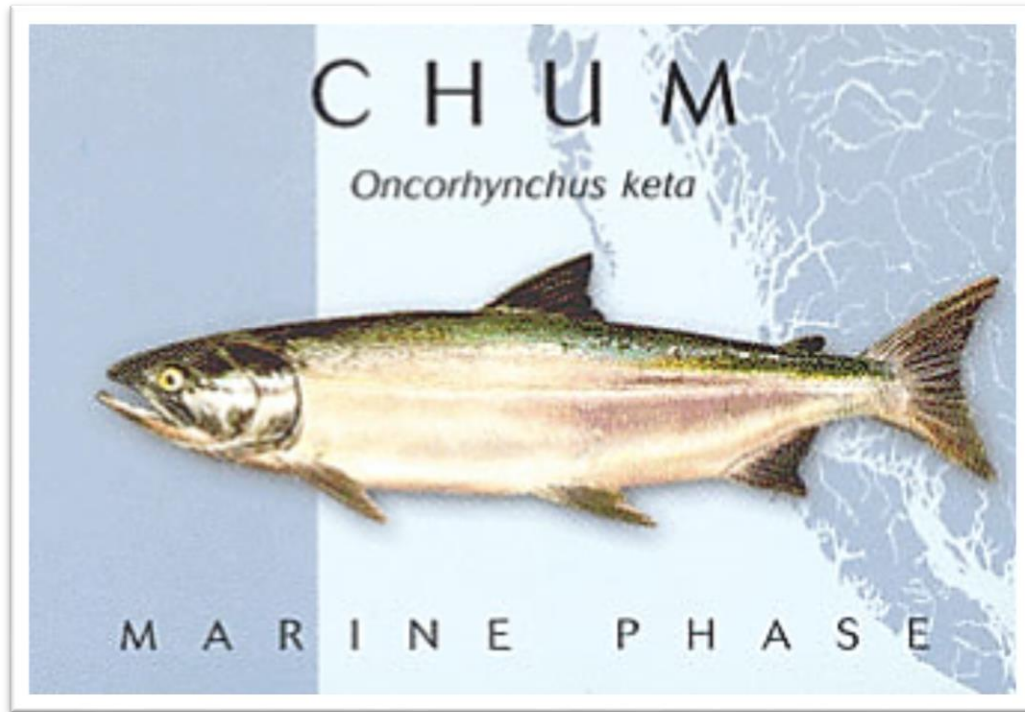
#### **13.1.5.3 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO FISHERIES**

Non-retention measures are in effect in Canadian fisheries.

#### **13.1.5.4 ALLOCATION AND FISHING PLANS**

There are no directed fisheries on this stock.

## 13.2 SOUTHERN CHUM SALMON FISHING PLAN



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### 13.2.1 SOUTHERN CHUM - OVERVIEW

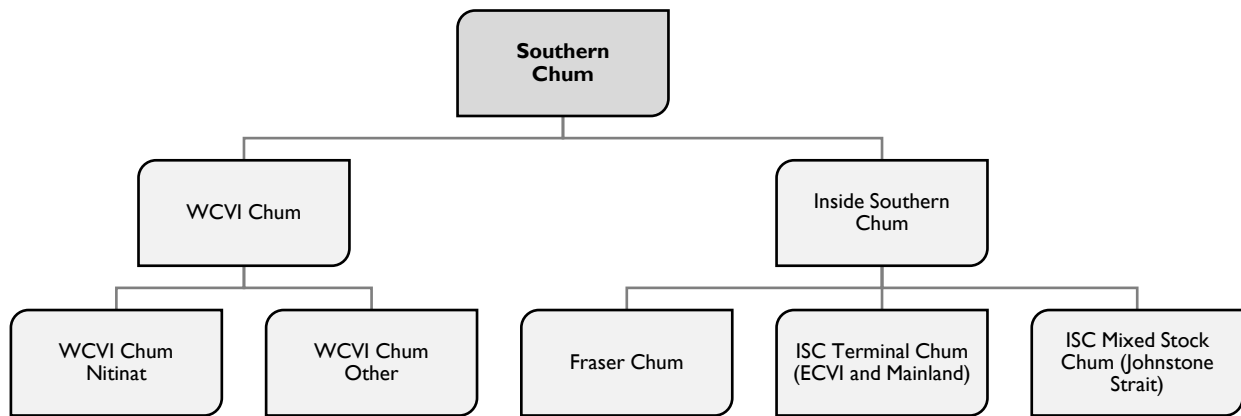


Figure 13.2-1: Overview of Southern Chum

### SOUTHERN CHUM ENHANCEMENT INFORMATION:

The major DFO operation enhancement facilities that produce Chum are:

- **South Coast Area:**
  - Big Qualicum River hatchery
  - Conuma River hatchery
  - Little Qualicum River hatchery
  - Nitinat River hatchery
  - Puntledge River hatchery
- **Fraser and Interior Area:**
  - Capilano River hatchery
  - Chehalis River hatchery
  - Chilliwack River hatchery
  - Inch Creek hatchery
  - Tenderfoot Creek hatchery
  - Weaver Spawning Channel

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). Not included are smaller Public Involvement Projects (PIPs) that are focused toward stewardship, stock rebuilding or educational activities and do not release large numbers of fish that would affect fisheries.

There are two datasets available: Post-Season Production from the 2016 brood year (i.e. 2018 releases, and numbers on hand for 2019 release), and the Production Plan, which includes proposed targets for the upcoming 2019 brood year. These are available at the following website:

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

### **SOUTHERN CHUM – SEP PROPOSALS FOR 2019**

- Little Qualicum Spawning Channel
  - Will not be operated for chum in 2019, due to issues with maintaining safe operation of the fence.

### 13.2.2 INSIDE SOUTHERN CHUM - OVERVIEW

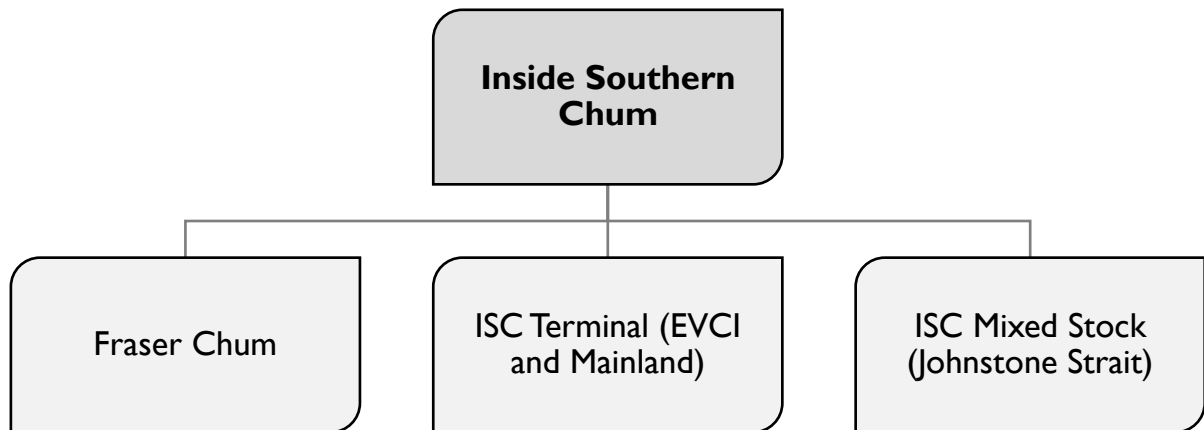


Figure 13.2-2: Overview of Inside Southern Chum

Inside Southern Chum (ISC) salmon spawn throughout Inner South Coast and in the Fraser River watershed, with Fraser stocks typically making up a significant portion of the returning abundance. ISC are managed in two distinct fall timed (mid-September into December) groups: Fraser Chum with two Conservation Units (CU) and ISC Terminal with 7 CUs; with ISC fisheries classified as ISC Mixed Stock (Johnstone Strait), ISC Terminal (EVC and Mainland), and the Fraser River ([Figure 13.2-2](#)). In addition to these fall timed populations, there are summer timed Chum within the ISC which have distinct timing (late July through to mid-September). There are no directed fisheries on these populations and they are passively managed as bycatch in Fraser directed Sockeye and Pink fisheries.

The Johnstone Strait mixed-stock fishery targets the ISC aggregate and is managed to a 20% exploitation rate. Fisheries target individual stocks in terminal fisheries throughout the ISC area and in the Fraser River. ISC terminal fisheries are managed to spawning goals at a more local level than the conservation units identified under the Wild Salmon Policy. The Fraser River terminal Chum fishery is managed under an abundance-based harvest plan built around an aggregate spawning goal and a terminal run size specified in the Pacific Salmon Treaty.

Assessment of Inside Southern Chum relies on in-season test fisheries (in Johnstone Strait and the Fraser River) which provide indications of relative Chum abundance, migration timing, stock compositions, and other biological information. Terminal river escapements for Inside Southern Chum populations are typically estimated through visual surveys of index systems with some higher quality estimates from other key systems (i.e. Harrison River Chum mark recapture and DIDSON fixed site programs on the Cowichan and Nanaimo Rivers). Coverage of visual surveys has declined since the 1980s in terms of number of surveyed systems, but the remaining surveys still cover most of the production for the aggregate.

Hatchery programs for ISC are mostly done to supplement harvest (Chehalis, Chilliwack, Inch, Weaver channel, Big Qualicum, Little Qualicum, Puntledge), but there are also some rebuilding programs (e.g. Nimpkish Chum).

### 13.2.3 FRASER CHUM

#### 13.2.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

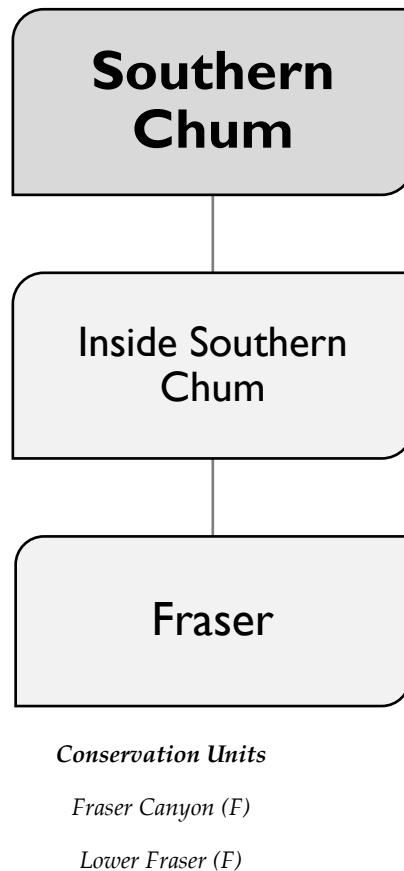


Figure 13.2-3: Overview of Fraser Chum

The Fraser Chum Management Unit includes all Chum which return to spawn in the Fraser River mainstem and Fraser River tributaries and is comprised of the WSP Lower Fraser Chum Conservation Unit and the Fraser Canyon Chum Conservation Unit. The vast majority of Chum returning to the Fraser River are part of the Lower Fraser Chum CU, and spawn in the Fraser Valley downstream of Hope. Major spawning aggregations occur within the Harrison River (including Weaver Creek and Chehalis River), the Stave River and the Chilliwack River. No spawning locations have been identified upstream of Hells Gate. Chum salmon return to the Fraser River from September through December, with the typical peak of migration through the lower river occurring from mid to late October.

Chum-directed fisheries which harvest Fraser Chum include mixed-stock fisheries in Johnstone Strait, mixed-stock fisheries in the U.S. Strait of Juan de Fuca and San Juan Islands, and Fraser Chum-targeted fisheries occurring within the Fraser River.

Fraser Chum are assessed in-season using Albion test fishery data to estimate Chum abundance, migration timing, and other biological information. Escapement estimates provided post-season rely on visual surveys of index systems, as well as a mark-recapture estimate in the Harrison River. Coverage of visual surveys has declined since the 1980s in terms of number of surveyed systems, but the remaining surveys still cover most of the key production areas for Fraser Chum.

DFO hatchery programs in the Lower Fraser River produce Chum to supplement harvest (Chehalis, Chilliwack, Inch, and Weaver channel), but hatchery production is also used for population rebuilding, such as helping to establish spawning populations in areas that have benefitted from habitat improvement projects. Chum are also produced at smaller-scale community-run hatcheries for educational and stewardship purposes.

### **13.2.3.2 STOCK ASSESSMENT INFORMATION**

#### **13.2.3.2.1 Pre-season**

Formal quantitative forecasts are not prepared for Fraser River Chum, but the qualitative Salmon Outlook for 2019 is “near target”. Returns in 2019 will be based largely on the brood from the 2015 escapement; escapement in 2015 was estimated at 0.95 M spawners. Directed fisheries are likely for the 2019 season, subject to in-season assessments. Note: The warm Pacific Ocean “Blob” persisted through the first half of 2016 when fry from the 2015 escapement entered the marine environment; the impact of this phenomenon on Fraser Chum productivity and returns in 2019 is unknown. However, productivity for the broods that entered the ocean in 2014 and 2015 (when the Blob was also present) appear to be below long-term averages.

The preliminary estimate of spawning escapement in 2018 is approximately 685,000. The October 22, 2018 in-season terminal return estimate was 770,000 Chum salmon (36% probability that the run would exceed the escapement goal of 800,000 spawners).

#### **13.2.3.2.2 In-season**

Terminal abundance of Fraser River Chum salmon is estimated based on in-season information on Chum catch from the Albion Chum test fishery and a Bayesian model that incorporates prior information on run size and migration timing.

The Albion Chum test fishery has operated annually since 1979 on the lower Fraser River in Area 29 at Albion (near Fort Langley). The test fishery is conducted with a drifted gill net at a specific site near the old Albion ferry crossing. The test fishery begins in early September of each year, and usually fishes until the end of November. On each day of operation, the boat fishes two sets, timed to coincide with the daily high tide. The Albion Chum test fishery normally fishes every other day from September 1st

through October 20th, alternating days with the Albion Chinook test fishery (which fishes an 8" mesh gill net during this period). From October 21 through mid-November, the Chum salmon test fishery operates daily, then every other day until late November. The gill net used in the Albion Chum test fishery is 150 fathoms long, constructed from uniform 6.75" mesh.

The first in-season estimate of terminal Fraser River Chum salmon abundance is typically provided in mid-October. Decisions regarding fishing opportunities are based on the Albion test fishery in-season information.

Table 13.2-1: Planned Chum Test Fisheries

Test Fishery	Proposed Proponent	Test Fishery Purpose	Potential Dates (preliminary <sup>a</sup> )	
			Start	End
Albion GN	DFO	Fraser Chum	01-Sep	23-Nov

<sup>a</sup> All dates subject to change based on in-season factors.

### 13.2.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

Additional conservation measures are being implemented in 2019 to reduce the impact of all Fraser River Chum fisheries on co-migrating Interior Fraser River Steelhead. These actions are described generally in Section 13.2.3.4 and detailed measures are provided for specific fisheries contained in Section 13.2.3.5.

Management of Fraser River Chum fisheries is based upon in-season information. As described in detail in the previous section, Albion test fishing data will be used to identify the abundance of Chum salmon returning to the Fraser River. The first in-season terminal run size assessment is announced in mid-October once the peak of the return has been identified.

The in-season estimate of abundance for Fraser River Chum is used for international as well as domestic management, as outlined in Chapter 6 of the Pacific Salmon Treaty. If Fraser River Chum in-season abundance is estimated to be less than 916,000, the Canadian commercial Chum salmon fisheries within the Fraser River and in associated marine areas (Area 29), will be suspended. In U.S. Areas 7 and 7A, catch is restricted to different levels depending on whether the Fraser River terminal Chum return is identified as below 1,050,000 or 1,600,000.



Table 13.2-2: Summary of key decision points for the management of the Fraser River Chum fishery

Run Size	Harvest Plan	Lower Fraser First Nations	Commercial	Recreational
<500,000 in Fraser	<10%	Limited (reduced hours and days/week fishing)	Closed	Mainstem Fraser River closed, restricted openings on tributaries
500,000 to 800,000 in Fraser	Directed fisheries limited to FSC	Normal	Closed	Mainstem Fraser River closed, restricted openings on tributaries
800,000 to 916,000 in Fraser	Catch not to exceed 91,800 (82,800 First Nations* and 9,000 test fishing)	Normal	Closed	Mainstem Fraser River open, restricted openings on tributaries
916,000 to 1,050,000 in Fraser	Commercial catch not to exceed 10% for Chum.	Normal	Open (TAC 35,000-105,000)	Open
>1,050,000 in Fraser	Commercial catch not to exceed 15% for Chum.	Normal	Open (TAC 105,000 plus)	Open

\* Note: Tsawwassen and Tla'amin Treaty domestic fishery allocations are not included here.

Commercial fishing opportunities (including First Nations Economic Opportunities) are contingent upon the identification of a commercial TAC:

- At run sizes less than 916,000, no commercial TAC is available.
- At run sizes from 916,000 to 1,050,000, the commercial TAC is a maximum of 10% of the run size. A minimum commercial TAC of 35,000 Chum has been identified as a requirement to support Area E gill net fishery openings.
- At run sizes greater than 1,050,000, the commercial TAC is a maximum of 15% of the run size.

The Department intends to work with participants in the Fraser commercial Chum fisheries, including First Nations, to outline considerations that will guide planning and scheduling of in-season commercial fishery openings.

Specific details of the fisheries and target allocations will be determined as part of the in-season planning process. The involvement of the Area B seine fleet in the Fraser River Chum fishery is dependent on the Area B Seine Harvest Committee developing and implementing a limited participation fishing plan that limits the harvests of Chum to identified target allocations.

The recreational fishery within the Fraser River is usually open from mid-July or early August to December 31 annually. In-season information is used to determine fishing opportunities and is also dependent on the estimated Fraser River Chum run size:

- At run sizes below 800,000 the recreational fishery on the main stem Fraser will be closed and openings on tributaries would be limited to those where a surplus is likely to occur. Surpluses may be identified on hatchery enhanced systems.
- At run sizes from 800,000 to 916,000 the recreational fishery will remain open on the main stem Fraser. Openings on tributaries would be limited to those where a surplus was likely to occur.
- At run sizes greater than 916,000, the recreational fishery will remain open in the Fraser River main stem and tributaries.

For 2019, management of the recreational fishery will also be subject to management measures implemented to conserve Interior Fraser River Steelhead. Please note general information on IFR Steelhead management measures in 13.2.3.4 and 13.2.3.5.2.

First Nations FSC fisheries typically occur in October and November, but these opportunities will be subject to management measures implemented to conserve Interior Fraser River Steelhead. Please note general information on IFR Steelhead management measures in 13.2.3.4 and 13.2.3.5.1. If in-season information indicates that the Fraser Chum return is less than 500,000, FSC fisheries targeting Fraser Chum will be limited to a maximum harvest rate of 10%.

Implementation of the WSP will require the development of biological benchmarks and associated biological status zones for Fraser River Chum. When these benchmarks are identified, corresponding decision breakpoints and management actions may be reviewed. Analyses have not yet been initiated on benchmark identification for Fraser River Chum.

#### **13.2.3.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO FRASER CHUM FISHERIES**

Chum fisheries within the Fraser River will be managed to minimize bycatch of co-migrating stocks of concern, including Lower Fraser River Coho, Interior Fraser River Coho and Interior Fraser River Steelhead. In some cases, full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.

For Chum-directed fisheries within the Fraser River, a “window closure” has been the primary tool applied in First Nations, commercial, and recreational fisheries to protect Interior Fraser River Coho from non-selective fishing gear (e.g. gill nets, rod and reel fishing with bait). Selective fishing gear (e.g. beach seines, rod and reel fishing with no bait, dip nets) has been allowed to fish within these window

closure dates, which span the period from early September to mid-October in the Lower Fraser River. Additional details on Interior Fraser Coho management are outlined in the Southern Coho Species Plan section (13.3) of Section 13.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a comprehensive, precautionary approach to the management of all fisheries in Southern BC that are likely to impact this stock of concern. Within the Fraser River (including Subareas 29-6, 29-7, 29-9, and 29-10), a 42-day closure will apply to commercial gill net, purse seine, beach seine, and shallow seine fisheries (including EO fisheries) and a 27-day closure will apply to commercial troll fisheries. Further, a 42-day closure will apply to Fraser River recreational fisheries and a 27-day closure will apply to Fraser River FSC fisheries. Areas and dates for the window closure are identified in Table 13.2-3, with details of specific management measures contained in fishery descriptions that follow.

Table 13.2-3 IFR Steelhead Rolling Window Closure Dates for Fraser River Chum Fisheries

Fishery Location	27-day window closure (commercial troll fisheries and FSC fisheries)		42-day window closure (commercial gill net, purse seine, beach seine, and shallow seine fisheries and recreational fisheries)	
	Start	End	Start	End
Area 29: 29-6, 29-7, 29-9, and 29-10	28-Sep	24-Oct	21-Sep	1-Nov
Mouth to Mission	28-Sep	24-Oct	21-Sep	1-Nov
Mission to Hope	29-Sep	25-Oct	22-Sep	2-Nov
Hope to Sawmill Creek	3-Oct	29-Oct	26-Sep	6-Nov
Sawmill Creek to Lytton (Thompson Confluence)	5-Oct	31-Oct	28-Sep	8-Nov
Lytton to Texas Creek	8-Oct	3-Nov	1-Oct	11-Nov
Texas Creek to Kelly Creek	10-Oct	5-Nov	3-Oct	13-Nov
Kelly Creek to Deadman Creek	13-Oct	8-Nov	6-Oct	16-Nov
Deadman Creek to Chilcotin River	16-Oct	11-Nov	9-Oct	19-Nov
Chilcotin River	19-Oct	14-Nov	12-Oct	22-Nov
Thompson River – Thompson Confluence to Bonaparte	8-Oct	3-Nov	1-Oct	11-Nov
Thompson River – Bonaparte River to Kamloops Lake	12-Oct	7-Nov	5-Oct	15-Nov

In addition to the new measures proposed for 2019, existing approaches to reduce Steelhead encounters and minimize Steelhead mortality will continue. For Area E Chum fisheries, this includes using shorter nets and reducing soak times—practices which have been in place since 2002. The use of revival tanks is also mandatory for commercial fisheries.

### **13.2.3.5 ALLOCATION AND FISHING PLANS**

#### **13.2.3.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial Fisheries*

FSC fisheries for Fraser Chum are culturally significant for First Nations communities in the lower Fraser River. Current proposed communal licence harvest targets for these communities total 91,800 Fraser Chum.

Refer to Section 10.2 for Table 10.2-1 - Communal Licence Harvest Target Amounts for Southern BC/Fraser River First Nations Fisheries.

At run sizes below 500,000 Chum, FSC fishing opportunities may be reduced. For planning purposes, returns less than 500,000 will be considered to be a conservation concern. This value may be revised in the future based on subsequent analyses.

Typically, Fraser River First Nations are provided FSC fishing opportunities for Chum as the Interior Fraser River Coho window closure ends in each area, beginning in early October. For 2019, an additional closure period will be implemented to protect IFR Steelhead (Table 13.2-3). Chum-directed FSC fisheries will be initiated following the end of the IFR Steelhead closure in each area. Because some amount of IFR Steelhead may still be present after the window closure is lifted, licensed FSC fishing times during this time period will be expected to follow a similar pattern to what has occurred in recent years. Area staff will work with local First Nations communities to develop specific fishing plans that meet these conservation objectives.

##### *Fishery Monitoring and Catch Reporting*

In the lower Fraser River, catch monitoring programs are managed through Activity Funding or Comprehensive Fisheries Agreements. Monitoring programs implemented vary between Nations but typically include landing site or vessel-based collection of catch and effort information paired with validation of effort by vessel patrols or overflights. Specific focus has also been placed on sampling bycatch of Chinook and Coho salmon for mark rate information and coded-wire tags (CWTs) to support the Salmon Head Recovery Program. Catch reports are received by DFO from catch monitoring programs on a weekly basis, within 48 hours of a fishery closing.

## *Treaty Fisheries*

### *Tsawwassen Fisheries (Domestic)*

For 2019, a 27-day rolling window closure will be implemented to protect Interior Fraser River Steelhead that will impact Treaty fisheries in the Fraser River, as per areas and dates outlined in Table 13.2-3. Area staff will work with the Tsawwassen First Nation (TFN) to develop specific fishing plans that meet these conservation objectives.

As per the Tsawwassen Fisheries Operation Guidelines (TFOG), each year the Tsawwassen First Nations will develop a Tsawwassen Annual Fishing Plan (TAFP) for the harvest of salmon as per the Tsawwassen First Nations Final Agreement. The TAFP will include the Tsawwassen preference for stocks and species to be harvested, locations, timing, access to specific runs, method of harvest, catch monitoring and reporting, enforcement, etc. The TAFP is then presented to the Joint Fisheries Committee (JFC) for their review. The JFC is made up of representatives of Canada (DFO), the Province of BC and the Tsawwassen First Nations. The JFC considers the TAFP in making its recommendations to the Minister of Fisheries and Oceans about the issuance of Harvest Document(s), which in effect licence the fishing of FSC salmon during the season. Multiple harvest documents will be issued over the course of a season for each salmon species. Harvest Documents may include: species and quantity, use of fish, gear type, dates and times, area, designations, monitoring and reporting, etc.

The domestic allocation for Chum salmon under the Tsawwassen First Nations Final Agreement will be 2.58% of the Terminal Surplus of Fraser River Chum salmon to a maximum of 2,576 Fraser River Chum salmon.

### *Fishery Monitoring and Catch Reporting*

The monitoring program for Tsawwassen Domestic fisheries includes fisher logs supplemented by validations of catch through on-water patrols and/or observations of landings and effort through on-water patrols. Details of monitoring programs in place can be found in the Tsawwassen Fisheries Operational Guidelines.

#### **13.2.3.5.2 Recreational Fisheries**

Chum retention in the Fraser River is usually open from mid-July or early August until December 31. In the tidal portion of the Fraser River (Area 29 downstream of the CPR bridge at Mission), the daily limit is four Chum. In non-tidal portions of the Fraser River (Region 2, from Mission to the Hope Bridge), the daily limit is two Chum. The fishery does not open upstream of the Hope Bridge in order to reduce impacts on Fraser Canyon Chum.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a 42-day rolling window closure will be applied to recreational fisheries in the Fraser River (including Subareas 29-6, 29-7, 29-9, and 29-10). No fishing for salmon will be permitted in the areas and dates outlined in Table 13.2-3.

Fishery openings are published on the recreational fisheries website, <http://www.bcsportfishingguide.ca/>. Updates are provided in-season via fishery notices.

### ***Fishery Monitoring and Catch Reporting***

Creel surveys are conducted in portions of the lower Fraser River and select tributaries in order to estimate recreational catch and effort for the times and areas surveyed. Typically, the creel survey in the lower Fraser River mainstem begins when the mainstem is opened to recreational salmon fishing; however, over the last number of years, the survey end date has been variable (mid-September to end of November). The creel surveys conducted on the Chilliwack River and Nicomen-Norrish recreational fisheries have remained stable over the last number of years both in times and areas (Chilliwack is surveyed from mid-September to mid-November and Nicomen-Norrish is surveyed from early October to the end of November).

#### **13.2.3.5.3 Commercial Fisheries**

The commercial licence groups that can access Fraser Chum in the terminal area (i.e. Area 29) are Area E, Area H and Area B. Additionally, Fraser Chum are harvested in mixed stock fisheries in Johnstone Strait by a number of commercial licence groups (see Johnstone Strait Mixed Stock Chum Section [13.2.4](#)). Other commercial opportunities to harvest Fraser Chum include economic opportunity fisheries for First Nations in the Lower Fraser River and demonstration fisheries for First Nations and commercial licence groups.

### ***Allocation***

The following table describes the overall allocation for all Inside Southern Chum, which includes Fraser Chum (refer to [Figure 13.2-2](#) in Section [13.2.2](#) - Inside Southern Chum). These allocations are used to balance overall harvest amounts in the JS Mixed stock, ECVI and mainland, and Fraser River commercial fisheries.

Table 13.2-4: Commercial Allocation Implementation Plan for the 2015–2019 period.

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Inside Chum	11 to 19, 28 to 29	63.0%	19.2%	12.0%	0.0%	5.8%

### ***Fraser Commercial Chum Fisheries***

#### ***Area B and Area E (Area 29)***

Seine and gill net fishing opportunities for Chum salmon will be confirmed in-season, based upon in-season assessment of the abundance of the Chum salmon returns and management objectives for Interior Fraser River steelhead (see Section 6.9).

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a 42-day rolling window closure will be applied to the Fraser River commercial seine and gill net Chum fisheries. No commercial seine or gill net Chum fisheries will be permitted within the IFR Steelhead window closure in Area 29 within the areas and dates outlined in Table 13.2-3.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

#### ***Area H Troll (Area 29)***

Mid to Late October/Early November - Area 29

A 27-day rolling window closure will be applied to commercial troll fisheries as part of the 2019 Interior Fraser River Steelhead conservation measures. No commercial troll fisheries will be permitted within the window closure in Area 29 within the areas and dates outlined in Table 13.2-3.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

### ***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 or electronic transmission with an electronic harvest log (E-log) is required in all commercial fisheries. (Catch Reporting requirements specific to each licence group are detailed in the conditions of licence for each gear type).
- Vessel counts conducted to verify number of vessels (effort) in each Area E gill net opening.
- Roving on-water observer coverage (DFO catch monitoring coverage and charter patrols) in each Area E gill net opening to conduct net haul observations and gather independent information on encounters of non-target species.
- Partial independent on-board/at-sea observer coverage for Area B seine fisheries.
- Dockside validation for Area B seine fisheries.

### ***Demonstration Fisheries***

#### *Area E Modified Net (Shallow Seine) Chum Demonstration Fishery*

See [Appendix 6](#) for more details.

For 2019, this fishery is to be operated in times and areas outside of the 42-day rolling window closure identified to protect Interior Fraser River Steelhead.

#### *Area B Seine Area 29 Chum Fishery*

The Area B Harvest Committee has expressed an interest in continuing to explore an Area 29 directed Chum seine fishery similar to that of 2015.

- **Region:** South Coast
- **Participants:** All Area B licence holders
- **Location of Fishery:** The fishing area that will be considered is portions of Area 29 off the Fraser River mouth.
- For 2019, this fishery is to be operated in times and areas outside of the 42-day rolling window closure identified to protect Interior Fraser River Steelhead.
- **Gear Type:** Seine gear using both regular seine and shallow seine nets, and the use of power skiffs is permitted. Selective fishing measures are mandatory; specified by licence conditions.
- **Time Frame:** The fishery would occur between mid-October and early November



- **Allocation:** Fishing opportunities will be based on catch levels in relation to the overall allocation of Inside Southern Chum

The target species is Chum, retention of Pink is permitted. There will be non-retention of Sockeye, Coho, Chinook and Steelhead.

- **Monitoring Plan:** Start, end, pause and daily catch reports will be required by phone-in or electronic logbook. There will be a requirement for observer coverage on vessels participating in this fishery. In addition to monitoring catch, observers will be available to collect any DNA sampling that is required and identified.

#### *Area B Seine Fraser River Chum Demonstration Fishery in the Lower Fraser River*

The purpose of this experimental fishery project is firstly to demonstrate the effectiveness of harvesting Fraser River Chum salmon within the confines of the Fraser River employing the selective capabilities of a purse seine, and secondly to capitalize on the ability to continue the harvest of Chum salmon that may not be available in marine areas, due to other constraints.

- **Region:** Lower Fraser River Area
- **Participants:** All Area B licence holders will be eligible; however, as this is an experiment, effort controls will be in place to limit participation to a maximum of eight to ten vessels fishing on any given day
- **Location of Fishery:** Area 29 in-river; Area B has indicated there are a number of potential locations around New Westminster, Glenrose, the Cement Plant, and down to the Deas Tunnel that would be suitable for seining and would, for the most part, be out of the shipping lanes
- For 2019, this fishery is to be operated in times and areas outside of the 42-day rolling window closure identified to protect Interior Fraser River Steelhead.
- **Gear Type:** Seine gear using shallow seine nets, the use of power skiffs and selective fishing measures are mandatory and are specified by licence conditions
- **Time Frame:** The fishery would occur between mid-October and early November.
- Consideration of other fisheries in the area will be taken into account when planning Area B in-river fishing activities. Specific fishing times would be confirmed in-season through an integrated planning process. The amount of available fishing days for this experiment will be confirmed in- season.
- **Allocation:** Fishing opportunities will be based on catch levels in relation to the overall allocation of Inside Southern Chum

The target species is Chum, retention of Pink is permitted. There will be non-retention of Sockeye, Coho, Chinook and Steelhead.

- **Monitoring Plan:** Start, end, pause and set-by-set catch reports will be required by phone-in or electronic logbook. There will be a requirement for observer coverage on all vessels participating in this fishery. In addition to monitoring catch, observers will collect any biological sampling (including DNA samples) that is required and identified.

#### 13.2.3.5.4 Fraser First Nations Commercial Chum Harvest

##### *Demonstration Fisheries*

##### *2019 Harrison-Fraser River Demonstration Fishery*

- **Region:** Lower Fraser Area
- **Participants:** Sts'ailes and Scowlitz First Nations
- **Location of Fishery:** The waters of the Harrison River located between the outlet of Harrison Lake downstream to the orange boundary signs labelled 'Fishing Boundary HFA' approximately 1000 meters below the CN Railway Bridge; and
- The waters of the Fraser River bounded on the west by a line from a white boundary sign on the upstream side of the Fraser River at the mouth of the Sumas River, thence true north to a white boundary sign on the opposite shore and bounded on the east by the downstream side of the bridge across the Fraser River at Agassiz.
- For 2019, this fishery is to be operated in times and areas outside of the 42-day rolling window closure identified to protect Interior Fraser River Steelhead.
- **Gear Type:** Chum: Beach seines only. Beach seines not to exceed a maximum mesh size of 2 ¾ inches and a length of 50 fathoms or 360 feet.
- **Allocation:**
  - Chum: To be determined but will be expressed as a percentage (%) share of the Fraser River Terminal Commercial Total Allowable Catch (FRTCTAC) utilizing relinquished licences from the PICFI program
  - Fraser Chinook: Fraser Chinook bycatch retention may be permitted subject to abundance.

- Hatchery Marked Coho: Hatchery-marked Coho bycatch retention may be permitted subject to abundance.
- **Time Frame:** All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.
  - Chum: Mid–October to mid–November
- **Monitoring Plan:** During any beach seining activity, a Monitor must be present with every beach seining crew during all fishing activity and provide set-by-set updates to the Sts’ailes Fishery Manager before the beach seine crews deploy their next set to ensure there is TAC available. The Sts’ailes Fishing Authority will collect all catch statistics via these monitors and report this information to DFO within 24 hours after the fishery closes.

### **Harvest Agreement Fisheries**

#### *Tsawwassen Fisheries (Commercial)*

In addition to the allocation of salmon for domestic harvests, TFN have an allocation for commercial catch outside of the Treaty as identified via the “Tsawwassen First Nations Harvest Agreement”. The allocation in the Harvest Agreement (HA) does not affirm Aboriginal or Treaty rights. Fishing undertaken via the HA will be comparable to the requirements of the current Fraser River commercial fishery (First Nations economic opportunity (EO) fishery), or a general commercial fishery (e.g. Area E). For 2019, this means that this fishery will not operate within the 42-day closure period identified for the IFR Steelhead window closures for gill net, purse seine, beach seine, and shallow seine gear (see Table 13.2-3 for dates). Tsawwassen fishers will be expected to operate under the same rules that apply to other fishers taking part in that Fraser River commercial fishery. TFN may also prepare a HA Fishing Plan and give to the JFC for review prior to the season’s commencement. Each year that the Minister authorizes a Fraser River commercial fishery in the Tsawwassen fishing area, or a general commercial fishery, the Minister will issue a communal commercial fishing licence for the Tsawwassen First Nations. The JFC set up by the Tsawwassen Final Agreement will conduct a post-season review.

Chum salmon allocation under the Harvest Agreement:

- 3.27% of the Terminal Commercial Catch for Fraser River Chum salmon for that year

#### *Fishery Monitoring and Catch Reporting*

The monitoring program for Tsawwassen Harvest Agreement fisheries includes a mandatory landing program (MLP) using 2-4 landing sites at which all fishers must land and have their catch validated and is supplemented by effort validation by vessel patrols. If selective gear is used (e.g. purse seines)

monitors are to be present during all fishing activity to record catch information on a set-by-set basis. Catch reports are received by DFO within 24 hours of the fishery close.

### **Economic Opportunity Fisheries**

Negotiations to provide economic opportunities to First Nations in the lower Fraser River are expected to be similar to recent years. Economic opportunity fisheries will be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. The Department's general approach is that Aboriginal commercial harvest opportunities are managed using the same harvest decision guidelines as the commercial fishery and opportunities are only afforded if commercial TAC is available.

Aboriginal commercial harvest opportunities may be implemented with different times, areas, gears and regulations consistent with the overall management approach for the commercial fishery, including considerations to protect co-migrating stocks of concern. For 2019, these considerations include the implementation of the 42-day rolling window closure for gill net, purse seine, beach seine, and shallow seine gear to protect Interior Fraser River Steelhead. No economic opportunity Chum fisheries will be permitted within the IFR Steelhead window closure (see Table 13.2-3 for dates). In the lower Fraser, DFO will work with First Nations and commercial harvesters to develop an approach to an integrated commercial fishery based on the principles of transparency, accountability and collaboration.

In addition to economic opportunity fisheries, the Department continues to support the development of inland fisheries with First Nations. For 2019, 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, under the same harvest decision guidelines as the commercial fishery and fish harvested will be off-set with licences that have been voluntarily relinquished from the commercial fishery.

### **Fishery Monitoring and Catch Reporting**

While details will be finalized prior to fisheries occurring, the monitoring programs in place for 2019 are expected to be similar to recent years as follows:

- Non-selective (e.g. gill net) EO fisheries will be monitored using a mandatory landing program (MLP) with packer and land-based sites where all fishers must land and have their catch validated. This program is supplemented by effort validation by vessel patrols and overflights.
- Selective (e.g. beach seine and purse seine) EO fisheries require monitors to be present during all fishing activity to record catch information on a set-by-set basis.

Catch reports for these Economic Opportunity fisheries are received by DFO from the catch monitoring programs within 24 hours of the fishery closure.

#### **13.2.3.5.5 ESSR Fisheries**

ESSR fisheries may occur at DFO hatchery facilities that have a surplus of returning hatchery Chum. In past years, ESSR fisheries have taken place at:

- Chehalis Hatchery – Lower Fraser
- Inch Creek Hatchery – Lower Fraser
- Chilliwack River Hatchery – Lower Fraser

### 13.2.4 INSIDE SOUTHERN CHUM TERMINAL FISHERIES

#### 13.2.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

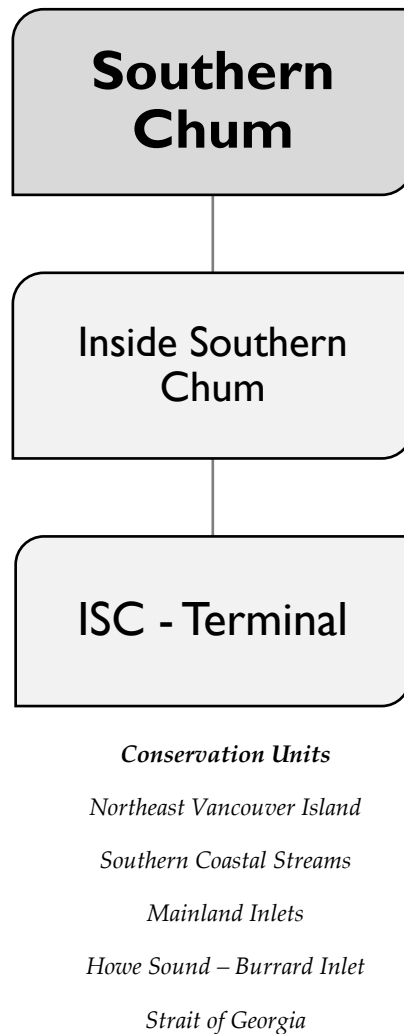


Figure 13.2-4: Overview of Inside Southern Chum Terminal

ISC Terminal include all Chum salmon spawning in watersheds adjacent to Johnstone Strait and the Strait of Georgia (i.e. Areas 11 to 19), plus Fraser River approach areas (Howe Sound, Burrard Inlet; statistical area 28), but not the Fraser River main stem and tributaries. The major ISC Terminal systems, grouped by CU, management and PFMA are included in the following table:

Table 13.2-5: Population Structure of the ISC Terminal Chum conservation units

- Bold font indicates systems for which four or more annual escapement observations are available over the period 1998 to 2006.
- Underlined fonts are summer run timed populations.
- Italicized font with an asterisk\* marks systems with active hatchery enhancement.

Methods for identifying CUs are documented in Holtby and Ciruna (2007). A complete list of sites for each Conservation Unit (CU) is available at:

[http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/wsp/CUs\\_e.htm](http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/wsp/CUs_e.htm)

Conservation Unit	Management Area	PFMA	Spawning Sites
<b>Southern Coastal Streams</b>	Johnstone Strait	11/12	<b>Driftwood Creek</b> (Area 11), Waldon Creek (Area 12)
	Kingcome	12	<u>Bughouse Creek</u> , Charles Creek, <u>Cohoe Creek</u> , Embley Creek, Hauskin Creek, Jennis Bay Creek, Kenneth River, <b><u>Kingcome River</u></b> , <b><u>Mackenzie River</u></b> , Nimmo Creek, <i>Scott Cove Creek*</i> , Shelter Bay Creek, Simoom Sound Creek, Sullivan Bay Creek, <b><u>Wakeman River</u></b>
	Bond/Knight	12	<b><u>Ahta River</u></b> , <u>Ahta Valley Creek</u> , Gilford Creek, Hoeya Sound Creek, <b><u>Kakweiken River</u></b> , Kamano Bay Creek, Lull Creek, Maple Creek, Matsiu Creek, Mcalister Creek, <b><u>Shoal Harbour Creek</u></b> , <i>Viner Sound Creek*</i> , Wahkana Bay Creek
<b>Upper Knight</b>	Bond/Knight	12	<u>Ahnuhati River</u> , Franklin River, <b><u>Klinaklini River</u></b> , <b><u>Kwalate Creek</u></b> , Sim River
<b>Loughborough</b>	Bond/Knight	12	Bouhey Creek, Call Creek, Cracroft Creek, <b><u>Glendale Creek</u></b> , Port Harvey Lagoon Creeks, Protection Point Creek, Shoal Creek
	Johnstone Strait	12	<b><u>Fulmore River</u></b> , Potts Lagoon Creek, Robbers Knob Creek, Tuna River

Conservation Unit	Management Area	PFMA	Spawning Sites
	Loughborough to Bute	13	<b>Apple River</b> , Bachus Creek, Cameleon Harbour Creek, Chonat Creek, Elephant Creek, Fanny Bay Creek, <b>Frazer Creek</b> , Frederick Arm Creek, <b>Granite Bay Creek</b> , <b>Grassy Creek</b> , <b>Gray Creek</b> , Hanson's Creek, Hemming Bay Creek, <b>Heydon Creek</b> , Kanish Creek, Knox Bay Creek, Owen Creek, <b>Phillips River</b> , <b>Read Creek</b> , St. Aubyn Creek, Stafford River, Thurston Bay Creek, <b>Village Bay Creek</b> , Waiatt Bay Creek, <b>Willow Creek</b> , <b>Wortley Creek</b>
<b>Northeast Vancouver Island</b>	Upper VI	12	Cluxewe River, Keogh River, Nahwitti River, <i>Quatse River*</i> , Shushartie River, Songhees Creek, Stranby River, Tsulquate River
	Johnstone Strait	12	<b>Adam River</b> , Hyde Creek, <b>Kokish River</b> , Mills Creek, New Vancouver Creek, <u><b>Nimkish River*</b></u> , Tsitika River,
		13	Amor De Cosmos Creek, Hyacinthe Creek, Salmon River
	Mid-VI	13	Pye Creek
<b>Strait of Georgia</b>	Mid Vancouver Island	13	Campbell River, Kingfisher Creek, Menzies Creek, Mohun Creek, Quinsam River, Simms Creek
	Loughborough to Bute	13	Bird Cove Creek, Drew Creek, Open Bay Creek, Quatam River, Whiterock Pass Creek
<b>Bute Inlet</b>	Loughborough to Bute	13	Cumsack Creek, Homathko River, Orford River, <b>Southgate River</b> , Teaquahan River
<b>Strait of Georgia</b>	Mid Vancouver Island	14N	Bob Creek, Brooklyn Creek, Chef Creek, Cook Creek, Cowie Creek, Hart Creek, Kitty Coleman Creek, McNaughton Creek, Millard Creek, Morrison Creek, <i>Oyster River*</i> , Portuguese Creek, <i>Puntledge River*</i> , <i>Rosewall Creek*</i> , Roy Creek, Sandy Creek, Storie Creek, Trent River, Tsable River, Tsolum River, Waterloo Creek, Wilfred Creek, Woods Creek
		14S	Annie Creek, Englishman River, French Creek, <i>Little Qualicum River*</i> , Nile Creek, <i>Qualicum River*</i>



Conservation Unit	Management Area	PFMA	Spawning Sites
	Toba Inlet	15	Black Lake Creek, <b>Brem River</b> , Brem River Tributary, Filer Creek, Forbes Bay Creek, Forbes Creek, Klite River, Little Toba River, <b>Okeover Creek</b> , Pendrell Sound Creek, Refuge Cove Creek, <b>Store Creek</b> , Tahumming River, <b><u>Theodosia River</u></b> , Toba River, Twin Rivers
	Jervis Inlet	15	<i>Lang Creek*</i> , Lois River, <i>Sliammon Creek*</i> , Whittall Creek
		16	Albion Creek, Angus Creek, Baker Creek, Brittain River, Burnet Creek, Carlson Creek, Cranby Creek, Deighton Creek, Deserted River, Doriston Creek, Earle Creek, Frock Creek, Gray Creek, Halfmoon Creek, High Creek, Hunaechin Creek, Jefferd Creek, Mill Creek, Mouat Creek, Park Creek, Pender Harbour Creeks, Ruby Creek, Sechelt Creek, , Skwawka River, Snake Bay Creek, Storm Creek, Tsuahdi Creek, Tzoonie River, Vancouver River, West Creek
<b>Strait of Georgia (cont)</b>	Howe Sound / Sunshine Coast	16	Dakota Creek, Mcnab Creek, McNair Creek, Potlatch Creek, Rainy River, Twin Creek,
	Lower Vancouver Island	17	Beck Creek, Bloods Creek, Bonell Creek, <i>Bonsall Creek*</i> , Bush Creek, Chase River, Departure Creek, Haslam Creek, Holland Creek, Knarston Creek, Millstone River, <i>Nanaimo River*</i> , Nanoose Creek, Napoleon Creek, Porter Creek, Stocking Creek, Tyee Creek, Walker Creek
	South Vancouver Island	17	<i>Chemainus River*</i>
		18	Cowichan River, Fulford Creek, Koksilah River, Shawnigan Creek
		19	<i>Goldstream River*</i>
<b>Howe Sound – Burrard Inlet</b>	Jervis Inlet	16	Bishop Creek, Shannon Creek
		16	Wilson Creek

Conservation Unit	Management Area	PFMA	Spawning Sites
	Howe Sound / Sunshine Coast	28A	Avalon Creek, Centre Creek, Eagle Creek, Hutchinson Creek, <b>Langdale Creek</b> , Long Bay Creek, Mannion Creek, Nelson Creek, <b>Ouillet Creek</b> , Terminal Creek, West Bay Creek, Whispering Creek
	Burrard Inlet	28A	Brothers Creek, Capilano River, Hastings Creek, <b>Indian River</b> , Lynn Creek, Mackay Creek, Maplewood Creek, McCartney Creek, Mosquito Creek, Mossom Creek, Noons Creek, Richards Creek, Seymour River
<b>Strait of Georgia</b>	Howe Sound / Sunshine Coast	28A	Chapman Creek, <b>Chaster Creek</b> , Flume Creek, <b>Roberts Creek</b> , Wakefield Creek,
		28B	Ashlu Creek, B.C. Rail Spawning, Branch 100 Creek, Brennan Channel, Brohm River, Cheakamus River, Chuk-Chuk Creek, Dryden Creek, Fries Creek, Hop Ranch Creek, July Creek, Lower Paradise Channel, Mamquam River, Mashiter Creek, Mashiter Spawning Channel, Meighan Creek, Mission Creek, Moody Channel, Pillchuck Creek, Raffuse Creek, Shovelnose Creek, Spring Creek, Squamish River, Stawamus River, Stawamus Spawning Channel, Tenderfoot Creek, Thirty Seven Mile Creek, Thirty-Six Mile Creek, Tiempo Spawning Channel, Twenty Eight Mile Creek, Upper Paradise Channel, Wildwood Spawning Channel
	Burrard Inlet	29B	Serpentine River

ISC Terminal fry emerge from the gravel as early as February and migrate downstream shortly after emergence, primarily in March and April. The juvenile Chum rear near the estuary and in near-shore areas until approximately late May, and subsequently enter the major marine water bodies (i.e. Strait of Georgia) where they gradually migrate northward through Johnstone Strait. The juvenile migration continues to more off-shore waters and towards the Gulf of Alaska beginning in June and July and continues through the summer months. In the first year, Chum are primarily located along the coast of North America and into the Gulf of Alaska (Salo, 1991).

Return migrations are of considerable distance, and the beginning of return migrations is not well documented. For ISC populations, some summer Chum are first observed in streams in August

(Ahnuhati River) while the vast majority of fall Chum spawn starting in early October with the peak of spawning occurring mid to late October and ending as late as mid-December.

### 13.2.4.2 STOCK ASSESSMENT INFORMATION

#### 13.2.4.2.1 Pre-season

Table 13.2-6: Inside Southern Chum Terminal 2019 Salmon Outlook

Management Area	Stock Outlook
<b>Johnstone Strait and Mainland Inlets (Area 12 and 13)</b>	Expectations for 2019 are below average to near target. This is based on the below average parental brood abundances in 2015 (ocean entry 2016- age 4 return in 2019) and associated poor marine conditions encountered in 2016 (based on observation of poor Pink and Coho returns to the local area in 2017). Expect more variability in Chum returns. Summer Chum stocks in 2018 appear to have done poorly relative to recent years remaining below average throughout the area and will likely stay the same in 2019.
<b>Areas 14 to 19</b>	Escapement enumeration data for 2018 indicated lower abundances and below target escapements for systems in mid to northern Strait of Georgia and Jarvis Inlet. Returns in Nanaimo, Cowichan and Goldstream were all above target. There was significant variation in return strength. For 2019, 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 to above target escapement. Mid-Island systems (Puntledge, Little Qualicum, Big Qualicum) are expected to show some improvement but still below target escapement levels. Jarvis Inlet stocks are forecast to be below target in 2019.

#### 13.2.4.2.2 In-season

Refer to Table 13.2-6: Inside Southern Chum Terminal 2019 Salmon Outlook and [13.2-7 and 13.2-8](#) for in-season assessment information. There are no planned Chum Test fisheries in ISC Terminal areas

### 13.2.4.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

#### 13.2.4.3.1 Structure of Harvest Management Decision

Overall Inside Southern Chum Terminal are managed under a precautionary harvest approach to fisheries management, with a focus on identifying fishing opportunities in terminal areas of Johnstone Strait, Strait of Georgia and Mainland Inlets based on in-season abundance estimates and observed

escapements into the natal streams. In terminal fisheries, smaller stocks are protected through time and area closures, and targeted stocks are managed to escapement goals.

The primary management tool is to control fishing effort and catch through restricting the area, the duration of the fishery, the number of licensed vessels fishing within an area (i.e. limited participation) and, recently through share-based demonstration fisheries (some areas and gear types). Other tools include altering gear efficiency or fishing power through manipulation of permitted gears (e.g. net length or depth, mesh sizes). Any available surplus stocks are harvested by nets and troll terminally, adjacent to natal streams using knowledge of run timing as a management tool to limit bycatch of non-target stocks and species. Time and area closures, as well as selective fishing techniques, are used to protect specific non-target populations or species of concern.

#### 13.2.4.3.2 Harvest Approach for ISC Terminal Fisheries

Management Escapement Goals (MEG) are in place for most Chum bearing systems within the ISC Terminal Area. All terminal Chum fisheries are managed under a general fixed escapement strategy (i.e. target harvest is any surplus to the MEG), but implementation details differ by area.

[Table 13.2-7](#) and [Table 13.2-8](#) summarize the fishery reference points and harvest guidelines for the Strait of Georgia terminal fisheries.

Annual implementation of the harvest guidelines follows the general approach below:

- Terminal fisheries are managed based on escapement with fisheries initiated to harvest abundances in terminal areas.
- Terminal Chum fisheries are generally implemented with shorter, low impact openings early in the run, and then expanded as warranted by in-season information. For example, terminal Chum fisheries in the Strait of Georgia typically have short initial openings, and are either extended or closed depending on in-season escapement data and catch information from the initial opening.
- Harvest opportunities in terminal fisheries are typically based on the lower quartile of the probability distribution for the abundance estimate (i.e. estimated 3 out of 4 chance that abundance is larger; 25th percentile).

Table 13.2-7: Management Escapement Goals (MEG) and Harvest Plans for Terminal Chum Fisheries in the Strait of Georgia

	Area 14 (Puntledge, Little Qualicum and Big Qualicum)	Area 16 (aggregate escapement Goal)
<b>MEG</b>	240,000 (incl. 10K hatchery broodstock)	85,000
<b>Based on</b>	These are interim targets based on stock recruit relationships for each of these populations	Habitat area and Chum spawning densities in the various rivers, combined for the aggregate
<b>Major Systems</b>	Puntledge (60K goal) Little Qualicum (85K), Big Qualicum (85k)	Tzoonie, Deserter, Brittain, Vancouver and Skwawka Rivers
<b>In-season Assessment</b>	Early catches, visual observations at river estuaries and escapement counts in the three river systems completed by hatchery and stock assessment staff.	Visual surveys by, DFO Stock Assessment and Sechelt Indian Band staff
<b>Implementation strategy</b>	Manage early-season fisheries to meet aggregate spawner goal but also avoid large surpluses (>100k). If forecast exceeds 340k (240k escapement goal plus 100k to account for forecast uncertainty), then target for early fisheries is 65% of the surplus, and remaining fisheries occur once abundance is confirmed in-season. If forecast falls below 240k, then river-specific escapement levels for the 3 major systems must be almost achieved (70% of Puntledge, 75% of Little Qualicum and of Big Qualicum)	Fisheries would occur after aggregate goal is achieved (i.e. fish observed in-river and inside a designated sanctuary area), but there have been no commercial openings in recent years. Potential implementation of a weekly assessment fishery with limited fleet size (3-5 vessels) in conjunction with river escapement assessments is being explored.

Table 13.2-8: Management Escapement Goals (MEG) and Harvest Plans for Terminal Chum Fisheries in the Strait of Georgia

	Area 17 (Nanaimo River)	Area 18 (Cowichan)	Area 19 (Goldstream)
<b>MEG</b>	40,000	160,000	15,000
<b>Based on</b>	This is an interim target based on stock recruit relationship	Habitat area and Chum spawning densities in the Cowichan River	Habitat area and Chum spawning densities in the Goldstream River
<b>Major Systems</b>	Nanaimo River	Cowichan	Goldstream
<b>In-season Assessment</b>	Historically a variety of visual survey methods were employed to estimate escapement into the Nanaimo. Since 2013 a joint Snuneymuxw/DFO fixed site DIDSON counter program has been used. If weather permits, hatchery staff conducts swim surveys to help validate and provide species composition for the DIDSON program.	In past approaches Chum abundance has been evaluated through a variety of techniques from a test fishing program to over flight visual surveys. In river Chum escapement estimates are provided by a DIDSON counter ran jointly with the Cowichan Tribes and DFO located in the lower river since 2006.	Visual surveys via stream walks by hatchery staff.

	Area 17 (Nanaimo River)	Area 18 (Cowichan)	Area 19 (Goldstream)
<b>Implementation strategy</b>	Commercial openings occur only if in-season observations indicate high probability of meeting the spawning goal. Fisheries are considered after 50% of the escapement target has past the Didson Counter and are dependent on abundance, date and water levels.	Commercial openings occur only if in-season observations indicate high probability of meeting the spawning goal. A small TAC fishery is triggered at approx. 40,000 chum past the Didson dependent on date. Further commercial opportunities are based on abundance/date triggers as discussed and agreed upon at the Cowichan Harvest Roundtable.	Commercial openings occur only if in-season observations indicate high probability of meeting the spawning goal. A small TAC fishery is triggered at 10,000 chum in-river dependent on date. Further commercial opportunities are based on abundance/date triggers as discussed and agreed upon with Harvest committees and local First Nations.

#### 13.2.4.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO INSIDE SOUTHERN CHUM FISHERIES

Refer to **Error! Reference source not found.** for management actions specific to ISC Terminal fisheries. If there are fisheries proceeding in 2019, they will be occurring in terminal areas outside of the migratory path of Interior Fraser River Steelhead and will thus not be impacted by 2019 IFR Steelhead conservation measures. The areas are outlined in Appendix 9.

Table 13.2-9: Incidental Harvest, Bycatch and Constraints to ISC Terminal Fisheries

Area	Incidental Harvest, Bycatch and Constraints to Inside Southern Chum Fisheries
<b>Nimkish (Area 12-19)</b>	<p>Observations in recent years have shown consistently low abundance of Chum returning to the Nimkish River. Low brood year returns in 2014 and no significant improvements in marine survival leave expectations for Nimkish Chum well below target in 2018. The timing of Nimkish River Chum is later than most ISC terminal stocks. The ISC Mixed Stock fisheries are complete prior to the historical peak of the Nimkish Chum return. Furthermore, during these fisheries, the near terminal approach area and area adjacent to the mouth of the river are closed to fishing.</p>
<b>Area 14</b>	<p>Beach boundaries are generally in effect to protect Coho and Chinook. Boundaries may range from zero to one and a half miles depending upon bycatch concerns and time of year. A Fillongley Creek radius boundary and Baynes Sound closures are in effect to protect wild Chum and Coho stocks. Coho conservation measures are in effect until November 10, including non-retention, maximum soak times for gill nets, barbless hooks for trollers and mandatory brailing and sorting for seines. The gill net fishery may be restricted to daylight hours only if there are significant levels of non-target species catch (e.g. Coho).</p> <p>The presence of sea lions in Area 14 appears to have reduced net and troll CPUE, reduced escapement in some streams, and altered migration and holding behaviour which has impacted assessment capabilities. These impacts will be considered in the management of the fishery, and may include exploring new assessment techniques.</p>
<b>Area 16</b>	<p>There is mandatory non-retention of Coho. Fishing is limited to terminal areas to minimize impacts on passing stocks.</p>



Area	Incidental Harvest, Bycatch and Constraints to Inside Southern Chum Fisheries
Area 17	<p>Fishery boundaries are in place to protect migrating stocks such as Fraser River Chum and IFR Steelhead and to confine the fishery to the Nanaimo River stock.</p> <p>Coho and Chinook conservation measures in effect until November 10 include non- retention and barbless hooks for troll.</p> <p>The gill net fishery may be restricted to daylight hours and maximum soak times if Coho encounters are high. Restrictions would be implemented after consultation with the Chum Advisory Committee.</p> <p>The gill net fleet will be allowed to use 90 mesh Alaska twist in Area 17 based on previous work conducted in Area 14. The two areas are similar with respect to target species and incidental catch issues, and therefore the results from Area 14 are applicable to Area 17.</p>
Area 18	<p>There is a half a nautical mile boundary in effect off Cherry Point to protect Coho holding in this area.</p> <p>Beach boundaries may be in effect to protect Coho and Chinook.</p> <p>Cowichan Bay is usually closed to protect Coho and Chinook and to provide a refuge for holding Chum; however, if Chum escapement targets are reached and timing is such that Chinook escapement is complete this area could be opened to access surplus Chum. This would occur following consultation with the Cowichan Roundtable and the Chum Advisory Committee.</p> <p>Other Coho conservation measures in effect include non-retention, barbless hooks for troll, and mandatory brailing and sorting for seines.</p> <p>The gill net fishery may be restricted to daylight hours. Maximum soak times for gill nets could be implemented if high Coho bycatch occurs.</p>
Area 19	<p>Subarea boundaries may be put into effect to protect Chinook and Coho holding in Squally Reach.</p> <p>Coho and Chinook conservation measures in effect until November 10 include non- retention and barbless hooks for troll.</p> <p>The gill net fishery may be restricted to daylight hours and maximum soak times if Coho encounters are high. Restrictions would be implemented after consultation with the Chum Advisory Committee.</p>

### 13.2.4.5 ALLOCATION AND FISHING PLANS

#### 13.2.4.5.1 First Nations Fisheries

##### *Food Social and Ceremonial Fisheries*

FSC fisheries for local Chum stocks will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

First Nations target local salmon stocks for FSC purposes throughout the Inner South Coast. First Nations harvest of Chum salmon can fluctuate depending on individual areas, preference, strength of Chum return, and also status and availability of other salmon species annually. Refer to Section 10.2 for Communal Licence Harvest Target Amount Table 10.2-1 in Southern BC/Fraser River First Nations Fisheries.

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

##### *Treaty Fisheries*

##### *Tla'amin Fisheries (Domestic)*

Tla'amin Domestic fisheries for local Chum stocks will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

The Domestic allocations for salmon under the Tla'amin First Nations Final Agreement are as follows:

- Sliammon River Chum
  - When the Available Terminal Harvest for Sliammon River Chum salmon is less than or equal to 7,400, a number of Sliammon River Chum salmon equal to the Available Terminal Harvest for Sliammon River Chum salmon; or
  - When the Available Terminal Harvest for Sliammon River Chum salmon is greater than 7,400, then 7,400 Sliammon River Chum salmon plus 25% of that portion of the Available Terminal Harvest of Sliammon River Chum salmon that is greater than 7,400.
- Terminal Chum
  - A number of Chum salmon equal to 25% of the Available Terminal Harvest for the Chum salmon stocks that originate from a Terminal Harvest Area, other than Sliammon River

Chum salmon stocks, if the Minister determines that there is an Available Terminal Harvest for those stocks.

### ***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.

#### **13.2.4.5.2 Recreational Fisheries**

Marine recreational fisheries will not be impacted by 2019 conservation measures to protect Interior Fraser River Steelhead.

Marine recreational fisheries targeting ISC Terminal stocks take place in tidal and non-tidal waters and angler effort is focused on terminal Chum returning to the Puntledge, Qualicum, Nanaimo and Cowichan River systems.

Chum recreational fisheries are open year round, with the majority of marine recreational Chum harvest occurring in Areas 13 and 18 from late September to late October. The normal daily limit is four. For 2019 in Southern BC tidal waters, it is anticipated that normal Chum opportunities will be provided for Southern BC Chum.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

In non-tidal waters, Chum retention is typically permitted based on observed abundances, and primarily occurs in hatchery systems. Freshwater recreational fisheries can retain Chum in several of the watersheds (e.g. Puntledge, Cowichan, Nanaimo). Total (marine and freshwater) recreational harvests have ranged from about 5,000 to about 20,000 in recent years.

### ***Fishery Monitoring and Catch Reporting***

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this

fishery. South Coast Stock Assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

### 13.2.4.5.3 Commercial Fisheries

Canadian commercial fisheries are managed to try and achieve allocation targets in the commercial allocation implementation plan. Commercial fishery allocations take into account catches of Inside Southern Chum including: Johnstone Strait Mixed-Stock fisheries, terminal area fisheries, and the Fraser River fisheries. In the ISC Terminal, fishing effort focuses on a terminal harvests in a few larger systems (some of them with substantial hatchery supplementation).

#### *Allocation*

Table 13.2-10: Commercial Allocation Implementation Plan for the 2015–2019 Period

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%

#### *ISC Terminal Commercial Chum Fisheries*

For 2018, an average return is expected to most Strait of Georgia systems; however, Chum forecasts remain highly uncertain.

Chum fishing opportunities in terminal areas will be determined in-season and discussed through pre-season meetings and the in-season Chum Advisory Committee. The following opportunities may be available but will be subject to additional conservation measures being implemented in 2019 to protect Interior Fraser River Steelhead. For Johnstone Strait and Strait of Georgia, a 42-day rolling window closure will apply to commercial gillnet and purse seine fisheries and a 27 rolling window closure will apply to commercial troll fisheries. Closure dates and areas are outlined in Appendix 9. Terminal fisheries targeting terminal abundances that are understood to not be on the migratory route of IFR Steelhead will remain open. Proposed areas for exclusion are also described in Appendix 9.

The fisheries in each area are managed as follows:

- 1) Mainland Inlet Terminal fisheries: Any Mainland Inlet terminal fisheries targeting Chum would be managed in-season based on terminal abundance, and harvesting would be by seine, gill net or troll gear. Fishery openings would be confined to minimize incidental harvest of other passing Chum stocks.

- 2) Johnstone Strait Terminal fisheries: No fishing opportunities directed at Nimpkish River Chum are anticipated due to both recent trends of poor returns and 2019 management measures for IFR Steelhead. In-season assessment will confirm the potential for any harvest opportunities; however, there have been no opportunities in recent years.
- 3) Strait of Georgia Terminal fisheries: Managed in-season based on terminal abundance. Chum harvests focus on terminal stocks listed below; however, there may be incidental retention of some other minor local stocks in the terminal areas as well. Note that Area B has requested the use of power skiffs be permitted in all terminal chum fisheries. The major systems are:

- **Area 14** - Puntledge, Big Qualicum and Little Qualicum: The fishery is directed at the enhanced stocks of these three river systems. Chum returning to this area have been enhanced since the late 1960s and terminal fisheries have occurred in October and November since the 1970s. ESSR fisheries are possible on enhanced stocks.

Terminal Chum fisheries in Area 14 will take place only in those waters exempt from the 2019 IFR Steelhead conservation measures as described in Appendix 9.

- Area D gill net openings are possible starting in October. Further gill net openings are subject to overall abundance in Area 14 and escapements in the Puntledge, Little Qualicum and Big Qualicum Rivers.
- Area B seine limited effort opportunities may be available in late October dependent on escapement levels, abundance and allocation status. Full fleet opportunities may also be available.
- Area H troll openings are possible starting in October. Further troll openings are subject to overall abundance in Area 14 and escapements in the Puntledge, Little Qualicum and Big Qualicum Rivers.
- **Area 15** – Malaspina Inlet: No targeted commercial fisheries for Chum are anticipated.
- **Area 16** - Jervis Inlet: The terminal fishery targets wild Chum stocks returning to river systems in the Jervis Inlet area. The main systems are Tzoonie, Deserted and Skwawka Rivers. Commercial opportunities are not anticipated due to the recent trend of poor returns; this will be confirmed in-season. Openings in this area generally take place in late-October to mid-November.
- **Area 17** – Nanaimo: The fishery is directed primarily at Nanaimo River stocks. The Nanaimo River Chum stocks are supplemented by the Nanaimo River Hatchery on poor return years. Openings usually occur in October and early November. Terminal Chum

fisheries in Area 17 will take place only in those waters exempt from the 2019 IFR Steelhead conservation measures as described in Appendix 9.

- Area E gill net opportunities are subject to in-season abundance estimates and licence area allocation status.
- Area B seine opportunities are subject to in-season abundance estimates and licence area allocation status.
- Area H troll opportunities are subject to in-season abundance estimates and licence area allocation status.
- **Area 18 – Cowichan:** The fishery is directed primarily at Cowichan River stocks. Cowichan Chum and to some extent Goldstream Chum are also harvested. Chemainus River stocks are also impacted but likely to a lesser extent. Openings generally occur in late October to late November. Commercial net fisheries in Satellite Channel are possible. Openings are subject to in-season abundance estimates for the Cowichan River.

Terminal Chum fisheries in Area 18 will take place only in those waters exempt from the 2019 IFR Steelhead conservation measures as described in Appendix 9.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

- **Area 19 – Goldstream (Saanich Inlet):** The fishery is directed primarily at Goldstream River Chum stocks, but some Cowichan River Chum are harvested incidentally. Openings generally occur in late October to early December with possible commercial net fisheries in Satellite Channel and Saanich Inlet. Openings are subject to in-season abundance estimates for the Cowichan and Goldstream Rivers.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***Fishery Monitoring and Catch Reporting***

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

### ***Demonstration Fisheries***

The Area H Harvest Committee has submitted demonstration fishery proposals for Mainland Inlet Chum (Area 12), Bute Inlet Chum, Area 14 (Cape Lazo) Terminal Chum and Areas 14, 17 and 18 (Qualicum, Nanaimo and Cowichan) Terminal Chum under the Commercial Salmon Allocation Framework process. See [Appendix 6: Updates to the Commercial Salmon Allocation Framework](#) for more details.

The Area D Harvest Committee has submitted a demonstration fishery proposal for Mainland Inlet Chum and Area 14 SCVI Chum, under the Commercial Salmon Allocation Framework process. See [Appendix 6: Updates to the Commercial Salmon Allocation Framework](#) for more details.

For 2019, these fisheries are to be operated in times and areas outside of the rolling window closures identified to protect Interior Fraser River Steelhead outlined in Appendix 9. The duration of the window closures will be 42 days for commercial gill net and purse seine fisheries and 27 days for commercial troll fisheries. These terminal fisheries targeting terminal abundances that are understood to not be on the migratory route of IFR Steelhead will remain open. Areas proposed for exemption are also listed in Appendix 9.

### ***ISC Terminal First Nations Commercial Chum Harvest***

The First Nations Salmon Coordinating Committee have submitted demonstration fishery proposals for Cowichan and Goldstream Chum under the Commercial Salmon Allocation Framework process. See [Appendix 6](#) for more details.

For 2019, this fishery is to be operated in times and areas outside of the rolling window closures identified to protect Interior Fraser River Steelhead outlined in Appendix 9. The duration of the window closures will be 42 days for commercial gill net and purse seine fisheries and 27 days for

commercial troll fisheries. These terminal fisheries targeting terminal abundances that are understood to not be on the migratory route of IFR Steelhead will remain open. Areas proposed for exemption are also listed in Appendix 9.

#### **13.2.4.5.4 ESSR Fisheries**

ESSR fisheries may be considered in the following Rivers: Little Qualicum, Big Qualicum, Puntledge, Nanaimo, Cowichan, Goldstream and Sliammon.



### 13.2.5 INSIDE SOUTHERN CHUM MIXED STOCK FISHERIES

#### 13.2.5.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

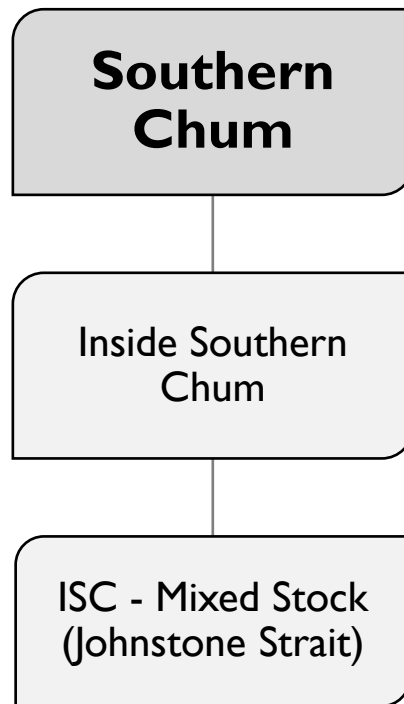


Figure 13.2-5: Overview of Inside Southern Chum Mixed Stock Fisheries

The Inside Southern Chum mixed stock fishery targets fall run Chum stocks that migrate through Johnstone Strait. Most of these fish spawn in systems adjacent to Johnstone Strait, the Strait of Georgia, and in the Fraser River, though a small component is bound for Washington State systems. The main components of the harvest are the Mid-Vancouver Island (MVI) and the Fraser River stock groupings. This fishery intercepts enhanced Chum from Big Qualicum hatchery, Little Qualicum hatchery, Puntledge hatchery, Chehalis hatchery, Chilliwack hatchery, Inch Creek hatchery, and Weaver Creek spawning channel.

The migration timing of these fall Chum stocks in the Johnstone Strait fishing area ranges from September to November with the peak typically early to mid-October. Mixed-stock fisheries occur in Areas 12 and 13, with terminal opportunities where surpluses are identified. Harvesters include First Nations (FSC fisheries), recreational, and commercial (seine, gill net and troll).

Canadian conservation units that may be encountered in this fishery include:

- Fraser Canyon (F)
- Lower Fraser (F)

- Bute Inlet
- Loughborough
- Northeast Vancouver Island
- Southern Coastal Streams
- Upper Knight
- Howe Sound - Burrard Inlet
- Strait of Georgia

### 13.2.5.2 STOCK ASSESSMENT INFORMATION

#### 13.2.5.2.1 Pre-season

Table 13.2-11: ISC Mixed Stock 2019 Salmon Outlook

Management Area	Stock Outlook
<b>Johnstone Strait and Mainland Inlet (Area 11 to 13)</b>	For the 2019 return, below average parental brood abundances in 2015 and observations of poor survival for Coho and Pink from the 2016 ocean entry year will likely mean below average return of age 4 Chum in 2019. The strong brood return in 2016 and some evidence of improved survival from ocean entry in 2017 means above average age 3 returns are likely in 2019. The resulting outlook for 2019 is Chum returns below average to near target. Expect variability in Chum returns.
<b>Strait of Georgia</b>	For 2019, abundance is expected to follow a similar pattern with stocks in the southern part of Georgia Strait such as Cowichan, Nanaimo, and Goldstream forecast above target escapement. Mid-Island systems (Puntledge, Little Qualicum, Big Qualicum) are expected to show improvement to near target escapement levels. Jervis Inlet stocks are forecast to be well below target in 2019.
<b>Fraser River (CUs: Fraser Canyon and Lower Fraser)</b>	The Outlook for 2019 is 'near target'. Returns in 2019 will be based largely on the brood from the 2015 escapement; escapement in 2015 was estimated at 950,000 spawners. Escapement assessments in 2018 are ongoing; a preliminary estimate of the 2018 escapement is approximately 669,000. The October 22, 2018 in-season estimate of the Fraser Chum terminal return was approximately 0.77 M fish with a 36% probability the run will exceed the spawning escapement goal.

### 13.2.5.2.2 In-season

The upper Johnstone Strait (Area 12) Chum seine test fishery uses standardized methods of test fishing, based on specific set locations. Two vessels, one fishing the Blinkhorn area (Subareas 12-3 & 12-4) of the Vancouver Island shoreline and the other fishing the Double Bay (Subareas 12-5 & 12-6) area are used to assess abundance and biologically sample the stocks passing through the upper Johnstone Strait area. Test fishery information is used to determine whether stocks are at or above the Lower Fishery Reference Point, and is also used for post season representation of the timing and spread of the aggregate return.

Table 13.2-12: Planned Chum Test Fisheries

Test Fishery	Proposed Proponent	Test Fishery Purpose	Potential Dates (preliminary <sup>a</sup> )	
			Start	End
Area 12	Namgis/A-Tlegay	ISC Mixed Stock Chum	15-Sept	3-Nov

<sup>a</sup> All dates subject to change based on in-season factors. In-season information from initial TFs important to determining timing of subsequent TFs.

### 13.2.5.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

Additional conservation measures are being implemented in 2019 to reduce the impact of commercial Chum fisheries on co-migrating Interior Fraser River Steelhead. These actions are described generally in Section 13.2.5.4 and detailed measures are provided for specific fisheries contained in Section 13.3.3.5.

#### Harvest Approach for Mixed-Stock Chum Fisheries in Johnstone Strait

In Johnstone Strait, a fixed harvest rate approach was initiated in 2002. It was agreed that the exploitation would be limited to a more cautious level of 20% implemented through a fixed effort approach, with two seine openings and limited gill net and troll opportunities through the month of October. This implementation approach was assessed through modeling and testing of assumptions by in-season mark-recapture (conducted in 2000-2002) to estimate harvest rates, fleet efficiencies, and migration rates of Chum through the mixed stock fishing area. Many of the parameters (run-timing and spread) required for the planning of these fisheries was obtained through the existing Chum test fishery. While cautious in the mixed stock areas, this approach provides a more stable marketing opportunity compared to the previous stepped harvest rate approach (also known as Clockwork).

The level of exploitation in Johnstone Strait and a critical abundance threshold of 1.0 million Inside Southern Chum used to manage both Canadian and U.S. fisheries is identified within the Pacific Salmon Treaty (PST) revised Annex IV Chapter 6. The critical abundance threshold for the ISC aggregate including Fraser stocks provides a reference point to either initiate (>1.0 million) mixed stock fisheries in Johnstone Strait and U.S. waters or suspend (<1.0 million). Of the overall 20% exploitation rate, commercial fisheries are organized using historic catch and effort fishing data to plan fisheries targeting 15% of passing stocks and the remaining 5% is set aside for FSC, test fishing, recreational and a commercial harvest buffer. The 15% commercial harvest is allocated between the purse seine, gill net and troll fisheries following commercial salmon allocation arrangements. The implementation of the management strategy in Johnstone Strait has three distinct benefits:

- 1) To minimize potential impacts on less productive stocks that are not following the aggregate abundance pattern;
- 2) To improve stability and predictability for harvesters; and
- 3) In periods of high abundance, increased terminal opportunities will develop focusing harvest on those abundant stocks.

The harvest plan is designed to achieve the provisions of the PST, which specifies a run size reference point of 1 million for the Inside Southern Chum aggregate (Johnstone Strait, Strait of Georgia and Fraser). The PST defines this as a critical threshold, and it is used as a Limit Reference Point (LRP) for commercial fisheries.

Table 13.2-13: Fishery Reference Points and Harvest Plan for Mixed-Stock Chum Fisheries in Johnstone Strait

Management Zone	Run Size Range*	Harvest Guideline	Exploitation Rate Range**
<b>1 – Critical</b>	0 – 1 Million	Non-commercial fisheries only	up to 5%
<b>Limit Reference Point for Commercial Fisheries = 1 Million run size</b>			
<b>2 – Very Low 3 – Low 4 – Moderate 5 – High</b>	More than 1 Million	Commercial harvest up to 15% ER, and non-commercial fisheries at 5% ER.	up to 20%

\* Run size is defined as aggregate abundance of Chum.

\*\* Exploitation rate is defined as % of the aggregate abundance caught in Canadian fisheries.

The harvest guidelines for mixed-stock fisheries in Johnstone Strait are used for pre-season planning, in-season implementation, and post-season review:

- 4) **Pre-Season:** The preseason planning model takes into account average migration timing and spread of the Inside Southern Chum aggregate, historic gear efficiencies and anticipated effort and distribution of effort by gear type (Area B purse seine, Area D gill net, and Area H troll).
  - Outputs from the model illustrate the exploitation (differing harvest strategies) by gear type and are presented as scenarios to the Chum Working Group. Participants in the Chum Working Group agree on a plan and finalize a fishing plan pre-season.
  - New decision rules and fisheries plans for the Mixed-stock Chum commercial fisheries taking place in Johnstone Strait will take into account the delayed start due to the new 2019 IFR Steelhead measures and will be developed in consultation with local First Nations and stakeholders.
- 5) **In-season:** Test fishing catch per unit effort data is tracked daily and compared to previous years of known run sizes. Fisheries are conducted as per the pre-season fishing plan if test fishery catches indicate a run size greater than the LRP.
- 6) **Post-Season:** Test fishery information is used for post season representation of the timing and spread of the aggregate return.

#### 13.2.5.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO ISC MIXED STOCK FISHERIES

For Inside Southern Chum salmon a critical threshold, where little or no harvesting occurs, is defined as 1.0 million in Chapter 6 of the PST.

Commercial opportunities for Chum may be constrained prior to late September to achieve Coho management objectives.

Given ongoing declines in Interior Fraser River Steelhead escapement, and the recent designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a precautionary approach to the management of those fisheries in southern BC that are likely to impact this stock of concern. In the Johnstone Straits, a rolling window closure of 42 days will apply to all commercial gillnet and purse seine fisheries and a 27-day closure will apply to commercial troll fisheries.

The implementation of the management strategy minimizes impacts on less productive stocks that are not tracking the aggregate abundance pattern.

Schedules and fishing dates will be confirmed pre-season following consultation with industry, First Nations, and stakeholders through the Chum Working Group process.

### **13.2.5.5 ALLOCATION AND FISHING PLANS**

#### **13.2.5.5.1 First Nations Fisheries**

##### *Food Social and Ceremonial*

FSC fisheries for mixed stock Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

First Nations target local salmon stocks for FSC purposes throughout the Inner South Coast. Inner South Coast First Nations harvest of Chum salmon is typically small with an aggregate communal licence harvest target of 155,000 for the South Coast, including the West Coast of Vancouver Island.

##### *Treaty Fisheries*

##### *Tla'amin Fisheries (Domestic)*

Tla'amin Domestic fisheries for mixed stock Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

The Domestic allocation for Chum salmon under the Tla'amin First Nations Final Agreement is a maximum of 2,000 Chum salmon that are not of terminal origin, caught in the Tla'amin Fishing Area. The allocation will be determined by an abundance-based formula.

##### *Fishery Monitoring and Catch Reporting*

Fishery monitoring will be conducted by DFO and 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.

#### **13.2.5.5.2 Recreational Fisheries**

Marine recreational fisheries will not be impacted by 2019 conservation measures to protect Interior Fraser River Steelhead.

Chum recreational fisheries are open year round, with the majority of marine recreational Chum harvest occurring in lower Area 13 (Deepwater Bay) from late September to late October. Updates are provided via Fishery Notice and published on the recreational fisheries website (<http://www.bcsportfishingguide.ca>). The normal daily limit is four. For 2018 in Southern BC tidal waters, it is anticipated that normal Chum opportunities will be provided for Southern BC Chum.

### ***Fishery Monitoring and Catch Reporting***

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast Stock Assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

#### **13.2.5.5.3 Commercial Fisheries**

##### ***Allocation***

Canadian commercial fisheries are managed to try and achieve allocation targets between fleets for all Inside Southern Chum harvests. Commercial fishery allocations take into account catches from: Johnstone Strait mixed-stock fisheries and terminal area fisheries in inside waters, including the Fraser River. Commercial allocation sharing arrangements in Johnstone Strait are: seine Area B – 77%; gill net Area D – 17%; and troll Area H – 6%. The Johnstone Strait Chum allocations are used to guide pre-season fishing effort inputs into the fishery planning model. As the fishery is managed based on effort, actual catch has not been used to adjust fisheries for the mixed stock Johnstone Strait Chum fishery. Where abundance permits, terminal area fishing opportunities are used to try and balance the overall ISC allocations below.

Table 13.2-14: Commercial Allocation Implementation Plan for the 2015–2019 period

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%

##### ***Inside Southern Chum - Mixed-Stock (Johnstone Strait) Commercial Fisheries***

ISC Mixed-Stock fisheries (Areas 12/13): Target fall run Chum, with seine, gill net and troll gear. Specific fishing plans will be determined pre-season following consultation with the Chum Working Group. A Chum Working Group meeting will be scheduled during July to begin this planning process. The fishing plan for Johnstone Strait mixed-stock fishery will follow the general outline:

- **Area B Seine**
  - A 42-day rolling window closure will be implemented in 2019 to protect co-migrating IFR Steelhead.
  - Openings may be scheduled following the IFR Steelhead closure (preliminary fishing dates will be determined at the pre-season Chum working group meeting).
- **Area D Gill Net**
  - A 42-day rolling window closure will be implemented in 2019 to protect co-migrating IFR Steelhead.
  - Openings may be scheduled following the IFR Steelhead closure (preliminary fishing dates will be determined at the pre-season Chum working group meeting).
  - Duration of each fishing period is generally 41 hours and will be confirmed in-season based on effort.
  - Fishing times are scheduled separate from the seine fishery when and where possible.
  - Fishing opportunities on the weekend are generally not planned in order to minimize any potential gear interactions with the recreational fishery in lower Area 13 and to minimize any processing issues on weekends.
- **Area H – Troll**
  - A 27-day rolling window closure will be implemented in 2019 to protect co-migrating IFR Steelhead.
  - Troll fisheries may be scheduled following the IFR Steelhead closure (preliminary fishing dates will be determined at the pre-season Chum working group meeting).
  - This fishery is planned to occur as Individual Transferable Effort (ITE) demonstration fishery (see details below in demonstration fishery section). Troll fisheries in Johnstone Strait are not planned during regular Area B seine openings when and where possible.
  - The Department is in discussions with Area H and this fishery for 2019 may be planned as a competitive derby-style fishery.

### ***Inside Southern Chum - Mixed-Stock Demonstration Fisheries***

#### ***Area H Troll Johnstone Strait Chum Individual Transferable Effort (ITE) Demonstration Fishery***

- **Region:** South Coast
- **Participants:** All Area H troll licence holders



- **Location of Fishery:** Johnstone Straits (portions of Areas 12 and 13).
- This fishery will be subject to the 27-day rolling window closure to be implemented in 2019 to protect co-migrating IFR Steelhead.
- **Gear Type:** Troll, barbless hooks and revival tanks are mandatory
- **Time Frame of Fishery:** Fishing plans and start dates will be confirmed prior to the season through the Chum Working Group consultation process.
- **Allocation:** Boat day allocations are based on the anticipated amount of effort and the distribution of that effort in order to stay within the Area H share of the harvest rate.

Boat days will be permitted to be transferred between other Area H licence holders.

The target species is Chum, retention of Pink is permitted. There will be non-retention of Sockeye, Coho, Chinook and Steelhead.

- **Monitoring Plan:** Start, end, pause and daily catch reports will be required by phone-in or electronic logbook. Over flights will be conducted and charter patrol will monitor the fishery.

#### ***Mixed-Stock First Nations Commercial Chum Harvest***

There are no First Nations commercial fisheries for mixed-stock Chum.

#### **13.2.5.5.4 ESSR Fisheries**

ESSR fisheries are identified in the Fraser and ECVI/Mainland Chum sections.

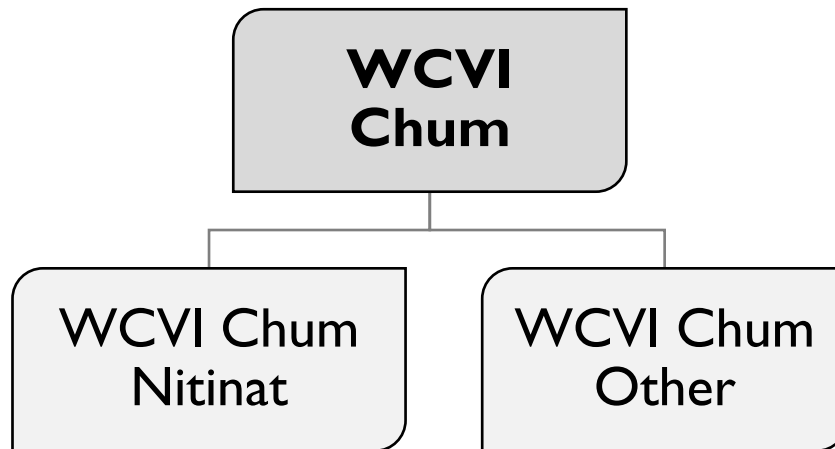
**13.2.6 WEST COAST VANCOUVER ISLAND CHUM – OVERVIEW**

Figure 13.2-6: Overview of West Coast Vancouver Island Chum

### 13.2.7 WCVI CHUM - NITINAT

#### 13.2.7.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

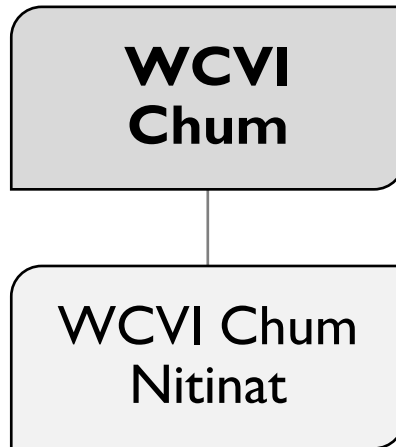


Figure 13.2-7: Overview of WCVI Chum – Nitinat

#### 13.2.7.2 STOCK ASSESSMENT INFORMATION

##### 13.2.7.2.1 Pre-season

Annual pre-season forecasts for the Nitinat system (predominantly enhanced) are based on brood year escapements, hatchery smolt output and estimated survival rates. The pre-season Nitinat Chum forecast is not yet available.

#### **13.2.7.2.2 In-season**

Nitinat Hatchery staff work in cooperation with the Ditidaht First Nations fishery program to assess escapement of Chum into Nitinat Lake and area. Through a combination of observations gathered from river surveys (swims, boat-based, and helicopter), brood collection activities and in-lake gillnet fisheries by Ditidaht First Nations; an in-season estimate of abundance is generated. Although there is high degree of uncertainty in the abundance estimate, it is generated from relatively consistently applied survey methods by observers with significant local knowledge and experience. Therefore, it provides a general gauge of the observed escapement relative to in-season escapement benchmarks defined for Nitinat Lake and area.

A scientific licence may be issued to the Ditidaht First Nations to provide biological samples and additional information on stock status and movement in Nitinat Lake.

In addition to the Ditidaht Nitinat Lake fishery, an Area E gill net limited-effort commercial assessment fishery, designed to achieve a maximum harvest rate of 15%, provides in-season assessment information. This fishery occurs in the approach waters to Nitinat Lake in Area 21 and 121.

A test fishery occurred in Nitinat Lake in the past; however, this is no longer operating.

#### **13.2.7.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Additional conservation measures are being implemented in 2019 to reduce the impact of commercial Chum fisheries on co-migrating Interior Fraser River Steelhead. These actions are described generally in Section 13.2.7.4 and detailed measures are provided for specific fisheries contained in Section 13.2.

The lower fishery reference point for Nitinat Chum is based on a gross escapement goal to Nitinat Lake of 225,000 Chum, including 175,000 into the rivers, 10,000 for Ditidaht First Nations FSC, and a minimum of 40,000 into the Nitinat hatchery. The upper fishery reference point is based on an escapement target of 325,000. The additional 100,000 Chum salmon are partly utilized as hatchery broodstock and to increase the distribution of spawners in the Nitinat River and to other Nitinat Lake tributaries.

## **In-season Commercial Fishery Decision Guidelines**

New decision rules for the Nitinat Chum commercial fishery taking into account the delayed start due to the new 2019 IFR Steelhead measures will be developed in consultation with local First Nations and stakeholders.

### **13.2.7.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO NITINAT CHUM FISHERIES**

Given ongoing declines in Interior Fraser River Steelhead escapement, and the recent designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a precautionary approach to the management of those fisheries in southern BC that are likely to impact this stock of concern. In Areas 21 and 121, no commercial gill net or purse seine fishing will take place from September 11 to October 22 to address IFR Steelhead bycatch concerns. Following the window closure, fisheries are permitted within a two mile boundary of the shore line between Bonilla Point and Pachena Point.

Retention of Steelhead in commercial fisheries is prohibited. Boundaries at Cheewhat River, Klanawa River and Carmanah Creek are in place to protect local Chum and Coho stocks.

### **13.2.7.5 ALLOCATION AND FISHING PLANS**

#### **13.2.7.5.1 First Nations Fisheries**

##### ***Food Social and Ceremonial Fisheries***

FSC fisheries for Nitinat Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

Ditidaht First Nations target Chum stocks for FSC purposes in Areas 21, 22 and 121. Most harvest occurs in Nitinat Lake (Area 22).

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River First Nations Fisheries.

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***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 Nitinat Chum.

#### **13.2.7.5.2 Recreational Fisheries**

Marine recreational fisheries will not be by 2019 Interior Fraser River Steelhead conservation measures.

Marine recreational fisheries targeting Nitinat Chum take place primarily in Nitinat Lake (Area 22). Chum recreational fisheries are open year round. The normal daily limit is four. In the Nitinat River, retention for Chum opens October 15 with a daily limit of two. Opening the freshwater recreational fishery is contingent on achieving escapement goals and mitigating concerns for impacts on spawning fish. There is a finfish closure at mouth of the Nitinat River to prevent foul hooking.

For 2019 in Southern BC tidal waters, it is anticipated that Chum opportunities will be provided for Nitinat Chum. Updates are provided via Fishery Notice and published on the recreational fisheries website: <http://www.bcsportfishingguide.ca>

### ***Fishery Monitoring and Catch Reporting***

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

### 13.2.7.5.3 Commercial Fisheries

#### *Allocation*

The overall fishery allocation targets are outlined below.

Table 13.2-15: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
Nitinat	21 to 22	65.5%	0.0%	34.5%	*	0.0%

\* bycatch provision

#### *WCVI – Nitinat Commercial Chum Fisheries*

No commercial gill net or seine fishing will take place from September 11 to October 22 to address Interior Fraser River Steelhead bycatch concerns. New decision rules for the Nitinat Chum commercial fishery taking into account the delayed start due to the new 2019 IFR Steelhead measures will be developed in consultation with local First Nations and stakeholders.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### *Area G (Troll)*

Chum may be retained as bycatch in fisheries targeting other stocks (e.g. AABM Chinook fishery). There are no directed troll fisheries on Nitinat Chum. No Area G troll fishing in Areas 21 and 121 will take place from September 18 to October 14 to address Interior Fraser River Steelhead bycatch concerns.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### *Fishery Monitoring and Catch Reporting*

Stage 1 gill net assessment fisheries will require a dockside monitoring program (DMP) using an approved certified DMP service provider. Regular catch monitoring and reporting requirements are in place for Stage 2 and 3 gill net and seine fisheries.

### *WCVI –First Nations Commercial Chum Harvest*

There are currently no First Nations commercial fisheries for Nitinat Chum.

#### **13.2.7.5.4 ESSR Fisheries**

ESSR fisheries in Nitinat Lake can occur when surpluses to escapement goals and broodstock egg targets are anticipated to be exceeded. The Ditidaht First Nations participates in the ESSR fishery in coordination with Nitinat Hatchery staff and broodstock collection activities.



### 13.2.8 WCVI CHUM - OTHER

#### 13.2.8.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

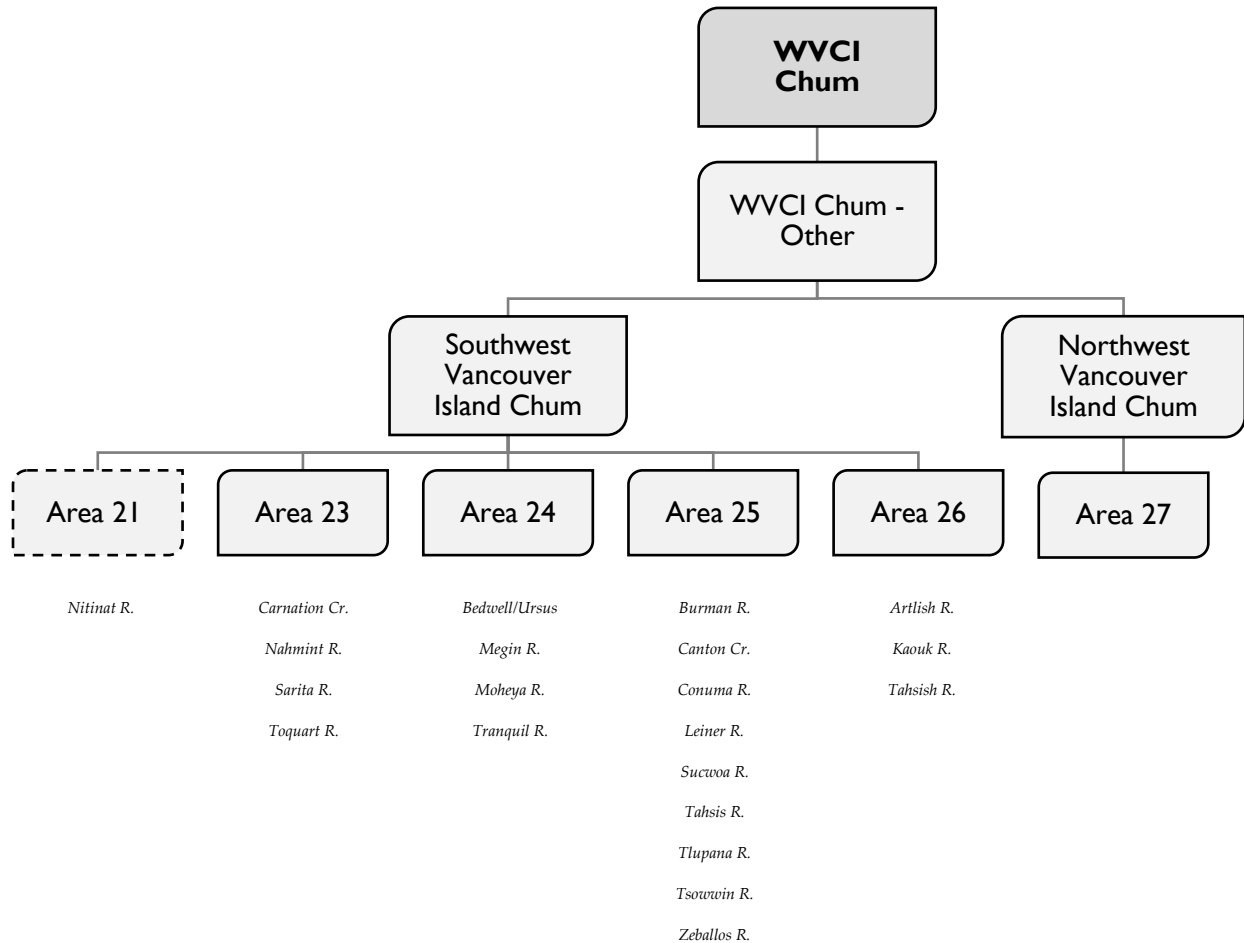


Figure 13.2-8: Overview of WCVI Chum - Other

Note that the management approach for enhanced Nitinat Chum is described separately in the WCVI Chum – Nitinat section ([13.2.7](#)).

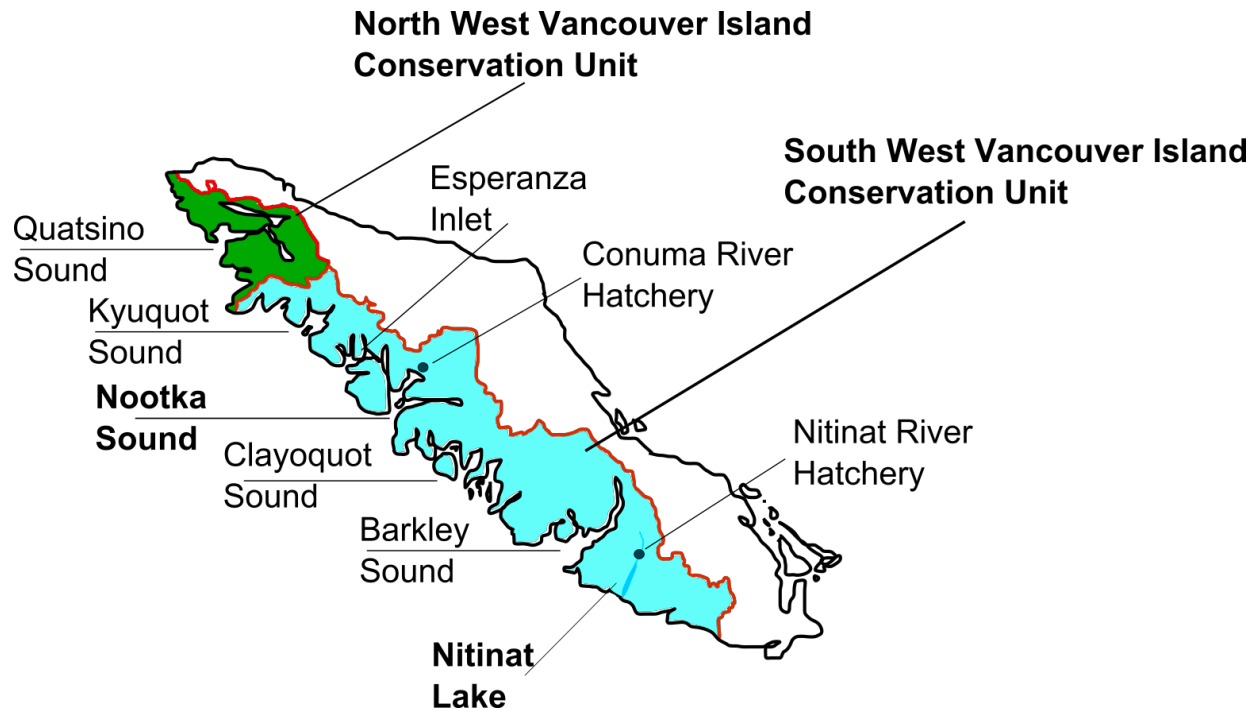


Figure 13.2-9: Map of WCVI Chum - Other Fisheries

### Population Structure of WCVI Chum

Chum salmon occur throughout the West Coast of Vancouver Island (WCVI) and have been grouped into 2 Conservation Units (CU) under the Wild Salmon Policy (WSP):

- 7) Southwest Vancouver Island (SWVI) with roughly 170 distinct spawning sites
- 8) Northwest Vancouver Island (NWVI) with roughly 60 distinct spawning sites

Major runs of Chum salmon originate in the following systems:

- Area 20: De Mamiel Cr., Sooke R.
- Area 22: Nitinat R. (enhanced). Note: The management approach for Nitinat Chum is described separately in the WCVI Chum – Nitinat section ([13.2.7](#)).
- Area 23: Cous Cr., Effingham R., Little Toquart Cr., Nahmint R., Sarita R., Toquart R.
- Area 24: Atleo River, Moyeha River, Tranquil Creek, Warn Bay Creek.
- Area 25: Black Creek, Burman River, Canton Creek (enhanced), Conuma River (enhanced), Deserted Creek, Espinosa Creek, Leiner River, Sucwoa River, Tahsis River, Tlupana River (enhanced), Tsowinn River, Zeballos River
- Area 26: Chamiss Creek, Kaouk River

- Area 27: Colonial / Cayeghle Creeks

### 13.2.8.2 STOCK ASSESSMENT INFORMATION

#### 13.2.8.2.1 Pre-season

**Method:** WCVI Chum mature and return to the terminal area as mainly 3, 4 and 5 year old fish. For naturally spawning stocks, expected returns for each contributing brood year are forecast based on observed spawner abundance and average recruitment and maturation rates. For hatchery stocks, expected returns for each contributing brood year are forecast based on hatchery releases and average marine survival rate. For both naturally spawning and hatchery stocks, observed returns of younger age classes are used to adjust forecasts of older age classes from the same brood year. In addition, for naturally spawning stocks, forecast returns of index populations within each terminal area are expanded based on their average historical contribution to production within the area.

**Sources of Uncertainty:** Likely as a function of lower quality assessment data quality (i.e. age data available for few stocks, estimates of spawner abundance are low quality) and also resulting from the highly volatile lower river spawning habitat that Chum favor, the performance of Chum forecasts is relatively poor. For WCVI areas, the mean absolute percentage error (MAPE) in recent year forecasts averages about 60%; meaning the observed returns are typically about 60% higher or lower than the forecast returns. Some of the key sources of uncertainty include: incomplete age data across stocks, uncertainty in spawner abundance, uncertainty in relative levels of production among index and non-index stocks.

**Forecast production for WCVI stock management units is not currently available.**

Spawner abundances for wild indicator stocks across the WCVI Conservation Unit have been below the upper biological benchmark in many recent years. Considering this result and the high level of uncertainty in the assessment data (and forecasts), fishing opportunities will be precautionary.

#### 13.2.8.2.2 In-season

When the catch-per-unit effort in fisheries is related to run size, fishery data can be used to provide in- season stock assessment information. This approach is responsive to in-season abundances rather than pre-season forecasts that are highly uncertain, particularly for Chum stocks. In the case that fishery results suggest the abundances are relatively low as expected, the resulting harvest rate will not significantly impede stock rebuilding. Alternatively, if results suggest the abundance is higher than expected, harvest opportunities are not unnecessarily foregone.

### 13.2.8.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

The Decision Guidelines in this plan are under construction and will be updated as local plans are developed.

For naturally spawning WCVI Chum stocks, upper and lower fishing reference points were developed using the “sustainable escapement goal” or “SEG” approach described in Bue and Hasbrouck (2001). This method uses escapement estimates to set fishery reference points and is suitable for stocks with relatively low quality assessment data, such as WCVI Chum. The SEG algorithm was determined by relating MSY reference points with time series derived benchmarks for model populations with more reliable data sets for which stock-recruit analysis is feasible. Conservative “SEGs” were defined as the 25% and 75% of a long-term escapement time series. The lower SEG is estimated to represent approximately 0.8  $S_{MSY}$  (i.e. size of spawning population at 80% maximum sustained yield), which is similar to an “upper biological benchmark”, or healthy state, described for salmon populations. (Fishery reference points are used to trigger fisheries, in contrast to biological reference points which are used to assess the conservation status of stocks). Use of precautionary fishery reference points to set abundance-based limits on harvest supports Marine Stewardship Council (MSC) third-party eco-certification of the fishery and also an objective of Canada’s Wild Salmon Policy.

Within each WCVI management area, SEGs were calculated for index populations with higher quality escapement data. To develop fishery reference points for the entire area, index SEGs were summed and this value expanded based their average historical contribution to escapement within the area. (Note: forecasts of abundance for each area are estimated from index populations using the same expansion factor). For WCVI hatchery populations, the lower and upper fishery reference points are determined by the needs of the hatchery and spawning objectives for nearby rivers.

Although more work is required to finalize the reference points for natural systems and associated harvest strategy and management plan for WCVI Chum, reference points have been applied in recent years to set target levels for commercial fisheries. That is, commercial fisheries have been curtailed when forecast abundance is below the lower fishery reference point in order to comply with the conditions of MSC certification.

Commercial fisheries for WCVI Chum employ a two-tiered harvest strategy for controlling removals; either a constant harvest rate strategy or a surplus-to-escapement goal strategy:

- **Fixed Harvest Rate Strategy** (fisheries targeting natural origin stocks, hatchery stocks at low abundance): For those fisheries where a significant component of the target stock is from naturally spawning populations, a constant harvest rate strategy of 10-

20% is implemented. The maximum harvest rate is set a precautionary level relative to stock-recruit derived optimal exploitation rates for WCVI Chum; which are in the order of 30-40%. This approach allows limited harvest while protecting the biodiversity of Chum stocks and permitting rebuilding when the population is low. In areas of low quality data or only naturally spawning stocks, including Barkley (Area 23), Clayoquot (Area 24), Esperanza Inlet (Area 25) and Kyuquot Sound (Area 26), the maximum allowable harvest rate is 10 to 15%. In Nootka Sound, up to 20% harvest is permitted given the prevalence of hatchery stock in the area.

- **Surplus-to-Escapement Goal Strategy** (fisheries targeting hatchery stocks at high abundance): This strategy only applies to Area 25 (Nootka Sound) fisheries that target hatchery surpluses. The allowable harvest rate is determined by the escapement goal when it is determined the stock is forecasted in-season to be above the Upper Fishery Reference Point and broodstock capture targets have been or will be met. This fishery occurs only in the Tlupana Inlet portion of Area 25 where little or no interception of non-enhanced stocks occurs.

All Conuma hatchery Chum are thermally marked, which allows for assessment of the hatchery contribution to fisheries and spawning. Sampling of the commercial catch was conducted in 2018. As part of the Marine Stewardship Council certification of the WCVI Chum fisheries, the Department is working with the Canadian Pacific Sustainable Fisheries Society to develop a plan to complete analysis of the samples to determine the presence of hatchery Chum in Nootka Sound Chum fisheries.

Stage 1 fisheries are Limited Entry Assessment Fisheries that may occur when the pre-season forecast indicates the run size is below the lower fishery reference point. They require increased monitoring and are designed to provide in-season information about the run size within a low-risk fishing strategy (i.e. limit overall mortality to less than 15%).

Further work on developing assessment criteria needs to occur prior to proceeding with stage 1 assessment fisheries and is contingent on additional consultation with First Nations and stakeholders.

Stage 2 fisheries are Limited Entry or Limited Effort fisheries that may occur when the pre-season forecast or Stage 1 fisheries indicate the run size is above the lower fishery reference point, but below the upper fishery reference point. They are designed to be lower risk and limit mortality to a precautionary level through a fixed harvest rate strategy.

Stage 3 fisheries are Full Fleet fisheries that may occur when the pre-season forecast or Stage 1 and/or 2 fisheries indicate the run size is above the upper fishery reference point. They are

designed to be relatively low risk and limit mortality to a precautionary level through a fixed-harvest rate strategy.

Table 13.2-16: Table on Fishery Triggers of Each Harvest Strategy

<b>Fishery Trigger</b>	<b>Harvest Strategy</b>	<b>Nootka (Enhanced)</b>	<b>Barkley, Clayoquot, Esperanza, Kyuquot</b>
<b>Pre-season forecast below Lower Fishery Reference Point</b>	Assessment Fishery	Stage 1: Assessment Fishery	Stage 1: Assessment Fishery
<b>Pre-season forecast between Lower and Upper Fishery Reference Point</b>	Fixed Harvest Rate	Stage 2: Limited Entry / Limited Effort Fishery	Stage 2: Limited Entry / Limited Effort Fishery
<b>In-season forecast above Upper Fishery Reference Point</b>	Fixed Harvest Rate	Stage 3: Full Fleet/Limited Effort Fishery	Stage 3: Full Fleet / Limited Effort Fishery
<b>In-season forecast above Upper Fishery Reference Point and broodstock capture near target</b>	Surplus to Escapement Goal	Full Fleet terminal fishery	n/a

Local Harvest Committee's (Roundtables), that include representatives from First Nations, commercial and recreational sectors, conservation groups, local governments and DFO on the West Coast of Vancouver Island are in various stages of developing local detailed Chum fishing plans, including management guidelines and assessment criteria for all fishery stages.

#### **13.2.8.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO WCVI CHUM - OTHER FISHERIES**

Bycatch of wild Chinook is a concern for these Chum fisheries. To reduce Chinook encounters, commercial fisheries will start no earlier than September 25 in Kyuquot Sounds, Esperanza Inlet and Nootka Sounds and no earlier than October 1 in Barkley Sound and October 15 in Clayoquot Sound. In addition, commercial fisheries will be daylight only to reduce encounters of non-target species.

In general, fishing area and the timing of openings are also designed to avoid specific areas where non-target stocks are prevalent:

- In Area 25, Hisnit Inlet is closed during Tlupana Inlet fisheries to protect Deserted River Chum as they are no longer enhanced. A stream mouth boundary at Marvinas Bay will protect local stocks adjacent to fishing area.
- Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a comprehensive, precautionary approach to the management of all fisheries in Southern BC that are likely to impact this stock of concern. Closed periods for commercial gill net, seine, and troll WCVI Chum-Other fisheries will be applied in Areas and portions of Areas with the potential to encounter these Steelhead stocks. See sections below for further details.

### **13.2.8.5 ALLOCATION AND FISHING PLANS**

#### **13.2.8.5.1 First Nations Fisheries**

FSC fisheries for WCVI Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

#### ***Food Social and Ceremonial Fisheries***

WCVI First Nations target Chum stocks for FSC purposes throughout NW and SW Vancouver Island.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River First Nations Fisheries.

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### ***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*

Treaty fisheries for WVCi Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

#### *Maa-nulth Fisheries (Domestic)*

The annual Domestic allocations for Chum salmon under the Maa-nulth First Nations Final Agreement are as follows:

- 3,000 pieces, when the return of Terminal Chum Salmon is critical;
- 6,500 pieces, when the return of Terminal Chum Salmon is low;
- 10,000 pieces, when the return of Terminal Chum Salmon is moderate;
- 14,000 pieces, when the return of Terminal Chum Salmon is abundant;
- 17,500 pieces, when the return of Terminal Chum Salmon is very abundant.

#### **13.2.8.5.2 Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht / Muchalaht, and Tla-o-qui-aht First Nations) Multi-species Fishery**

The Five Nations multi-species fishery for WVCi Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

#### **13.2.8.5.3 Recreational Fisheries**

The recreational fishery for WVCi Chum will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

Marine recreational fisheries targeting Southern Chum take place in inshore and offshore waters of the west coast of Vancouver Island (Areas 21 to 27 and 121 to 127). These fisheries are open year round, with the majority of the catch and effort taking place in September to



November in terminal areas. The normal daily limit is four. In non-tidal waters, Chum retention is typically permitted based on observed abundances, and primarily occurs in hatchery systems.

For 2019 in Southern BC tidal waters, it is anticipated that Chum opportunities will be provided for all areas of the South Coast. Updates are provided via Fishery Notice and published on the recreational fisheries website:

<http://www.bcsportfishingguide.ca>

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### *Fishery Monitoring and Catch Reporting*

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

#### **13.2.8.5.4 Commercial Fisheries**

##### *Allocation*

Table 13.2-17: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Outside	23 to 27	0.0% <sup>d</sup>	98.0%	0.0%	2.0%	0.0%

<sup>d</sup> potential for future re-negotiation if Chum populations re-build

##### *WCVI Chum – Other Commercial Chum Fisheries*

Earliest anticipated gill net start dates:

- Barkley Sound – Oct. 1
- Clayoquot Sound – Oct. 15
- Nootka Sound – Sept. 25

- Esperanza Inlet – Sept. 25
- Kyuquot Sound – Sept. 25 (Area 26-11 will remain closed for Interior Fraser River Steelhead conservation until October 12)

Detailed planning for any potential Area D Chum fisheries will occur with local First Nations and the Roundtables established in each area. Fishery planning will be dependent on pre-season forecasts and any adjustments to which have occurred in previous years may be considered depending on post-season assessments of the 2018 Stage 2 fisheries relative to their estimated achieved harvest rates.

Coho retention in net fisheries may be permitted when abundance permits.

There are separate approach area and terminal fisheries to facilitate bio-sampling for age and hatchery contribution.

### ***Area G (Troll)***

Chum salmon may be retained as bycatch in other directed fisheries, such as the AABM Chinook fishery in Areas 23 to 27, and 123 to 127.

To support conservation of IFR Steelhead, a 27-day rolling window closure will be applied to commercial Chinook troll fisheries off of WVCI. These measures are outlined in Table 13.2-18 below.

Table 13.2-18: Interior Fraser River Steelhead Closure Dates by Area for the Area G Troll Fishery.

Area Details	Start	End
Area 123	16-Sep	12-Oct
Area 124	13-Sep	9-Oct
Area 125	11-Sep	7-Oct
Area 26-11	8-Sep	4-Oct
Area 126	8-Sep	4-Oct
Areas 27-1 and 27-2 westerly of a line from Cape Parkins (50 26.6395 N, 128 02.8157 W) to Kwakiutl Point (50 21.0552 N, 127 59.4362 W), 27-4 to 27-6)	6-Sep	2-Oct
Area 127	6-Sep	2-Oct

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their

identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

### ***Fishery Monitoring and Catch Reporting***

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

### ***WCVI Chum - Other - Chum Demonstration Fisheries***

None

### ***Economic Opportunities***

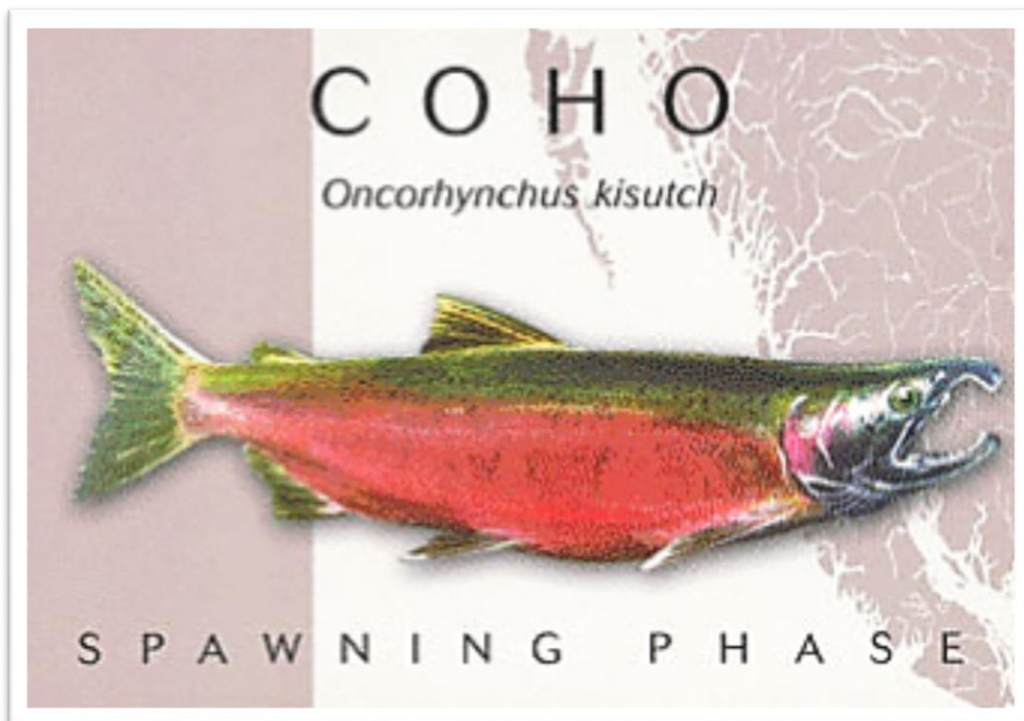
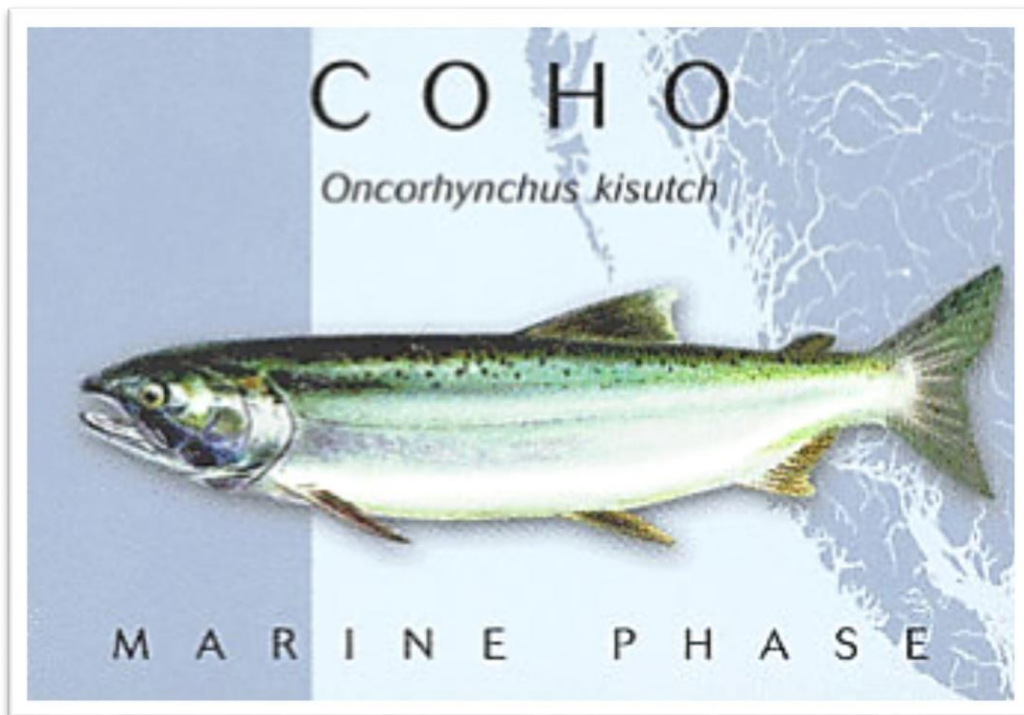
Potential Area 23 Economic Opportunity Chum fisheries will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

Negotiations to provide economic opportunities for the Tseshaht and Hupacasath First Nations are expected similar to recent years. Economic Opportunity fisheries will be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. The Department’s general approach is that Aboriginal commercial harvest opportunities are managed using comparable rules to the commercial fishery.

#### **13.2.8.5.5 ESSR Fisheries**

There is potential for an ESSR fishery at Conuma Hatchery which is dependent upon identifying a surplus to the enhanced systems in Tlupana Inlet through in-season abundance indicators. The likelihood of an ESSR fishery has been reduced in recent years due to poor returns and reduced hatchery production targets.

### 13.3 SOUTHERN COHO SALMON FISHING PLAN



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### 13.3.1 SOUTHERN COHO - OVERVIEW

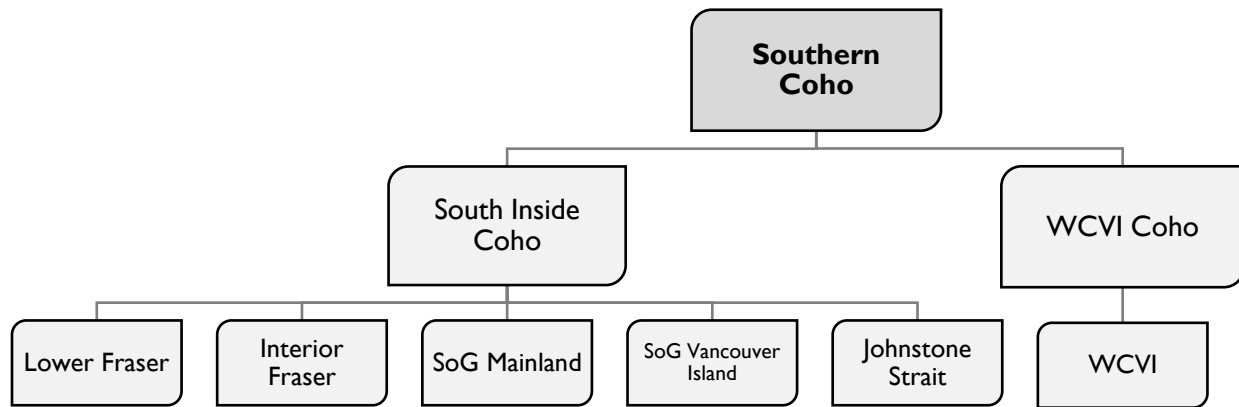


Figure 13.3-1: Overview of Southern Coho

Coho fisheries in southern BC are managed in a manner consistent with the umbrella of the PST, with considerations for Canadian stocks of concern resulting in a range of measures to reduce fisheries impacts, including selective fishing practices.

#### PST COHO ABUNDANCE BASED MANAGEMENT FRAMEWORK

The basis for managing fisheries impacting wild Coho originating from southern BC, Washington State, and Oregon is set out in the PST. This abundance based management (ABM) system was adopted in 2002 and will define harvests of Southern Coho through 2019.

The ABM plan constrains total fishery exploitation of key stock management units, including Strait of Georgia Mainland, Strait of Georgia Vancouver Island, Lower Fraser, and Interior Fraser.

Conservation units in the WCVI and Johnstone Strait are managed domestically.

In the United States, the management units relevant to the agreement include the Skagit River, the Stilliguamish, the Snohomish, Hood Canal, tributaries to the Strait of Juan de Fuca, the Quillayute, the Hoh, Queets, and Grays Harbour.

For each of these management units, annual limits of fishing mortality will be established based on the level of abundance and the health of the wild stocks. The text of the agreement and formulae for sharing between the two countries can be found on the PSC website at:

<http://www.psc.org/publications/>.

Under the principles of Coho ABM management, as stocks become less abundant, more stringent fishery management actions will be implemented. As stocks become more abundant, increased fishing opportunities will be considered.

### **SOUTHERN COHO ENHANCEMENT INFORMATION:**

The major DFO operation enhancement facilities that produce Coho are:

- **BC South Coast:**
  - Big Qualicum River hatchery
  - Conuma River hatchery
  - Nitinat River hatchery
  - Puntledge River hatchery
  - Quinsam River hatchery
  - Robertson Creek hatchery
- **BC Fraser River:**
  - Capilano River hatchery
  - Chehalis River hatchery
  - Chilliwack River hatchery
  - Inch Creek hatchery
  - Spius Creek Hatchery

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). Not included are smaller Public Involvement Projects (PIPs) that are focused toward stewardship, stock rebuilding or educational activities and do not release large numbers of fish that would affect fisheries.

There are two datasets available: **Post-Season Production** from the 2017 brood year (i.e. 2018 releases, and numbers on hand for 2019 release), and the **Production Plan**, which includes proposed targets for the upcoming 2019 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 SOUTHERN INSIDE COHO

#### 13.3.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

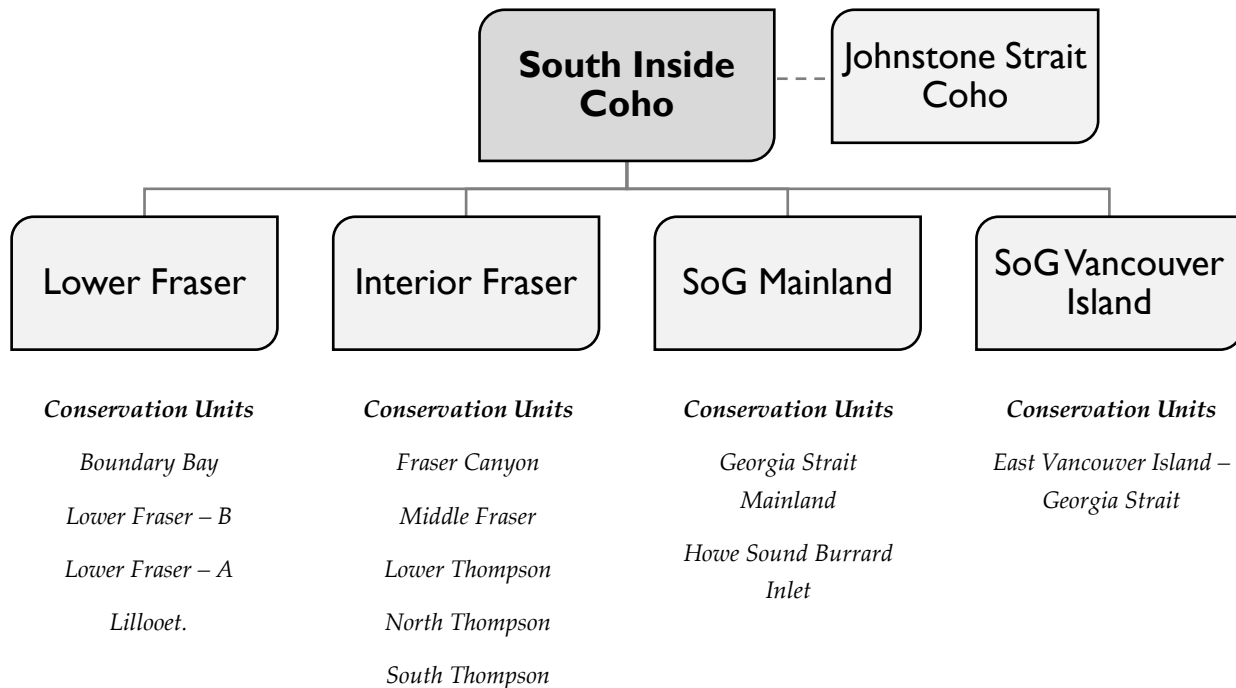


Figure 13.3-2: Overview of Southern Inside Coho

There are four Management Units identified in the Pacific Salmon Treaty – Southern Coho Management Plan in Annex IV, Chapter 5-Coho Salmon including: Lower Fraser, Interior Fraser, Strait of Georgia Mainland, and Strait of Georgia Vancouver Island. In addition, there are also four Conservation Units in the Johnstone Strait area including: Homathko-Klinaklini Rivers; Nahwitti Lowland; East Vancouver Island-Johnstone Strait-Southern Fjords; and Southern Coastal Streams-Queen Charlotte Strait- Johnstone Strait-Southern Fjords. These Conservation Units are not actively managed.

Coho may be encountered as bycatch in fisheries directed at other stocks. Depending on the location, First Nations FSC fisheries are generally directed at more abundant stocks and species with retention of hatchery or hatchery and wild Coho bycatch considered where abundances permit. Limited First Nations FSC directed fisheries may also be permitted in terminal areas where abundances permit. Most commercial and recreational fisheries in southern BC do not permit retention of wild Coho in times and areas where Interior Fraser Coho may be prevalent. However, mark-selective fisheries have been implemented in most southern BC recreational



fisheries and some commercial fisheries permit retention of hatchery enhanced stocks, while minimizing impacts on wild stocks.

### 13.3.2.2 STOCK ASSESSMENT INFORMATION

The WSP biological status of the five Interior Fraser River Coho CUs has been assessed by CSAS. The Science Advisory Report is available at:

[http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2015/2015\\_022-eng.pdf](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2015/2015_022-eng.pdf)

Up to and including the 2013 return year, three CUs were determined to have an integrated status of AMBER (Middle Fraser, Fraser Canyon, South Thompson) and two were determined to have an integrated status of AMBER/GREEN (Lower Thompson, North Thompson). Integrated status has not been re-evaluated after the low escapements observed in 2014 and 2015.

This assessment found no evidence that smolt-adult survival has improved or returned to the higher productivity regime. Because the productivity is low, the sustainable harvest that can be expected from the management unit is also low relative to historic levels.

The *Conservation Strategy for Coho Salmon (Oncorhynchus kisutch), Interior Fraser River Populations* was published in 2006 (<http://www.dfo-mpo.gc.ca/Library/329140.pdf>) and contains the following recovery objectives:

- **Objective 1:** The 3-year average escapement in at least half of the sub-populations within each of the five populations is to exceed 1,000 wild-origin spawning Coho salmon, excluding hatchery fish spawning in the wild. This represents a total Interior Fraser Coho spawning escapement of 20,000 to 25,000 wild-origin Coho. This objective is designed to provide the abundance and diversity required to satisfy the recovery goal.
- **Objective 2:** Maintain the productivity of Interior Fraser Coho so that recovery can be sustained. This objective is designed to ensure that the threats to recovery are addressed. This objective may be met by addressing the causes for the decline that were identified by COSEWIC:
  - Development of a harvest management plan to ensure that exploitation rates are appropriate to changes in productivity caused, for example, by fluctuations in ocean conditions.
  - Identification, protection, and, if necessary, rehabilitation of important habitats.
  - Ensure that the use of fish culture methods is consistent with the recovery

The CSAS stock assessment advice from 2014 interpreted the above recovery objectives for Interior Fraser Coho as follows:

- **Short Term Objective 1:** 3 year geometric mean<sup>1</sup> escapement in at least half of the subpopulations within each of the 5 CUs to exceed 1000 natural spawners, excluding hatchery fish spawning in the wild; approximately 20,000 wild spawners; and
- **Longer Term Objective 1:** 3 year geometric mean escapement in all of the subpopulations within each of the 5 CUs to exceed 1000 natural spawners, excluding hatchery fish spawning in the wild; approximately 40,000 wild spawners

(Note 1: Using geometric means provides more precautionary generational averages and recognizes the concern (through heavier weighting) that smaller escapements may impact genetic diversity.)

#### 13.3.2.2.1 Pre-season

The description of the models used can be found in Simpson *et al.* (2004). The processes used have been modified annually based on model performance and development of new models although the underlying methods are unchanged. Marine survival forecasts are derived for Qualicum, Quinsam, Inch, and Robertson Hatchery stocks, and Black and Carnation Creek wild stocks. Abundance forecasts are derived for Interior Fraser and Thompson River aggregates, and selected aggregates from Areas 12 and 13.

#### *Johnstone Strait Coho*

The 2019 Salmon Outlook for Area 12 Coho is low/ near target. Returns in 2017 appear varied throughout the area and many programs are still ongoing. Based on the preliminary poor returns to the Keogh River indicator in Area 12, marine conditions were poor for the 2017 outmigration, but improved over recent years. The formal forecast for Coho has not yet been finalized but will likely be similar to the recent 3-year average. Smolt production in 2018 was slightly below average for Keogh River (62,000), although only 230 adults contributed to this recruitment, indicating extremely high freshwater productivity. This high freshwater productivity may continue to buffer adult returns against continued poor marine survival.

#### *Strait of Georgia Coho*

2018 escapements are not complete and to date indicate variability between systems. Survival continues to be below the long term average suggesting that GST Coho remain in a low productivity regime, likely driven by both freshwater and marine processes. Smolt production in 2018 at Black Creek was below average (40K), but a slight improvement over 2017. The Salmon Outlook for Area 13-North, including Quinsam River hatchery indicator, is somewhat

better with a *low/near* target rating. Escapement monitoring for 2018 is still underway and to date has better than forecasted returns to the area. Early estimates for the 2018 return to the Quinsam River hatchery indicator are average or slightly better than average. 2019 expectations are for returns similar to 2018 (below to average escapement), but are highly uncertain with wild stocks at *low* and hatchery stocks at *near* target.

### ***Lower Fraser Coho***

The 2019 outlook classifies Lower Fraser Coho as a *stock of concern* due to current marine conditions. Fall/winter 2018/2019 escapement surveys are now underway; however, it is too early to determine trends. Sustained improvement in marine conditions will be required to improve outlook.

### ***Interior Fraser Coho***

The 2019 Salmon Outlook is *stock of concern* and a 2014 CSAS paper determined that Interior Fraser Coho remain in a low productivity (i.e. low Coho survival rate) regime. Sustained improvement in marine conditions will be required to improve outlook and rebuild abundance.

The Thompson River Aggregate, which is encompassed within the Interior Fraser Aggregate, is no longer required for domestic management purposes and therefore it will no longer be part of the Coho Forecast.

The observed 2018 abundance for the Interior Fraser Aggregate was 43% higher than the previous year, and 11% higher than the forecast.

The forecast model selected for the 2019 return is the 3 Year Average model, which is the same model used in 2018. The 2019 forecast of abundance for the Interior Fraser Aggregate is 40,533 Coho with an 80% forecast range of 28,422 to 58,342. Please note that the confidence interval was changed from 50% to 80%. This forecast is 25% less than the observed escapement in 2018.

#### **13.3.2.2.2 In-season**

At this time, there is no in-season assessment done on southern inside Coho stocks, with the exception of some programs to assess local abundance in some terminal areas.

### **13.3.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Annex IV, Chapter 5 of the Pacific Salmon Treaty establishes the international management regime for southern BC and southern U.S. origin Coho based on the status of defined Management Units (MU) in each country. Each MU is to be managed to constrain exploitation rates based on the status of the MU, or groups of MUs in the case of the U.S. Until such time as

the Parties provide specific maximum exploitation rate targets for each MU that originates within its jurisdiction consistent with attainment of maximum sustained harvest levels, Canada and the U.S. will manage their fisheries consistent with the maximum exploitation rate ranges for three status levels – *low*, *moderate* and *high*.

Table 13.3-1: Pacific Salmon Treaty abundance-based exploitation rate limits on Coho salmon stocks in fisheries harvesting southern BC Coho.

	Low	Moderate	Abundant
Survival	$S \leq 0.03$	Three consecutive years $0.03 < S \leq 0.06$	Three consecutive years $S > 0.06$
		and	and
Escapement	Monitored in CU's and subpops but no thresholds	Three consecutive years: Half of subpops in each CU > 1000; or Aggregate MU esc. objective (e.g., 27,000)	Three consecutive years: All IFR subpops in each CU > 1000; or Aggregate MU esc. objective (e.g., revised 40,000)
ER cap (US/Can)	0.20 (0.10/0.10)	0.30 (0.12/0.18)	0.45 (0.15/0.30)

In addition, within the *low status* zone, each country is expected to implement additional fishery management measures as may be necessary to address conservation needs for MUs within its jurisdiction. For most years since 1998 (except 2014 and 2015) Canada has done this by planning on reducing its share of the total exploitation rate on IFR Coho to approximately 3%-5% or less.

The Coho management units used by the PST under the Southern Coho management plan are:

- Lower Fraser
- Interior Fraser
- Strait of Georgia - Vancouver Island (SoG V)
- Strait of Georgia – Mainland (SoG Mainland)

## Domestic Canadian Management

In response to large declines in total returns and escapements of IFR Coho in the mid-nineties, exploitation rates in Canadian fisheries were significantly reduced, and for many years, with the exception of 2014 and 2015, the maximum Canadian exploitation rate (ER) has been set at 3%-5%. Since 1998, this level of exploitation has led to significant fisheries management restrictions for fisheries in times and areas where IFR Coho may be encountered. These management actions have generally ranged from non-retention of wild Coho to time and area closures. Non-retention or time and area closures may be in place in the following fisheries:

- West Coast Vancouver Island (WCVI) troll (commercial and First Nations) and recreational fisheries in offshore areas from June until early September;
- Commercial net and recreational fisheries in the Straits of Juan de Fuca from June until early October;
- Commercial, recreational and First Nations fisheries in Johnstone and Queen Charlotte Straits from early June until late August;
- Commercial, recreational and First Nations fisheries in the Strait of Georgia from June until early October;
- Commercial, recreational and First Nations fisheries both off the mouth of, and in, the Fraser River from early June until mid-October; and,
- Commercial, recreational and First Nations fisheries in the Fraser River upstream of Sawmill Creek from mid- to late September until late October.

Management measures for Interior Fraser Coho are generally in place from January to September when these populations are expected to be encountered in southern BC waters. These measures are expected to also limit impacts on other Southern Inside Coho populations.

For fishery planning purposes, IFR Coho fishing mortality is estimated pre-season using a variety of domestic models. Exploitation rates in the marine fisheries are estimated using a harvest rate spreadsheet model, which is based on the historical relationship between fishing effort and associated exploitation rates in the period 1986 to 1997 as determined from coded wire tag recoveries of IFR Coho and release mortality rates as identified in the South Coast Integrated Fisheries Management Plan (IFMP).

Food, social and ceremonial, commercial and recreational impacts from the Fraser River mouth to Sawmill Creek are estimated using results from a decay model. Results are based on: the number of Coho encounters (kept and released) in fisheries directed on other species; the proportion of IFR to LFR Coho present in the river at the time of the particular fishery; and,

release mortality rates as identified in the IFMP. Coho encountered in tributary and mainstem Fraser River fisheries upstream of Sawmill Creek are assumed to be 100% IFR Coho.

For the purpose of implementing the PST arrangements in the Annex 4 Coho Chapter, Canada works with the United States to estimate fishery impacts on southern BC Coho using a bilaterally agreed Fisheries Regulation Assessment Model (FRAM). The FRAM model is used pre-season by the United States to plan fisheries within stock-specific constraints associated with MU status as identified in the Agreement. FRAM-estimated impacts on IFR Coho may not match the estimates projected by Canadian domestic models as FRAM is based on a shorter base period of CWT data (1986-92, instead of 1986-97 used in CDN domestic models), impacts in Fraser River in-river fisheries are accounted for differently, and includes other impacts associated with natural mortalities and dropouts.

Post season, FRAM reconstructs cohort abundance(s) to estimate fishery-stock-specific ERs. The post-season application of the FRAM model has recently been updated to incorporate Fraser River freshwater fisheries impacts.

For 2019, based on poor marine conditions and on-going low productivity regime, the Department is planning to manage Canadian fisheries in a highly precautionary manner with fisheries management measures similar to those in place prior to 2014.

### **Fraser River Fisheries**

Within the Fraser River, a “window closure” has been the primary tool applied in First Nations, commercial, and recreational fisheries to protect Interior Fraser Coho from non-selective fishing gear (e.g. gill nets, rod and reel fishing with bait). Selective fishing gear (e.g. beach seines, modified shallow seines, rod and reel fishing with no bait, dip nets) has been allowed to proceed within these window closure dates. The window closure is implemented on subsequent dates in upstream areas of the Fraser and Thompson Rivers, depending on when the peak migration of IFR Coho is expected to pass through each area.

In the past decade, with the exception of 2014, the start and end dates of the window closure have been selected to protect 90% of the Interior Fraser Coho migration from exposure to non-selective fishing gear, with adjustments made on an annual basis to initiate the closure period following the Labour Day weekend. The objective of protecting 90% of the run was developed when IFR Coho were in critically low status, and was aligned with other domestic management measures to meet an overall domestic management objective of limiting the total Canadian exploitation rate on Interior Fraser Coho to 3%-5% or less.

For 2019, the window closure dates are identified below. During the times and areas specified below, fisheries will be closed for non-selective fishing gear, and only selective or limited experimental fisheries will be permitted.

Table 13.3-2: 2019 Window Closure Dates for non-selective fishing gear

<b>Subareas 29-6, 29-7, 29-9 and 29-10</b>	September 3 to October 4
<b>Fraser River - Below Mission</b>	September 3 to October 4
<b>Fraser River - Mission to Hope</b>	September 5 to October 7
<b>Fraser River - Hope to Sawmill Creek</b>	September 7 to October 12
<b>Fraser River - Sawmill Creek to Lytton</b>	September 16 to December 31
<b>Fraser River - Lytton to Williams Lake River</b>	September 23 to December 31
<b>Fraser River - Upstream of Williams Lake River</b>	October 1 to December 31
<b>Thompson River Downstream of the confluence of the North and South Thompson Rivers</b>	September 23 to December 31
<b>Thompson River Upstream of the confluence of the North and South Thompson Rivers</b>	October 1 to December 31

#### 13.3.2.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO SOUTHERN INSIDE COHO FISHERIES

All fisheries where IFR Coho are known to be prevalent will be conducted with a non-retention restriction for unmarked Coho, except for an extremely limited number of FSC fisheries conducted in terminal areas by First Nations in Fraser and Thompson River tributaries.

Fisheries for other salmon species will be managed taking into consideration the anticipated incidental mortalities of IFR Coho which may result in reduced harvest opportunities for other salmon species.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a rolling window closure throughout Southern BC to help protect Interior Fraser River Steelhead in 2019. Areas and dates for the window closure are identified in Appendix 9.

### 13.3.2.5 ALLOCATION AND FISHING PLANS

Based on the IFR Coho management objective, the following fishing plan considerations have been identified.

#### 13.3.2.5.1 First Nations Fisheries

##### *Food Social and Ceremonial*

##### *Marine Waters*

FSC fisheries for Southern Inside Coho in marine areas will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

First Nations target local salmon stocks for FSC purposes throughout the Inner South Coast. Sockeye salmon are a priority species for First Nations, but the overall objective expressed by many First Nations in consultation is to access a diversity of fishing opportunities throughout the season and across species. Coho salmon make up part of that diversity.

2019 management measures include:

- Retention of wild Coho salmon is permitted in portions of southern Queen Charlotte Sound, Queen Charlotte Strait, northern Johnstone Strait, and Mainland Inlets (Kingcome, Knight, and Bute).
- In other Management Areas of Southern BC, all efforts and attempts shall be made to return all wild Coho to the water alive and unharmed. After all efforts and attempts to return wild Coho to the water alive and unharmed have been made, wild Coho that are dead may be retained. All Coho missing an adipose fin (with a healed over scar) may be retained.

##### *Non-tidal Waters (excluding Fraser River)*

Some First Nations Coho-directed fisheries may occur in freshwater systems throughout Southern Inside waters subject to local abundance.

FSC fisheries for Coho in freshwater systems outside of the Fraser River system will not be affected by 2019 Interior Fraser River Steelhead conservation measures.



*Fraser River*

Due to recent trends of poor abundances of Fraser Coho stocks, there have been no First Nations fisheries in the lower Fraser Area that target Coho salmon (with the exception of terminal ESSR harvests in hatchery-enhanced systems). With the exception of 2014 and 2015, First Nations have been asked to release incidentally-caught unmarked Coho salmon alive and unharmed, where possible, prior to the end of the non-selective window closure dates.

Marked Coho salmon may be retained for FSC purposes. Where applicable, First Nations may retain un-marked Coho salmon for FSC purposes following the window closure dates noted above.

Directed harvest may be permitted in specific areas or terminal systems where abundance permits. These fisheries are generally for very small numbers of Coho. Fishing plans are discussed and agreed upon between DFO and the appropriate First Nations once Coho have begun to return to the area and terminal abundance sufficient to support some small-scale FSC harvest can be assessed.

FSC fisheries in the Fraser River, including Subareas 29-6, 29-7, 29-9, and 29-10, will be affected by 2019 Interior Fraser River Steelhead conservation measures. A 27-day rolling window closure will be applied to FSC fisheries according to the times and areas outlined in Table 13.3-3 below. These measures will not extend to marine FSC fisheries.

Table 13.3-3 Dates and Area for the Interior Fraser River 27-day Rolling Closure for FSC Fisheries in the Fraser River system.

<b>Fishery Location</b>	<b>Start</b>	<b>End</b>
Area 29: 29-6, 29-7, 29-9, and 29-10	28-Sep	24-Oct
Mouth to Mission	28-Sep	24-Oct
Mission to Hope	29-Sep	25-Oct
Hope to Sawmill Creek	3-Oct	29-Oct
Sawmill Creek to Lytton (Thompson Confluence)	5-Oct	31-Oct
Lytton to Texas Creek	8-Oct	3-Nov
Texas Creek to Kelly Creek	10-Oct	5-Nov
Kelly Creek to Deadman Creek	13-Oct	8-Nov
Deadman Creek to Chilcotin River	16-Oct	11-Nov
Chilcotin River	19-Oct	14-Nov

Thompson River – Thompson Confluence to Bonaparte	8-Oct	3-Nov
Thompson River – Bonaparte River to Kamloops Lake	12-Oct	7-Nov

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River First Nations Fisheries.

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***Fishery Monitoring and Catch Reporting***

#### ***Marine Waters***

Fishery monitoring will be conducted by DFO and 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.

#### ***Fraser River and Tributaries***

In the Fraser River watershed, catch monitoring programs are managed through Activity Funding or Comprehensive Fisheries Agreements.

In the lower Fraser River (below Sawmill Creek), monitoring programs implemented typically include landing site or vessel based collection of catch and effort information paired with validation of effort by vessel patrols or overflights. Specific focus has been placed on sampling of Chinook and Coho salmon for mark rate information and coded-wire tags (CWTs) to support the Salmon Head Recovery Program. Catch reports are received by DFO from catch monitoring programs on a weekly basis, within 48 hours of a fishery closing.

For fisheries above Sawmill Creek, catch monitoring programs range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

### *Treaty Fisheries*

Treaty fisheries targeting Coho within the Fraser River (including Areas 29-6, 29-7, 29-9, and 29-10) will be subject to closures to protect Interior Fraser River Steelhead as outlined in Table 13.3-3. These measures do not extend to marine Treaty fisheries.

#### *Tsawwassen Fisheries (Domestic)*

As per the Tsawwassen Fisheries Operation Guidelines (TFOG), each year the Tsawwassen First Nations (TFN) will develop a Tsawwassen Annual Fishing Plan (TAFP) for the harvest of salmon as per the Tsawwassen First Nations Final Agreement.

The treaty outlines that in any year, the Tsawwassen Allocation for Coho salmon is an amount of Fraser River Coho salmon that will result in an annual average harvest of 500 Fraser River Coho salmon and will be harvested a) incidentally in fisheries that target other species; or b) using selective harvesting techniques to capture specific Coho stocks.

<http://www.aadnc-aandc.gc.ca/eng/1100100022703/1100100022704>

The monitoring program for Tsawwassen Domestic fisheries includes fisher logs supplemented by validations of catch through on-water patrols and/or observations of landings and effort through on-water patrols. Details of monitoring programs in place can be found in the Tsawwassen Fisheries Operational Guidelines.

#### *Tla'amin Fisheries (Domestic)*

The Domestic allocations for salmon under the Tla'amin First Nations Final Agreement for Coho are as follows:

- **Non-terminal Coho**

A number of Coho salmon equal to 2.1% of the total amount of Coho salmon, as determined by the Minister, harvested by all other mixed-stock Coho fisheries in Management Area 15.

- **Terminal Coho**

A number of Coho salmon equal to 25% of the Available Terminal Harvest for Coho salmon stocks that originate from a Terminal Harvest Area, if the Minister determines that there is an Available Terminal Harvest for those stocks.

### **13.3.2.5.2 Recreational Fisheries**

Conservation measures to protect Coho will be in place in a number of areas and times.

### ***Marine Waters***

Recreational fisheries for Coho in marine areas will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

Marine recreational fishing opportunities for inside Coho take place in Johnstone Strait (Areas 11/12/13), the Strait of Georgia (Areas 13 to 19) and Juan de Fuca Strait (Areas 19 to 20). Inside Coho fishing opportunities in the South Coast are largely dependent on the stock status of Interior Fraser Coho and Strait of Georgia Coho, and fishing opportunities are based on minimizing impacts on wild Coho with opportunities for retention of hatchery-marked Coho. Wild Coho retention opportunities are provided in Area 19 and 20 beginning in October, after Interior Fraser Coho are considered to have migrated through the area. Marine recreational Coho fisheries are typically open from June 1 to December 31, and updates are provided via Fishery Notice and published on the recreational fisheries website: <http://www.bcsportfishingguide.ca>. Normal limits are 2 per day for hatchery-marked fish in most areas. Wild retention and increased daily limits may be considered in some terminal areas of the South Coast where fisheries are targeting local Coho stocks. In non-tidal waters, Coho retention is permitted based on observed abundances and escapement targets being met. These occur mainly in hatchery systems.

Anglers must release with the least amount of harm any fish caught that may not legally be retained; when releasing a fish, anglers must immediately return it to the water where it was caught.

Wild Coho opportunities may be permitted consistent with pre-2014 management measures with greater restrictions in place than in 2014 and 2015; changes to fishery management actions will be announced by Fishery notice.

### ***Fraser River and Tributaries***

Recreational fishing for Coho will be closed in the tidal waters of the Fraser River and in non-tidal waters of the Fraser River in Region 2 from January 1 until October 4. Additionally, in this same area, there will be a ban on using bait while fishing for salmon from September 3 until October 4.

For 2019, additional Interior Fraser River Steelhead conservation measures will be implemented in the Fraser River recreational fishery following the Coho window closure. A 42-day rolling window closure will be implemented according to the times and areas outlined in Table 13.3-4 below.

Table 13.3-4: 42-day Rolling Window Closure Dates by Area for the Fraser River Recreational Fishery.

Fishery	Start	End
Area 29: 29-6, 29-7, 29-9, and 29-10	21-Sep	1-Nov
Mouth to Mission	21-Sep	1-Nov
Mission to Hope	22-Sep	2-Nov
Hope to Sawmill Creek	26-Sep	6-Nov
Sawmill Creek to Lytton (Thompson Confluence)	28-Sep	8-Nov
Lytton to Texas Creek	1-Oct	11-Nov
Texas Creek to Kelly Creek	3-Oct	13-Nov
Kelly Creek to Deadman Creek	6-Oct	16-Nov
Deadman Creek to Chilcotin River	9-Oct	19-Nov
Chilcotin River	12-Oct	22-Nov
Thompson River – Thompson Confluence to Bonaparte	1-Oct	11-Nov
Thompson River – Bonaparte River to Kamloops Lake	5-Oct	15-Nov

In Region 2, opportunities for hatchery-marked Coho may be provided after the IFR Steelhead closure. Opportunities on tributaries to the Fraser River may be provided in those systems where hatchery production can support a Coho fishery, and where IFR Steelhead will not be impacted.

In Regions 3, 5A, 7 and 8, there are no recreational fisheries that target Coho. Fisheries for other species may be limited after September 16 if they potentially have impacts on co-migrating Coho.

### ***Fishery Monitoring and Catch Reporting***

#### *Marine Waters*

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

### *Fraser River and Tributaries*

Creel surveys are conducted in portions of the lower Fraser River and select tributaries in order to estimate recreational catch and effort for the times and areas surveyed. Typically, the creel survey in the lower Fraser River mainstem begins when the mainstem is opened to recreational salmon fishing; however, over the last number of years, the survey end date has been variable (mid-September to end of November). The creel surveys conducted on the Chilliwack River and Nicomen-Norrish recreational fisheries have remained stable over the last number of years both in times and areas (Chilliwack is surveyed from mid-September to mid-November and Nicomen-Norrish is surveyed from early October to the end of November).

The catch monitoring program in the Fraser watershed upstream of Alexandria will range from no monitoring to fisher-reported catch to highly intensive creel surveys. The expected effort and catch in a fishery, harvest rate, potential bycatch, and any biological sampling requirements will be taken into account when planning the catch monitoring program.

#### **13.3.2.5.3 Commercial Fisheries**

Commercial fisheries are managed to avoid impacts to Southern Inside Coho. Generally all Coho caught incidentally during fisheries targeting other species must be released in a manner that causes the least harm. Estimates of release mortality are calculated post-season. Fisheries targeting other salmon species may be constrained if potential impacts to IFR Coho cannot be reduced to an acceptable level.

### *Allocation*

Table 13.3-5: Commercial Allocation Implementation Plan for the 2015–2019 period

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

Notes on Coho allocations (south):

<sup>TBD</sup> currently no directed fisheries in this area. Will be reviewed should future directed opportunity develop.

### *Southern Inside Commercial Coho Fisheries*

#### *Area B Seine*

No directed southern inside Coho fisheries and Coho non-retention in fisheries directed at other stocks.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

#### *Area D Gill Net*

No directed southern inside Coho fisheries and Coho non-retention in fisheries directed at other stocks.

#### *Area E Gill Net*

No directed southern inside Coho fisheries. During the times specified in 13.2-2 fishing will be restricted to limited selective and / or demonstration fisheries only. To protect Interior Fraser River Steelhead, gill net demonstration fisheries will be subject to a 42-day rolling window closures as identified in Table 13.2-3. The retention of Coho (hatchery marked only) bycatch during directed Chum fisheries may be permitted.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

#### *Area H Troll*

No directed southern inside Coho fisheries and Coho non-retention in fisheries directed at other stocks.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

### ***Fishery Monitoring and Catch Reporting***

There is a mandatory harvest log and in-season reporting program for catch and release information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

### ***Southern Inside Coho Demonstration Fisheries***

There are no demonstration fisheries targeting Southern Inside Coho.

### ***Southern Inside First Nations Commercial Coho Harvest***

There is no First Nations commercial harvest targeting Southern Inside Coho.

### ***Harvest Agreements***

There are no harvest agreements for directed Coho fisheries on Southern Inside Coho. Harvest Agreements typically include provisions for fishing under the same or comparable rules as commercial fisheries operating in the same areas.

### ***Economic Opportunities***

There are no economic opportunity fisheries targeting Southern Inside Coho.

#### **13.3.2.5.4 ESSR Fisheries**

ESSR fisheries may occur at DFO hatchery facilities that have a surplus of returning hatchery Coho. In past years, ESSR fisheries for Southern Inside Coho have taken place at:

- Big Qualicum Hatchery
- Nanaimo River
- Chapman Creek



- Capilano Hatchery
- Chehalis Hatchery
- Chilliwack Hatchery
- Inch Creek Hatchery

### 13.3.3 WCVI COHO

#### 13.3.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

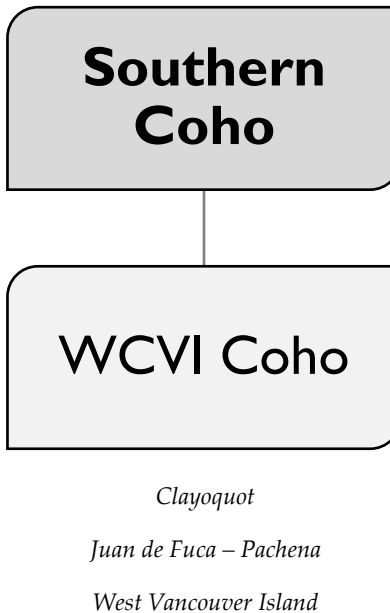


Figure 13.3-3: Conservation Units within the WCVI Coho Management Unit

WCVI Coho originate from streams along the West Coast of Vancouver Island. Three major hatchery facilities, including Nitinat (Area 22), Conuma (Area 25), Robertson (Area 23), as well as production from smaller enhancement facilities also contribute to Coho returns. Coho harvest opportunities for these populations are provided for First Nations, recreational and commercial fisheries in inshore waters depending on local abundance.

#### 13.3.3.2 STOCK ASSESSMENT INFORMATION

##### 13.3.3.2.1 Pre-season

In the 2019 Salmon Outlook Coho from the West Coast of Vancouver Island are classified as low to near target. Information to forecast Coho returns is limited. Therefore, there is considerable uncertainty in this outlook. For 2019, most of the return will be Coho originating from the 2016 brood year that smolted in 2018. In addition, for most WCVI areas, Coho spawning populations are relatively stable.

A pre-season marine survival forecast is derived for the Robertson Creek Hatchery stock each year. The results of this forecast for Roberson Creek and Carnation Creek stocks can be found in section [13.3.2.2.1](#).

#### **13.3.3.2.2 In-season**

At this time, there is no in-season assessment of abundance done on WCVI Coho stocks.

### **13.3.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

Fisheries taking place in offshore waters (Areas 121 and 123 to 127) are constrained by Interior Fraser Coho decision guidelines. Fisheries taking place in near shore waters (Areas 23 to 27) are managed based on pre-season assumptions of returns to the area.

### **13.3.3.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO WCVI COHO FISHERIES**

All fisheries where IFR Coho are known to be prevalent will be conducted with a non-retention restriction for unmarked Coho.

Fisheries for other salmon species will be managed taking into consideration the anticipated incidental mortalities of IFR Coho, resulting in many cases, in reduced harvest opportunities for other salmon species until such time as IFR Coho are assumed to have migrated out of the area.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a rolling window closure throughout Southern BC to protect Interior Fraser River Steelhead in 2019. Areas and dates for the window closure are identified in Appendix 9.

### **13.3.3.5 ALLOCATION AND FISHING PLANS**

#### **13.3.3.5.1 First Nations Fisheries**

##### ***Food Social and Ceremonial***

FSC fisheries for WCVI Coho will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

Management measures to protect stocks of concern, including Interior Fraser Coho may constrain WCVI FSC fisheries in the offshore area.

Bycatch or incidental retention may be permitted during fisheries for abundant species or stocks. Directed harvest may be permitted in specific areas or terminal systems where abundance permits.

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***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***

Treaty fisheries for WCVI Coho will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

### ***Maa-nulth Fisheries (Domestic)***

Each year, the Maa-nulth Fish Allocation for Coho salmon is a) an amount of Ocean Coho Salmon equal to 7,000 pieces; and b) An amount of Terminal Coho Salmon equal to:

- 1,200 pieces, when the return of Terminal Coho Salmon is critical;
- 1,850 pieces, when the return of Terminal Coho Salmon is low;
- 3,050 pieces, when the return of Terminal Coho Salmon is moderate; and
- 3,630 pieces, when the return of Terminal Coho Salmon is abundant.

### ***Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht / Muchalaht, and Tla-o-qui-aht First Nations) Multi-species Fishery***

The Five Nations Multi-species fishery will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

### 13.3.3.5.2 Recreational Fisheries

Recreational fisheries for Coho in marine areas will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

Marine recreational fisheries targeting outside Coho take place in inshore and offshore waters of the west coast of Vancouver Island (Areas 21 to 27, 121 to 127). Outside Coho fishing opportunities are largely dependent on the stock status of Interior Fraser Coho and WCVI Coho, and fishing opportunities are largely based on minimizing impacts on wild Coho and mark-selective fishing for hatchery-marked Coho. Management measures are often required in order to meet conservation objectives for Interior Fraser Coho, and include non-retention of wild Coho in many areas in the South Coast at certain times of the year when they are vulnerable to fisheries.

Marine recreational Coho fisheries typically operate June 1-Dec 31, and updates are provided via Fishery Notice and published on the recreational fisheries website: <http://www.bcsportfishingguide.ca>. Normal limits are 2/day and 4 in possession for hatchery-marked fish in most areas. Wild retention and increased daily limits are permitted in most inshore areas on the west coast of Vancouver Island where fisheries are targeting local Coho stocks. In non-tidal waters, Coho retention is permitted based on observed abundances; escapement targets being met, and primarily occurs in hatchery systems.

For 2019 in Southern BC tidal waters, it is anticipated that some wild Coho retention opportunities will be provided in inshore areas of the west coast of Vancouver Island. Any changes will be announced via Fishery Notice.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Increased marked Coho production from the Conuma Hatchery expected to return in 2019 will result in increased bag limits in terminal tidal areas. A marked only opportunity is planned for the non-tidal Conuma River.

### *Fishery Monitoring and Catch Reporting*

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

#### **13.3.3.5.3 Commercial Fisheries**

##### *Allocation*

Table 13.3-6: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Outside	21 to 27, 121 to 127	9.5%	9.5%	1.0%	80.0% <sup>b</sup>	0.0%

Notes on Coho allocations (south):

<sup>b</sup> Coho taken primarily in offshore fisheries

##### *Southern Outside Commercial Coho Fisheries*

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a rolling window closure throughout Southern BC to protect Interior Fraser River Steelhead in 2019. Areas and dates for the window closure are identified in Appendix 9.

##### *Area B Seine*

No directed WCVI Coho fisheries and Coho non-retention in fisheries directed at other stocks.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

*Area D Gill Net*

No directed offshore Coho fisheries. Near shore fisheries may permit bycatch retention in fisheries targeting other species based on pre-season forecasts of abundance. Coho directed fisheries may be permitted in terminal locations on enhanced stocks.

*Area E Gill Net*

No directed southern outside Coho fisheries and Coho non-retention in fisheries directed at other stocks.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

*Area G Troll*

Management measures to protect stocks of concern, including Interior Fraser Coho will constrain WCVI fisheries in the offshore area. However, there may be potential opportunities available for retention of Coho (hatchery marked or hatchery marked and wild) bycatch during directed Chinook fisheries. In previous years, any fishery that allows Coho retention occurred after mid-September to minimize possible impacts on Interior Fraser Coho. This year, an additional 27-day rolling window closure will be applied to the Area G troll fishery to protect Interior Fraser River Steelhead. Areas and dates for this window closure are listed in Section 13.1.2.

The Department may permit the retention of hatchery marked Coho and/or limited retention of wild Coho prior to mid- September subject to the review of available data.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

***Fishery Monitoring and Catch Reporting***

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- 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 or electronic transmission with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

### ***WCVI Coho Demonstration Fisheries***

There are no proposed demonstration fisheries that meet the essential CSAF criteria targeting Southern Outside Coho.

### ***Economic Opportunities***

Potential Area 23 Economic Opportunity Coho fisheries will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

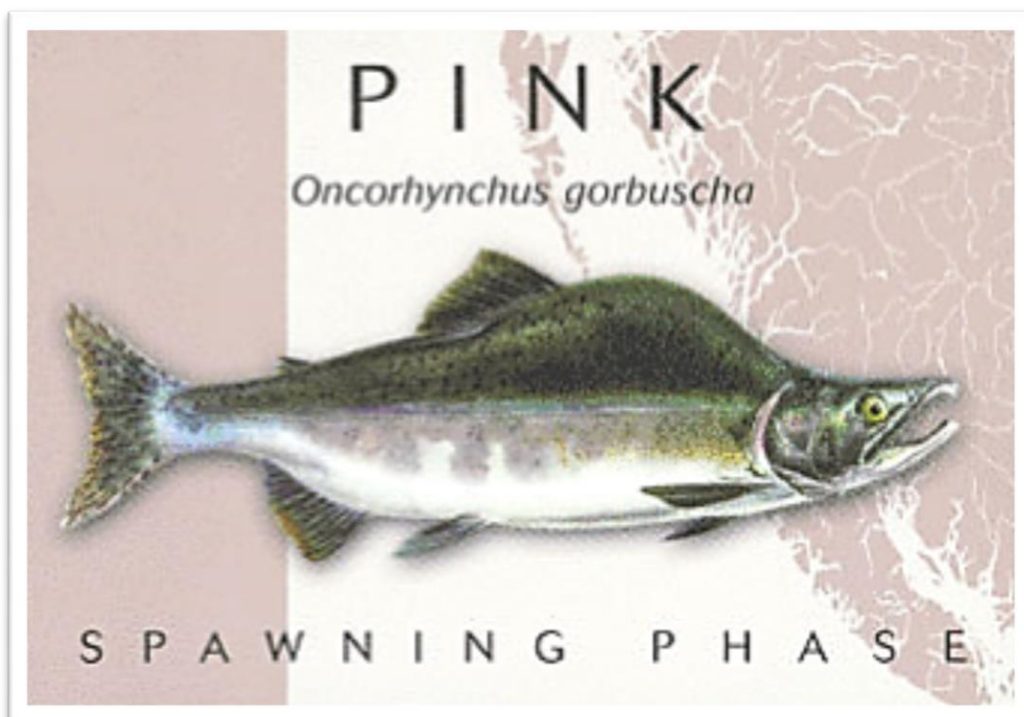
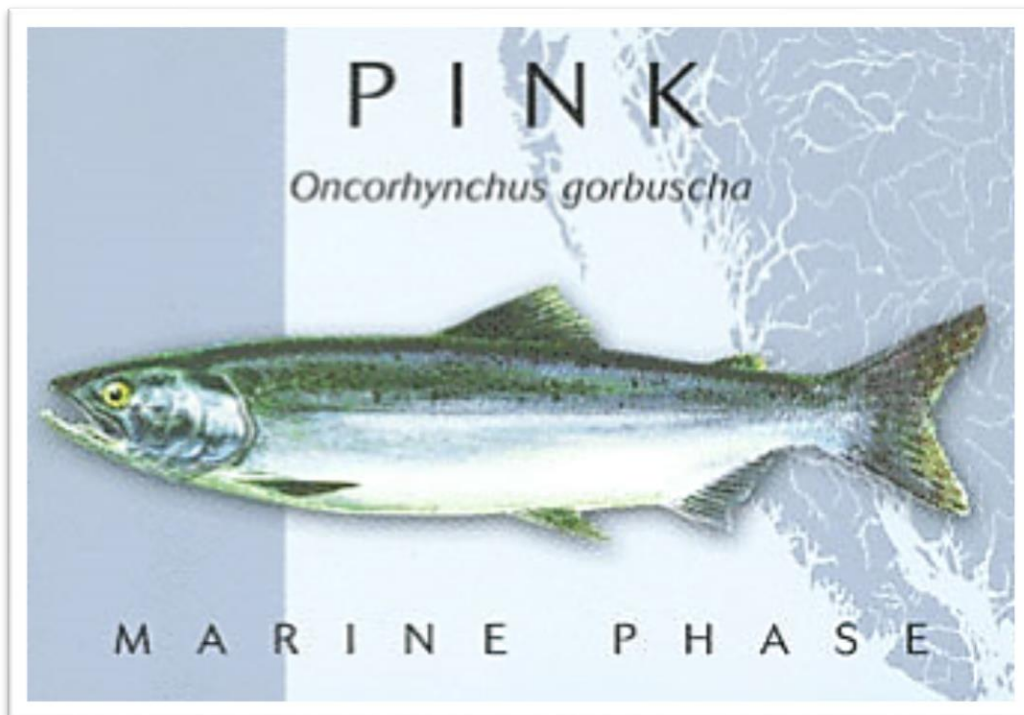
Negotiations to provide economic opportunities for the Tseshaht and Hupacasath First Nations are expected similar to recent years. Economic opportunity fisheries will be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. 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.

#### **13.3.3.5.4 ESSR Fisheries**

ESSR fisheries may occur at DFO hatchery facilities that have a surplus of returning hatchery Coho. These fishery opportunities are provided to the local First Nations. In past years, ESSR fisheries have taken place at the Roberson Creek Hatchery and Nitinat Hatchery.



## 13.4 SOUTHERN PINK SALMON FISHING PLAN



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### 13.4.1 SOUTHERN PINK - OVERVIEW

In southern BC, Pink salmon stocks are found primarily in tributaries of the Fraser River and in streams on the East Coast of Vancouver Island and the Mainland. Pink returns on the WCVI are small and are not actively managed. Most Pink fisheries in southern BC target Fraser River origin Pink salmon in odd years; Pink harvests in other areas primarily occur near terminal areas. Detailed information is provided below outlining management of Fraser River, ECVI and Mainland populations.

Information on smaller WCVI Pink populations is under development and further information will be provided in a subsequent year.

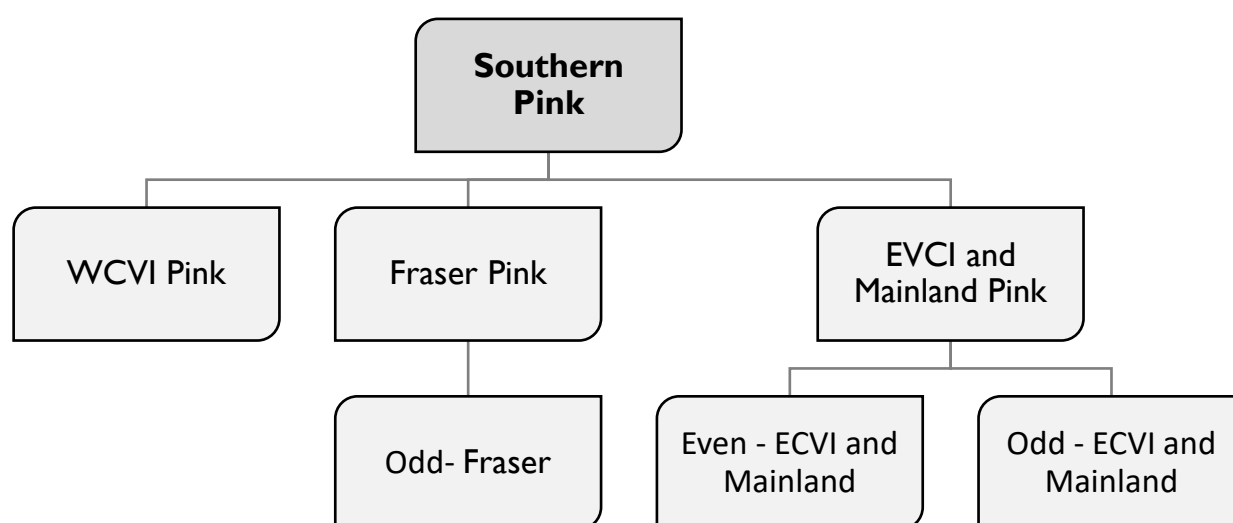


Figure 13.4-1: Overview of Southern Pink Salmon

### SOUTHERN PINK SALMON ENHANCEMENT INFORMATION:

The major DFO operation enhancement facilities that produce pinks are:

#### BC South Coast:

- Quinsam River hatchery

#### BC Lower Fraser (odd year run only):

- Capilano River hatchery
- Chehalis River hatchery
- Chilliwack River hatchery

- Tenderfoot Creek hatchery
- Weaver Spawning Channel

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP), larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). Not included are smaller Public Involvement Projects (PIPs) that are focused toward stewardship, stock rebuilding or educational activities and do not release large numbers of fish that would affect fisheries.

There are two datasets available: Post-Season Production from the 2016 brood year (i.e. 2017 releases, and numbers on hand for 2018 release), and the Production Plan, which includes proposed targets for the upcoming 2018 brood year. These are available at the following website:

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

## 13.4.2 FRASER PINK SALMON

### 13.4.2.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

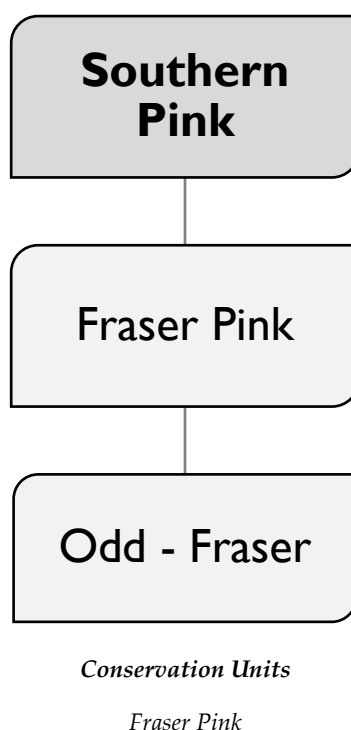


Figure 13.4-2: Conservation Units in the Fraser Pink Salmon Management Unit (1 CU)

Fraser Pink salmon migrate up the Fraser system from early August through early October, peaking in early to mid-September. Returns occur on a two year cycle, almost entirely in odd numbered calendar years only. Minimal numbers of Fraser River Pink salmon return in even years and no directed harvest occurs in these years.

### 13.4.2.2 STOCK ASSESSMENT INFORMATION

#### 13.4.2.2.1 Pre-season

The total 2019 forecast of Fraser Pink Salmon ranges from 2.5 million to 10.6 million at the 10% and 90% probability-levels, with a median (50% probability level) forecast of 5.0 million (Table 13.4-1). The median forecast is below average (12.7 million). Pink salmon fry abundance in the brood year (2017) was 192 million, which was less than half of the long term average (432 million). Due to changes in assessment methods of adult returns over time, the 2019 Pink forecast is highly uncertain.

For further details, refer to the Canadian Science Advisory Secretariat (CSAS) Pacific Region Science Response: DFOa. 2019. Pre-season run size forecasts for Fraser River Sockeye (*Oncorhynchus nerka*) and Pink (*O. gorbuscha*) salmon in 2019. DFO Can. Sci. Advis. Sec. Sci. Resp. 2019

Table 13.4-1: 2019 Pre-season Fraser Pink return forecasts (DFO, 2019)

Forecast Model	Brood Year (2017) Fry	Mean Run Size	Probability that Return will be at/or Below Specified Run Size				
			10%	25%	50%	75%	90%
<b>Power (Fry) – SSS</b>	192,000,000	12,700,000	2,530,000	3,577,000	5,018,600	7,513,000	10,610,000

### ***2019 Pre-season Fraser River Pink and Sockeye Run Timing Curves:***

The Fraser Pink timing estimate is based on historic cycle line medians. As shown below it is expected that there will be considerable overlap between the Pink and Summer and Late run Sockeye in 2019.

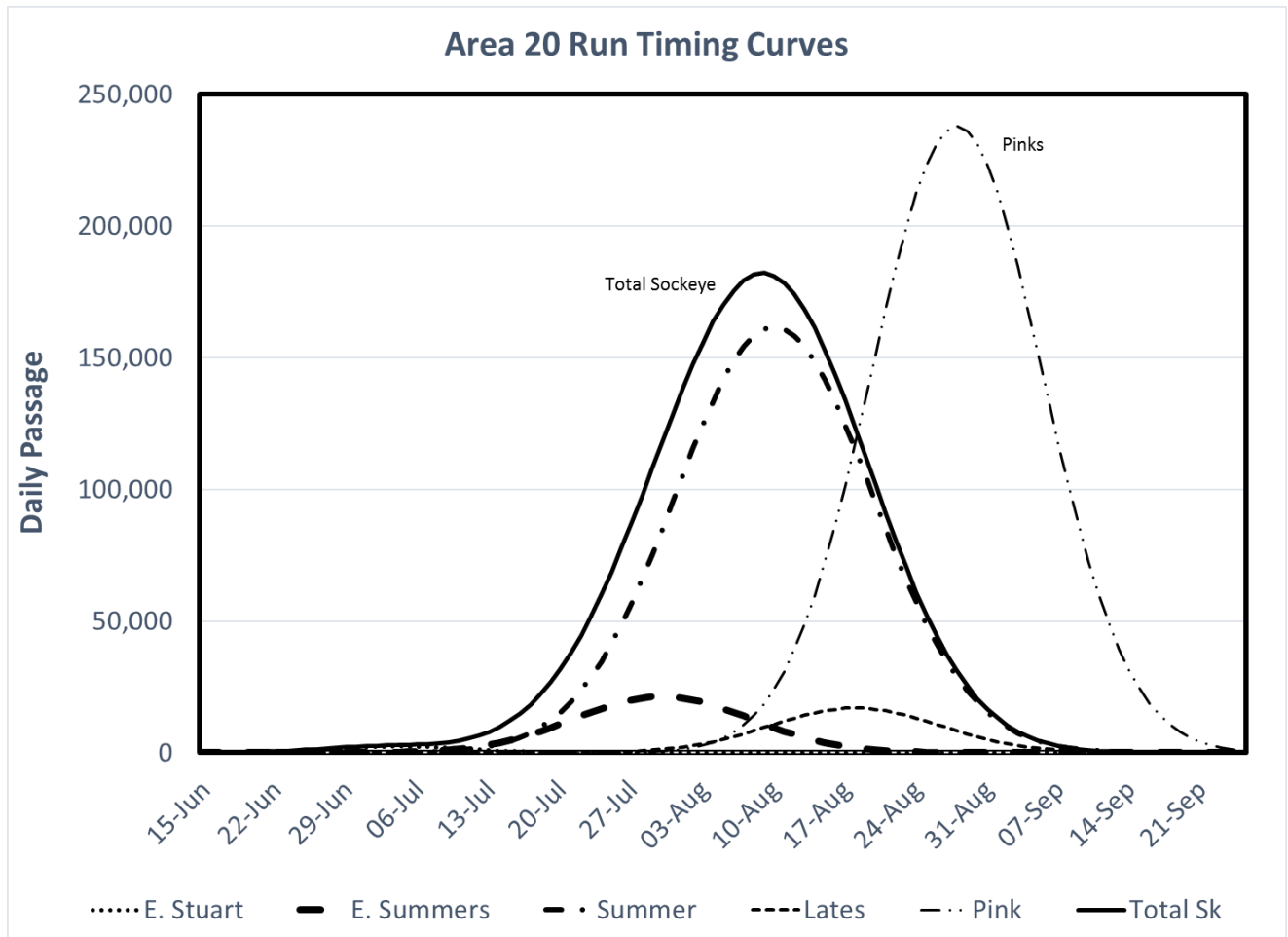


Figure 13.4-3: Pre-season Run Timing Curves for 2019 Fraser River Pink and Sockeye Salmon

### Planned Test Fisheries

Test fishery plans to assess in-season abundances of Fraser Sockeye and Pink salmon are developed annually by the Fraser River Panel (FRP). The plan will take into account conservation concerns for all stocks and species, assessments required for in-season management, total allowable catch and cost. The pre-season planned test fishing schedule may be adjusted based on in-season information.

#### 13.4.2.2.2 In-season

In odd years, assessment of Pink run size is conducted by the Pacific Salmon Commission. Estimates of abundance, run timing, stock composition, and other technical information are used to assess potential fishing opportunities relative to pre-season fishing plans.

In even years, there is no in-season assessment for Fraser River Pink salmon.



### 13.4.2.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

Prior to each fishing season the Fraser Pink Salmon Decision Guidelines (Table 13.4-2) are used to develop the spawning escapement plan (Table 13.4-3) to identify conservation constraints. A pre-season fishing plan is then developed by DFO and the Fraser River Panel (FRP) that takes into consideration conservation concerns for other species, pre-season forecasts of abundance, timing, and diversion rate.

In odd years, Pink salmon are managed to the decision guidelines in the table below.

In even years, there are no fisheries planned to target directly on Fraser Pink salmon.

Table 13.4-2: Fraser Pink Salmon Odd Year Decision Guidelines

Run Size	Escapement Plan
Less than 7.059 M	The allowable exploitation rate (ER) increases linearly from zero percent at a run size of zero to 15% at a run size of 7.059M.  (For run sizes less than 7.059M, the allowable % ER is the run size expressed in millions multiplied by (15%/7.059))
between 7.059M & 20M	The allowable ER increases from 15% to 70%.  The escapement goal is 6M, the remainder is harvestable surplus.
Greater than 20M	The allowable ER is 70%.  The escapement goal increases as the run size increases beyond 20M.

Table 13.4-3: 2019 Fraser Pink Salmon Escapement Plan

#### 2019 Fraser Pink Escapement Plan

Run Size	Escapement Plan				
Less than 7.059M	Exploitation rate increases linearly from 0% at run size =0 to 15% at run size = 7.059M				
Between 7.059M-20M	Fixed Escapement. Escapement goal = 6,000,000				
Greater than 20M	Exploitation Rate Cap = 70%				
2019 Pre-season Forecast Return					
	p10	p25	p50	p75	p90
forecast	2,530,000	3,577,000	5,018,600	7,513,000	10,610,000
escapement target	2,394,000	3,305,000	4,483,000	6,000,000	6,000,000
allowable ER	5%	8%	11%	20%	43%
Available Harvest (TF, US, CDN)	136,000	272,000	535,600	1,513,000	4,610,000

### 13.4.2.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO FRASER PINK FISHERIES

Harvest of Fraser Pink salmon in odd years may be constrained by the management objectives for Fraser Sockeye and for stocks of concern, particularly Interior Fraser (IFR) Coho salmon and Steelhead. In some cases, full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a comprehensive, precautionary approach to the management of all fisheries in Southern BC that are likely to impact this stock of concern. Areas and dates for the window closure are identified in Table 13.4-4, with details of specific management measures contained in fishery descriptions that follow.

Table 13.4-4: Start and end dates for the IFR Steelhead closure period by Management Area

Fishery	27-day window closure (commercial troll fisheries and Fraser River FSC)		42-day window closure (commercial gill net, purse seine, beach seine, and shallow seine fisheries and Fraser River recreational fisheries)	
	Start	End	Start	End
Area 29: 29-6, 29-7, and 29-10	28-Sep	24-Oct	21-Sep	1-Nov
Mouth to Mission	28-Sep	24-Oct	21-Sep	1-Nov
Mission to Hope	29-Sep	25-Oct	22-Sep	2-Nov
Hope to Sawmill Creek	3-Oct	29-Oct	26-Sep	6-Nov
Sawmill Creek to Lytton (Thompson Confluence)	5-Oct	31-Oct	28-Sep	8-Nov
Lytton to Texas Creek	8-Oct	3-Nov	1-Oct	11-Nov
Texas Creek to Kelly Creek	10-Oct	5-Nov	3-Oct	13-Nov
Kelly Creek to Deadman Creek	13-Oct	8-Nov	6-Oct	16-Nov
Deadman Creek to Chilcotin River	16-Oct	11-Nov	9-Oct	19-Nov
Chilcotin River	19-Oct	14-Nov	12-Oct	22-Nov
Thompson River – Thompson Confluence to Bonaparte	8-Oct	3-Nov	1-Oct	11-Nov

Thompson River – Bonaparte River to Kamloops Lake	12-Oct	7-Nov	5-Oct	15-Nov
Area 29: 29-8	28-Sep	24-Oct	21-Sep	1-Nov
Area 29: 29-1 to 29-5	23-Sep	19-Oct	16-Sep	27-Oct
Area 19	22-Sep	18-Oct	15-Sep	26-Oct
Area 20	19-Sep	15-Oct	12-Sep	23-Oct
Area 21/121	18-Sep	14-Oct	11-Sep	22-Oct
Area 13	17-Sep	13-Oct	11-Sep	22-Oct
Area 12	12-Sep	8-Oct	6-Sep	17-Oct
Area 11	11-Sep	7-Oct	5-Sep	16-Oct

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

As part of new 2019 Chinook management measures, Fraser River recreational fisheries will remain closed to salmon fishing until at least August 23. See Section 13.1.4.5.2 for more information.

Even year Fraser Pink returns are extremely low and fisheries are not planned to target directly on the stock.

#### 13.4.2.5 ALLOCATIONS AND FISHING PLANS

In-season information including estimates of abundance, run timing, stock composition, and other technical information are used to assess potential fishing opportunities relative to pre-season fishing plans.

The Fraser River Panel meets regularly from early July to mid-September to review information as it becomes available over the course of the Sockeye and Pink migrations. In-season information including fishery openings are posted on the Internet regularly throughout the fishing season by the DFO and the PSC at the following web sites:

- Weekly PSC News Release:  
[http://www.psc.org/news\\_frpnews.htm](http://www.psc.org/news_frpnews.htm)
- Aboriginal, Commercial and Recreational Fishery Notices:  
<http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?>

### 13.4.2.5.1 First Nations Fisheries

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### *Food Social and Ceremonial Fisheries*

First Nations target local salmon stocks for FSC purposes throughout the south coast. Catches are typically higher in odd years when Fraser River Pink are on their dominant cycle year. Minimal Pink catch is thought to occur in even years.

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. Refer to Section [10.2](#) for [Table 10.2-1](#) of Communal Licence Harvest Target Amounts for Southern BC/Fraser River First Nations Fisheries.

FSC fisheries will be planned to maximize the use of selective gear types and reduce bycatch where possible.

To support Interior Fraser River Steelhead conservation, a 27-day rolling window closure will apply to all FSC salmon fisheries in the Fraser River within the times and areas identified in Table 13.4-4 (including Subareas 29-6, 29-7, 29-9 and 29-10). This closure does not extend to marine FSC fisheries targeting Fraser Pink Salmon.

In some cases, full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

In addition to these FSC fisheries, local First Nations access Pink salmon through ESSR harvests at several hatchery facilities (refer to Section 13.4.2.5.7).

#### *Fishery Monitoring and Catch Reporting*

##### *Marine waters*

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.

#### *Fraser River and tributaries*

First Nations catch monitoring programs are managed through Activity Funding or Comprehensive Fisheries Agreements.

In the lower Fraser River (below Sawmill Creek), monitoring programs implemented vary between Nations but typically include landing site or vessel based collection of catch and effort information paired with validation of effort by vessel patrols or overflights. Catch reports are received by DFO from catch monitoring programs on a weekly basis, within 48 hours of a fishery closing.

For fisheries in the Fraser watershed above Sawmill Creek, catch monitoring programs typically range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

#### *Treaty Fisheries*

Treaty fisheries will be planned to maximize the use of selective gear types and reduce bycatch where possible.

In some cases, full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

To support Interior Fraser River Steelhead conservation, a 27-day rolling window closure will apply to all Treaty salmon fisheries in the Fraser River within the times and areas identified in Table 13.4-4 (including Subareas 29-6, 29-7, 29-9 and 29-10). This closure does not extend to marine Treaty fisheries targeting Fraser Pink Salmon.

#### *Tsawwassen Fisheries (Domestic)*

In any year, the Tsawwassen Fishing Right Allocation for Pink salmon will be that number of fish caught incidentally in the harvest of Tsawwassen Allocation for Sockeye salmon, up to a maximum of 2,500 Fraser River Pink salmon.

The monitoring program for Tsawwassen Domestic fisheries includes fisher logs supplemented by validations of catch through on-water patrols and/or observations of landings and effort through on-water patrols. Details of monitoring programs in place can be found in the Tsawwassen Fisheries Operational Guidelines.

*Tla'amin (Domestic)*

The Domestic allocations for salmon under the Tla'amin First Nations Final Agreement are in any year: the Tla'amin Fish Allocation for Pink salmon is a maximum of 5,000 Pink salmon. The allocation will be determined by an abundance-based formula.

*Maa-nulth (Domestic)*

The Maa-nulth Domestic allocation for Pink salmon under the Maa-nulth First Nations Final Agreement are in each two year period following the effective date of the Agreement (2009): a maximum of 7,250 Pink salmon (some or all of which may be Fraser Pink).

***Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht / Muchalaht, and Tla-o-qui-aht First Nations) Multi-species Fishery***

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

The Five Nations Multi-species fishery for Fraser River Pink salmon will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

**13.4.2.5.2 Recreational Fisheries**

In most south coast tidal waters, the limit in recreational fisheries is four (4) Pink salmon per day. Marine recreational Pink fisheries typically take place in August and September. Updates are provided via Fishery Notice and published on the recreational fisheries website: <http://www.bcsportfishingguide.ca>

Non-tidal, Fraser River opportunities may be anticipated for Fraser River Pink salmon in odd numbered years and fishing decisions will be dependent on in-season information, including co-migrating species of constraint.

In some cases, recreational fisheries may be reduced or closed due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

As part of new 2019 Chinook management measures, Fraser River recreational fisheries will remain closed to salmon fishing until at least August 23. After that date, opportunities for species other than Chinook will be informed by in-season abundance and other conservation issues (Coho, Steelhead, etc.). Reduced Fishing opportunities may be provided in tributary areas during times and locations at-risk Chinook stocks would not be encountered. See Section 13.1.4.5.2 for more information.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a 42-day rolling window closure will be applied to the recreational fishery in the Fraser River (including Areas 29-6, 29-7, 29-9 and 29-10). No fishing for salmon will be permitted within the times and areas in the Fraser River identified in Table 13.4-4. Note that these recreational closures do not apply to marine recreational fisheries.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***Fishery Monitoring and Catch Reporting***

#### ***Marine Waters***

Catch monitoring programs including seasonal creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast and Lower Fraser stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

#### ***Fraser River***

Creel surveys are conducted in portions of the lower Fraser River and select tributaries in order to estimate recreational catch and effort for the times and areas surveyed. Typically, the creel survey in the lower Fraser River mainstem begins when the mainstem is opened to recreational salmon fishing; however, over the last number of years, the survey end date has been variable (mid-September to end of November). The creel surveys conducted on the Chilliwack River and Nicomen-Norrish recreational fisheries have remained stable over the last number of years both in times and areas (Chilliwack is surveyed from mid-September to mid-November and Nicomen-Norrish is surveyed from early October to the end of November).

Catch monitoring programs in the Fraser watershed upstream of Alexandria will range from fisher reported catch to highly intensive creel surveys; however, some times and areas are unmonitored. Expected effort and catch, harvest rates, potential bycatch, and any biological

sampling requirements are taken into account when planning the catch monitoring program for these areas.

### 13.4.2.5.3 Commercial Fisheries

Allocation arrangements for Fraser Pink salmon within the commercial fleet is as follows:

Table 13.4-5: Allocation arrangements for Fraser Pink salmon within the commercial fleet

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%

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

#### *Fraser Commercial Pink Fisheries*

Returns of Pink Salmon are highly uncertain; however, given the low brood year return in 2017 and poor fry outmigration in the spring of 2018, directed commercial fisheries on Fraser Pink are expected to be limited.

If fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

#### *Area B (Seine) and Area D/E (Gill Net)*

Similar to other Fraser Pink cycle years, Area B seine and Area H troll have submitted an ITQ demonstration fishery for Fraser Sockeye and Pink salmon (*see South Coast Fraser Pink Demonstration Fishery below*).

Fraser Pink salmon are generally caught incidentally during Fraser Sockeye gill net fisheries as there are typically no directed Fraser Pink gill net fisheries due to co-migrating species of constraint.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 42-day closure will apply to commercial gill net and seine fisheries within the times and areas identified in Table 13.4-4.



Pink retention bycatch is permitted in Fraser River Sockeye directed fisheries.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

#### *Area G Troll*

No fisheries are anticipated in 2019.

#### *Area H Troll*

Similar to other Fraser Pink cycle years, Area B seine and Area H troll have submitted an ITQ demonstration fishery proposal for Fraser Sockeye and Pink salmon (see South Coast Fraser Pink Demonstration Fishery below).

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 27-day closure will apply to commercial troll fisheries within the times and areas identified in Table 13.4-4

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

#### *South Coast Fraser Pink Demonstration Fisheries*

##### *Area B Seine and Area H Troll Fraser River Pink Individual Transferable Quota (ITQ) Demonstration Fishery*

Please see Appendix 7 for more information on the Area B and Area H Fraser Pink ITQ demonstration fishery guidelines for 2019.

This demonstration fishery will be similar to the quota based ITQ Fraser River Sockeye fishery that was planned for 2009-2018. Note that a separate demonstration fishery proposal is provided for a demonstration – experimental seine fishery in the lower Fraser River.

- **Region:** South Coast and Lower Fraser River Areas
- **Participants:** All Area B seine and H troll licence holders
- **Location of Fishery:** Seine fishing areas that will be considered in the fishery include: Johnstone Strait (portions of Area 12 and 13), Juan de Fuca (portions of Area 20), portions of Areas 16 and 18, and portions of Area 29 off the Fraser River mouth, which may include depths shallower than 45 m.

In Area 20, additional measures may be in place to minimize impacts on Coho. Consideration for seine fishing opportunities in Area 20 will also be dependent on diversion rate estimates.

Troll fishing areas that will be considered in the fishery include; Johnstone Strait (portions of Areas 12 and 13), portions of Areas 16 and 18, and portions of Area 29 off the Fraser River mouth.

In Areas 12, 13 and 20 additional restrictions will be identified around test-fishing locations to minimize impacts on test-fishery assessment requirements.

- A 42-day rolling window closure will be applied to commercial seine fisheries and a 27-day closure will apply to commercial troll fisheries within the times and areas identified in Table 13.4-4.
- **Gear Type:** Seine and Troll gear, selective fishing measures are mandatory and are specified by licence conditions.

Power skiffs may be used where conditions of licence permit. Shallow seine nets may be used in areas off the mouth of the Fraser.

- **Time Frame:** This fishery is planned to occur when Fraser River Pink Canadian Commercial TAC is identified. It is anticipated that this fishery will take place within the time period of mid-August to mid-September.

The Area H troll fishery is anticipated to be open on a 7 day per week basis as TAC permits. The Area B seine fishery is expected to be open 5 to 7 days per week and will be dependent on the amount of available TAC and the available time frame for the

fishery.

It is expected that Area B seine fishing opportunities in Area 20 and Area 29 will also be managed to a boat day limit to control impacts on Interior Fraser Coho.

- **Allocation:** The fishery will be based on available Fraser River Pink commercial TAC. Shares for each fleet will be based on the commercial allocation plan.

The Fraser River Pink quota (ITQ) will be determined by DFO by dividing the respective Area B and Area H Fraser River Pink allocations by the total number of licences for Area B and Area H multiplied by the available commercial Fraser River Pink Total Allowable Catch (TAC) determined in-season.

The quota share will be expressed as a percentage of the TAC and the percentage will remain fixed in-season subject to amendments for in-season quota transactions. The TAC may be distributed over the course of the fishery in increments. The TAC will be announced by fishery notice and adjusted as required. Updates will typically be announced following Fraser River Panel meetings (usually Tuesday and Friday).

Quota will be transferable within each licence area (e.g. Area B to Area B; or, Area H to Area H) as well as between licence areas (e.g. Area B to Area H; or vice versa).

Transfers to or from other commercial fisheries is currently under review by the Department.

The target species is Pink and bycatch retention of Chum is permitted (except Chum retention is not permitted in Area 20). Sockeye retention will be subject to pre-season management decision regarding use of available sockeye TAC. If sockeye TAC is available, individual license holders will have the flexibility to decide how to use their available quotas (ITQs) of sockeye and pink salmon. Accounting for ITQ's of Fraser River Sockeye will be based on total mortalities, including retained catch and assessed release mortalities. Two examples of how sockeye mortalities are calculated are provided below. For a detailed explanation on how sockeye total mortalities are assessed refer to Area B and Area H Fraser Sockeye and Pink ITQ Demonstration Fishery 2019 Guidelines in Appendix 7. There will be non-retention of Coho, Chinook and steelhead.

- **Examples of total Sockeye mortality calculations:**

1) A troll vessel landing 400 Pink salmon and no Sockeye from Area 12 on August 20 with a fleet-wide Sockeye encounter rate from observer data of 15% Sockeye for that day and area would be assessed a release mortality of 6 Sockeye against their quota as follows:

$400 \text{ Pinks} \times 0.15 \text{ encounter rate} \times 0.10 \text{ release mortality} = 6 \text{ Sockeye mortalities}$

2) A seine vessel landing 10,000 Pink salmon and 400 Sockeye from Area 12 on August 28 with a fleet-wide sockeye encounter rate from observer data of 7% Sockeye for that day and area would be assessed 475 Sockeye against their quota as follows:

$10,000 \text{ Pinks} \times 0.07 \text{ encounter rate} = 700 \text{ expected Sockeye encounters}$

$700 \text{ expected Sockeye} - 400 \text{ landed Sockeye} = 300 \text{ releases}$

$300 \text{ releases} \times 0.25 \text{ release mortality} = 75 \text{ Sockeye release mortality}$

$400 \text{ landed Sockeye} + 75 \text{ Sockeye release mortality} = 475 \text{ total Sockeye mortalities}$

- **Monitoring Plan:** Start, end, pause and daily catch reports will be required by phone-in or electronic logbook. Verification of Sockeye encounter rates in this fishery is essential. Encounter rate data will be collected by third party, on-grounds observers. An observer plan will be developed pre-season to estimate the fleet-wide Sockeye encounter rates, by area fished, for Area B and Area H vessels similar to the approach used in 2013. When developing a pre-season plan, the Department will determine the levels of observer coverage for Area B and Area H, based on information collected during the 2011 and 2013 fisheries. There is a requirement for 100% third-party dockside validation of the catch at designated landing locations. Over flights will be conducted and charter patrol will monitor the fishery.

Additional on-grounds observer coverage/monitoring may be required to assess the releases of non-target species in Area B and H Sockeye fisheries. Observer requirements will be determined in-season, subject to areas fished and effort.

Additional monitoring requirements are required and in place for the Area 20 seine fishery including on-grounds management, set by set reporting in established grid zones and observer coverage.

### *Fishery Monitoring and Catch Reporting*

There is a mandatory harvest log and in-season reporting program for catch and other fishing information for all commercial fisheries, including “Start/Pause/Cancel/End” fishing reports. Mandatory catch reporting by phone-in is required with a paper harvest log OR electronic transmission is required with an electronic harvest log (E-log). Catch reporting requirements are

specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required. Partial independent on-board/at-sea observer coverage and/or mandatory dockside validation may be required for Area B seine fisheries.

#### **13.4.2.5.4 Fraser First Nations Commercial Pink Harvest**

Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 42-day closure will apply to commercial gill net, purse seine, beach seine, and shallow seine fisheries and a 27-day closure will apply to commercial troll fisheries within the times and areas identified in Table 13.4-4.

#### ***Demonstration Fisheries***

##### ***RiverFresh Wild BC Seafood – In-River Pink Fisheries***

RiverFresh Wild BC Seafood (RiverFresh) is a Commercial Fishing Enterprise operating under the Shuswap Nation Tribal Council (SNTC) society. The Secwepemc Fisheries Commission (SFC), the fisheries department of the SNTC, is contracted by RiverFresh to provide commercial fishery planning and monitoring services. SFC has been coordinating demonstration fisheries and conducting business feasibility analyses since 2005.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 42-day closure will apply to commercial gill net, purse seine, beach seine, and shallow seine fisheries within the times and areas identified in Table 13.4-4.

The 2019 SFC demonstration fisheries expectations will be similar to previous years when CCTAC is available; pre-season forecasts for Early Summer, Summer and Late run Sockeye stocks in the Secwepemc fishing area are uncertain. Chinook directed opportunities directed on S. Thompson 4-1 stocks are uncertain with pending additional actions for Fraser Chinook. There is interest of Pink directed fisheries using beach seines in the Thompson River which may occur. Non target bycatch that cannot be released may be identified and retained for food, social and ceremonial purposes subject to dual fishing guidelines. RiverFresh will build on

previous year's experiences and expand their knowledge and abilities to participate in larger scale fisheries.

**PARTICIPANTS** – Skeetchestn Indian Band and other partners to be determined

**LOCATION OF FISHERIES** – Kamloops Lake / Thompson River

**GEAR TYPE** – Gill net and/or beach seine

**TIME FRAME** - NOTE: All fishery time frames are estimates and final dates will be determined according to in-season migration timing information

Pink fishery – fishery will target Fraser Pinks with any available CCTAC for Sockeye as bycatch; potential start date is August 22 ending Sept. 23.

**ALLOCATION** – Pink Fishery - allocation will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser Pink in-season utilizing relinquished licences from the PICFI program.

**MONITORING PLAN** – Fishery will be monitored using designated landing sites, electronic logbook system (ELOG) and independent validation of catch at the processing plant and independent validation releases when required.

***Upper Fraser Fisheries Conservation Alliance (UFFCA) Partnership – In-River Pink Fisheries***

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 42-day closure will apply to commercial gill net, purse seine, beach seine, and shallow seine fisheries within the times and areas identified in Table 13.4-4.

The UFFCA continues to develop their Commercial Fishing Enterprise focusing on viable and sustainable fishing practices. Discussions are on-going with groups participating in the partnership based on the viability of individual fisheries. The 2019 demonstration fishery will build on previous years' experiences to implement successful fisheries and address constraints and challenges to harvesting allocations, marketing, processing and acquiring infrastructure required for the emerging inland fisheries.

**PARTICIPANTS** - UFFCA Partnership – Northern Shuswap Tribal Council (NSTC); Tsilhqot'in National Government (TNG)/Xeni Gwet'in First Nations Government.

**North Shuswap Tribal Council**

**Location:** Quesnel River, Chilcotin River and mainstem Fraser

**Gear Type:** Beach seine, dip nets, and fish wheels

**Time frame:** Fishery will target Fraser Pinks; potential start date is Sept. 5 for a four week fishery

**Tsilhqot'in National Gov't / Xeni'Gwet'in First Nations Government**

**Location:** Chilko River, Chilcotin River and mainstem Fraser

**Gear type:** Beach seine, dip net, partial weir/fish trap, and fish wheel

**Time frame:** Fishery will target Fraser Pinks. Potential start date August 25 for a three to four week fishery

**ALLOCATION – All**

Allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser Pinks stocks utilizing relinquished licences from the PICFI program.

**MONITORING PLAN – All**

Fishery will be monitored using designated landing sites, electronic logbook system (ELOG) and validation of catch at either landing site or plant.

***Harrison Salmon Producers (Sts'ailes and Scowlitz First Nations)***

- **Region:** Lower Fraser Area
- **Participants:** Sts'ailes and Scowlitz First Nations
- **Location of Fishery:**
  - The waters of the Harrison River located between the outlet of Harrison Lake downstream to the orange boundary signs labelled 'Fishing Boundary HFA' approximately 1000 meters below the CN Railway Bridge; and
  - The waters of the Fraser River bounded on the west by a line from a white boundary sign on the upstream side of the Fraser River at the mouth of the Sumas River, thence true north to a white boundary sign on the opposite shore and bounded on the east by the downstream side of the bridge across the Fraser River at Agassiz.
- **Gear Type:**

- Pink: Set nets, drift nets or beach seines. Beach seines not to exceed a maximum mesh size of 2 ¾ inches and a length of 50 fathoms or 360 feet.
- **Allocation:** Allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser Pinks stocks utilizing relinquished licences from the PICFI program.
- **Time Frame:** All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.
  - Fraser Pinks: This fishery would be planned to take place once a Fraser River Pink Canadian Commercial TAC is identified, potentially late August thru Sept.
- **Monitoring Plan:** During any set net or drift net fishing activity the fishers will transport their catch to a predetermined Sts'ailes /Scowlitz landing site to have their catch monitored. During any beach seining activity a Monitor will be present with every beach seining crew during all fishing activity and provide set by set updates to the Sts'ailes Fishery Manager, before the beach seine crews deploy their next set to ensure there is TAC available. The Sts'ailes Fishing Authority will collect all catch statistics via these monitors and report this information to DFO immediately after the fishery closes.

#### 13.4.2.5.5 Harvest Agreements

Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 42-day closure will apply to commercial gill net, purse seine, beach seine, and shallow seine fisheries and a 27-day closure will apply to commercial troll gear within the times and areas identified in Table 13.4-4.



### *Tsawwassen*

TFN have an allocation for commercial catch outside of the Treaty as identified via the “Tsawwassen First Nations Harvest Agreement”. The allocation in the Harvest Agreement (HA) does not affirm Aboriginal or Treaty rights. Fishing undertaken via the HA will be comparable to the requirements of the current Fraser River commercial fishery (First Nations economic opportunity (EO) fishery), or a general commercial fishery (e.g. Area E). For 2019, the HA will be comparable to the EO fishery.

Tsawwassen fishers will be expected to operate under the same rules that apply to other fishers taking part in that Fraser River commercial fishery. For 2019, this means that this fishery will not operate within the times and areas 42-day closure period identified for the Interior Fraser River Steelhead window closures for gill net, purse seine, beach seine, and shallow seine gear (see Table 13.4-4). TFN may also prepare a HA Fishing Plan and give to the JFC for review prior to the season’s commencement. Each year that the Minister authorizes a Fraser River commercial fishery in the Tsawwassen fishing area, or a general commercial fishery, the Minister will issue a communal commercial fishing licence for the Tsawwassen First Nations. The JFC set up by the Tsawwassen Final Agreement will conduct a post season review.

Salmon allocation under the Harvest Agreement:

- **Pink:** 0.78% of the Commercial Allowable Catch for Fraser River Pink salmon for that year.

#### **13.4.2.5.6 Economic Opportunities**

Fisheries are anticipated in 2019 for Fraser River Pinks. Pink retention bycatch is permitted in Fraser River Sockeye directed fisheries. Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

As part of the Interior Fraser River Steelhead conservation measures being implemented in 2019, a rolling window closure will be applied to all commercial fisheries in the Fraser River and marine approach areas. A 42-day closure will apply to commercial gill net, purse seine,

beach seine, and shallow seine fisheries and a 27-day closure will apply to commercial troll gear within the times and areas identified in Table 13.4-4.

### ***Fishery Monitoring and Catch Reporting***

#### ***Lower Fraser***

In the Lower Fraser, catch monitoring programs are managed through Activity Funding Agreements and Comprehensive Fisheries Agreements. While details will be finalized prior to fisheries occurring, the monitoring programs in place in recent years are as follows:

- Non-selective (e.g. gill-net) EO fisheries have been monitored using a mandatory landing program (MLP) with packer and land-based sites where all fishers must land and have their catch validated. This program is supplemented by effort validation by vessel patrols and overflights.
- Selective (e.g. beach seine and purse seine) EO fisheries have required monitors to be present during all fishing activity to record catch information on a set-by-set basis.

#### **13.4.2.5.7 ESSR Fisheries**

There are no anticipated ESSR fisheries for Fraser Pink salmon. Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. See Section 13.4.2.4 for information on Incidental Harvest, Bycatch and Constraints to Fraser Pink Fisheries.

### 13.4.3 EAST COAST VANCOUVER ISLAND AND MAINLAND PINKS

#### 13.4.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

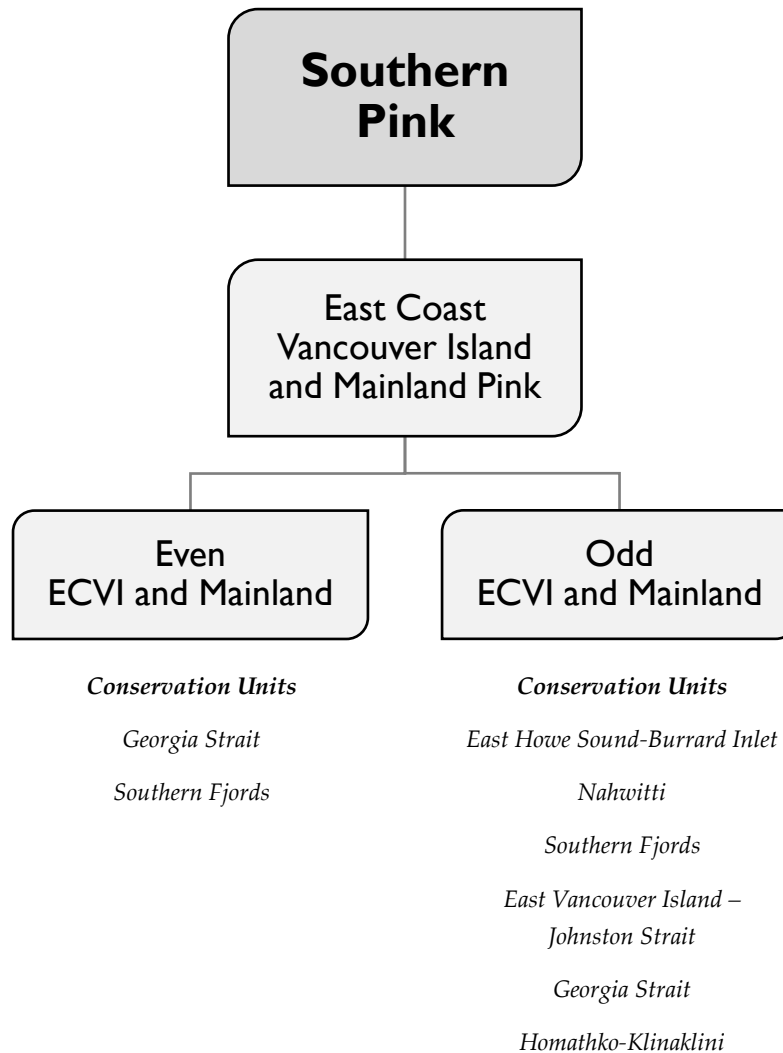


Figure 13.4-4: Conservation Units in the ECVI and Mainland Pink Salmon Management Unit (8 CUs)

East Coast Vancouver Island (ECVI) and Mainland Pinks are grouped into 8 conservation units (CUs) that extend over the entire East Coast of Vancouver Island as well from Seymour Inlet South to Burrard inlet on the Mainland of British Columbia. All Pink salmon mature at 2 years of age which results in the reproductive isolation of even and odd year brood lines. Within the ISC region there are many systems that support both even and odd year brood lines and the methods for identifying CUs take that into account. The cycle lines tend to be more even-year

dominant as you shift North within the management unit and more odd-year dominant as you move shift South.

These stocks are mainly harvested incidentally or as bycatch during mixed-stock Johnstone Strait Fraser River Sockeye and Pink directed fisheries. In addition, these stocks can be harvested in Johnstone Strait test fisheries. Directed fisheries have occurred in some terminal areas, for instance portions of Howe Sound, Jervis Inlet, and Knight Inlet. Historically, the majority of commercial harvests have occurred by purse seine. Opportunities are also available for First Nations and recreational harvesters; however, effort is generally low.

The migration of these stocks to the terminal areas normally begins in early to mid-August and is usually complete by the middle to the end of September. These stocks may be managed as an aggregate early in the season (provided surpluses are expected for stocks) and then separately as they enter the terminal areas.

### 13.4.3.2 STOCK ASSESSMENT INFORMATION

#### 13.4.3.2.1 Pre-season

Table 13.4-6: 2019 Outlook for ECVI and Mainland Pink stocks.

Outlook Unit	2019 Outlook Category	Comments
Squamish - Odd only (CUs: East Howe Sound-Burrard Inlet; and, Georgia Strait)	ND	Squamish Pink salmon are rebuilding; however, no target run size has been developed and available quantitative assessment information has not been reviewed. (2017 Outlook Category was ND.)

Outlook Unit	2019 Outlook Category	Comments
<b>Areas 11 to 13 - Odd &amp; Even</b>	2/3	<p>Since 2015, there has been only limited assessment of Pink Salmon in Areas 12 and 13 and no assessment in Area 11.</p> <p>Even Year: Returns in 2018 were low in most systems monitored and below the even year 3 generational averages except Amor De Cosmos. Preliminary returns in Area 12-13 were varied with some systems showing an improvement over the 2016 brood including Amor De Cosmos, Ahta, Phillips, Quinsam and Salmon Rivers.</p> <p>Odd Year: In 2017, preliminary returns to the main indicators in Area 12-13 fell below their parental brood returns of 2015 and 3 generational averages.</p> <p>Historically, Pink returns to this area have been highly variable and expectations continue to be highly uncertain. Based on recent returns, the outlook for 2019 is for below to near target returns.</p> <p>(2017 Outlook Category was 2/3; 2018 Outlook Category was 2/3)</p>
<b>Georgia Strait - West - Odd &amp; Even</b>	2/3	<p>These are primarily odd year dominant pink stocks. Returns in 2017 were average to below average and generally lower than brood returns in 2015 with the exception of Nanaimo River. Assuming similar marine survival, the outlook for 2019 is for below target returns. Due to the high variability of Pink Salmon, these expectations are highly uncertain.</p> <p>(2017 Outlook Category was 2/3; 2018 Outlook Category was 2)</p>
<b>Georgia Strait - East - Odd &amp; Even</b>	2/3	<p>These are primarily odd year dominant stocks. Assessment information on Pink Salmon in this area is limited. Escapements in 2017 were much lower than brood returns in 2015 by an order of magnitude. Assuming continuation of poor marine survival, results for 2019 returns are expected to be below target. Due to the high variability of Pink Salmon, these expectations are highly uncertain. (2017 Outlook Category was 2/3; 2018 Outlook Category was 2)</p>

Historically Pink returns have been highly variable and expectations are highly uncertain.

#### **13.4.3.2.2 In-season**

Historically, weekly assessments to determine abundance and potential fishing opportunities have been based on over-flights, on-grounds surveys of the terminal areas and in some years, limited effort seine, gill net, and troll assessment fisheries. Assessment plans for the upcoming season have not yet been developed and are typically dependent on funding availability, outlook category and early in-season indications of abundance through other programs such as Fraser Sockeye directed test fisheries.

### **13.4.3.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

#### **13.4.3.3.1 In-season Decisions**

Commercial representatives are consulted in-season through area harvest committee advisory bodies. The following considerations will guide commercial fisheries management decisions:

- Commercial fishing opportunities are generally not considered until at least 30% to 40% of target escapements are in the river or are identified in terminal sanctuary areas, and there is evidence that a significant proportion of the return has not yet entered the river or sanctuary area.
- A cautious approach to managing Pink stocks in terminal areas will continue based on uncertainty in returns.
- Pink directed fisheries will generally be restricted to approach waters and terminal areas.
- Fishing occurs during daylight hours only.
- Fishing boundaries may be established to minimize encounters of Chinook, Coho, Sockeye and Chum, and to ensure escapement targets are reached.
- A boundary may be implemented in Upper Knight Inlet to conserve weaker Pink stocks.
- Limited participation commercial fisheries may occur. This will be confirmed in-season based on assessment information.

#### **13.4.3.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO ECVI AND MAINLAND PINK FISHERIES**

The abundance of these stocks can be highly variable and there are difficulties in assessing these stocks due to glacial water conditions and limitations of available assessment methods. The funding for in-season assessment of ECVI and mainland Pink stocks is currently uncertain; fisheries directed on these stocks are contingent on in-season assessment information.

#### **13.4.3.5 ALLOCATION AND FISHING PLANS**

##### **13.4.3.5.1 First Nations Fisheries**

###### ***Food Social and Ceremonial Fisheries***

FSC fisheries for ECVI and Mainland Pinks will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

The majority of the Pink harvest occurs incidentally while harvesting co-migrating Sockeye salmon and in years of low Sockeye abundance.

First Nations opportunities to harvest salmon for food, social and ceremonial purposes are provided through communal licences issued by DFO. The allocation for Pink salmon (Fraser and Mainland Inlets combined) from South Coast marine waters is 60,000. In addition to these FSC fisheries, First Nations access Pink salmon through ESSR harvests at hatchery facilities. In recent years, harvest opportunities have been available at Big Qualicum and Quinsam River Hatchery facilities.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River 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***

#### ***Tla'amin (Domestic)***

Tla'amin Domestic fisheries will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

The Domestic allocations for salmon under the Tla'amin First Nations Final Agreement is that in any year, the Tla'amin Fish Allocation for Pink salmon is a maximum of 5,000 Pink salmon.

#### **13.4.3.5.2 Recreational Fisheries**

Marine recreational fisheries will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

The Pink return to the Mainland Inlets provide recreational fishing opportunities in inside waters of the South Coast. Mainland Pinks typically return in dominant even-year cycles, and fisheries targeting Mainland Pinks take place primarily in Johnstone Strait and terminal areas in the Mainland Inlets.

East Coast Vancouver Island stocks are less abundant and little effort and harvest takes place on these stocks, apart from the Quinsam and Campbell Rivers where Pinks can return in abundance. Freshwater recreational fishery effort has increased in recent years, in particular at the Quinsam and Campbell Rivers where high returns have occurred.

Marine recreational Pink fisheries typically take place in August, and updates are provided via Fishery Notice and published on the recreational fisheries website:

<http://www.bcsportfishingguide.ca>. The normal daily limit is 4.

Recreational Pink fisheries targeting Mainland Pink stocks and hatchery returns to the Quinsam and Campbell Rivers are anticipated.

### ***Fishery Monitoring and Catch Reporting***

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery. South Coast and Lower Fraser stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.



### 13.4.3.6 COMMERCIAL FISHERIES

#### 13.4.3.6.1 Allocations

Table 13.4-7: Commercial Allocation Implementation Plan for the 2015–2019 period

Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
12 to 13 (mainland inlets only)	73.0%	9.0%	0.0%	0.0%	18.0%

#### *ECVI and Mainland Commercial 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-August and mid-September. The areas typically fished are outlined below and may be updated in-season.

If there are fisheries proceeding in 2019, they will be occurring in terminal areas outside of the migratory path of Interior Fraser River Steelhead and will thus not be impacted by 2019 IFR Steelhead conservation measures. These areas are outlined in Appendix 9.

#### *Area B Seine*

Fishing areas in Thompson Sound, Bond Sound and Jervis Inlet

#### *Area D Gill Net*

Fishing in the approach areas to Thompson Sound and Bond Sound (details to be determined in-season)

#### *Area E Gill Net*

Fishing areas in Jervis Inlet

#### *Area H Troll*

Fishing areas in Jervis Inlet and the terminal approach areas of Thompson Sound, however boundaries will be determined in-season. Coho sensitive areas may remain closed.

#### *Fishery Monitoring and Catch Reporting*

There is a mandatory harvest log and in-season reporting program for catch information for all commercial fisheries.

- Mandatory requirement to file fishing reports in all commercial fisheries, including “Start/Pause/Cancel/End” fishing reports.
- Mandatory catch reporting by phone-in is required with a paper harvest OR electronic transmission is required with an electronic harvest log (E-log).

Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type. Additional requirements are in place for providing biological samples as required.

#### ***ECVI and Mainland Pink Demonstration Fisheries***

The Area H Harvest Committee has submitted a demonstration fishery proposal under the Commercial Salmon Allocation Framework process. See [Appendix 6](#) for more details. If there are fisheries proceeding in 2019, they will be occurring in terminal areas outside of the migratory path of Interior Fraser River Steelhead and will thus not be impacted by 2019 IFR Steelhead conservation measures. These areas are outlined in Appendix 9.

#### ***ECVI and Mainland First Nations Commercial Pink Harvest***

None at this time.

### **13.4.3.6.2 Economic Opportunities**

There are no economic opportunity arrangements or harvest agreements in this area.

### **13.4.3.6.3 ESSR Fisheries**

ESSR fisheries may occur at DFO hatchery facilities that have a surplus of returning hatchery Pinks. In recent years, Pink ESSR fisheries have taken place at:

- Quinsam Hatchery
- Weaver Spawning Channel Big Qualicum

### 13.4.4 WCVI PINK SALMON

#### 13.4.4.1.1 Snapshot Overview and Map of Management Unit

This section of the IFMP is under development and further information will be provided in a future year. There are no directed commercial fisheries on WCVI Pink salmon planned for 2019. Pink salmon have been permitted to be retained in recreational fisheries. Catch rates are low and occur primarily as incidental catch in fisheries directed at other species. New for 2019, Pink non-retention in recreational fisheries is being considered for in-shore areas of the WCVI.

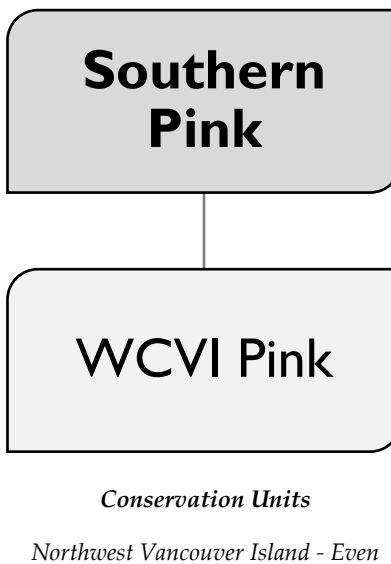
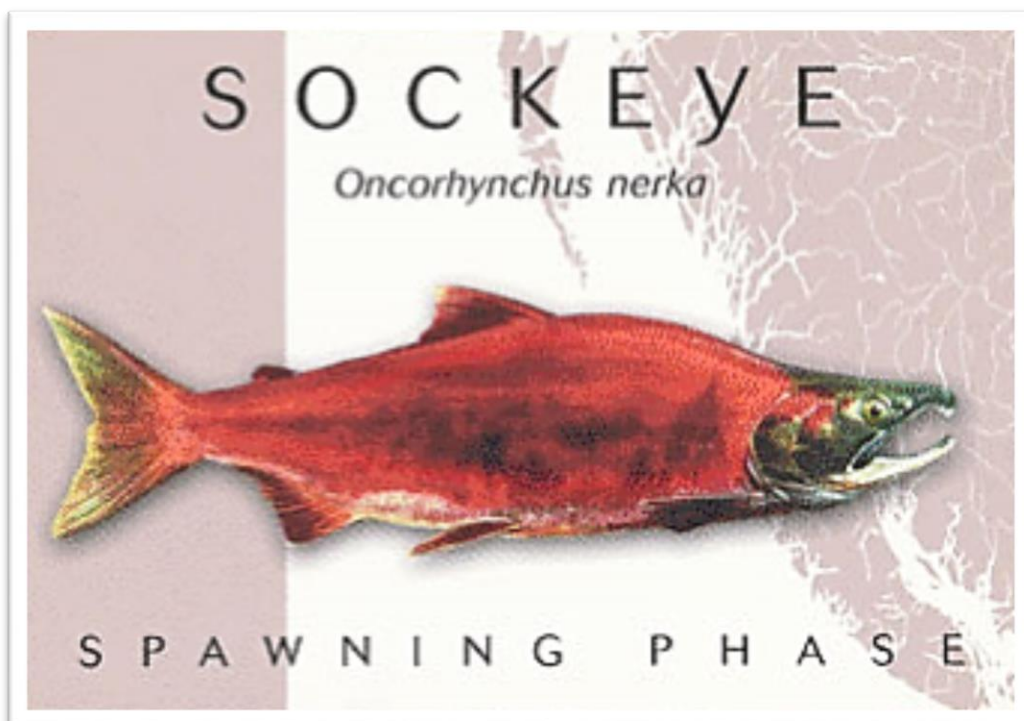
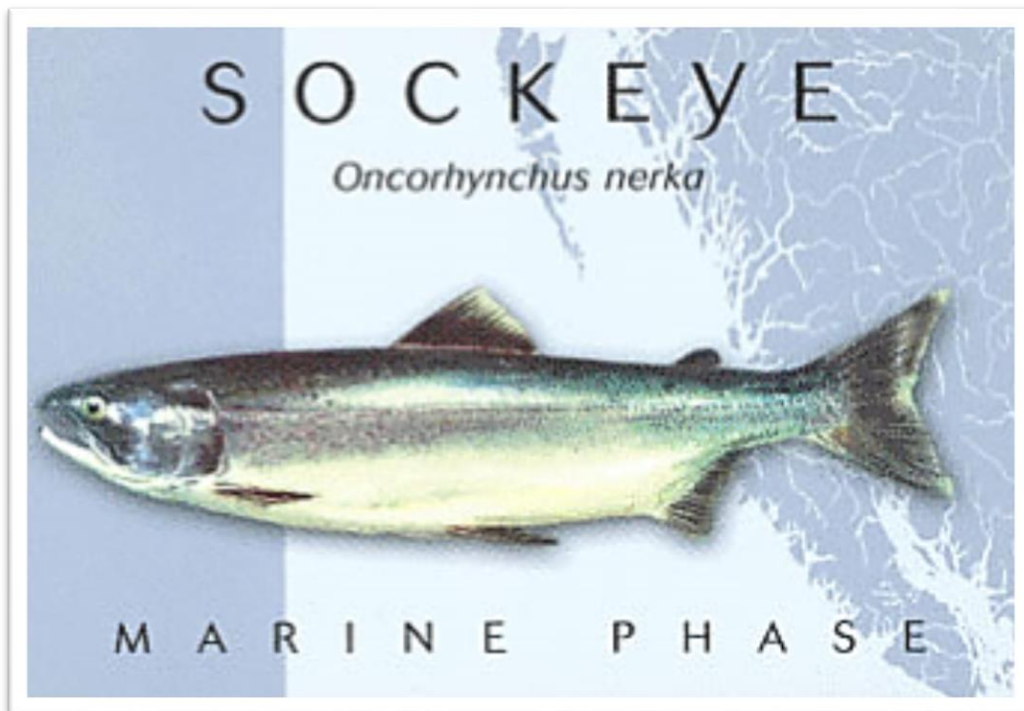


Figure 13.4-5: Overview of WCVI Pink Salmon

### 13.5 SOUTHERN SOCKEYE SALMON FISHING PLAN



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### 13.5.1 SOUTHERN SOCKEYE - OVERVIEW

In Southern BC, Sockeye salmon stocks are found primarily in tributaries of the Fraser River and in streams throughout Vancouver Island and the mainland. For Southern Sockeye, returns to Barkley/Somass (WCVI), Fraser River and Okanagan are actively managed and detailed information is provided below outlining management of these populations. Information on smaller Sockeye populations in the WCVI-other Sockeye unit is under development and further information will be provided in a subsequent year.

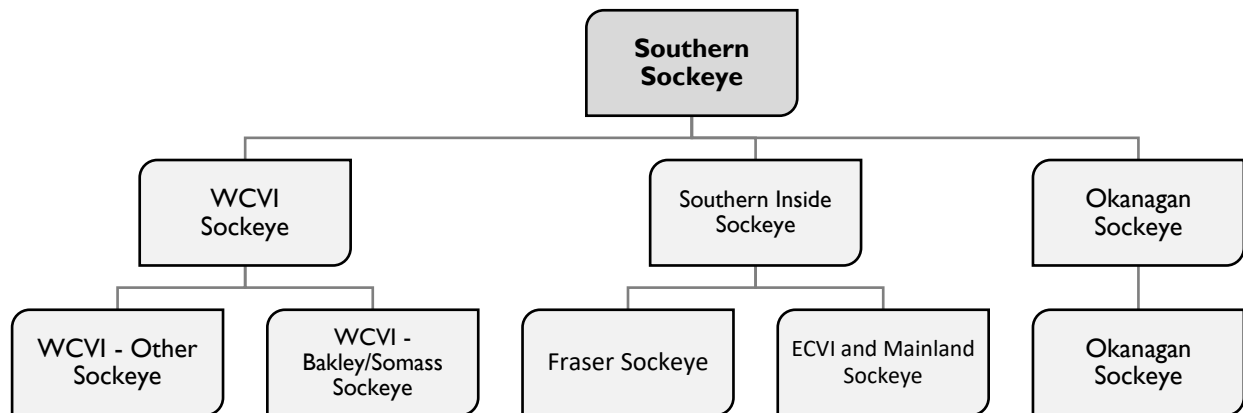


Figure 13.5-1: Southern Sockeye Overview

### SOCKEYE ENHANCEMENT INFORMATION

The major DFO operation enhancement facilities that produce sockeye are:

- **BC South Coast:**
  - Rosewall Creek hatchery
- **Fraser and tributaries:**
  - Inch Creek hatchery
  - Gates Spawning Channel
  - Horsefly Spawning Channel
  - Nadina Spawning Channel
  - Weaver Spawning Channel

The information available at the link below addresses production from major DFO Operations (OPS) facilities, contracted Community Economic Development Program hatcheries (CEDP),

larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers, and Aboriginal Fisheries Strategy (AFS). Not included are smaller Public Involvement Projects (PIPs) that are focused toward stewardship, stock rebuilding or educational activities and do not release large numbers of fish that would affect fisheries.

There are two datasets available: **Post-Season Production** from the 2017 brood year (i.e. 2018 releases, and numbers on hand for 2019 release), and the **Production Plan**, which includes proposed targets for the upcoming 2019 brood year. These are available at the following website:

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

### **FRASER RIVER SOCKEYE – SEP PROPOSALS FOR 2019**

- Enhancement pilot project to support Fraser River sockeye stock recovery – Bowron and Early Stuart
  - Using recent COSEWIC and WSP stock status, Bowron and Early Stuart are identified as high priority stocks for recovery support
  - A pilot enhancement project is being investigated in partnership with the Upper Fraser Fisheries Conservation Alliance.
  - Dependent on feasibility, this pilot project would involve low production levels (<200K eggs per stock) at Shuswap Hatchery Sockeye site
  - Project would span 4 years, unless higher priority stocks are identified by DFO
- Horsefly Channel will be in operation for 2019, based on brood year size and expected run strength.



### 13.5.2 OVERVIEW OF WCVI SOCKEYE

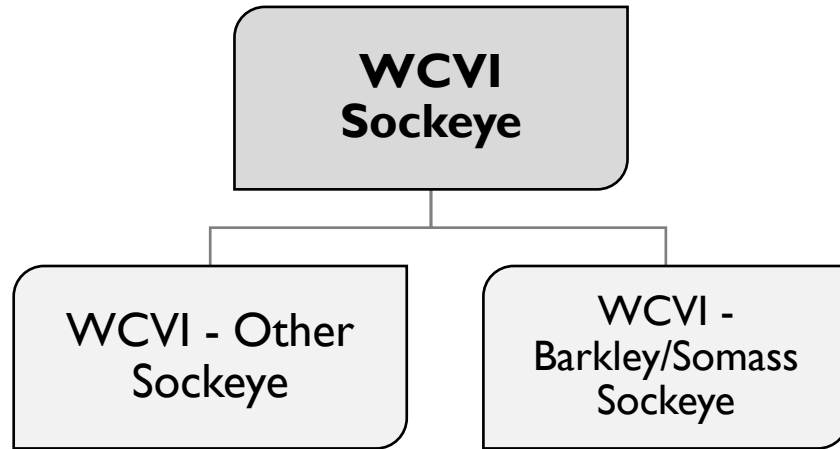


Figure 13.5-2: Overview of WCVI Sockeye

The WCVI Sockeye Management Unit consists of several Sockeye conservation units; including 'lake- type' and 'river type Sockeye. Area 23 stocks are currently the only Sockeye populations in the WCVI management unit with sufficient production to support directed fisheries from all sectors. Some other stocks are harvested by local First Nations for domestic use.

### 13.5.3 WCVI BARKLEY/SOMASS SOCKEYE

#### 13.5.3.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

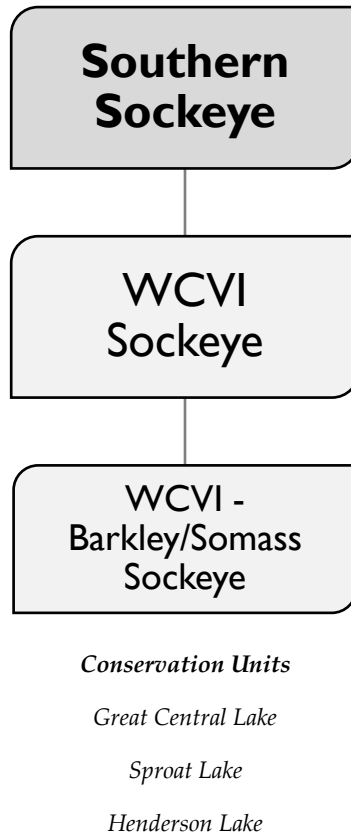


Figure 13.5-3: Overview of WCVI Barkley/Somass Sockeye

There are three major Sockeye stocks in Area 23, of which Great Central and Sproat Lake stocks are the largest. The combined production from these two lakes averages about 760,000 annually and accounts for more than 90% of the total Sockeye run to the area. Henderson Lake supports a smaller but substantial Sockeye run averaging about 30,000 over the past 30 years. However, in many recent years the abundance of Henderson Sockeye has been low and fisheries are managed to limit interceptions of this stock. There is a much smaller lake-type population in Maggie Lake as well as small populations of ‘creek-type’ Sockeye observed in Carnation Creek, Effingham River, Nahmint River, Sarita River and Toquart River.

Area 23 Sockeye fisheries are managed through a “co-management” process via the Area 23 Harvest Committee. Members of the Area 23 Harvest Committee include representatives from local First Nations, fishery advisory committees and local stewardship groups. The Area 23

Harvest Committee serves both a plenary function and a decision-making function. This format allows for improved planning of local fisheries and better conflict resolution among harvesters. The Area 23 Harvest Committee has developed a detailed Area 23 Sockeye Local Integrated Fisheries Management Plan that describes the basis of the management and assessment of the Area 23 Sockeye fisheries and harvest plans for each sector. This plan is used to guide an in-season decision making process during which assessment results are reviewed and weekly harvest plans are determined. An overview of the fishery implementation is provided below.

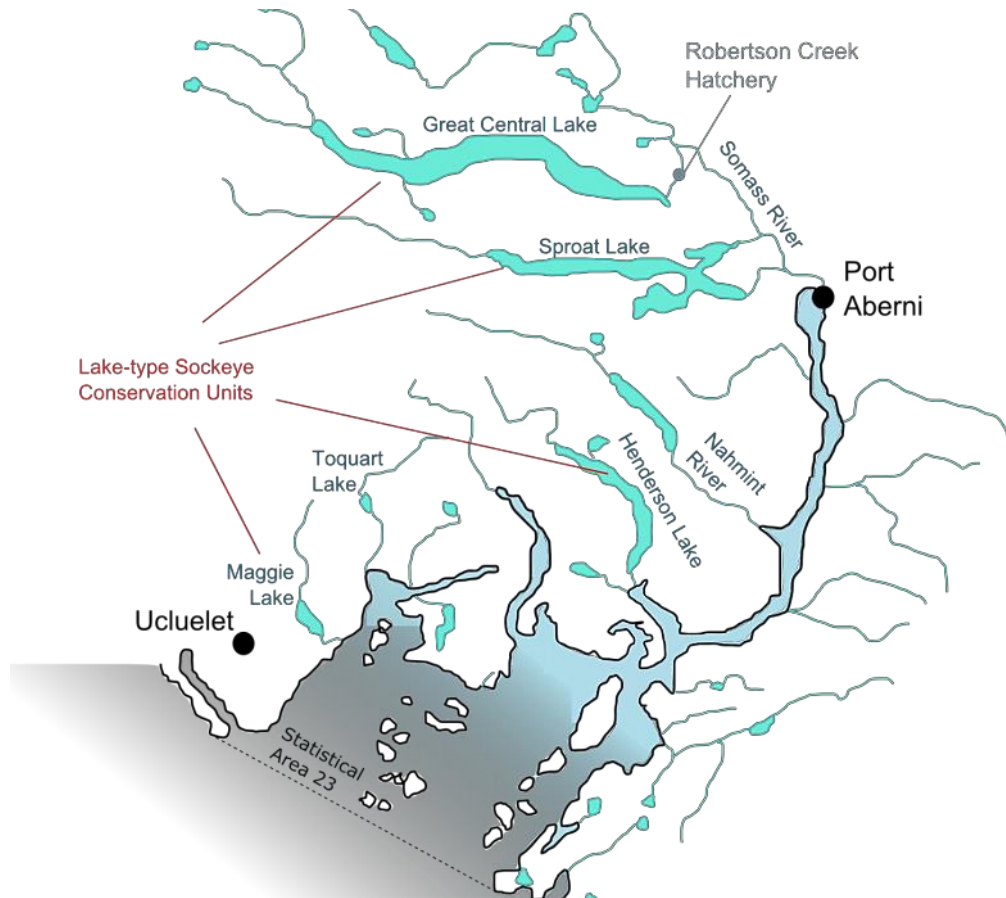


Figure 13.5-4: Barkley Sound and Alberni Inlet - Major features and salmon conservation units

### 13.5.3.2 ENHANCEMENT INFORMATION

For two of the major stocks, enhancement activities have been used to increase production. Great Central Lake was fertilized initially from 1970 to 1973 and then annually since 1977. Henderson Lake was fertilized from 1979 to 1999. Sproat Lake was fertilized once in 1985; however the program was discontinued due to resulting algae blooms. In addition to lake fertilization efforts, a hatchery at Henderson Lake operated by the Uchucklesaht First Nation released fed Sockeye fry annually from 1992 to 2007. Total hatchery production ranged from

about 70,000 to 2,300,000 fry depending on the year. The contribution of the hatchery to the Henderson Lake Sockeye return was not assessed annually. However, for two brood years when the population was marked the hatchery contribution was variable.

Stable funding for stewardship activities such as habitat restoration and lake fertilization was identified as a priority by the Harvest Committee. In support of this priority, the commercial sector currently provides the proceeds from 10K Sockeye out of the commercial harvest to support stewardship activities annually.

There is currently no hatchery supplementation of these stocks.

### **13.5.3.3 STOCK ASSESSMENT INFORMATION**

#### **13.5.3.3.1 Pre-season**

Statistical models are used to forecast Sockeye returns to Great Central and Sproat Lakes using correlates of early marine survival and observations of brood year survival (i.e. from earlier returning age classes).

Forecasts generated from all methods are compared and based on their correspondence, their relative accuracy at predicting past returns, and other relevant information a single management forecast is produced for both stocks. The management forecast is used to guide early season fisheries until the run size is estimated based on in-season observations.

For 2019 fishery management purposes, the Area 23 round table agreed to begin fisheries in the “low” zone for early season harvest management, using a management forecast for Somass Sockeye of 350,000 adult sockeye. There is considerable uncertainty in the 2019 forecast which vary between 196,000 (Sibling models) to 1.3M (Coho survivals) in the same ocean entry year. The mid-point estimates of the Somass forecast models are: 196,000 (Sibling); 312,000 (Sea Surface temperature); 379,000 (Sea Surface Salinity), 563,000 (SEP Biostandards), 1,340,000 (Coho Leading Indicator).

Statistical forecast models for Henderson Lake Sockeye are not currently generated due to data limitations. However, a salmon “outlook” broadly categorizes status from very low to abundant based on assessments of spawner and juvenile abundance and marine conditions experienced for the contributing brood years. The recommended management outlook for Henderson sockeye is the “very low” zone for harvest management, corresponding to an expected return of less than 15,000.

### 13.5.3.3.2 In-season

Stock assessments are conducted during the migration period using data compiled from escapement counts and fisheries. The objectives of the assessments are to 1) update pre-season run size forecasts for Great Central and Sproat Lake (Somass) Sockeye based on in-season observations and 2) evaluate harvest and escapement levels relative to targets. The assessments are conducted weekly starting from mid-June to early August. While there is typically not enough in-season information to revise the outlook for Henderson Lake Sockeye, catch of Henderson Sockeye in Area 23 fisheries is monitored using stock composition analysis from DNA samples.

Table 13.5-1: Planned Sockeye Test Fisheries.

All dates subject to change based on in-season factors. In-season information from initial TF is important for determining timing of subsequent TFs.

Test Fishery	Proposed Proponent	Test Fishery Purpose	Potential Dates (preliminary)	
			Start	End
Barkley Sound SN	Hupacasath / Tseshaht	Somass Sockeye	June 10	August

See Section [12.5](#) for entire table for the 2019 proposed test fisheries.

### 13.5.3.4 DECISION GUIDELINES AND MANAGEMENT ACTIONS

Annual harvest plans are developed to meet the following objectives:

- Achieve the escapement (and corresponding harvest rate) associated with the forecast run size;
- Limit impacts on non-target stocks and species and stocks of concern;
- Meet allocation priorities;
- Distribute the TAC over the duration of the fishing season to maintain the biological diversity of the population (i.e. to maintain a diverse contribution of various age and run timing classes);
- Reduce gear conflict among harvest sectors;
- Maximize the value of harvest;

- Provide for stability and predictability of harvest opportunities;
- Provide assessment information (e.g. catch-per-unit-effort (CPUE) abundance indices, stock and age composition sampling);
- Allow sufficient flexibility to respond to changes in fish behavior / migration caused by environmental conditions through the Area 23 Harvest Committee in-season decision-making process.

The Area 23 local Sockeye management plan further details management assumptions, actions and scenarios used to guide in-season decision-making.

#### **13.5.3.5 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS**

##### **Environmental Conditions**

In-season harvest planning is complicated by environmental conditions such as low water levels and high water temperatures that impact migration timing and behavior of the fish.

##### **Henderson Lake Sockeye**

With the exception of Maa-nulth Treaty Nations, Henderson Sockeye are not targeted in Area 23 Sockeye fisheries although they are intercepted. The status and TAC of Henderson Sockeye determines the allowable interception rate of Henderson Sockeye in Area 23 Sockeye fisheries. In-season adjustments to reduce impacts to Henderson Sockeye may be necessary if higher harvest rates occur.

#### **13.5.3.6 ALLOCATION AND FISHING PLANS**

Assessment results and management issues are reviewed weekly through the Area 23 in-season assessment and management process. Fishing plans are developed based on the Area 23 Sockeye Local Integrated Fisheries Management Plan. The management table for the Somass stocks below shows the escapement and harvest rate targets and allocations by run size. The management table for Henderson Sockeye below defines fishery reference points for that stock.

All fisheries are managed to achieve the harvest rate that will result in the escapement target associated with the forecast run size. Methods used to control the harvest rate of the fisheries depend on the gear type. The primary method used to manage catch of First Nations and commercial net fisheries is limiting effort (i.e. the duration of the opening and/or number of participating vessels). The level of effort is determined by an overall weekly catch target. Secondary controls may also be used in net fisheries, such as closing an area with a

concentration of holding fish that are particularly vulnerable to the gear. The primary control to manage the catch of recreational fisheries is through daily limits, which vary according to run size. Secondary controls, such as time and area closures, are also used.

For all fisheries, seasonal closures are in place and in years of low abundance the opening time may be delayed or shortened.

Table 13.5-2: Somass Sockeye management table

MANAGEMENT ZONE	RUN SIZE	REFERENCE POINT	ESCAPEMENT GOAL	HARVEST RATE	MAANULTH FIRST NATIONS	RECREATIONAL (expected catch)	TSUMASS ECONOMIC OPPORTUNITY	COMMERCIAL SEINE	COMMERCIAL GILLNET
<b>1 - Critical</b>	Less than 170,000		Up to 170,000	0	0	0	0	0	0
<b>2 - Very Low</b>	200,000 to 350,000	low end	170,000	15%	6,000	4,000	16,000	0	4,000
		high end	262,500	25%	13,572	21,000	28,757	11,503	7,669
<b>3 - Low</b>	350,000 to 500,000	low end	262,500	25%	13,572	21,000	28,757	11,503	7,669
		high end	325,000	35%	16,083	45,000	49,013	35,943	23,962
<b>4 - Moderate</b>	500,000 to 700,000	low end	325,000	35%	16,083	45,000	49,013	35,943	23,962
		high end	350,000	50%	21,105	63,000	84,445	102,870	68,580
<b>5 - High</b>	700,000 to 1,000,000	low end	350,000	50%	21,105	63,000	84,445	102,870	68,580
		high end	400,000	60%	22,886	90,000	128,821	208,976	139,317
<b>6 - Abundant</b>	1,000,000 to 1,800,000	low end	400,000	60%	22,886	90,000	128,821	208,976	139,317
		high end	540,000	70%	22,886	100,000	302,971	491,486	327,657

\* incidental catch only

Table 13.5-3: Management zones for Henderson Lake Sockeye

MANAGEMENT ZONE	RUN SIZE	REFERENCE POINT	ESCAPEMENT TARGET	HARVEST RATE
1 - Very Low	up to 15,000		up to 12,750	<15%*
2 - Low	15,000 to 25,000	low end	12,750	15%
		high end	20,000	20%
3 - Moderate	25,000 to 45,000	low end	20,000	20%
		high end	31,500	30%
4 - High	45,000 to 60,000	low end	31,500	30%
		high end	36,000	40%
5 - Abundant	60,000 to 150,000	low end	36,000	40%
		high end	75,000	50%

\* incidental catch only

### 13.5.3.6.1 First Nations Fisheries

#### *Food Social and Ceremonial*

The Tseshaht and Hupacasath First Nations target Somass Sockeye for FSC purposes in Area 23. Harvest occurs in the Somass River and upper Alberni Inlet.

Refer to Section [10.2](#) for Communal Licence Harvest Target Amount [Table 10.2-1](#) in Southern BC/Fraser River First Nations Fisheries.

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### *Treaty Fisheries*

##### *Maa-nulth Nations Domestic Harvest*

Maa-nulth First Nations (Huu-ay-aht, Toquaht, Uchucklesaht, Yu?lu?i?ath (Ucluelet), Ka:'yu:'k't'h'/Che:k:tles7et'h' (Kyuquot Sound)) are allocated a portion of the catch of Sockeye returning to Henderson Lake as well as the Somass River through a modern treaty (the Maa-nulth First Nations Final Agreement). Individuals within the Nations are designated to harvest



using a variety of gear; from smaller vessels using hook and line to larger, higher capacity vessels using commercial type gear (e.g. gill net and seine). The Maa-nulth may also designate vessels operated by non-members (e.g. commercial vessels) to fish on behalf of the Nations. The Maa-nulth fishery protocols are reported in the Fisheries Operational Guidelines and the Supporting Documents associated with the Final Agreement.

The Domestic allocations for salmon under the Maa-nulth First Nations Final Agreement are as follows:

- Sockeye salmon
  - Each year, the Maa-nulth Fish Allocation for Sockeye salmon is an amount of Somass Sockeye salmon equal to:
    - When the Somass Sockeye Canadian Total Allowable Catch is 50,000 or less, 20% of the Somass Sockeye Canadian Total Allowable Catch;
    - When the Somass Sockeye Canadian Total Allowable Catch is greater than 50,000 and less than or equal to 85,000, then 10,000 plus 10% of that portion of the Somass Sockeye Canadian Total Allowable Catch that is greater than 50,000 and less than or equal to 85,000;
    - When the Somass Sockeye Canadian Total Allowable Catch is greater than 85,000 and less than or equal to 412,421, then 13,500 plus 2.87% of that portion of the Somass Sockeye Canadian Total Allowable Catch that is greater than 85,000 and less than or equal to 412,421; and
    - When the Somass Sockeye Canadian Total Allowable Catch is greater than 412,421, then 22,886
  - An amount of Henderson Lake Sockeye salmon equal to 26.85% of the Henderson Lake Total Allowable Catch up to a maximum of 17,055 pieces.

### ***Fishery Monitoring and Catch Reporting***

#### ***Maa-nulth Nations Domestic Harvest***

The Maa-nulth First Nations have developed a harmonized catch monitoring system based on complete catch accounting and reporting using standardized catch reporting books and the Maa-nulth Electronic Reporting Program (MERP) developed by DFO. Catch is estimated by summing individual logbook catch from each harvester as reported through the MERP database. Catch estimates are stratified by time (duration of the opening) and by area (DFO Subarea 23-1 and 23-2). Effort is estimated by summing individual fishing trips as reported

through the MERP database. Effort estimates are stratified by time (duration of the opening) and by area (Subarea 23-1 and 23-2).

#### **13.5.3.6.2 Recreational Fisheries**

In most years, Somass Sockeye returns support Sockeye directed recreational fishing opportunities in Barkley Sound, Alberni Inlet and the Somass River. Recreational Sockeye fisheries typically commence May 1. The normal daily limit is 4 Sockeye per day in marine waters and 2 Sockeye per day in non-tidal waters. Initial daily limits for 2019 recreational fisheries will be determined based on the pre-season forecast; Fishing opportunities are subject to in-season management changes depending on abundance. Fishery updates are provided via Fishery Notice and published on the recreational fisheries website:

<http://www.bcsportfishingguide.ca>

Recreational harvesters in possession of a valid tidal waters recreational license and salmon stamp may participate in the fishery.

The average daily participation is about 150 vessels per day over the duration of the fishing season (e.g. June through July). However, the level of effort varies depending on the timing and catch-per-unit effort. In moderate to abundant run size years and during the peak of the migration, daily effort is typically between 250 to 450 individual vessels with observations of up to 600 vessels during peak weekend periods. There are typically 2 to 3 individual harvesters on each vessel.

#### ***Fishery Monitoring and Catch Reporting***

The WCVI Creel Survey generates recreational catch and effort statistics by area and species. Unlike logbook based catch and effort estimates, which require full reporting, the creel survey employs sampling techniques using independent creel surveyors. In order to estimate catch and effort within a coefficient of variation (CV) of 10%, the survey objective is to interview 10% of the landings and conduct a minimum of 8 effort counts per month per area.

The WCVI Creel survey does not cover fisheries in non-tidal waters.

#### ***Fishery Monitoring Plan***

The creel survey combines angler surveys and aerial boat counts to estimate recreational catch.

Anglers are interviewed at the end of fishing trips to provide both average catch by species and average fishing times, while the aerial counts from chartered aircraft capture ‘instantaneous’ snapshots of the number of recreational boats fishing at the time of the flight. The fishing times obtained through angler interviews are used to generate a daily profile of fishing activity which

is used to expand the ‘instantaneous’ aerial counts of boats fishing to an estimate of the total number of boats fishing that day. In the most basic sense, the estimate of the number of boats fishing is multiplied by the average catch by species to estimate the total catch by species on that day.

By adopting a stratified random sampling design for angler interviews and aerial counts, unbiased estimates of daily catch rate are obtained and then expanded to generate monthly estimates. The estimates are stratified by day type (weekday vs. weekend), location (by creel sub-area) and time (monthly and time of the day).

For the Area 23 Sockeye fishery, designated survey sites include Clutesi Ramp, China Creek (plus others in Barkley Sound). The survey operates from mid-June to mid-September.

### 13.5.3.6.3 Commercial Fisheries

#### *Allocation*

Table 13.5-4: Commercial Allocation Implementation Plan for the 2015–2019 period

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%

Notes on Sockeye allocation (south):

<sup>c</sup> potential for future re-negotiation

#### *WCVI Barkley/Somass Commercial Sockeye Fisheries*

Commercial harvesters in possession of an Area B seine net licence or Area D gill net licence may participate in this fishery. Opportunities for directed harvest are anticipated in 2019. Normally, fishing opportunities for all net fleets in Area 23 occur from mid-June to Early August.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### *Area B Seine*

Since 2002, Area B harvesters have fished Area 23 Sockeye with a weekly catch target that is shared among the Area B licence holders. The number of vessels participating in any given opening is limited and depends on the weekly quota available. The intention of defining a

weekly catch target is to provide opportunities for seine harvest that otherwise would not be available under a derby fishery model (i.e. for smaller run sizes or during early season fisheries). Prior to any scheduled opening, the Area B Seine Association provides the local area fishery manager with a list of harvesters designated to fish in that opening. The list is determined based on Area B Association protocol. The opening will not proceed if vessels outside the designated list are present in the fishing area due to the risk of additional effort exceeding the allowable harvest rate.

#### *Area D Gill Net*

The Area D Sockeye fishery operates throughout Area 23 (notwithstanding conservation closures). However, typically early season commercial gill net fisheries are restricted to the “outside” portion (Barkley Sound) seaward of Pocahtonas Point to reduce gear conflict within Alberni Inlet. In early to mid-July, the fishery is restricted to the “inside” portion (Alberni Inlet) in order to reduce interceptions of later migrating Henderson Sockeye, which are vulnerable in the outside area.

Scheduled openings occur typically during the day between the hours of 06:00 and 20:00 in June. In July when the fleet is moved inside Alberni Inlet openings are more variable in timing depending on weekly catch targets. The fishing area and allowable effort (timing, number and length of openings) are used as harvest controls.

### ***Fishery Monitoring and Catch Reporting***

#### *Area B Seine*

Catch is estimated by summing individual harvest log catch from each harvester as reported through the FOS (Fishery Operating System) database. Catch estimates are stratified by time (duration of the opening) and by area (Subarea 23-1 and 23-2). Effort is estimated by summing individual phone in reports from each harvester as reported through the FOS database. Effort estimates are stratified by time (duration of the opening) and by area (Subarea 23-1 and 23-2).

All Area B catch landed in the Area 23 Sockeye fishery is validated by an independent Observer Service Provider through a dockside monitoring program. Validated catch reported are submitted weekly (by COB Wednesday) to the local fishery manager by the Observer Service Provider.

#### *Area D Gill Net*

Catch is estimated by summing individual harvest log catch from each harvester as reported through the FOS (Fishery Operating System) database. Catch estimates are stratified by time (duration of the opening) and by area (Subarea 23-1 and 23-2). Effort is estimated by summing

individual phone in reports from each harvester as reported through the FOS database. Effort estimates are stratified by time (duration of the opening) and by area (Subarea 23-1 and 23-2).

#### **13.5.3.6.4 WCVI – Barkley/Somass Sockeye Demonstration Fisheries**

There are currently no demonstration fisheries planned on these stocks.

#### **13.5.3.6.5 WCVI Barkley/Somass First Nations Commercial Sockeye Harvest**

##### ***Demonstration Fisheries***

There are currently no demonstration fisheries planned on these stocks.

##### ***Harvest Agreements***

##### ***Maa-nulth Fisheries (Commercial)***

In addition to the allocation of salmon for domestic purposes, Maa-nulth has an allocation for commercial catch outside of the Treaty as identified in the “Maa-nulth First Nations Harvest Agreement”. Fishing under the HA will be managed with requirements comparable to the regular commercial fisheries.

Under the Harvest Agreement, the allocation for Henderson Lake Sockeye Salmon in a portion of Area 23 will be for 20% of the Terminal Commercial Total Allowable Catch after accounting for the Maa-nulth Domestic harvest allocation from the total CTAC.

##### ***Economic Opportunities***

Economic opportunities for the Tseshaht and Hupacasath First Nations are expected subject to negotiated agreement. Opportunities for directed harvest are anticipated. Economic opportunity fisheries will be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. These fisheries will be conducted separately from FSC fisheries, under the same harvest decision guidelines as the commercial fishery and fish harvested have been off-set with licences voluntarily relinquished from the commercial fishery. Communal licences are issued weekly to both the Tseshaht and Hupacasath First Nations following the development of an Annual Harvest Plan and through the in-season decision-making process.

The Tseshaht and Hupacasath First Nations share an allocation of Somass Sockeye for economic opportunity (EO) fisheries as defined in the Tsu-mu-ass Fishery Agreement. There are two distinct types of fisheries that operate. The first provides for designated communal fishing days,

when harvest occurs through a collective effort such as using a drag seine net off one vessel at the Papermill Dam site in the lower Somass River. The harvest is distributed among members of the Nations. The second type of fishery is a traditional, artisanal net fishery. Typically, harvest occurs from relatively small vessels using gill nets. However, the bands may also designate vessels operated by non-members (e.g. commercial vessels) to fish on behalf of the nation. These vessels require a separate licence.

### ***Fishery Monitoring and Catch Reporting***

Catch is validated by monitors at mandatory designated landing sites. Monitors count the fishers catch, and issue a landing slip after validation. Catch is estimated by summing landing slip information as collected by First Nations monitors stationed at the designated landing sites. Monitors are stationed at landing sites for the full duration of the fishery opening. Catch estimates are stratified by time (duration of the opening) and by area. A landing slip identifies the catch attributed to each designated harvester. More than one landing slip may be attributed to a single vessel (i.e. more than one designated harvester fishing on the vessel and catch is shared among the harvesters).

Effort will be estimated by summing individual landing events from each harvester as reported through the FOS reporting system. The E-logs will be maintained by First Nations monitors stationed at the designated landing sites. Effort estimates will be stratified by time (duration of the opening) and by area (Inlet/Lower River (as delimited by the “green lights” at the pilings)/Papermill Dam). A landing event refers to the landing of a vessel at a designated landing site. As described above, there may be more than one landing slip associated with a landing event.

#### **13.5.3.6.6 ESSR Fisheries**

An ESSR for Sockeye is rare but may occur at Robertson Creek Hatchery.

### 13.5.4 WCVI – OTHER SOCKEYE

This section of the IFMP is under development and further information will be provided in a subsequent year. There are no commercial or recreational directed fisheries on these Sockeye planned for 2019. However, there are directed First Nations FSC and treaty harvests that occur on many of these stocks.

#### 13.5.4.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

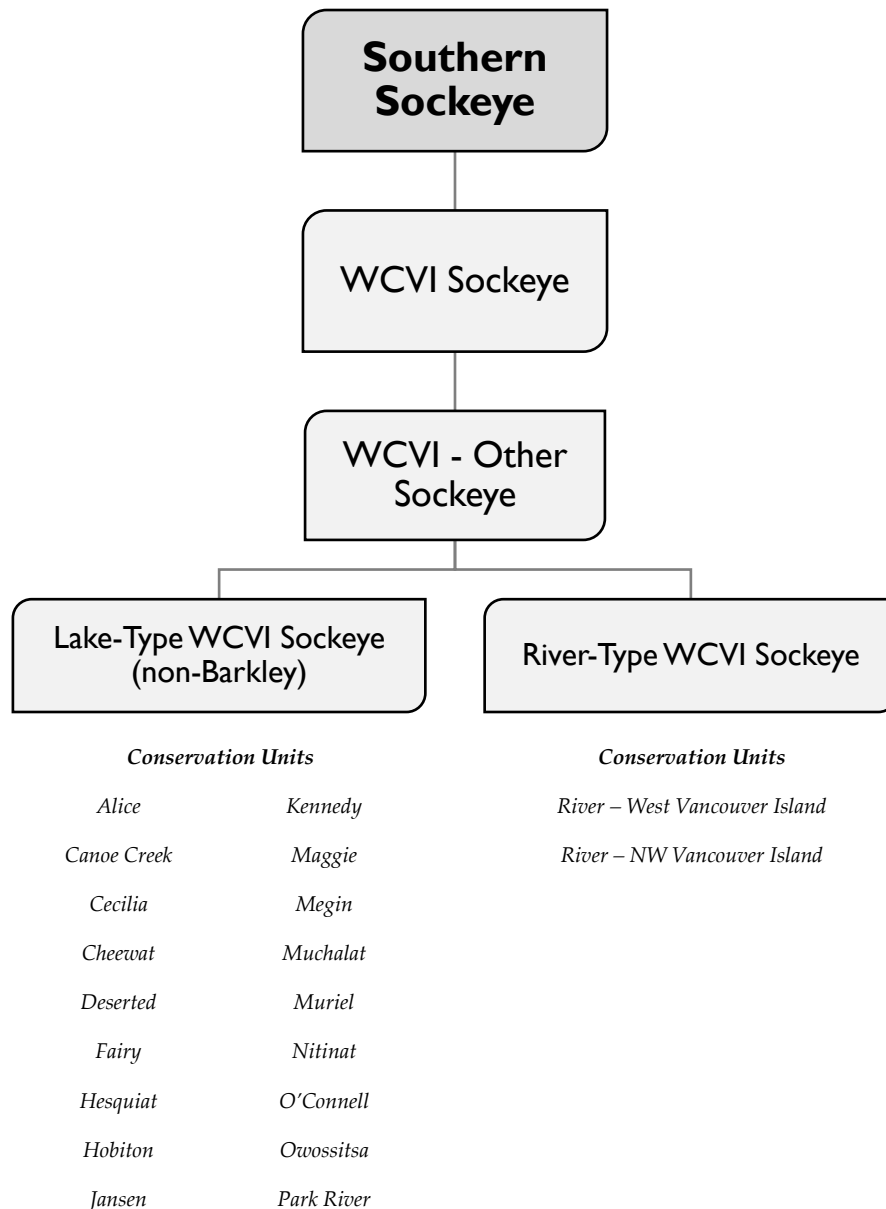


Figure 13.5-5: Overview of WCVI - Other Sockeye

### 13.5.5 OVERVIEW OF SOUTHERN INSIDE SOCKEYE

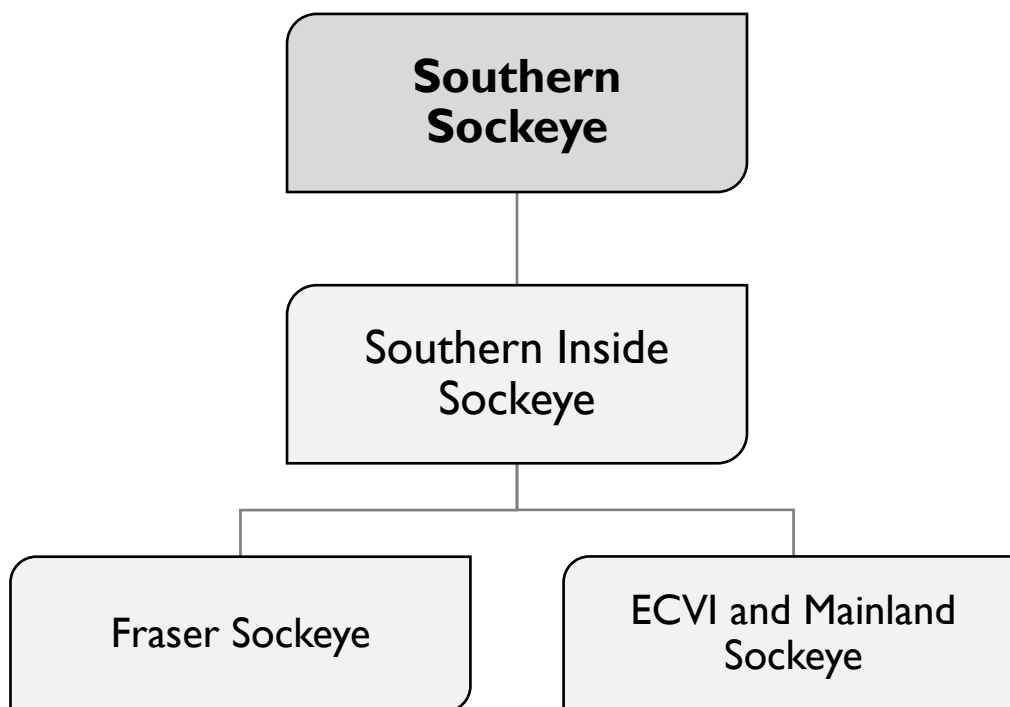


Figure 13.5-6: Overview of Southern Inside Sockeye



### 13.5.6 FRASER SOCKEYE

#### 13.5.6.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

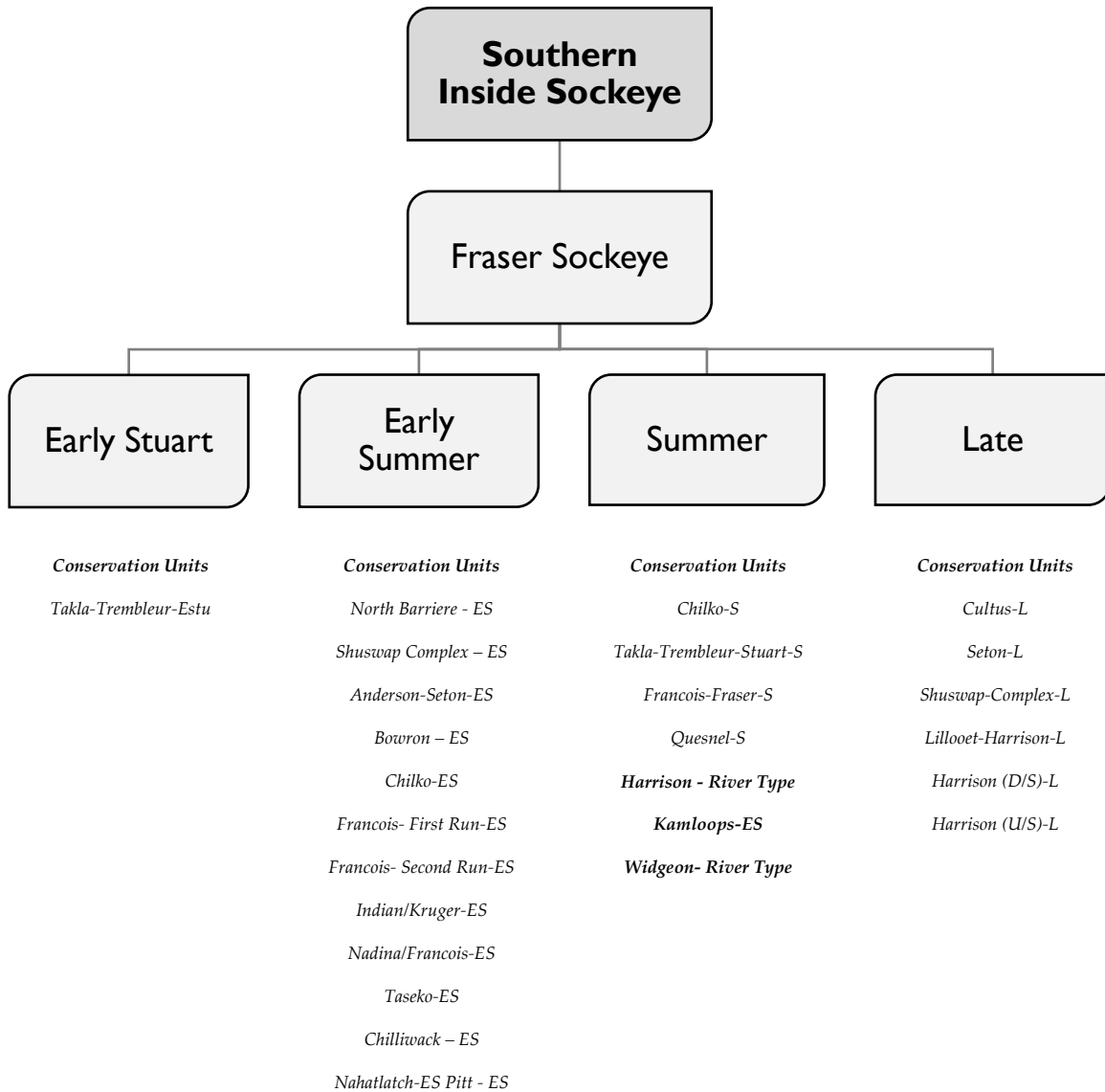


Figure 13.5-7: Overview of Fraser Sockeye

Note: **bolded** CUs have been managed as part of the Summer run aggregate since the 2012 season

### 13.5.6.2 STOCK ASSESSMENT INFORMATION

In 2017, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) published an assessment and status report on 24 designatable units of Fraser Sockeye. COSEWIC status reports are used to assign risk status to wildlife species. COSEWIC classified 8 designatable units as endangered, 2 as threatened, 5 as special concern, and 9 as not at risk. The report is available online at:

[https://www.sararegistry.gc.ca/virtual\\_sara/files/cosewic/srSockeyeSalmon2017e.pdf](https://www.sararegistry.gc.ca/virtual_sara/files/cosewic/srSockeyeSalmon2017e.pdf)

The Canadian Science Advisory Secretariat (CSAS) also assessed the integrated biological status of Fraser River Sockeye salmon CUs was assessed in 2012 and more recently 2017 (see Table 13.5-5). The CSAS publication and Science Advisory Report are available at:

2012: <http://www.dfo-mpo.gc.ca/Library/349836.pdf>

2017: <http://waves-vagues.dfo-mpo.gc.ca/Library/40712163.pdf>

Table 13.5-5 Status Evaluations for 24 Fraser Sockeye CUs – 2017 relative to 2012

2017	2012		Conservation Unit	Cyclic	Stock	
R	R		Bowron-ES	-	Bowron	
R	R		Cultus-L	-	Cultus	
R	R		Takla-Trembleur-EStu	cyclic	Early Stuart	
R	R*		Taseko-ES	-	Miscellaneous Early Summers	
R	R		Widgeon – River*	-	Miscellaneous Lates	
R	A		Harrison (U/S)-L	-	Weaver	
R	UD		Seton-L	-	Portage	
R	A	R	A	Quesnel-S	cyclic	Quesnel
R	A	R	A	Takla-Trembleur-Stuart-S	cyclic	Late Stuart
A		R		Nahatlatch-ES	-	Miscellaneous Early Summers
A		A		North Barriere-ES	-	Fennel and Miscellaneous Early
A		A		Kamloops-ES	-	Raft and Miscellaneous Early
A		A	G	Shuswap-ES	cyclic	Scotch, Seymour, Mis. Early Summer
A		G*		Lillooet-Harrison-L	-	Birkenhead
A	G	R		Nadina-Francois-ES	-	Nadina
A	G	R	A	Chilliwack-ES	cyclic	Miscellaneous Early Summers
A	G	R	A	Francois-Fraser-S	-	Stellako
A	G	A		Anderson-Seton-ES	-	Gates
A	G	G		Harrison (D/S)-L	-	Miscellaneous Lates
A	G	G		Shuswap Complex-L	cyclic	Late Shuswap
G		A	G	Pitt-ES	-	Pitt
G		G*		Chilko-S and Chilko-ES agg.	-	Chilko
G		G		Harrison River – River Type	-	Harrison
DD	DD		Chilko-ES	-	Chilko	

Abbreviations: EStu: Early Stuart; ES: Early Summer; S: Summer; L: Late; Mis: miscellaneous;

\*Widgeon (river-type) CU has a small distribution, therefore, this CU will be consistently in the Red status zone;

Fraser River Sockeye are managed based on four management groups (Early Stuart Run, Early Summer Run, Summer Run, and Late Run). However, management actions for specific populations within the four management groups may be considered. Spawning escapement targets and harvest rules are developed annually for each management group.

The Fraser River Sockeye Spawning Initiative process was initiated in 2006 as a Wild Salmon Policy project and is used to inform escapement strategy options. Further to this, the Wild Salmon Policy 2018-2022 Implementation Plan was announced in 2018. Refer to DFO's Wild Salmon Policy website for details:

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

Fisheries targeting on Fraser Sockeye may also encounter some ECVI and Mainland Sockeye and Pink salmon. Terminal fisheries on ECVI and Mainland Sockeye and Pink populations are

escapement goal driven. Targeted terminal fisheries on ECVI and Mainland Pinks will be determined in-season, while directed Sockeye fisheries on ECVI stocks are not anticipated in 2019.

#### **13.5.6.2.1 Pre-season**

Prior to each fishing season, conservation constraints and a spawning escapement plan are determined through the Salmon Outlook and IFMP consultations. A pre-season fishing plan is then developed by the bilateral US-Canada Fraser River Panel (FRP) that takes into consideration pre-season forecasts of abundance, timing, diversion rate and environmental conditions and/or values based on historical data. Final forecasts of timing and diversion rate are not completed until June.

#### ***2019 Pre-season Fraser River Sockeye Run Size Forecast:***

Pre-season forecasts of run size at a range of probability levels are developed for all individual Fraser Sockeye stocks, and then aggregated into the four management (run timing) groups Table 13.5-6. Fraser Sockeye run size forecasts are highly uncertain, largely due to the wide variability in annual survival rates, and observation error in the stock-recruitment data. Fraser Sockeye survival for most stocks have been variable with a record low survival observed in the 2009 return year, improvements from 2010 to 2014, and a decline again (2015 to 2017).

The 2019 run size forecast approach uses a suite of models, which were selected on a stock-specific basis based on their ability to predict true returns over the full stock-recruitment time series. The forecast is highly uncertain as represented by the cumulative probabilities, which largely represent uncertainty in stock survival. If survivals fall outside a stock's historic stock-recruitment time series, then returns could fall outside the forecast distribution. It is more appropriate to reference individual stock forecast distributions, versus the total Fraser Sockeye forecast, since not all stocks will exhibit the same survival in a particular year. Therefore, the total forecast distribution from 1,794,000 to 14,297,000 at the 10% to 90% probability levels will likely under-estimate or over-estimate total returns at the ends of the probability distribution. The median or 50% probability of the total 2019 forecast distribution is 4,795,000 (there exists a one in two chance the return will be at or below this value). Forecast returns are dominated by Summer run stocks, with Chilko accounting for 57% of the total forecast (50% probability) for all management groups.

The effects of extremely warm water temperatures on survival have been incorporated quantitatively into the forecasts for seven stocks where temperature covariate models historically perform well. Although the effect of the warm coastal temperatures on Fraser Sockeye survival is highly uncertain, forecasts for these stocks using temperature covariate

models were in most cases smaller than forecasts produced by models that exclude these covariates. These stocks account for 76% of the total forecast at the median forecast level. Given that the warm ocean conditions that developed in late 2013 and persisted through 2016, median (50% probability level) forecasts based on models that do not include indices of environmental conditions may overestimate returns. In recent years (2015-2017), total Fraser Sockeye returns fell at the low end (~10% probability level) of the forecast range. However, in 2018, total returns were better, i.e. between the 25% and 50% probability levels of the forecast range. Due to the below average survival observed for many stocks in 2018 sibling models were used to forecast age 5 returns for 7 stocks. In recent years, although total returns have fallen at lower probability levels, the exact response between individual stocks has varied (source: DFO).

For further details, refer to the Fraser Stock Assessment Technical Memo Pre-season Run Size Forecasts for Fraser River Sockeye (*Oncorhynchus nerka*) and Pink (*Oncorhynchus gorbuscha*) Salmon in 2019.

Run sizes for Fraser Sockeye will be updated in season.

Table 13.5-6: 2019 Pre-season Sockeye return forecasts by stock and timing group (DFO, 2019)

Run timing group	Forecast Model <sup>a</sup>	Probability that Return will be at/or Below Specified Run Size				
Stocks		10%	25%	50%	75%	90%
Early Stuart	<i>Ricker (Ei)</i>	18,000	27,000	41,000	61,000	92,000
Early Summer		112,000	221,000	465,000	898,000	1,753,000
<i>(total excluding miscellaneous)</i>		76,000	140,000	277,000	557,000	1,059,000
Bowron	<i>Ricker (Pi)</i>	6,000	9,000	15,000	24,000	39,000
	<i>PowerAge4</i>					
Upper Barriere (Fennell)	<i>/SiblingAge5</i>	3,000	5,000	10,000	19,000	32,000
Gates	<i>Larkin</i>	12,000	22,000	41,000	81,000	152,000
Nadina	<i>MRJ</i>	29,000	59,000	129,000	283,000	576,000
	<i>LarkinAge4</i>					
Pitt	<i>/SiblingAge5</i>	13,000	20,000	34,000	57,000	90,000
	<i>LarkinAge4</i>					
Scotch	<i>/SiblingAge5</i>	4,000	9,000	19,000	38,000	75,000
	<i>LarkinAge4</i>					
Seymour	<i>/SiblingAge5</i>	9,000	16,000	29,000	55,000	95,000
Misc (EShu) <sup>b</sup>	<i>R/S</i>	30,000	68,000	156,000	253,000	448,000
Misc (Taseko) <sup>c</sup>	<i>R/S</i>	1,000	2,000	3,000	6,000	9,000
Misc (Chilliwack)	<i>Ricker</i>	2,000	5,000	17,000	59,000	195,000
Misc (Nahatlatch) <sup>d</sup>	<i>R/S</i>	3,000	6,000	12,000	23,000	42,000

Run timing group  Stocks	Forecast Model <sup>a</sup>	Probability that Return will be at/or Below Specified Run Size				
		10%	25%	50%	75%	90%
<b>Summer</b>		1,553,000	2,454,000	3,930,000	7,048,000	11,187,000
<b>(total excluding miscellaneous)</b>		1,526,000	2,398,000	3,835,000	6,852,000	10,789,000
Chilko	Power Juv (Pi)	1,151,000	1,773,000	2,750,000	4,761,000	7,143,000
Late Stuart	R1C	6,000	14,000	39,000	105,000	256,000
Quesnel	Ricker (Ei)Age4 /SiblingAge5	100,000	177,000	333,000	687,000	1,207,000
Stellako	Larkin	175,000	261,000	368,000	572,000	848,000
Harrison <sup>e</sup>	Ricker/Odd(Ei)	71,000	140,000	293,000	646,000	1,205,000
Raft <sup>e</sup>	Ricker(PDO)	23,000	33,000	52,000	81,000	130,000
Misc (N. Thomp. Tribs) <sup>e &amp; f</sup>	R/S	1,000	3,000	5,000	10,000	20,000
Misc (N. Thomp River) <sup>e &amp; f</sup>	R/S	26,000	53,000	89,000	185,000	375,000
Misc (Widgeon) <sup>g</sup>	R/S	0	0	1,000	1,000	3,000
<b>Late</b>		111,000	189,000	359,000	669,000	1,265,000
<b>(total excluding miscellaneous)</b>		100,000	169,000	320,000	596,000	1,138,000
Cultus	PowerJuv (Pi)	0	0	1,000	2,000	3,000
Late Shuswap	RickerCycAge4 /SiblingAge5	11,000	26,000	61,000	140,000	325,000
Portage	Larkin	0	0	2,000	8,000	29,000
Weaver	Ricker(PDO)Age4 /SiblingAge5	7,000	13,000	27,000	55,000	116,000
Birkenhead	Ricker (Ei)	82,000	130,000	229,000	391,000	665,000
Misc Harrison/Lillooet <sup>g</sup>	R/S	11,000	20,000	39,000	73,000	127,000
<b>TOTAL SOCKEYE SALMON</b>		1,794,000	2,891,000	4,795,000	8,676,000	14,297,000
<b>(TOTAL excluding miscellaneous)</b>		1,720,000	2,734,000	4,473,000	8,066,000	13,078,000

a. See Table 4 for model descriptions

b. Misc. Early Shuswap uses Scotch & Seymour R/EFS

c. Misc. Taseko uses Chilko R/EFS

d. Misc. Nahatlach uses Early summer-run stocks R/EFS

e. Raft, Harrison, Misc. North Thompson stocks moved to Summer run-timing group

f. Misc. North Thompson stocks use Raft & Fennel R/EFS

g. Misc. Late Run stocks (Harrison Lake down-stream migrants including Big Silver, Cogburn, etc.), and river-type Widgeon use Birkenhead R/EFS

Table 13.5-7: Age composition of 2019 forecasted returns for each stock at the 50% probability level

Sockeye stock/timing group	2019 Fraser Sockeye Forecasts				
	FOUR YEAR OLDS	FIVE YEAR OLDS	TOTAL 50% <sup>a</sup>	Four Year Old Proportion	Five Year Old Proportion
	50% <sup>a</sup>	50% <sup>a</sup>			
<b>Early Stuart</b>	27,000	14,000	41,000	66%	34%
<b>Early Summer</b>					
Bowron	9,000	6,000	15,000	60%	40%
Upper Barriere (Fennell)	8,000	2,000	10,000	80%	20%
Gates	34,000	7,000	41,000	83%	17%
Nadina	83,000	46,000	129,000	64%	36%
Pitt	9,000	25,000	34,000	26%	74%
Scotch	15,000	4,000	19,000	79%	21%
Seymour	25,000	4,000	29,000	86%	14%
Misc (EShu)	63,000	94,000	156,000	40%	60%
Misc (Taseko)	3,000	40	3,000	99%	1%
Misc (Chilliwack)	17,000	4,000	21,000	83%	17%
Misc (Nahatlatch)	8,000	4,000	12,000	65%	35%
<b>Summer</b>					
Chilko	2,426,000	324,000	2,750,000	88%	12%
Late Stuart	30,000	9,000	39,000	77%	23%
Quesnel	207,000	126,000	333,000	62%	38%
Stellako	194,000	174,000	368,000	53%	47%
Harrison <sup>b</sup>	167,000	42,000	293,000	80%	20%
Raft	31,000	21,000	52,000	60%	40%
Misc (N. Thomp. Tribs)	3,000	2,000	5,000	65%	35%
Misc (N. Thomp River)	65,000	25,000	89,000	72%	28%
Misc (Widgeon)	300	480	780	38%	62%
<b>Late</b>					
Cultus	1,000	0	1,000	100%	0%
Late Shuswap	20,000	41,000	61,000	33%	67%
Portage	0	2,000	2,000	0%	100%
Weaver	11,000	16,000	27,000	41%	59%

Sockeye stock/timing group	2019 Fraser Sockeye Forecasts				
	FOUR YEAR OLDS	FIVE YEAR OLDS	TOTAL 50% <sup>a</sup>	Four Year Old Proportion	Five Year Old Proportion
	50% <sup>a</sup>	50% <sup>a</sup>			
Birkenhead	144,000	85,000	229,000	63%	37%
Misc(Non-Shuswap)	27,000	12,000	39,000	70%	30%
<b>Total</b>	<b>3,627,300</b>	<b>1,089,520</b>	<b>4,798,780</b>	<b>64%</b>	<b>36%</b>

a. Probability that actual return will be at or below specified run size

b. Harrison are four (in four year old columns) and three (in five year old columns) year old forecasts

### 2019 Pre-season Fraser River Sockeye Run Timing Curves:

Preliminary run timing estimates shown in the figure below are based on historical or all years' median timings excluding the 2016 cycle years. All timing estimates may be updated for pre-season planning once timing forecasts are developed for Early Stuart and Chilko Sockeye. As shown below (Figure 13.5-8) it is expected that there will be considerable overlap between the timing groups and with Fraser Pink Salmon in 2019.

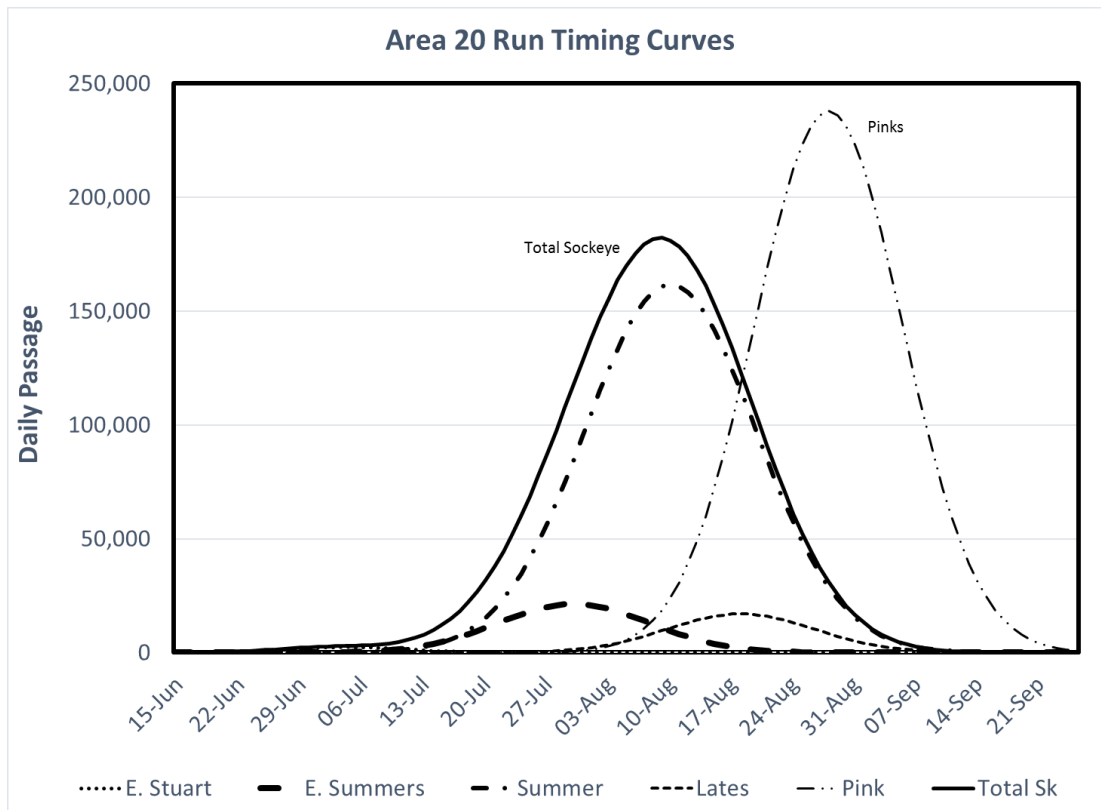


Figure 13.5-8: Pre-season Area 20 Run Timing Curves for 2019 Fraser Sockeye and Pink Salmon



Test fishery plans to assess in-season abundances of Fraser Sockeye and Pink salmon are developed annually by the FRP. The plan will take into account conservation concerns for all stocks and species, assessments required for in-season management, total allowable catch and cost. The pre-season planned test fishing schedule will be responsive to in-season information.

#### **13.5.6.2.2 In-season**

In-season information including estimates of abundance, run timing, stock composition, and other technical information are used to assess potential fishing opportunities relative to pre-season fishing plans.

In-season information derived from catch in test and other fisheries, and in-river hydro-acoustic estimates of salmon passage are provided by the Pacific Salmon Commission (PSC) staff to the DFO and FRP for consideration when planning fisheries.

The FRP meets regularly from early July to mid-September to review information as it becomes available over the course of the Sockeye migration. During this period, in-season information is regularly updated by the FRP to set spawning escapement objectives, management adjustments, and calculate Total Allowable Catch (TAC). The availability of the TAC to harvesters will be affected by other factors, including migration pathways and conservation requirements for co-migrating stocks or species.

In-season information including fishery openings is posted on the Internet regularly throughout the fishing season by the DFO and the PSC at the following web sites:

- Weekly PSC News Release:  
[http://www.psc.org/news\\_frpnews.htm](http://www.psc.org/news_frpnews.htm)
- Aboriginal, Commercial and Recreational Fishery Notices:  
<http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm>
- Sockeye Test Fisheries:
  - FRP approved test fishery results are available from the PSC at:  
<http://www.psc.org/publications/fraser-panel-in-season-information/test-fishing-results/>
  - Other test fishery results are available from DFO at:  
<http://www.pac.dfo-mpo.gc.ca/fm-gp/fraser/index-eng.html>

### 13.5.6.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS

#### Fraser Sockeye Run Timing Groups

The four run timing groups (Early Stuart, Early Summer, Summer and Late Run) identified under the Pacific Salmon Treaty Annex generally contain stocks with similar timing in the marine area. A preliminary analysis of the run timing for Raft River, North Thompson, and Harrison stocks supported a decision made in advance of the 2012 season to include these stocks in the Summer Run management group (based on similar run timing). The 2019 Fraser Sockeye escapement plan reflects this continued re-alignment of stocks. The harvest rules have been adjusted since 2012 to account for this change.

#### Proportional Management Adjustments & Proportional Difference Between Estimates

Proportional management adjustments (pMA) and/or proportional difference between estimates (pDBEs) may be adopted by the FRP to assist in the achievement of escapement goals. Management adjustments (pMA x escapement goal) are added to the escapement goal when necessary to account for historic differences between Mission hydroacoustic estimates of fish passage (plus catch upstream of the hydroacoustics site) and spawning ground escapement estimates. That is, sometimes more fish are needed to be counted going upstream at Mission (in the lower Fraser River) than the escapement goal (plus expected catch upstream of Mission) in order to achieve the escapement goal on the spawning grounds. Differences between estimates at Mission and the spawning grounds (DBEs) occur for many reasons, including measurement errors in the number of fish estimated at Mission, on the spawning grounds, caught along the way, stock ID error, en-route losses due to migration difficulties, and unaccounted for removals (e.g. predation). DBEs expressed as a proportion (pDBE) can be interpreted as the percentage of fish estimated to pass Mission that would not be expected to be enumerated by the spawning ground assessment programs, assuming no additional catch.

The pre-season pMAs shown in the escapement plan are comprised of historical median pDBEs. Prior to the start of the season in 2016, a change was made by the FRP regarding how pMAs are calculated to better reflect the pDBE of individual stocks. Within the management groups, the pDBEs for some individual stocks (e.g., Chilliwack, Pitt, Harrison and Birkenhead type stocks) were weighted with the pDBEs from the remaining aggregated stocks in their respective timing groups over the range of forecast values. This results in different pMAs within a management group across the range of forecast run sizes. When combining pMAs and escapement goals that both change across the range of forecast run sizes, the resulting allowable exploitation rate can

sometimes decrease as the run size increases. However, as expected, the number of fish that can be harvested does increase with run size in these instances.

When forecasts or in-season information on temperature, discharge and/or timing is available, the pMA and pDBE for each management group can be estimated based on historical relationships between the temperature and discharge or the timing of a particular run timing group, and the discrepancy between the number of fish estimated at Mission and the spawning grounds.

The Fraser Panel may update the pMAs and/or pDBEs pre-season and in-season as methods are finalized and information on environmental conditions, return timing, return strength and fish health becomes available.

### **2019 Escapement Strategy**

The Fraser River Sockeye Spawning Initiative (FRSSI) was undertaken to develop escapement strategies for Fraser River Sockeye.

A range of harvest rules (also called Total Allowable Mortality or “TAM” rules) have been evaluated in the Fraser River Sockeye Spawning Initiative (FRSSI) model. An illustration of the harvest rules, taken from the Pestal *et al.* 2011 CSAS paper, is shown below.

It is important to note that each harvest or TAM rule is characterized by Lower Fishery Reference Points (vertical dashed line through the No-Fishing Point) and Upper Fishery Reference Points (vertical dashed line through the Cut-Back Point) to describe the shape of the Total Allowable Mortality (TAM) rule for each management group (see Figure 13.5-9). The TAM cap and the Low Abundance Exploitation Rate (LAER) describe the upper and lower ranges of exploitation rates, respectively. These four values define the harvest rule for each management group in the escapement plan, and once finalized, do not change in-season. During the fishing season, in-season estimates of run size and pMAs are used in conjunction with the escapement plan to determine the total allowable harvest for a given management group at a given time.

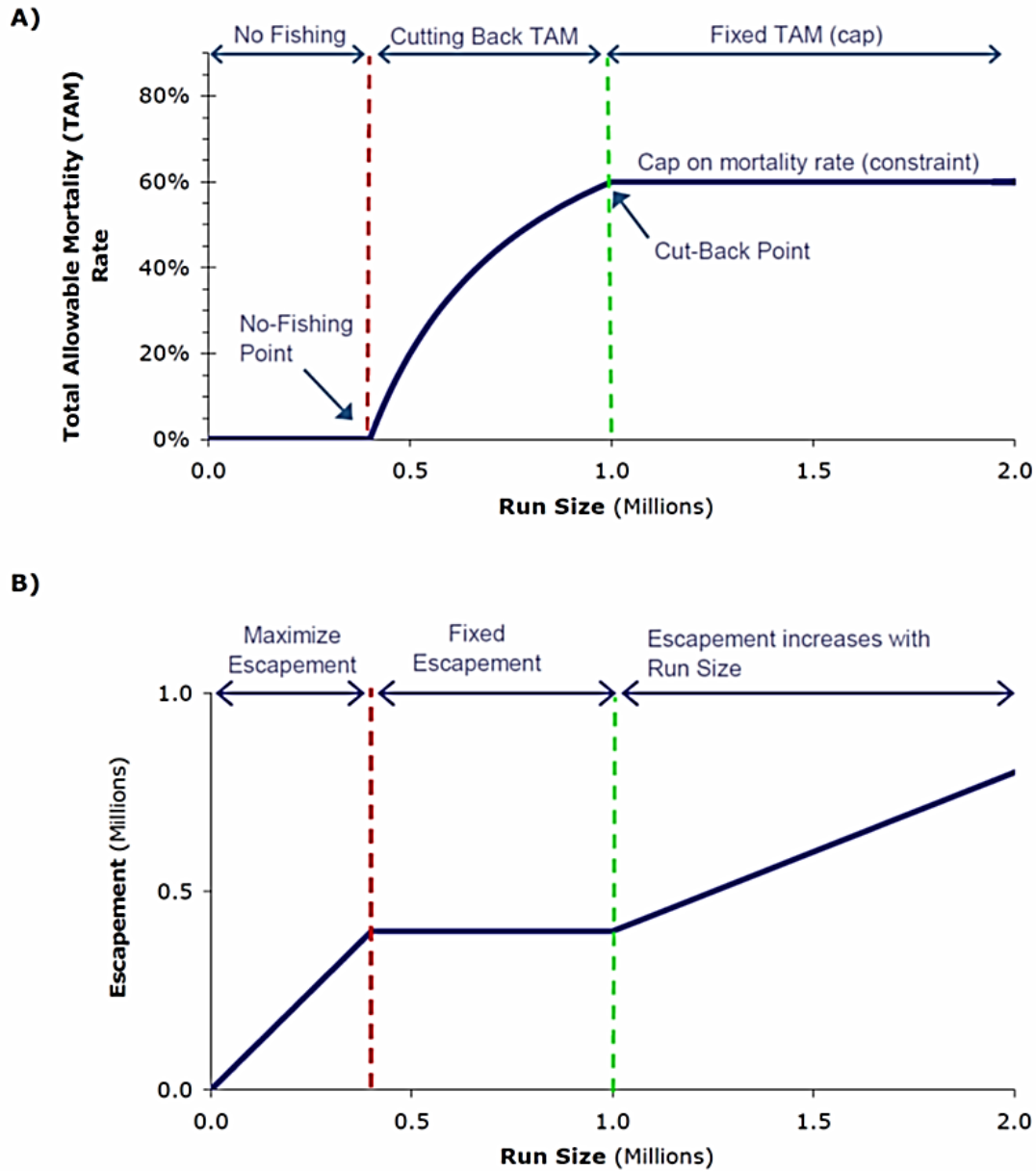


Figure 13.5-9: Shape of Total Allowable Mortality (TAM) rule.

Note: the Low Abundance Exploitation Rate (LAER) is applied after the TAM rule and is not shown in the figure.

The Lower & Upper Fishery Reference Points interact with the TAM cap to describe the shape of the TAM rule:

- The Upper Fishery Reference Point describes the run size above which the TAM plateaus at the TAM cap (e.g. 60%) and the remaining proportion goes to escapement (e.g., 40% of the run at run sizes above the Upper Fishery Reference Point).

- The Lower Fishery Reference Point describes the numerical escapement target when the run size is between the Upper and Lower Fishery Reference Points.

When the run size is below the Lower Fishery Reference Point, the escapement target is the run size, but it is recognized that there will be some low incidental harvest in the form of low abundance exploitation rates (LAERs) to allow for fisheries directed on co-migrating stocks and species. In 2018, the LAERs for the Run timing groups were as follows: 10% for the Early Stuart Run, 20% for both the Early Summer and Summer Runs, and 20% to 30 % for Late Run and Cultus Lake Sockeye.

### **2019 Escapement Plan**

For the 2019 escapement plan, the Department sought input on two escapement options and their components. Consistent with other years, the Department considered all input provided during final escapement plan development. The final escapement plan for 2019 is Option 1 (as per the Draft 2019/20 Southern Salmon IFMP). The Option 1 escapement plan provides additional harvest flexibility at low run sizes and is described in Table 13.5-8. The fishery reference points shown in the table are evaluated for the stocks that have a long term stock-recruitment relationship. For the Early Summers, Summers, and Lates, the fishery reference points are scaled up annually to account for the expected contribution of the unforecasted, or “miscellaneous” stocks to the run timing group at the p50 abundance forecast (see Table 13.5-6). In the case of Early Summers the reference points were scaled over the forecast range due to the significant change in proportion of the miscellaneous stocks over the forecast range.

Table 13.5-8: 2019 Fraser Sockeye Escapement Plan (i.e. Option 1) - Brood Year (2015) Escapement Plan with LAER Adjustments and Lower Summer TAM

Management Unit	Harvest Rule Parameters		Lower Fishery Reference Point	Upper Fishery Reference Point
	Low Abundance ER (LAER)	TAM Cap		
Early Stuart	10%	60%	108,000	270,000
Early Summer (w/o misc)	20%	60%	100,000	250,000
Summer (w/o misc)	20%	60%	1,000,000	2,500,000
Late (w/o misc)	20%	60%	300,000	750,000

Table 13.5-10 shows, at the management group level, the range of expected outcomes (e.g. exploitation rates, available harvest, management adjustments and expected numbers of spawners to the grounds) for the range of the abundance forecast and fisheries reference points for the escapement plan. Note that these values do not take into account the pre-spawn mortality which can occur after adult salmon reach spawning grounds. We currently do not have any methods to predict pre-spawn mortality rates. Table 13.5-9 provides an example of descriptions of the information presented in Table 13.5-10.

Table 13.5-9: Description example of information shown in Table 13.5-10

From Escapement Options Table		Description
forecast	p10 18,000	run size forecast probability level being used for calculations in this column forecast associated with p-level (above) and this management group
TAM Rule (%)	0%	total allowable mortality (TAM) at this run size forecast
Escapement Target	18,000	escapement goal at this run size
MA	12,400	management adjustment (MA=pMA x escapement target)
Esc. Target + MA	30,400	adds up escapement target and management adjustment
LAER	10%	low abundance exploitation rate
ER at Return	0%	exploitation rate given TAM rule, run size, escapement target, & MA
Allowable ER	10%	larger of the values in the two previous rows
available harvest	1,800	harvest available for test fish, US, and Canada (=allowable ER x run size)
Performance		
Projected S (after MA)	9,600	projected adult spawners to the grounds (NOT accounting for pre-spawn mortality (PSM))
BY Spawners	10,096	number of adult spawners four years previous (compare to line above)
Proj. S as % BY S	95%	projected spawners as a percentage of brood year spawners
cycle avg S	44,409	average number of spawners on this cycle line (NOT accounting for PSM)
Proj. S as % cycle S	22%	projected spawners as a percentage of cycle line average spawners

Table 13.5-10: 2019 Escapement Plan for the Fraser River Sockeye management groups over a range of pre-season forecasts. For a description of the values in this table, refer to Table 13.5-9. Note, the bolded columns represent the pre-season planning values that are anticipated to be used to start the season in 2019

Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
Early Stuart	forecast	18,000	27,000	<b>41,000</b>	61,000	92,000
	TAM Rule (%)	0%	0%	<b>0%</b>	0%	0%
	Escapement Target	18,000	27,000	<b>41,000</b>	61,000	92,000
	MA	12,400	18,600	<b>28,300</b>	42,100	63,500
	Esc. Target + MA	30,400	45,600	<b>69,300</b>	103,100	155,500
	LAER	10%	10%	<b>10%</b>	10%	10%
	Available ER at Return	0%	0%	<b>0%</b>	0%	0%
	Allowable ER	10%	10%	<b>10%</b>	10%	10%
	Allowable Harvest	1,800	2,700	<b>4,100</b>	6,100	9,200
	<u>2019 Performance</u>					
Early Summer (w/o RNT)	Projected S (after MA)	9,600	14,300	<b>21,800</b>	32,400	48,900
	BY Spawners	10,096	10,096	<b>10,096</b>	10,096	10,096
	Proj. S as % BY S	95%	142%	<b>216%</b>	321%	484%
	cycle avg S	44,409	44,409	<b>44,409</b>	44,409	44,409
	Proj. S as % cycle S	22%	32%	<b>49%</b>	73%	110%
Management Unit		Pre-season Forecast Return				
		p10	p25	p50	p75	p90
Early Summer (w/o RNT)	<i>lower ref. pt. (w misc)</i>	147,400	157,900	<b>167,900</b>	161,200	165,500
	<i>upper ref. pt. (w misc)</i>	368,400	394,600	<b>419,700</b>	403,100	413,800
	forecast (incl. misc)	112,000	221,000	<b>465,000</b>	898,000	1,753,000
	TAM Rule (%)	0%	29%	<b>60%</b>	60%	60%
	Escapement Target	112,000	157,900	<b>186,000</b>	359,200	701,200
	MA	50,400	71,100	<b>83,700</b>	161,600	315,500
	Esc. Target + MA	162,400	229,000	<b>269,700</b>	520,800	1,016,700
	LAER	20%	20%	<b>20%</b>	20%	20%
	Available ER at Return	0%	0%	<b>42%</b>	42%	42%
	Allowable ER	20%	20%	<b>42%</b>	42%	42%
	Allowable Harvest	22,400	44,200	<b>195,300</b>	377,200	736,300
Early Summer (w/o RNT)	<u>2019 Performance</u>					
	Projected S (after MA)	61,800	122,000	<b>186,100</b>	359,400	701,500
	BY Spawners	137,845	137,845	<b>137,845</b>	137,845	137,845
	Proj. S as % BY S	45%	89%	<b>135%</b>	261%	509%
	cycle avg S	144,830	144,830	<b>144,830</b>	144,830	144,830
	Proj. S as % cycle S	43%	84%	<b>128%</b>	248%	484%

Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Summer	lower ref. pt. (w misc)	1,109,500	1,109,500	1,109,500	1,109,500	1,109,500
(w. RNT & Har)	upper ref. pt. (w misc)	2,773,900	2,773,900	2,773,900	2,773,900	2,773,900
	forecast	1,553,000	2,454,000	3,930,000	7,048,000	11,187,000
	TAM Rule (%)	29%	55%	60%	60%	60%
	Escapement Target	1,109,500	1,109,500	1,572,000	2,819,200	4,474,800
	MA	99,900	99,900	141,500	253,700	402,700
	Esc. Target + MA	1,209,400	1,209,400	1,713,500	3,072,900	4,877,500
	LAER	20%	20%	20%	20%	20%
	Available ER at Return	22%	51%	56%	56%	56%
	Allowable ER	22%	51%	56%	56%	56%
	Allowable Harvest	343,600	1,244,600	2,216,500	3,975,100	6,309,500
2019 Performance						
	Projected S (after MA)	1,112,600	1,112,600	1,576,400	2,827,100	4,487,300
	BY Spawners	977,005	977,005	977,005	977,005	977,005
	Proj. S as % BY S	114%	114%	161%	289%	459%
	cycle avg S	651,121	651,121	651,121	651,121	651,121
	Proj. S as % cycle S	171%	171%	242%	434%	689%

Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Late	lower ref. pt. (w misc)	336,600	336,600	336,600	336,600	336,600
(w/o Har)	upper ref. pt. (w misc)	841,400	841,400	841,400	841,400	841,400
	forecast	111,000	189,000	359,000	669,000	1,265,000
	TAM Rule (%)	0%	0%	6%	50%	60%
	Escapement Target	111,000	189,000	336,600	336,600	506,000
	MA	54,400	98,300	188,500	198,600	323,800
	Esc. Target + MA	165,400	287,300	525,100	535,200	829,800
	LAER	20%	20%	20%	20%	20%
	Available ER at Return	0%	0%	0%	20%	34%
	Allowable ER	20%	20%	20%	20%	34%
	Allowable Harvest	22,200	37,800	71,800	133,800	435,200
2019 Performance						
	Projected S (after MA)	59,600	99,500	184,900	336,100	504,400
	BY Spawners	68,022	68,022	68,022	68,022	68,022
	Proj. S as % BY S	88%	146%	272%	494%	742%
	cycle avg S	465,982	465,982	465,982	465,982	465,982
	Proj. S as % cycle S	13%	21%	40%	72%	108%
	Allowable Harvest (TF, US, CDN)	390,000	1,329,300	2,487,700	4,492,200	7,490,200
	Total projected spawners	1,243,600	1,348,400	1,969,200	3,555,000	5,742,100

Table 13.5-11 shows the projected escapement for each forecasted stock over the range of forecast probability levels (i.e. the “projected S” (after MA) from Table 13.5-10 are distributed to the component stocks). Note that this makes the additional assumption that the exploitation rate will be distributed evenly within a management group.



Table 13.5-11: Projected spawners by forecasted stock over the forecast range, applying 2019 TAM rules and historical pMAs.

Run timing group Stocks	Total Escapement		Comparisons @p10		Comparisons @p25		Comparisons @p50		Comparisons @p75	
	Cycle Ave	Brood Year	Cycle Ave	Brood Year	Cycle Ave	Brood Year	Cycle Ave	Brood Year	Cycle Ave	Brood Year
Early Stuart	44,409	10,096	22%	95%	32%	142%	49%	216%	73%	321%
Early Summer	144,830	137,845	43%	45%	84%	89%	128%	135%	248%	261%
Bowron	16,904	3,875	20%	85%	30%	129%	35%	155%	57%	248%
Upper Barriere	8,051	1,420	21%	120%	35%	197%	50%	282%	94%	535%
Gates	9,889	20,326	67%	32%	122%	60%	166%	81%	328%	159%
Nadina	16,814	34,434	95%	46%	194%	95%	307%	150%	673%	329%
Pitt	32,655	38,478	22%	19%	34%	29%	42%	35%	70%	59%
Scotch	9,791	6,614	22%	33%	51%	76%	78%	115%	155%	230%
Seymour	34,955	7,897	14%	63%	25%	111%	33%	147%	63%	279%
Misc (EShu)	3,705	12,697	448%	131%	1012%	295%	1684%	491%	2731%	797%
Misc (Taseko)	5,955	980	7%	41%	17%	102%	24%	143%	42%	255%
Misc (Chilliwack)	1,799	6,710	61%	18%	156%	42%	378%	101%	1312%	352%
Misc (Nahatlatch)	4,312	4,414	39%	39%	77%	75%	111%	109%	213%	208%
Summer	651,121	977,005	171%	114%	171%	114%	242%	161%	434%	289%
Chilko	412,471	662,707	200%	124%	195%	121%	267%	166%	463%	288%
Late Stuart	18,039	11,124	24%	39%	35%	57%	86%	140%	233%	378%
Quesnel	46,078	45,678	155%	157%	174%	176%	290%	292%	598%	603%
Stellako	102,375	101,422	122%	124%	116%	117%	144%	146%	224%	226%
Harrison	60,926	115,715	84%	44%	104%	55%	193%	102%	425%	224%
Raft	5,457	16,054	302%	103%	275%	93%	383%	130%	596%	202%
Misc (N. Thomp. Tribs)	333	932	210%	75%	420%	150%	601%	215%	1201%	429%
Misc (N. Thomp River)	4,792	23,072	388%	81%	501%	104%	745%	155%	1548%	322%
Misc (Widgeon)	650	301	15%	33%	31%	66%	46%	100%	92%	199%
Late	465,982	68,022	13%	88%	21%	146%	40%	272%	72%	494%
Cultus	20,701	1,220	0%	8%	0%	8%	1%	16%	3%	49%
Late Shuswap	310,704	9,688	1%	38%	3%	90%	7%	212%	15%	485%
Portage	3,793	36	0%	0%	3%	278%	13%	1389%	66%	6944%
Weaver	29,300	3,032	8%	79%	15%	145%	31%	300%	63%	610%
Birkenhead	99,123	45,049	48%	105%	166%	76%	133%	293%	227%	500%
Misc. non-Shuswap	2,361	8,997	267%	70%	487%	128%	953%	250%	1779%	467%

Color code shows comparison of p50 abundance forecast outcomes compared to cycle average and brood year escapement (green = greater than 125%, no color = between 75%- 125%, yellow = between 25% - 74%, red = less than 25%).

### 13.5.6.4 HARVEST CONSTRAINTS INCLUDING INCIDENTAL SOCKEYE CATCH, BYCATCH, AND LAER

Although unlikely, fisheries targeting late-run Fraser Sockeye may be affected in 2019 by conservation measures to protect Interior Fraser River Steelhead. Dates and areas for rolling window closures can be found in Appendix 9.

**Harvest Constraints:** Fishing plan options are evaluated for a range of possible Fraser Sockeye run sizes and return timing. In-season run size and timing estimates form the basis for management once these estimates are available. There is significant overlap between Fraser run timing groups as well as between Fraser Sockeye and other salmon species. The overlap of one timing group may constrain harvest opportunities on another timing group and the directed harvest of one species may be constrained by another. In some cases, full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season. **Incidental Catch, Bycatch Constraints, and LAER:** Though total allowable catch (TAC) may be identified for various Fraser Sockeye management groupings in most years,

conservation and management constraints on co-migrating stocks, management groups, or other species can affect harvest opportunities. In recent years the less abundant Fraser Sockeye management groups (i.e. Early Summer and Late Run Sockeye), Spring 4<sub>2</sub> and Spring and Summer 5<sub>2</sub> Chinook, Interior Fraser Coho and Interior Fraser Steelhead have been the primary harvest constraints when planning directed Fraser Sockeye fisheries.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

**If in-season assessment information indicates that the escapement targets in the Fraser Sockeye escapement plan are not going to be achieved then the priority is conservation.** In cases when the total allowable mortality minus any management adjustment results in a zero or very low total allowable mortality for a timing group, the Department may consider measures to protect 80-90% of the return of that Fraser Sockeye timing group while allowing directed harvest of co-migrating stock groups or species. In the escapement plan table, this concept is expressed as the **low abundance exploitation rate (LAER)**. For example, in 2018 the LAER was 10% for Early Stuart Sockeye, 20% for both the Early Summer and Summer Run Sockeye, and 20% to 30% for Late Run Sockeye.

**The low abundance exploitation rate (LAER) is not a target as the objective of the LAER is to allow as many fish to pass to the spawning grounds as possible while allowing some incidental harvest, and in some cases some directed harvest when there is little opportunity for harvest directed on other Fraser Sockeye stock groups or species.**

Fisheries are only considered if they provide scientific information necessary for conservation (test fisheries) or have reasonably low catch impacts on Fraser Sockeye. **All fishery impacts, including test fisheries, are to be accounted for under the LAER.** Additional considerations under LAER management necessary for fishery planning include: current and projected catch accounting for all United States and Canadian fisheries, the distribution of impacts between gear groups, gear selectivity, release mortality rates, Sockeye mortality relative to target species, compliance with licence regulations and environmental conditions.

**For First Nations FSC fisheries, the LAER is not a harvest target, the above considerations apply, and a sharing plan may be required to enable a fair distribution of impacts between marine and Fraser River First Nations.** When FSC fisheries are prosecuted using the LAER, the licence amounts by area (South Coast, Lower Fraser, Middle/Upper Fraser) are generally used to guide low impact fisheries for other species or stocks.

## Early Stuart Management

The 2019 Early Stuart return represents an off-cycle year following the 2018 sub-dominant cycle year. The main contributor to the 2019 return is forecasted to be age four fish from the 2015 brood year (approximately 66% age 4). The 2019 p50 forecast (41,000) is lower than the cycle average (156,100).

Similar to the management of all timing groups the implications of the escapement strategy for Early Stuart fishing plans will be influenced by in-season run size estimates and management adjustments which may be adjusted based on temperature and discharge conditions in the Fraser River during the return migration. Based on the draft escapement options, the pre-season forecast and long term median management adjustments, Early Stuart Sockeye remain in a low abundance exploitation rate (LAER) situation if the actual returns fall within the forecast range.

In recent years, window closures and other fishing restrictions have been required in commercial, recreational and First Nations fisheries to stay within the LAER objectives identified in the escapement plan. Management measures in 2019 will include a rolling window closure based on the run timing of the Early Stuart and Early Summer migrations through various fishing areas. Potential window closure dates in Table 13.5-12 are provided for planning purposes to protect Early Stuart and Early Summer Sockeye. **These dates may be revised based on updated timing or in-season information.**

Table 13.5-12 shows the 2019 4-week window closure dates to protect Early Stuart and the early-timed Early Summer Run Sockeye. Typically a 3-week closure has been implemented to protect the Early Stuart Run. However, in 2019 a one week extension of the typical closure (resulting in a 4-week closure in total) will be implemented to provide protection to weak early-timed stocks of the Early Summer Run management group (e.g. Bowron, Taseko). The 2019 closure dates are listed in Table 13.5-12 for fishery planning and management, however, note that the actual closure dates and duration may change pre-season or in-season based on updated timing or in-season information. In addition to the window closure, considerations are being given for reducing test fishing activities during the earlier part of the Early Stuart migration. This may take the form of delaying the start of marine gill net test fisheries and/or reducing the number of test fish vessels.

Table 13.5-12: Dates for the 2019 Early Stuart window closure (3-weeks) plus 1-week extension to provide additional protection for earlier timed stocks of the Early Summer run Sockeye (i.e. 4-week total closure).

Area	Start Date	Start Time	4 Week End Date	End Time	Management Action
Areas 111, 121, 123 to 127	23-Jun		22-Jul		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 22 (Sn, Gn, Tr)
Area 11	23-Jun		22-Jul		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 22 (Gn, Tr); July 25 (Sn) <sup>1,2</sup>
Area 12	23-Jun		22-Jul		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 22 (Gn, Tr); July 25 (Sn) <sup>1,2</sup>
Area 13	23-Jun		22-Jul		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 22 (Gn, Tr); July 25 (Sn) <sup>1</sup>
Areas 14 to 16	23-Jun		22-Jul		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 22 (Gn, Tr); Aug 15 (Sn) <sup>1</sup>
Areas 17, 19, 20 and 21	23-Jun		22-Jul		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 22 (Sn, Gn, Tr)
Areas 18 and 29	27-Jun	Noon	26-Jul	Noon	Earliest potential opening to FNs FSC fishing for Fraser sockeye = July 26, noon
Steveston-Mission Bridge	27-Jun	Noon	26-Jul	Noon	
Mission Bridge-Sawmill Cr	28-Jun	6:00 AM	28-Jul	6:00 AM	Earliest potential opening to FNs FSC fishing for Fraser sockeye = July 28, 6 AM
Sawmill Cr-Texas Cr	3-Jul	6:00 PM	31-Jul	6:00 PM	FN's FSC: Open to selective fishing for chinook (dip net, angling and potential for 8" mesh gill net) and may open in tribs for sockeye and chinook.
Texas Cr-Kelly Cr	3-Jul	6:00 PM	31-Jul	6:00 PM	
Kelly Cr-Deadman	3-Jul	6:00 PM	31-Jul	6:00 PM	
Deadman-Chilcotin	9-Jul	6:00 PM	4-Aug	6:00 PM	FN's FSC: Open to selective fishing for chinook (dip net, angling) and may open in tribs for sockeye and chinook.
Chilcotin-Quesnel	9-Jul	6:00 PM	4-Aug	6:00 PM	
Quesnel-Hixon	9-Jul	6:00 PM	4-Aug	6:00 PM	
Hixon-Prince George	11-Jul	6:00 PM	9-Aug	6:00 PM	FN's FSC: Open to selective fishing for chinook (dip net and 8" mesh gill net) and may open in tribs for sockeye and chinook.
Prince George-Stuart R	11-Jul	6:00 PM	9-Aug	6:00 PM	FN's FSC: Some allowable harvest in terminal areas.

<sup>1</sup> Gear restrictions remain in place to protect Sakinaw sockeye until July 25 (Queen Charlotte and Johnstone

<sup>2</sup> Additional sockeye closures will remain in place in portions of Areas 11 and 12 until late July in waters north of Lewis Point to protect Nimpkish sockeye.

## Early Summer Management

Forecast returns for stocks within this management group are variable but generally lower than average given the lower than average escapements in the brood year.

Based on the draft escapement options, the pre-season forecast range and long term median management adjustment values, directed harvest opportunities on Early Summer Run Sockeye are anticipated to be limited. Harvest may also be incidental during directed Summer Run fisheries. In 2019, the Department sought feedback and received support for adding an additional week to the typical 3-week Early Stuart window closure to provide protection for the early component of the Early Summer Run Sockeye (e.g. Bowron, Taseko). **For fishery planning and management, see Table 13.5-12 for the 2019 4-week window closure dates, however note that the actual closure dates and duration may change pre-season or in-season based on updated timing or in-season information.**

## Summer Run Management

The Summer Run Sockeye make up approximately 82% of the total return at the median forecast. After Chilko (57%) the Stellako (8%), Quesnel (7%) and Harrison (6%) stocks are the largest contributors to the 2019 forecast. Based on the escapement plan, the pre-season forecast range and long term median management adjustment values, directed harvest opportunities on Summer Run is anticipated to be low if the actual return is at the p10 forecast and moderate if the actual return falls in at the p25 forecast or above. Harvest may be limited by constraints on co-migrating groups (e.g., Early Summer and Late Run) and stocks of concern (e.g. Cultus Lake Sockeye, Interior Fraser Coho).

## Late Run and Cultus Lake Sockeye Management

The Late Run return in 2019 represents the subdominant cycle line and is expected to be below the cycle line average at the midpoint of the forecast distribution. The Late Run Sockeye make up approximately 7% of total return at the median forecast.

Historically, the ocean migration timing of Late Run Sockeye was similar to Summer Run Sockeye, however, Late Run Sockeye typically delayed entering the Fraser River by 4-6 weeks. Since the mid-1990s, Late Run Sockeye have entered the Fraser River much earlier, and they have experienced very high levels of en-route and/or pre-spawn mortality in these instances. In 2009-2011, the Late Run delay off the river mouth increased to approximately two weeks. In 2014 Late Run Sockeye delayed approximately three weeks. In 2018, although the Late Run timing through Area 20 was close to expectations, the delay off the mouth of the Fraser River was one of the longest observed since before 1995 at approximately 23 days. However, in 2012,

2013, and 2015 (brood year) there was little to no delay. While a range of studies have been undertaken to understand the cause and impact of this phenomenon, no causal factors have been identified. Planning for 2019 may take timing into account specifically when calculating in-season management adjustments for this group.

Based on the pre-season forecast, directed harvest opportunities on Late Run Sockeye are not expected throughout the forecast range (p10 to p90) as Late Run Sockeye remain in a LAER situation. Late Run Sockeye harvest will likely be in fisheries directed on Summer Run Sockeye and they will be subject to constraints on co-migrating stocks of concern such as Cultus Lake Sockeye and Interior Fraser Coho.

### **Cultus Lake Sockeye**

Management of Cultus Lake Sockeye will be based on the Cultus Lake Sockeye recovery objectives and an assessment of in-season information for the Late Run Sockeye stock aggregate. For more information on the recovery objectives, refer to Section 6.6 of the IFMP under Fishery Management Objectives for Stocks of Concern.

Due to the low numbers of Cultus Lake Sockeye compared to co-migrating stocks, the abundance and exploitation rate for Cultus Lake Sockeye cannot be calculated directly. For management purposes, the Cultus abundance, exploitation rate and en-route mortality will be assumed to be the same as the abundance (relative to run size forecast p-values), exploitation and en-route mortality rate for similarly timed Late Run stocks caught seaward of the confluence of the Fraser and Vedder Rivers. Exploitation rates are based on DNA analysis of Sockeye sampled either directly from fisheries or indirectly, from nearby test fisheries. En-route mortality estimates are based on the Late Run management adjustment which may be updated in-season.

Assessment of the Cultus population shown in Table 13.5-13 is sensitive to assumptions about en-route and pre-spawn mortality. Assuming the average estimated pre-spawn mortality (PSM) since the early upstream migration of Late Run began in 1996 (approximately 40%), the Late Run (excluding Birkenhead) pDBE, and the p10 to p90 pre-season forecast abundance range, the short term minimum recovery objectives 1 & 2 (see below and Section 6.6 of the IFMP under Fishery Management Objectives for Stocks of Concern) for the Cultus population are unlikely to all be met in 2019. The values in the table are also limited to the maximum exploitation rate permissible for Late Run Sockeye based on the escapement plan (i.e. LAER), abundance and management adjustment. In-season, these maximum exploitation rates for Cultus Sockeye may be higher or lower than indicated, due to interactions between run size, management adjustment, pre-spawn mortality, Late Run escapement plan and Cultus recovery objectives. These exploitation rates are not intended to be used as management targets and in-

season fishery management planning will take into account a range of considerations including updated assumptions based on in-season information as well as objectives for other Fraser Sockeye management groups and/or other stocks/species. Table 13.5-13 shows how the projected successful spawners compared to Objectives 1 & 2 across the middle forecast range, with pre-season assumptions of en-route and pre-spawn mortalities. Objectives 3 & 4 are longer term objectives and the performance of Cultus in relation to these objectives is not being assessed in Table 13.5-13.

- Objective 1 - Ensure the genetic integrity of the population by exceeding a four-year arithmetic mean of 1,000 successful adult spawners with no fewer than 500 successful adult spawners on any one cycle. This objective secures genetic variability.
  - 1a. 4 year average successful spawners > 1,000
  - 1b. minimum of 500 successful spawners in each of the last 4 years
- Objective 2 - Ensure growth of the successful adult spawner population for each generation (that is, across four years relative to the previous four years), and on each cycle (relative to its brood year) for not less than three out of four consecutive years. This objective ensures the population is growing.
  - 2a. 4 year average spawners > previous 4 year average spawners
  - 2b. current year spawners > brood year spawners
- Objective 3 - Rebuild the population to the level of abundance at which it can be delisted (designated Not at Risk) by COSEWIC.
- Objective 4 - Rebuild the population to a level of abundance (beyond that of Objective 3) that will support ecosystem function and sustainable use. This long term objective proposes candidate benchmarks for Cultus Sockeye that correspond to our current understanding of the dynamics of Cultus Sockeye.

Table 13.5-13: Assessment of Cultus population performance compared to management objectives 1 & 2, based on the escapement plan, a range of pre-season run sizes and management adjustments to account for en-route losses.

*2019 projected Cultus successful spawners*

run size	p25 400		p50 700		p75 1,700		p90 3,200	
exploitation rate (ER)	20%	0%	20%	0%	20%	0%	20%	0%
pDBE	-0.36							
projected adults to the fence	205	256	358	448	870	1,088	1,638	2,048
brood stock (excluded from calculations)	169							
potential spawners	36	87	189	279	701	919	1,469	1,879
pre-spawn mortality (PSM)*	40%							
projected successful adult spawners	20	50	110	170	420	550	880	1130

*Cultus Management Objectives - projected 2019 evaluation*

Management Objectives	value	p25		p50		p75		p90	
1a. 4 year avg successful spawners **		519	526	541	556	619	651	734	796
> 1000		no	no	no	no	no	no	no	no
1b. minimum 500 in each year (2016-2019)**		no	no	no	no	no	no	no	no
2a. 4 year avg > previous 4 year avg	> 1,126	no	no	no	no	no	no	no	no
2b. current year > brood year	> 557	no	no	no	no	no	no	yes	yes

\* PSM value of 40% used in these calculations are based on the average PSM since 1996, some of which were not directly attained through stock assessment programs - see note below

\*\* successful spawners estimates are highly dependent on PSM assumptions, which can be difficult to assess due to difficulties in retrieving Cultus sockeye carcasses after spawning

The 2019 calculations assume the average pre-spawn mortality rate since 1996 of approximately 40%. Exploitation rates are from the 2019 escapement plan option (i.e., LAER) and are compared with a zero percent (e.g. no harvest) scenario in the second column to illustrate the potential differences.

### 13.5.6.5 ALLOCATION AND FISHING PLANS

#### 13.5.6.5.1 First Nations Fisheries

Voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

#### *Food Social and Ceremonial*

FSC fisheries in the Fraser River, including Subareas 29-6, 29-7, 29-9, and 29-10, could be affected by 2019 Interior Fraser River Steelhead conservation measures. A 27-day rolling window closure will be applied to FSC fisheries according to the times and areas outlined in Table 13.5-14 below. These measures will not extend to marine FSC fisheries.



Table 13.5-14: Dates and Area for the Interior Fraser River 27-day Rolling Closure for FSC Fisheries in the Fraser River.

Fishery Location	Start	End
Area 29: 29-6, 29-7, 29-9, and 29-10	28-Sep	24-Oct
Mouth to Mission	28-Sep	24-Oct
Mission to Hope	29-Sep	25-Oct
Hope to Sawmill Creek	3-Oct	29-Oct
Sawmill Creek to Lytton (Thompson Confluence)	5-Oct	31-Oct
Lytton to Texas Creek	8-Oct	3-Nov
Texas Creek to Kelly Creek	10-Oct	5-Nov
Kelly Creek to Deadman Creek	13-Oct	8-Nov
Deadman Creek to Chilcotin River	16-Oct	11-Nov
Chilcotin River	19-Oct	14-Nov
Thompson River – Thompson Confluence to Bonaparte	8-Oct	3-Nov
Thompson River – Bonaparte River to Kamloops Lake	12-Oct	7-Nov

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

**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. For these reasons, in some cases, groups may not be able to harvest their full shares. FSC fisheries will be planned to maximize the use of selective gear types and reduce bycatch where possible.**

Refer to Section 10.2 for Communal Licence Harvest Target Amount in Southern BC/Fraser River First Nations Fisheries.

### ***Specific Conservation Measures for First Nations Fisheries***

#### *Early Stuart Sockeye*

Refer to Section 13.5.6.4 Harvest Constraints including Incidental Sockeye Catch, Bycatch, and LAER for details.

#### *Cultus Lake and Late Run Sockeye*

Refer to Section 13.5.6.4 Harvest Constraints including Incidental Sockeye Catch, Bycatch, and LAER for details.

### ***Treaty Fisheries***

Treaty fisheries in the Fraser River, including Subareas 29-6, 29-7, 29-9, and 29-10, could be affected by 2019 Interior Fraser River Steelhead conservation measures. A 27-day rolling window closure will be applied to Treaty fisheries according to the times and areas outlined in Table 13.5-14 above. These measures will not extend to marine Treaty fisheries.

#### *Tsawwassen Fisheries (Domestic)*

The domestic allocation for Sockeye salmon under the Tsawwassen First Nations Final Agreement is as follows:

- When the Canadian Total Allowable Catch for Fraser River Sockeye salmon is 500,000 or less, 1.0% of the Canadian Total Allowable Catch for Fraser River Sockeye salmon;
- When the Canadian Total Allowable Catch for Fraser River Sockeye salmon is greater than 500,000 and less than 3.0 million, then 5,000 Fraser River Sockeye salmon plus 0.40904% of that portion of the Canadian Total Allowable Catch for Fraser River Sockeye that is greater than 500,000 and less than 3.0 million; and
- When the Canadian Total Allowable Catch for Fraser River Sockeye salmon is equal to or greater than 3.0 million, then 15,226 Fraser River Sockeye salmon.

The monitoring program for Tsawwassen Domestic fisheries includes fisher logs supplemented by validations of catch and effort through on-water patrols and/or observations of landings.

Details of monitoring programs in place can be found in the Tsawwassen Fisheries Operational Guidelines.

*Tla'amin Fisheries (Domestic)*

The Domestic allocations for Fraser River Sockeye under the Tla'amin First Nations Final Agreement are as follows:

- When the CTAC for Fraser River Sockeye salmon is less than or equal to 2.0 million, 0.5% of the CTAC for Fraser River Sockeye salmon; or
- When the CTAC for Fraser River Sockeye salmon is greater than 2.0 million and less than or equal to 6.5 million, 10,000 Fraser River Sockeye salmon plus 0.1% of that portion of the CTAC for Fraser River Sockeye salmon that is greater than 2.0 million and less than or equal to 6.5 million; or
- When the CTAC for Fraser River Sockeye salmon is greater than 6.5 million, 14,500 Fraser River Sockeye salmon plus 0.048% of that portion of the CTAC for Fraser River Sockeye salmon that is greater than 6.5 million.

*Maa-nulth Fisheries (Domestic)*

The domestic allocation for Sockeye salmon under the Maa-nulth First Nations Final Agreement is an amount of Fraser River Sockeye salmon equal to 0.13366% of the Fraser River Sockeye Salmon Canadian Total Allowable Catch.

*Five Nations (Ahousaht, Ehattesaht, Hesquiaht, Mowachaht / Muchalaht, and Tla-o-qui-aht First Nations) Multi-species Fishery*

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 T'aaq-wiihak First Nations) - have aboriginal rights to fish for any species of fish, with the exception of Geoduck, within their Fishing Territories and to sell that fish. The Department has developed a 2019/20 Five Nations Multi-species Fishery Management Plan (FMP) in consultation with the Five Nations. The FMP includes specific details about the fishery, such as allocation/access, licensing and designations, fishing area, harvesting opportunities, and fishery monitoring and catch reporting. For further information see the FMP at: <https://waves-vagues.dfo-mpo.gc.ca/Library/4079393x.pdf>.

The Five Nations Multi-species fishery for Fraser River Sockeye will not be affected by 2019 Interior Fraser River Steelhead conservation measures.

## *Fishery Monitoring and Catch Reporting*

### *Marine Waters*

Fishery monitoring will be conducted by DFO and 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.

### *Fraser River and tributaries*

Catch monitoring programs are managed through Activity Funding or Comprehensive Fisheries Agreements.

In the lower Fraser River (below Sawmill Creek), monitoring programs implemented vary between Nations but typically include landing site or vessel based collection of catch and effort information paired with validation of effort by vessel patrols or overflights. Catch reports are received by DFO from catch monitoring programs on a weekly basis, within 48 hours of a fishery closing.

For fisheries on the Fraser watershed above Sawmill Creek, catch monitoring programs typically range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

#### **13.5.6.5.2 Recreational Fisheries**

Recreational fisheries in the Fraser River ( including Areas 29-6, 29-7, 29-9, and 29-10) will be affected by 2019 Interior Fraser River Steelhead conservation measures. A 42-day rolling window closure will be applied to recreational fisheries according to the times and areas outlined in Table 13.5-15 below. These measures will not extend to marine recreational fisheries.

Table 13.5-15: Dates and Area for the Interior Fraser River 42-day Rolling Closure for Recreational Fisheries in the Fraser River.

<b>Fishery Location</b>	<b>Start</b>	<b>End</b>
Area 29: 29-6, 29-7, 29-9, and 29-10	21-Sep	1-Nov
Mouth to Mission	21-Sep	1-Nov

Mission to Hope	22-Sep	2-Nov
Hope to Sawmill Creek	26-Sep	6-Nov
Sawmill Creek to Lytton (Thompson Confluence)	28-Sep	8-Nov
Lytton to Texas Creek	1-Oct	11-Nov
Texas Creek to Kelly Creek	3-Oct	13-Nov
Kelly Creek to Deadman Creek	6-Oct	16-Nov
Deadman Creek to Chilcotin River	9-Oct	19-Nov
Chilcotin River	12-Oct	22-Nov
Thompson River – Thompson Confluence to Bonaparte	1-Oct	11-Nov
Thompson River – Bonaparte River to Kamloops Lake	5-Oct	15-Nov

Opportunities for targeted Fraser River Sockeye fisheries will be determined based upon in-season assessment and abundance of Fraser River Sockeye stocks. Sockeye non-retention will be in effect in most South Coast waters until such time as in-season information indicates an allowable recreational / commercial total allowable catch of Fraser Sockeye.

In years when opportunities are available for recreational Sockeye, fisheries typically take place in August, and updates are provided via Fishery Notice and on the recreational fisheries website: <http://www.bcsportfishingguide.ca>. The normal daily limit is four Sockeye in marine waters and two Sockeye in non-tidal waters. In some cases, recreational fisheries may be reduced or closed due to conservation concerns and management considerations that are identified in-season. Due to conservation concerns for other species of Fraser River salmon, Sockeye opportunities may be delayed or forgone. Refer to Section 13.5.6.4 Harvest Constraints including Incidental Sockeye Catch, Bycatch, and LAER for details.

As part of new 2019 Chinook management measures, Fraser River recreational fisheries will remain closed to salmon fishing until at least August 23. After that date, opportunities for species other than Chinook will be informed by in-season abundance and other conservation issues (Coho, Steelhead, etc.). Reduced Fishing opportunities may be provided in tributary areas during times and locations at-risk Chinook stocks would not be encountered. See Section 13.1.4.5.2 for more information.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***Fishery Monitoring and Catch Reporting***

#### ***Marine Waters***

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information for this fishery. South Coast stock assessment staff use these programs to provide annual estimates of the recreational harvest in each area.

#### ***Fraser River and Tributaries***

Creel surveys are conducted in portions of the lower Fraser River and select tributaries in order to estimate recreational catch and effort for the times and areas surveyed. Typically, the creel survey in the lower Fraser River mainstem begins when the mainstem is opened to recreational salmon fishing; however, over the last number of years, the survey end date has been variable (mid-September to end of November). The creel surveys conducted on the Chilliwack River and Nicomen-Norrish recreational fisheries have remained stable over the last number of years both in times and areas (Chilliwack is surveyed from mid-September to mid-November and Nicomen-Norrish is surveyed from early October to the end of November).

Catch monitoring programs in the Fraser watershed upstream of Alexandria will range from fisher reported catch to highly intensive creel surveys; however, some times and areas are unmonitored. Expected effort and catch, harvest rates, potential bycatch, and any biological sampling requirements are taken into account when planning the catch monitoring program for these areas.

#### **13.5.6.5.3 Commercial Fisheries**

While it is unlikely to occur in 2019, conservation measures to protect Interior Fraser River Steelhead will affect Fraser Sockeye fisheries if fisheries persist late in the season. Dates and areas for rolling window closures can be found in Appendix 9.

Commercial fisheries for Fraser River Sockeye may occur both in the marine approach waters and within the Fraser River and tributaries. In the marine waters these commercial fisheries include the Area B seine and the Area H troll individual transferable quota (ITQ) fishery, and the Area D gill net full fleet competitive (derby) fishery. Additionally, in years with large returns, Area G Troll fishing opportunities on the West Coast of Vancouver Island may be

considered. Within the Fraser River and tributaries, commercial fisheries include the Area E gill net full fleet competitive (derby) fishery, along with First Nations economic opportunity (EO) and demonstration fisheries. There may also be consideration for escapement surplus to spawning requirement (ESSR) fisheries in terminal areas.

Opportunities for targeted Fraser River Sockeye fisheries will be determined based upon in-season assessment and abundance of Fraser River Sockeye stocks. Fishing opportunities will also be subject to achieving fisheries management objectives for constraining stocks and species of concern (Early Stuart Sockeye, Cultus Lake Sockeye, Nimpkish Sockeye, Sakinaw Sockeye, Interior Fraser River Coho, Interior Fraser River Steelhead, and Fraser River Spring 4<sub>2</sub> and Spring/Summer 5<sub>2</sub> Chinook) in areas where they are present. Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.

### *Allocation*

Table 13.5-16: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
<b>South – Fraser – Small Return Years (e.g. 2019)</b>	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0.0% <sup>d</sup>	4.8%

Notes on Sockeye allocation (south):

<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.

### *Johnstone Strait (Areas 11 to 13)*

#### *Area B (Seine) and Area D (Gill Net)*

Early to Late July - Areas 11 to 13

- No fisheries are anticipated prior to late July in order to protect Sakinaw Lake and Fraser River Early Stuart and early-timed Early Summer Run Sockeye. No fishing opportunities are available above Lewis Point prior to late July to protect returning Nimpkish River Sockeye.

August to Mid-September - Areas 11 to 13

- Directed fisheries may occur for Fraser River Sockeye. Opportunities will be based on in-season assessment and abundance information. If a fishery occurs, Area B seines will be managed as an ITQ demonstration fishery (along with Area H troll- see details below in demonstration fisheries section). Area D gill nets will be managed as an open, competitive (derby-style) fishery.

### ***Strait of Georgia (Area 14 and 16)***

#### ***Area B (Seine)***

Consideration may be given for Fraser River Sockeye seine fisheries in portions of Area 14 and Area 16 (Sabine) subject to in-season information, as well as constraints for Sakinaw Sockeye and for other stocks of concern.

### ***Juan de Fuca Strait, Strait of Georgia and Fraser River (Areas 18, 20 and 29)***

#### ***Area B (Seine)***

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

Subject to in-season information, Area B seine opportunities will be considered in Juan de Fuca (Area 20), Area 18, and Area 29. Opportunities and fishing locations will be confirmed based on in-season information.

The Fraser River Panel in conjunction with DFO will develop and implement Fraser River Sockeye fishing plans for these areas, as they fall within Fraser River Panel management responsibilities.

Early to Late July – Areas 18, 20 and 29

- No fisheries anticipated prior to late-July in order to protect early-timed Fraser River Sockeye stocks.

Late July to Mid-August - Areas 18, 20 and 29



- Fraser River Sockeye fishing plans will be based on in-season estimates of abundance and timing.
- Coho release mortalities, TAC and diversion rate will be factors determining available harvest opportunities during this period.

Late August to early September – Areas 18, 20, 29

- Opportunities for harvesting Sockeye will be based on in-season abundance and assessment information, and subject to IFR Coho and Cultus (Late Run) Sockeye constraints.

### ***Area 29 and Tidal Waters of the Fraser River***

#### ***Area E Gill Net***

Subject to in-season information, Area E gill net opportunities will be considered in Area 29, including tidal waters of the Fraser River and off the Fraser River mouth. Opportunities and fishing locations will be confirmed based on in-season information. Fisheries may take place in August. Fisheries in early September will be subject to constraints due to co-migrating Coho salmon. Sockeye fisheries will not be considered after the Interior Fraser Coho window closure date as described under Fraser River Fisheries in Section 13.3.2.5 of the Southern Coho Species plan (Section 13.3).

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

### ***Queen Charlotte Strait and Johnstone Strait (Areas 11 to 13), and lower Strait of Georgia (Areas 18 and 29)***

#### ***Area H (Troll)***

Actual opportunities for targeted Fraser River Sockeye fisheries will be determined based upon in-season assessment and abundance of Fraser River Sockeye stocks and also subject to achieving fisheries management objectives for constraining stocks and species of concern (Early Stuart Sockeye, Cultus Lake Sockeye, Nimpkish Sockeye, Sakinaw Sockeye, Interior Fraser River Coho, Interior Fraser River Steelhead, and Fraser River Spring 4<sub>2</sub> and Spring/Summer 5<sub>2</sub> Chinook) in areas where they are present.

If an opportunity is available, ITQ fisheries could occur in Queen Charlotte Strait and Johnstone Strait (Areas 11 to 13), and in the lower Strait of Georgia (Areas 18 and 29). Fishing

opportunities will be confirmed in-season following consultation with industry and will depend on run size, diversion rate and Area H TAC. If a fishery occurs, Area H troll will be managed as part of the Area B Seine and Area H Troll ITQ demonstration fishery (see details below in demonstration fisheries section).

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.

### ***West Coast Vancouver Island and Queen Charlotte Strait (Areas 11, 12, 20, 111 121 to 127)***

#### ***Area G (Troll)***

Fishing opportunities for Fraser River Sockeye are not planned in 2019 given Area G only receives an allocation for Fraser Sockeye in years of large returns based on commercial allocation arrangements.

In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2.

Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.

### ***Fishery Monitoring and Catch Reporting***

Fishery Monitoring and Catch Reporting includes the following:

- Over-flights conducted to count vessels (effort) in each Area D gill net opening; counts of Area B seine and Area H troll vessels are also made if they are present in the fishing area.
- On-grounds DFO funded charter patrol coverage in portions of Areas 12 and 13.
- Vessel counts conducted to verify number of vessels (effort) in each Area E gill net opening.

- On-water observer coverage (on grounds charter patrol and DFO roving catch monitoring coverage) in each Area E gill net opening to conduct net haul observations and gather independent information on encounters of target and non-target species.
- 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). Catch reporting requirements are specific to each licence group and are detailed in the conditions of licence for each gear type
- 100% dockside catch validation for Area B seine and Area H troll ITQ fisheries.
- Partial independent on-board/at-sea observer coverage for Area B seine and Area H troll fisheries in areas where species and stocks of concern are present (e.g., Areas 16, 20, 29).

### ***South Coast Fraser Sockeye Demonstration Fisheries***

#### ***Area B Seine and Area H Troll Fraser River Sockeye Individual Transferable Quota (ITQ) Demonstration Fishery***

Please see Appendix 7 for more information on the Area B and Area H Fraser Sockeye and Pink ITQ demonstration fishery guidelines for 2019.

This demonstration fishery will be similar to the quota based ITQ Fraser River Sockeye fishery that was planned for 2009-2018. Note that a separate demonstration fishery proposal is provided for a demonstration – experimental seine fishery in the lower Fraser River.

- **Region:** South Coast and Lower Fraser River Areas
- **Participants:** All Area B seine and H troll licence holders
- **Location of Fishery:** Seine fishing areas that will be considered in the fishery include: Johnstone Strait (portions of Area 12 and 13), Juan de Fuca (portions of Area 20), portions of Areas 16 and 18, and portions of Area 29 off the Fraser River mouth, which may include depths shallower than 45 m.

In Area 20, additional measures may be in place to minimize impacts on Coho. Consideration for seine fishing opportunities in Area 20 will also be dependent on diversion rate estimates.

Troll fishing areas that will be considered in the fishery include; Johnstone Strait (portions of Areas 12 and 13), portions of Areas 16 and 18, and portions of Area 29 off the Fraser River mouth.

In Areas 12, 13 and 20, additional restrictions will be identified around test-fishing locations to minimize impacts on test-fishery assessment requirements.

- **Gear Type:** Seine and Troll gear, selective fishing measures are mandatory and are specified by licence conditions.

Power skiffs may be used where conditions of licence permit. Shallow seine nets may be used in areas off the mouth of the Fraser.

- **Time Frame:** This fishery is planned to occur when Fraser River Sockeye Canadian Commercial TAC is identified. It is anticipated that this fishery will take place within the time period of late July to early September.

The Area H troll fishery is anticipated to be open on a 7 day per week basis as TAC permits. The Area B seine fishery is expected to be open 5 to 7 days per week and will be dependent on the amount of available TAC and the available time frame for the fishery.

It is expected that Area B seine fishing opportunities in Area 20 and Area 29 will also be managed to a boat day limit to control impacts on Interior Fraser Coho.

- **Allocation:** The fishery will be based on available Fraser River Sockeye commercial TAC. Shares for each fleet will be based on the commercial allocation plan.

The Fraser River Sockeye quota (ITQ) will be determined by DFO by dividing the respective Area B and Area H Fraser River Sockeye allocations by the total number of licences for Area B and Area H multiplied by the available commercial Fraser River Sockeye Total Allowable Catch (TAC) determined in-season.

The quota share will be expressed as a percentage of the TAC and the percentage will remain fixed in-season, subject to amendments for in-season quota transactions. The TAC may be distributed over the course of the fishery in increments. The TAC will be announced by fishery notice and adjusted as required. Updates will typically be announced following Fraser River Panel meetings (usually Tuesday and Friday).

Quota will be transferable within each licence area (e.g., Area B to Area B; or, Area H to Area H) as well as between licence areas (e.g., Area B to Area H; or vice versa).

Transfers to or from other commercial fisheries is currently under review by the Department.

The target species is Sockeye and bycatch retention of Pink and Chum is permitted (except Chum retention is not permitted in Area 20). There will be non-retention of Coho, Chinook and Steelhead.

- **Monitoring Plan:** Start, end, pause and daily catch reports will be required by phone-in or electronic logbook. There is a requirement for 100% third-party dockside validation of the catch at designated landing locations. Over flights will be conducted and charter patrol will monitor the fishery.

Additional on-grounds observer coverage/monitoring may be required to assess the releases of non-target species in Area B and H Sockeye fisheries. Observer requirements will be determined in-season, subject to areas fished and effort.

Additional monitoring requirements are required and in place for the Area 20 seine fishery including on-grounds management, set by set reporting in established grid zones and observer coverage.

### ***Area B Seine Fraser River Sockeye Experimental Demonstration (ITQ) Fishery in the Lower Fraser River***

This demonstration fishery proposal is similar to the proposal that was provided by Area B to DFO in 2010.

The purpose of this experimental fishery project is to demonstrate the effectiveness of harvesting Fraser River Sockeye and/or Pink salmon within the confines of the Fraser River, employing the selective capabilities of a purse seine and secondly to capitalize on the ability to continue the harvest of Sockeye salmon and/or Pink salmon that may not be available in marine areas due to other constraints.

This fishery would be managed as part of the Area B and H demonstration ITQ fishery for Fraser River Sockeye and Pink salmon.

- **Region:** Lower Fraser River Area

- **Participants:** All Area B licence holders will be eligible. However, as this is an experiment, effort controls will be in place to limit participation to a maximum of eight to ten vessels fishing on any given day
- **Location of Fishery:** Area 29 in-river: Area B has indicated there are a number of potential locations around New Westminster, Glenrose, the Cement Plant and down to the Deas Tunnel that would be suitable for seining and would for the most part, be out of the shipping lanes
- **Gear Type:** Seine gear using shallow seine nets, the use of power skiffs and selective fishing measures are mandatory and are specified by licence conditions
- **Time Frame:** This fishery is planned to occur when Fraser River Sockeye and/or Pink Canadian Commercial TAC is identified. It is anticipated that this experimental fishery would take place sometime within the time period of mid-August to late September

Consideration of other fisheries in the area will be taken into account when planning Area B in- river fishing activities. Specific fishing times would be confirmed in-season through an integrated planning process. The amount of available fishing days for this experiment will be confirmed in-season.

- **Allocation:** For this experimental fishery to proceed, it will require available Fraser River Sockeye commercial TAC. The harvest from this fishery will be part of the Area B and H Fraser River Sockeye and Fraser Pink ITQ demonstration fishery. The quota share will be expressed as a percentage of the commercial TAC.

As this is an experimental fishery, there will be a cap on the total allowable harvest in this fishery and the amount will be confirmed in-season. The target species is Sockeye and/or Pink salmon, retention of Chum may be permitted; there will be non-retention of all other species.

- **Monitoring Plan:** As per the Area B and H Fraser River Sockeye and Pink demonstration ITQ fishery, start, end, pause and daily catch reports will be required by phone-in or electronic logbook. There is a requirement for 100% dockside validation of the catch at designated off- loading locations.

There will be a requirement for observer coverage on all vessels participating in this fishery. In addition to monitoring catch, observers will be available to collect any DNA sampling that is required and identified.

#### 13.5.6.5.4 Fraser First Nations Commercial Sockeye Harvest

While it is unlikely to occur in 2019, conservation measures to protect Interior Fraser River Steelhead will affect Fraser Sockeye fisheries if fisheries persist late in the season. Dates and areas for rolling window closures can be found in Appendix 9.

##### *Demonstration Fisheries*

Discussions regarding demonstration fisheries that will provide commercial opportunities for First Nations and allow for continued testing of inland fisheries. 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, under comparable rules to the commercial fishery and fish harvested will be off-set with licences voluntarily relinquished from the commercial fishery.

**Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.**

##### *Upper Fraser Fisheries Conservation Alliance (UFFCA) Partnership – In- River Sockeye Fisheries*

The UFFCA continues to develop their Commercial Fishing Enterprise focusing on viable and sustainable fishing practices. Discussions are on-going with groups participating in the partnership based on the viability of individual fisheries. The 2019 demonstration fishery will build on previous years' experiences to implement successful fisheries and address constraints and challenges to harvesting allocations, marketing, processing and acquiring infrastructure required for the emerging inland fisheries.

- **Participants:** UFFCA Partnership – Northern Shuswap Tribal Council (NSTC); Tsilhqot'in National Government (TNG)/Xeni Gwet'in First Nations Government; Carrier Sekani Tribal Council (CSTC); Lheidi T'enneh First Nations (LTFN)

##### *North Shuswap Tribal Council*

- **Location:** Quesnel River, Quesnel Lake, Chilcotin River and mainstem Fraser
- **Gear Type:** Beach seine, purse seine, dip nets, and fish wheels
- **Time Frame:** Fishery will target Summer run (Quesnel / Chilko / Late Stuart / Nechako Rivers) Sockeye. Potential start date is August 16 for a six week fishery

*Tsilhqot'in National Gov't / Xeni'Gwet'in First Nations Government*

- **Location:** Chilko River, Chilko Lake and Chilcotin River
- **Gear Type:** Beach seine, purse seine, dip net, partial weir/fish trap, and fish wheel
- **Time Frame:** Fishery will target Summer Run (Chilko) Sockeye. Potential start date is August 16 for a three to four week fishery

*Carrier Sekani Tribal Council and Lheidli T'enneh First Nations*

- **Location:** Fraser River, Fraser Lake and potentially other suitable locations
- **Gear Type:** Beach seine, dip net, partial weir/fish trap, and purse seine
- **Time Frame:** Fishery will target Summer Run (Late Stuart/Stellako) Sockeye. Potential start date is August 15 for a four week fishery.

NOTE: All fishery time frames are estimates and final dates will be determined based on in- season migration timing and abundance information.

- **Allocation:** All fisheries described above  
Allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser Sockeye stocks in the area utilizing relinquished licences from the PICFI program.
- **Monitoring Plan:** All fisheries described above  
Fishery will be monitored using designated landing sites, electronic logbook system (ELOG) and validation of catch at either landing site or plant.

*RiverFresh Wild BC Seafood – In-River Sockeye and Fisheries*

RiverFresh Wild BC Seafood (RiverFresh) is a Commercial Fishing Enterprise operating under the Shuswap Nation Tribal Council (SNTC) society. The Secwepemc Fisheries Commission (SFC), the fisheries department of the SNTC, is contracted by RiverFresh to provide commercial fishery planning and monitoring services. SFC has been coordinating demonstration fisheries and conducting business feasibility analyses since 2005.

The 2019 SFC demonstration fisheries expectations are similar to previous years when CCTAC is available; pre-season forecasts for Early Summer, Summer and Late Run Sockeye stocks in the Secwepemc fishing area are uncertain. Fishery expectations to target South Thompson Chinook are uncertain with pending additional management actions to protect Fraser Chinook and fisheries for Fraser Pinks may be the only opportunity for 2019. . Bycatch that cannot be released



may be identified and retained for food, social and ceremonial purposes subject to dual fishing guidelines. RiverFresh will build on previous year's experiences and expand their knowledge and abilities to participate in larger scale fisheries.

- **Participants:** Skeetchestn Indian Band other partners to be determined
- **Location of Fisheries:** Thompson River / Kamloops Lake/ Little Shuswap Lake
- **Gear Type:**
- Sockeye Fishery – Gill nets directed on Sockeye if CCTAC becomes available or may be taken as bycatch in beach seine Pink directed opportunities. If Sockeye abundance is sizable, purse seines may be utilized.
- **Time Frame:**  
NOTE: All fishery time frames are estimates and final dates will be determined according to in-season migration timing information. Sockeye Fishery: Fishery will potentially target Early Summer, Summer and Late Run Thompson Sockeye; potential start date of Aug 22 for a six week fishery ending Sept. 23 or longer with selective fishing methods
- **Allocation:**  
Sockeye Fishery: Sockeye allocation will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser Sockeye in-season utilizing relinquished licences from the PICFI program.
- **Monitoring and Reporting Plan:**  
Fishery will be monitored using designated landing sites, independent validation of catch at the processing plant and independent validation releases when required. Reporting will include electronic logbook system (ELOG).

#### *Harrison-Fraser River Demonstration Fishery*

- **Region:** Lower Fraser Area
- **Participants:** Sts'ailes and Scowlitz First Nations
- **Location of Fishery:** The waters of the Harrison River located between the outlet of Harrison Lake downstream to the orange boundary signs labelled 'Fishing Boundary HFA' approximately 1000 meters below the CN Railway Bridge; and

The waters of the Fraser River bounded on the west by a line from a white boundary sign on the upstream side of the Fraser River at the mouth of the Sumas River, thence

true north to a white boundary sign on the opposite shore and bounded on the east by the downstream side of the bridge across the Fraser River at Agassiz.

- **Gear Type:** Set nets, drift nets or beach seines. Beach seines not to exceed a maximum mesh size of 2  $\frac{3}{4}$  inches and a length of 50 fathoms or 360 feet,
- **Allocation:**  
Sockeye: To be determined but will be expressed as a percentage (%) share of Canadian Commercial Total Allowable Catch (CCTAC) utilizing relinquished licences from the PICFI program.
- **Time Frame:** All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.

Sockeye: This fishery would be planned to take place once a Fraser River Sockeye Canadian Commercial TAC is identified, potentially late July to early September.

Fraser Chinook: Fraser Chinook bycatch retention may be permitted subject to abundance.

- **Monitoring Plan:** During any set net or drift net fishing activity, the fishers will transport their catch to a predetermined Sts' ailes /Scowlitz landing site to have their catch monitored. During any beach seining activity, a Monitor must be present with every beach seine crew during all fishing activity and provide set-by-set updates to the Sts' ailes Fishery Manager, before the beach seine crews deploy their next set to ensure there is TAC available. The Harrison Fishing Authority will collect all catch statistics via these monitors and report this information to DFO immediately after the fishery closes.

### *Harvest Agreements*

**Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.**

#### *Tsawwassen Fisheries (Commercial)*

In addition to the allocation of salmon for domestic harvests, TFN have an allocation for commercial catch outside of the Treaty as identified via the "Tsawwassen First Nations Harvest Agreement". Fishing undertaken via the Harvest Agreement (HA) will be comparable to the requirements of the current Fraser River commercial fishery (First Nations economic opportunity (EO) fishery), or a general commercial fishery (e.g., Area E). Tsawwassen

harvesters will be expected to operate under the same rules that apply to other fishers taking part in that Fraser River commercial fishery.

Sockeye salmon allocation under the Harvest Agreement: 0.78% of the Commercial Allowable Catch for Fraser River Sockeye salmon for that year.

The monitoring program for Tsawwassen Harvest Agreement fisheries includes a mandatory landing program (MLP) using 2 to 4 landing sites at which all fishers must land and have their catch validated and is supplemented by effort validation by vessel patrols. If selective gear is used (e.g., purse seines), monitors must be present during all fishing activity to record catch information on a set-by-set basis.

### ***Economic Opportunities***

Negotiations to provide economic opportunities to First Nations in the lower Fraser River will be undertaken as in recent years. Economic opportunity fisheries may be conducted under agreements that specify provisions for planning fisheries, allocations, catch reporting requirements as well as roles and responsibilities regarding the management of the fishery. The Department's general approach is that Aboriginal commercial harvest opportunities are managed using requirements comparable to the commercial fishery.

**Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.**

### ***Fishery Monitoring and Catch Reporting***

#### ***Lower Fraser***

In the Lower Fraser, catch monitoring programs are managed through Comprehensive Fisheries Agreements. While details will be finalized prior to fisheries occurring; the monitoring programs in place for 2019 are expected to be similar to recent years as follows:

- Non-selective (e.g., gill-net) EO fisheries will be monitored using a mandatory landing program (MLP) with packer and land-based sites. All fishers must land their catch at these sites and have their catch validated. This program is supplemented by effort validation by vessel patrols and overflights.
- Selective (e.g., beach seine and purse seine) EO fisheries require monitors to be present during all fishing activity to record catch and release information on a set-by-set basis.

### 13.5.6.5.5 ESSR Fisheries

ESSR fisheries for individual Fraser Sockeye spawning populations may be considered if the projected number of effective spawners is expected to exceed the freshwater productive capacity of the system taking into account requirements for adult spawners or juvenile rearing. Stock specific spawning requirements may be determined based upon WSP benchmarks, TEK, and stock specific information, on a system by system basis upon receipt of a terminal access request. Given inherent uncertainties about freshwater capacity, a decision on whether an ESSR will proceed will be made by the Department and any amounts specified for harvest may take into account available information and associated uncertainties on a range of factors including: stock-specific abundance, projected spawner abundances, productive capacity of the system, stock composition in the proposed fishing area and selectivity of fishing gear.

Given the uncertainties of in-season information, the Department may permit only a portion of any estimated surplus to be harvested. **Even if fishing opportunities are available, in some cases full harvest targets may not be harvestable due to conservation concerns and management considerations that are identified in-season.**

Table 13.5-17 : Potential framework to determine in-season harvest levels for ESSR fisheries on one terminal stock.

ESSR Fishery	Stock and In-season Assessment Method	In-season Assessment	In-season Assessment Uncertainty	ESSR Harvest Level	
<b>Terminal Enhanced</b> (hatchery or spawning channel)	Weaver- Fishway Gates- Fishway Nadina- Fishway Horsefly Fishway	* Escapement Complete Count	Low	High	>50%
<b>Terminal Wild</b>	Scotch- Fence Chilko- Sonar Quesnel- Sonar Stellako- Sonar Birkenhead- Sonar	* Escapement Complete Count	Low	Medium -High	26-50%
	Chilliwack- Visual Upper Barriere- Visual Misc North Thompson- Visual Raft- Visual Pitt- Visual	**Escapement Index Count	Medium	Medium	11-25%

	Late Stuart- Escapement Projection Late Adams- Escapement Projection Seymour- Escapement Projection Harrison- Escapement Projection	*** In-season Run Size Estimate	High	Low	0-10%
--	----------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------	------	-----	-------

\* Complete terminal escapement count (i.e. fence count, fishway count, hydroacoustic count (Didson)). Low uncertainty associated with this type of escapement estimate.

\*\* Escapement index count (i.e. hydroacoustic count (Didson), visual count. Medium uncertainty associated with this type of escapement estimate.

\*\*\* In-season run size estimate- Estimate provided in-season in the Fraser Panel process. Escapement projections would consider projected catch above Mission and in-season estimates of the difference between the Mission hydroacoustic estimates and post season spawning ground estimates. High uncertainty associated with the escapement projections.

### 13.5.7 EAST COAST VANCOUVER ISLAND AND MAINLAND SOCKEYE

#### 13.5.7.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

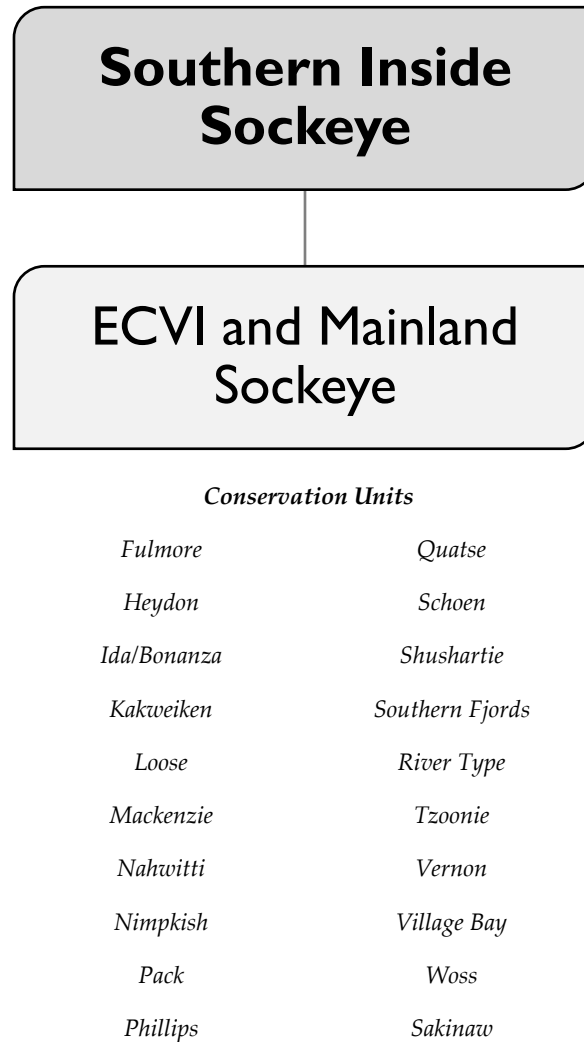


Figure 13.5-10: Overview of East Coast Vancouver Island and Mainland Sockeye

### 13.5.7.2 STOCK ASSESSMENT INFORMATION

#### 13.5.7.2.1 Pre-season

Table 13.5-18: ECVI and Mainland Sockeye 2019 Salmon Outlook

Outlook Unit	2019 Outlook
<b>Areas 11-13</b>	<p>No systems are assessed in Area 11.</p> <p>Preliminary Sockeye returns in 2018 to the Nimpkish River (Area 12) were slightly below the 2014 brood year but above both the 4- and 12-year averages. Assessment of Quatse River escapement data (in Area 12) has not yet been completed, but indications are for an average return abundance.</p> <p>Preliminary Sockeye returns in Area 13, specifically the Phillips River, were average in 2018. The Heydon Creek Sockeye program (in Area 13) was also reinstituted in 2018 and preliminary counts are above the most recent 4-year average (from 2009-2012).</p> <p>For 2019, the only indication of marine survival comes from varied but somewhat improved returns of local Pink and Coho salmon returns in 2018 (same 2017 outmigration year as 2019 Sockeye). Consequently, the average to above average brood in 2015 and some mixed signals in marine survival conditions result in an outlook that is low to near target.</p> <p>(2018 Outlook Category was 2/3)</p>
<b>Sakinaw</b>	<p>Of the 78,878 smolts that left Sakinaw Lake in 2016 only three adult Sockeye returned in 2018. Marine survival continues to be extremely low; for the 2016 ocean entry year, the smolt-to-adult survival was 0.003% for hatchery-origin and 0.139% for wild-origin smolts. The 2018 return included 2 fish from captive brood and 1 natural origin spawner. Under this low survival rate, it is likely that there will be almost no adult Sockeye returning in 2019 from the 34,871 smolts enumerated in 2017. If marine survival is near the 4-year average, a total of 52 adults are expected; 23 natural origin and 29 from captive brood.</p> <p>(2018 Outlook Category was 1)</p>

#### 13.5.7.2.2 In-season

Historically many of these Sockeye populations were assessed visually by fishery officers, charter patrol, and stock assessment personnel. In recent years escapements have been consistently monitored for 3 populations: Nimpkish River, Quatse River and Sakinaw River.

The Quatse River Sockeye population has been estimated using a DIDSON acoustic system since 2006. With the installation of a new resistivity fence on the Quatse system, it is anticipated

that future estimates will be provided from that program with a few years of DIDSON calibration.

The Nimpkish river escapement has been estimated through a standardized swim survey program since 2002. Information on timing and fish distribution is also collected during this program. In 2015, the Namgis First Nations in conjunction with DFO initiated a pilot program to enumerate Sockeye in the lower portion of the Nimpkish River using a DIDSON system and a deflection fence. This program will continue into its 5<sup>th</sup> year in 2019.

Sakinaw Lake Sockeye have been enumerated both as they leave as smolts through a smolt trap and when they return as adults through a counting fence with video recording over the last 13 years. This intensive assessment provides very accurate estimates of abundance, and also provides the adipose fin clip rate (used to identify hatchery origin fish) for further evaluation of freshwater survival rates of hatchery releases, number of natural smolts per spawner and enhanced contribution to the total return (marine survival rates of both hatchery and natural Sockeye).

#### **13.5.7.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

This section of the IFMP is under development and further information will be provided in a subsequent year. There are no commercial or recreational directed fisheries on these Sockeye planned for 2019. However, there may be some small directed First Nations FSC harvests that occur on some of these stocks.

#### **13.5.7.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO SOUTH LOCAL SOCKEYE FISHERIES**

Fisheries are structured to reduce the harvest of Sakinaw Lake Sockeye and Nimpkish Sockeye in mixed stock areas.

First Nations FSC fisheries harvest related measures will continue in 2019 to ensure protection of Sakinaw Lake Sockeye. First Nations fisheries in Johnstone Strait will be restricted to gill net and troll only until July 25 and until August 15 in the northern Strait of Georgia. Furthermore, roving window closures to protect Early Stuart Sockeye and potentially additional closures to protect early-timed Early Summer run Sockeye can limit or delay FSC fisheries. The waters near the mouth of Sakinaw Creek in Area 16 will be closed to all fishing all season.

Harvest measures continue to be required to minimize impacts on Nimpkish Sockeye. In order to protect this stock, time and area closures may be implemented for First Nations, commercial, and recreational fisheries in the approach waters to the Nimpkish River (including the river). With the exception of test fisheries, marine waters north of Lewis Point on Vancouver Island



(Subareas 11-1, 11-2, & 12-5 to 12-19) are scheduled to be closed to Sockeye retention in all fisheries until late July. However, marine waters north of Lewis Point may be open to Sockeye retention in First Nations FSC fisheries prior to late July if in-season abundance of Nimpkish Sockeye is higher than expected and no other weak stock constraints exist.

Further constraints to fisheries may include harvest restrictions based on Early Stuart, Early Summer, and Late Run (Cultus) Fraser River Sockeye.

### **13.5.7.5 ALLOCATION AND FISHING PLANS**

#### **13.5.7.5.1 First Nations Fisheries**

FSC fisheries targeting ECVI and Mainland Sockeye will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

##### ***Food Social and Ceremonial***

The Department continues to work with the Namgis First Nations on the development of a lower river assessment program for Nimpkish Sockeye. This program will work towards providing a much earlier indication of Sockeye abundance in the Nimpkish River and help to develop a First Nations FSC harvest plan. If in-season abundance permits, some First Nations FSC harvest may occur in the Nimpkish River.

##### ***Treaty Fisheries***

Treaty fisheries targeting ECVI and Mainland Sockeye will not be impacted by 2019 Interior Fraser River Steelhead conservation measures.

##### ***Tla'amin (Domestic)***

The Domestic allocations for terminal Sockeye salmon under the Tla'amin First Nations Final Agreement are as follows:

- A number of Sockeye equal to 25% of the Available Terminal Harvest for the Sockeye salmon stocks that originate from a Terminal Harvest Area

##### ***Specific Conservation Measures for First Nations Fisheries***

##### ***Sakinaw Lake Sockeye***

Harvest related measures to ensure protection of Sakinaw Lake Sockeye will continue. First Nations FSC fisheries in Johnstone Strait will be restricted to gill net and troll only until July 25 and until August 15 in the northern Strait of Georgia. The waters near the mouth of Sakinaw Creek in Area 16 will be closed to fishing all season.

### *Nimpkish Sockeye*

Harvest related measures continue to be required to minimize impacts on this stock. In order to protect this stock, time and area closures may be implemented for First Nations, commercial, and recreational fisheries in the approach waters to the Nimpkish River (including the river). Marine waters north of Lewis Point on Vancouver Island (Subareas 11-1, 11-2 and 12-5 to 12-19) are scheduled to be closed to Sockeye retention in all fisheries until late July. However, marine waters north of Lewis Point may be open to Sockeye retention in First Nations FSC fisheries prior to late July if in-season abundance of Nimpkish Sockeye is higher than expected and no other weak stock constraints exist. The Department has been working with the Namgis First Nations on the development of a lower river assessment program for Nimpkish Sockeye. This program will work towards providing a much earlier indication of Sockeye abundance in the Nimpkish River and help to develop a First Nations FSC harvest plan. If in-season abundance permits, some First Nations FSC harvest may also occur in the Nimpkish River.

#### ***Fishery Monitoring and Catch Reporting***

Fishery monitoring will be conducted by DFO and the First Nations under Fisheries Agreements if applicable. First Nations are required to keep records of harvest and provide catch information to DFO. 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.

#### **13.5.7.5.2 Recreational Fisheries**

For southern BC tidal waters, it is anticipated that Sockeye non-retention will be in effect during those times and in those areas when stocks of concern are present. There are no directed recreational fisheries for ECVI and Mainland Sockeye populations. Updates to recreational fisheries will be provided in- season based on fishery notices. In non-tidal waters, Sockeye non-retention is in effect year- round.

#### ***Fishery Monitoring and Catch Reporting***

Catch monitoring programs including creel surveys, logbooks and the internet recreational effort and catch survey (iREC) are the main tools used to capture recreational catch and effort information in this fishery.

### 13.5.7.5.3 Commercial Fisheries

#### *Allocation*

There are no directed commercial fisheries for ECVI and Mainland Sockeye populations. Commercial allocation arrangements are set for Fraser River Sockeye fisheries.

Table 13.5-19: Commercial Allocation Implementation Plan for the 2015–2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South - Fraser	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0.0% <sup>d</sup>	4.8%

Notes on Sockeye allocation (south):

<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.

#### *East Coast Vancouver Island and Mainland Commercial Sockeye Fisheries*

There are no commercial Sockeye harvest opportunities for ECVI and Mainland Sockeye populations. Commercial fisheries target Fraser River Sockeye stocks and opportunities are subject to achieving fisheries management objectives for constraining stocks which includes Nimpkish and Sakinaw Sockeye.

#### *East Coast Vancouver Island and Mainland First Nations Commercial Sockeye Harvests*

There are no First Nations commercial harvests for ECVI and Mainland Sockeye populations.

### 13.5.7.5.4 ESSR Fisheries

There are no ESSR fisheries for these populations.

### 13.5.8 OKANAGAN SOCKEYE

#### 13.5.8.1 SNAPSHOT OVERVIEW AND MAP OF MANAGEMENT UNIT

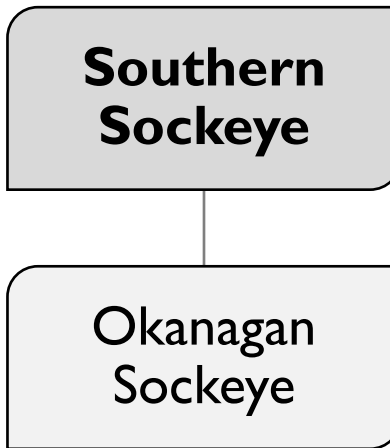


Figure 13.5-11: Overview of Okanagan Sockeye

Okanagan Sockeye is the last remaining viable Sockeye salmon population returning to Canada within the Columbia River Watershed. Run timing into the Okanagan system is primarily affected by water temperature within the Okanagan River. Okanagan Sockeye tend to hold in the Columbia River until migration conditions are favourable. Peak spawning usually occurs from mid to late October. Of all Okanagan River Sockeye enumerated at Wells Dam on the Columbia River, on average roughly 60% of those adults are enumerated on the spawning grounds in Canada.

#### 13.5.8.2 STOCK ASSESSMENT INFORMATION

##### 13.5.8.2.1 Pre-season

Returns of Okanagan sockeye adults to the Columbia and Okanagan rivers in 2019 will be derived from smolt cohorts that migrated seaward in spring 2016 (returning as 5-year-olds), 2017 (returning as 4-year-olds) and 2018 (returning as 3-year old “jacks” or “jills”). 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. Marine survival of only sea entry year 2016 noted above was influenced by warm ocean conditions due to the development of a very strong El Niño event in 2015-2016. Further, examination of an association between historic smolt-to-adult

return (SAR) variations and NOAA Fisheries “stop-light” indicators suggests that both the 2017 and 2018 sea-entry smolts are likely to have experienced an improvement in survival rates relative to the <2% SAR applied to 2015 and 2016 sea entry year smolts. Applying a 3.6 % SAR to smolt cohorts for the 2017 and 2018 sea-entry years yields an estimate of around 69,000 adults contributing to the 2018-2021 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 2019 of 62,000 age-4 and age-5 Okanagan wild-origin fish. Production of hatchery-origin fish from Skaha Lake may increase these returns by 10-20 % for a total maximum return of 74,000 adult sockeye of Okanagan origin in 2019.

Given a domestic escapement objective of roughly 60,000 adults through Wells Dam and an associated terminal escapement of 35,000 Sockeye at Oliver, this forecast will most likely result in a very small surplus of only 14,000 large adults to support fisheries in both the U.S. and Canada. The uncertainty of en route mortality associated with migration conditions in the Okanagan River may also impact fishing opportunities in 2018.

#### **13.5.8.2.2 In-season**

Assessment of returns is done via counts of escapement past dams located on the Columbia River in the United States. Spawning ground assessments are done on an annual basis by the Okanagan Nation Alliance fisheries staff and are comprised of visual / dead recovery surveys to determine spawner abundance in the Okanagan River and Skaha Lake system.

### **13.5.8.3 DECISION GUIDELINES AND MANAGEMENT ACTIONS**

The current science based spawning objective is 35,500 fish as enumerated on an indexed section of the spawning ground which is equivalent to approximately 61,200 fish as enumerated through Wells Dam on the Columbia River in Washington State.

The following decision rules are used to manage Okanagan Sockeye in Canada:

- If projected escapement past Wells Dam on the Columbia River is less than 10,000 Sockeye, limited fishing for FSC purposes is permitted by Okanagan Nation.
- If projected escapement past Wells Dam is between 10,000 and 60,000 fish, an Okanagan Nation FSC catch of 5% of the run that has migrated past Wells Dam is permitted.

- If projected escapement past Wells Dam exceeds 60,000 fish, an Okanagan Nation FSC minimum catch of 10% of the run that has migrated past Wells Dam is permitted.

Should the projected escapement past Wells Dam exceed 80,000 fish; additional opportunities may be considered.

#### **13.5.8.4 INCIDENTAL HARVEST, BYCATCH AND CONSTRAINTS TO OKANAGAN SOCKEYE FISHERIES**

Fisheries are managed to avoid incidental capture of Okanagan River Chinook.

#### **13.5.8.5 ALLOCATION AND FISHING PLANS**

Allocations are described above in the Decision Guidelines and Management Actions section.

##### **13.5.8.5.1 First Nations Fisheries**

###### ***Food Social and Ceremonial***

The Okanagan Nation Alliance opportunities to harvest salmon for food, social and ceremonial purposes are provided through a communal licence negotiated annually with DFO. This licence provides the details of the FSC fishery.

###### ***Fishery Monitoring and Catch Reporting***

Okanagan Nation Alliance uses a variety of methods to estimate FSC harvests. Current methods include video monitoring, roving creel monitors, catch card reporting and phone interviews.

##### **13.5.8.5.2 Recreational Fisheries**

Recreational fisheries will take place if the Wells Dam counts are sufficient to meet spawning escapement and FSC requirements. The allowable catch will be determined in-season based on Sockeye counts over Wells Dam and movement of fish into Osoyoos Lake. This fishery takes place on Osoyoos Lake.

A creel survey utilizing access sites and boat patrols are conducted capturing effort, landed catch and release data during the fishery. The survey is conducted by the Okanagan Nation Alliance in conjunction with DFO.

### 13.5.8.5.3 Commercial Fisheries

#### *Okanagan First Nations Commercial Sockeye Harvest*

##### *Okanagan Sockeye First Nations Demonstration Fishery*

The Okanagan Nation Alliance (ONA) will be working towards sustaining commercial sales of Okanagan Sockeye in addition to working with strategic allies for increasing sales and trade from other inland commercial fisheries. If abundance permits, a 2019 fishery would be similar to 2018 and continue to build on previous year's demonstration fisheries and address the challenges involved in informing business plans for in-river fisheries in the BC Interior where commercial fisheries are developing, and establishing markets for inland commercial Sockeye.

- **Region:** BC Interior
- **Participants:** Okanagan Nation Alliance partnership: Okanagan Indian Band, West bank First Nations, Penticton Indian Band, Osoyoos Indian Band, Upper Nicola Indian Band Lower and Upper Similkameen Indian bands.
- **Location of Fishery:** Osoyoos Lake and Okanagan River
- **Gear Type:** Purse seine(s), troll fleet and tangle net
- **Time Frame:**  
NOTE: All fishery time frames are estimates and final dates will be determined according to in-season migration timing information. Fishery will target on Okanagan (Columbia) Sockeye. Potential start date of July 20 with end date determined on run timing and fish quality
- **Allocation:** The pre-season forecast for Okanagan Sockeye indicates a lower return than 2018 is expected. Opportunities for commercial and recreational fisheries are not likely in 2019. If abundance permits an Opportunity, it will be identified based on in-season information of passage thru Wells Dam on the Columbia River. Commercial and recreational harvesting will only be conducted if the Wells Dam counts are sufficient to meet spawning escapement and FSC requirements. The allowable catch will be determined in-season based on Sockeye counts over Wells Dam and movement of fish into Osoyoos Lake.
- **Monitoring Plan:** These fisheries will be monitored using designated landing sites, electronic logbook system (ELOG) and validation of catch at either landing site or plant. In addition, biotelemetry tracking of adult Sockeye will continue to be

developed for estimating instantaneous mortality rates (natural or fishing) during spawner migration.

#### **13.5.8.5.4 ESSR Fisheries**

There are no ESSR fisheries for Okanagan Sockeye.



# APPENDIX I: LOGBOOK SAMPLES

**SALMON TROLL** Logbook I.D. # **T** **SAMPLE** 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>									
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				
Day	Mon.																		
15	Jul	4	9	3	(F) or I	Kept	25	0	12	0	0	X	X	3	0	0			
Trip ID #: <b>FOS-12345</b>					Rel.	0	0	0	0	3	3	5	0	8 Yellowtail, 3 Canary, 6 Silvergrey		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: <b>Dan Doe</b>					<sup>7</sup> F.I.N.: <b>99999</b>									
15	Jul	4	5	8½	(F) or I	Kept	42	0	8	0	0	X	X	0	0	0			
Trip ID #: <b>FOS-12345</b>					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-12346</b>					
Vessel Master Name: <b>Dan Doe</b>					Signature: <b>Dan Doe</b>					<sup>7</sup> F.I.N.: <b>99999</b>									
16	Jul	5	1	10	(F) or I	Kept	12	0	0	0	0	X	X	0	0	0			
Trip ID #: <b>FOS-12345</b>					Rel.	0	0	0	0	0	1	2	0	2 Chilipepper, 2 unknown rockfish		0			
Comments:														<sup>6</sup> DCR Conf. #: <b>FOS-12346</b>					
Vessel Master Name: <b>Dan Doe</b>					Signature: <b>Dan Doe</b>					<sup>7</sup> F.I.N.: <b>77777</b>									
18	Jul	5	1	6	(F) or I	Kept	0	0	0	0	8	X	X	0	0	0			
Trip ID #: <b>FOS-12398</b>					Rel.	0	6	0	0	0	1	0	0	0	0	1L			
Comments:														<sup>6</sup> DCR Conf. #: <b>FOS-12402</b>					
Vessel Master Name: <b>John Smith</b>					Signature: <b>John Smith</b>					<sup>7</sup> F.I.N.: <b>77777</b>									
18	Jul	5	3	5½	(F) or I	Kept	0	0	0	0	12	X	X	0	0	0			
Trip ID #: <b>FOS-12398</b>					Rel.	0	0	0	0	0	0	0	0	0	0	2D			
Comments:														<sup>6</sup> DCR Conf. #: <b>FOS-12402</b>					
Vessel Master Name: <b>John Smith</b>					Signature: <b>John Smith</b>					<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=Dogfish, M=Mackerel, S=Steelhead. If any **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**.

2019

**SALMON GILLNET** Logbook I.D. # **G SAMPLE** 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 Type <sup>1</sup> : <b>A</b> # Strands <sup>2</sup> : <b>6</b> Length: <b>200</b> (fathoms) Weedline Depth <sup>3</sup> : <b>30cm</b> Hang Ratio: <b>3</b> :1 Mesh Size <sup>4</sup> : <b>7/8"</b> # Meshes: <b>90</b>																					
<b>Daily Catch Records</b>																					
Date	Mgmt. Area	Sub-area(s)	Hours Fished	# of sets	<sup>4</sup> Kept or Released	Sockeye	Coho	Pink	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	0	Yes					
Trip ID #: <b>FOS-12480</b>					Rel.	0	9	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	0	1	0	0	0	Yes					
Trip ID #: <b>FOS-12480</b>					Rel.	0	2	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>			
5 Aug 12	12-4	2	3	Kept	88	0	116	7	0	0	0	2	0	0	0	Yes					
Trip ID #: <b>FOS-12480</b>					Rel.	0	0	0	0	0	1	0	0	0	11M, 2R	No					
Comments: <b>Steelhead released in good condition. 2 sea lions released alive around 11AM.</b>														<sup>8</sup> DCR Conf. #: <b>FOS-12367</b>							
Vessel Master Name: <b>John Smith</b>														Signature: <b>John Smith</b>				<sup>9</sup> F.I.N.: <b>77777</b>			
29 Aug 17	17-11	6	6	Kept	163	0	328	0	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	No					
Comments:														<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	0	Yes					
Trip ID #: <b>FOS-12773</b>					Rel.	0	2	0	0	1	1	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.

2019

SALMON SEINE Logbook I.D. # S SAMPLE Report Catch to: 1-(888) 387-0007 Record daily catch in pieces Page #

Vessel Name: <b>Pacific Blue</b>														VRN (CFV#): <b>12346</b>			
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	Steelhead	Atlantic	<sup>3</sup> Other Fish	<sup>4</sup> Non-fish		
14 Aug	3	3-3, 3-2	8	5	Kept	42	0	431	0	0	0	0	6	0	Yes		
Trip ID #: <b>FOS-12281</b>					Rel.	0	3	0	12	2	0	0	0	0	No		
Comments: <b>2 Rhinoceros Auklets released alive at 10 AM, 1 coho clipped, 2 coho dead, 1 rel'd alive</b>														DCR Conf. #: <b>5 FOS-12346</b>			
Vessel Master Name: <b>Dan Doe</b>														Signature: <b>Dan Doe</b>		F.I.N.: <b>99999</b>	
15 Aug	4	4-5	5 1/2	2	Kept	38	0	850	0	0	0	0	0	0	Yes		
Trip ID #: <b>FOS-12281</b>					Rel.	0	0	0	2	1	0	1	0	4 D, 1 L, 1 salmon shark	No		
Comments: <b>1 harbour seal released, steelhead revived in tank then released in good condition</b>														DCR Conf. #: <b>6 FOS-12358</b>			
Vessel Master Name: <b>Dan Doe</b>														Signature: <b>Dan Doe</b>		F.I.N.: <b>99999</b>	
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	No		
Comments: <b>Both coho rel'd in good condition. 12 jack chinook squishers all dead.</b>														DCR Conf. #: <b>6 FOS-12428</b>			
Vessel Master Name: <b>John Smith</b>														Signature: <b>John Smith</b>		F.I.N.: <b>77777</b>	
Offload Catch Records																	
Dates Fished						#	Date offloaded	Sockeye	Coho	Pink	Chum	Chinook	(Other)	Complete if catch pooled with that of another vessel:			
First date		Last date		Days													
Day	Month	Day	Month	fished										Received from:	Offloaded to:	Vessel	
14	Aug	15	Aug	2	15	Aug	471	0	3958	0	0	0	42			Name:	
Business and port offloaded to: <b>Canfisco, Pr. Rupert</b>								Fish slip #: <b>79768</b>				OCR Conf. #: <b>6 FOS-12380</b>		VRN (CFV#):			
19	Aug	19	Aug	1	20	Aug	310	0	1692	0	0	0	0		✓	Name: <b>Home Run II</b>	
Business and port offloaded to:								Fish slip #: <b>79801</b>				OCR Conf. #: <b>6 FOS-12482</b>		VRN (CFV#): <b>12347</b>			

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. 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.

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## 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. 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, crew training, 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/Safe on the Wheel Course
- Fish Safe – Safest Catch Program – FREE for BC commercial fishers
- First Aid training
- Radio Operators Course
- Fishing Masters Certificate training
- Small Vessel Operators Certificate training
- Publications:

- 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>)
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Safe at Sea and Safest Catch – DVD Series
- Safest Catch Log Book
- Safety Quick

For further information see:

<http://www.tc.gc.ca/eng/marinesafety/menu.htm>

<http://www.fishsafebc.com>

<http://www.worksafebc.com>

## **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 drills 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 also to correct ballasting. Fish harvesters must be familiar with their vessel's center of gravity, the effect of liquid free surfaces on stability (i.e. 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 reputable 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. Examples of detailed documentation include: engine room procedures; maintenance schedules to ensure watertight integrity; and, instructions for regular practice of emergency drills.

The Fishing Vessel Safety Regulations currently require, with certain exceptions, a full stability assessment for vessels between 15 and 150 gross tons that do not exceed 24.4 meters in length and include fishing vessels involved in the catch of herring or capelin. 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, the following fishing vessels must successfully undergo a stability assessment by a competent person:

- A new fishing vessel that has a hull length of more than 9 m;
- 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 vessels 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

A fishing vessel that is not required to undergo a stability assessment shall have 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. 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 one, or to receive guidance on obtaining competent assessor.

In 2008, TC is updating [SSB No. 01/2008](#), 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.

he 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* and M17P0052 - *Miss Cory*.

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 Regulation (OHSR) require owners of fishing vessels to provide documentation on board, readily accessible to crew members, which describes vessel characteristics, including stability.

In 2013, Fish Safe developed a code of best practices for the food and bait herring fishery and the prawn fishery: 'Food and Bait – Best Practice Reminders'; 'Prawn Industry - Best Industry Recommended 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 – Cell phone: (604) 739-0540 - 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.

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) require 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 with the crew for the established 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))

WorkSafeBC currently requires workers who are employed under conditions which involve a risk of drowning to wear a PFD or lifejacket with sufficient buoyancy to keep the worker's head above water. Where there is a risk of entering the water, the use of a PFD will prepare a crew member to remain afloat, to survive the effects of cold shock, reduce the need to swim and give rescuers time to respond.

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:

[http://www.weatheroffice.gc.ca/marine/index\\_e.html](http://www.weatheroffice.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.

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.

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 on MCTS and DSC can be obtained by contacting a local Coast Guard MCTS centre (located in Victoria or Prince Rupert or from the Coast Guard website: [www.ccg-gcc.gc.ca/Pacific](http://www.ccg-gcc.gc.ca/Pacific)).

### 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 meters 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 meters or more in length; or
- d) where the length of the vessel or object being towed or pushed by the ship is twenty meters or more in length.

Exceptions include:

- a) a ship towing or pushing inside a log booming ground,
- b) a pleasure yacht *less than* 30 meters in length, and
- c) a fishing vessel that is *less than* 24 meters in length and *not more than* 150 tons gross.

More detailed information on VTS can be obtained by calling (250) 363 8904 or from the Coast Guard website:

<http://www.ccg-gcc.gc.ca/eng/CCG/Home>

### 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, 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, and personal flotation devices (PFDs). Part 12 addresses issues related to tools, machinery and equipment, including safeguarding. Part 15 addresses issues related to rigging.

Additionally, Part 3 of the WCA defines the roles and responsibilities of owners, employers, supervisors and workers. (Fishing vessel masters are considered to be employers under the WCA)

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 uses, 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
- Cody King, Courtenay, (250) 334-8733
- Mark Lunny, Courtenay, (250) 334-8732
- Jessie Kunce, Victoria, (250) 881-3461
- Gregory Matthews, Courtenay, (250) 334-8734
- Pat Olsen, Manager of Interest for Marine and Fishing, (250) 334-8777

For information on projects related to commercial fishing:

For information on projects and initiatives related to commercial fishing health and safety please contact Tom Pawlowski (604) 233-4062 or by email: [tom.pawlowski@worksafebc.com](mailto:tom.pawlowski@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.

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  
Richmond, BC, V7A 4V4  
Email: [ryan@fishsafebc.com](mailto:ryan@fishsafebc.com)  
Website: <http://www.fishsafebc.com>

## 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 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 released one investigation report:

- the capsizing of the trawl [Caledonian](#) and subsequent fatalities.

In 2018 the TSB 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.

The TSB issues 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 fishers 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 fishers still don't wear them. Regulations currently require that PFDs be worn only if fishers identify a risk, however; you never know when you could end up in the water. So the TSB is recommending to TC and WorkSafeBC 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.

For more information about the TSB, visit the website at:

<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.tsb.gc.ca/eng/surveillance-watchlist/marine/2018/marine.asp>

Reporting an Occurrence:

<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:

[Glenn Budden](#), Investigator, Marine - Fishing Vessels  
Transportation Safety Board of Canada  
4 - 3071 No. 5 Road  
Richmond, BC, V6X 2T4  
Telephone: (604) 666-2712  
Cell: (604) 619-6090  
Email: [glenn.budden@tsb.gc.ca](mailto:glenn.budden@tsb.gc.ca)



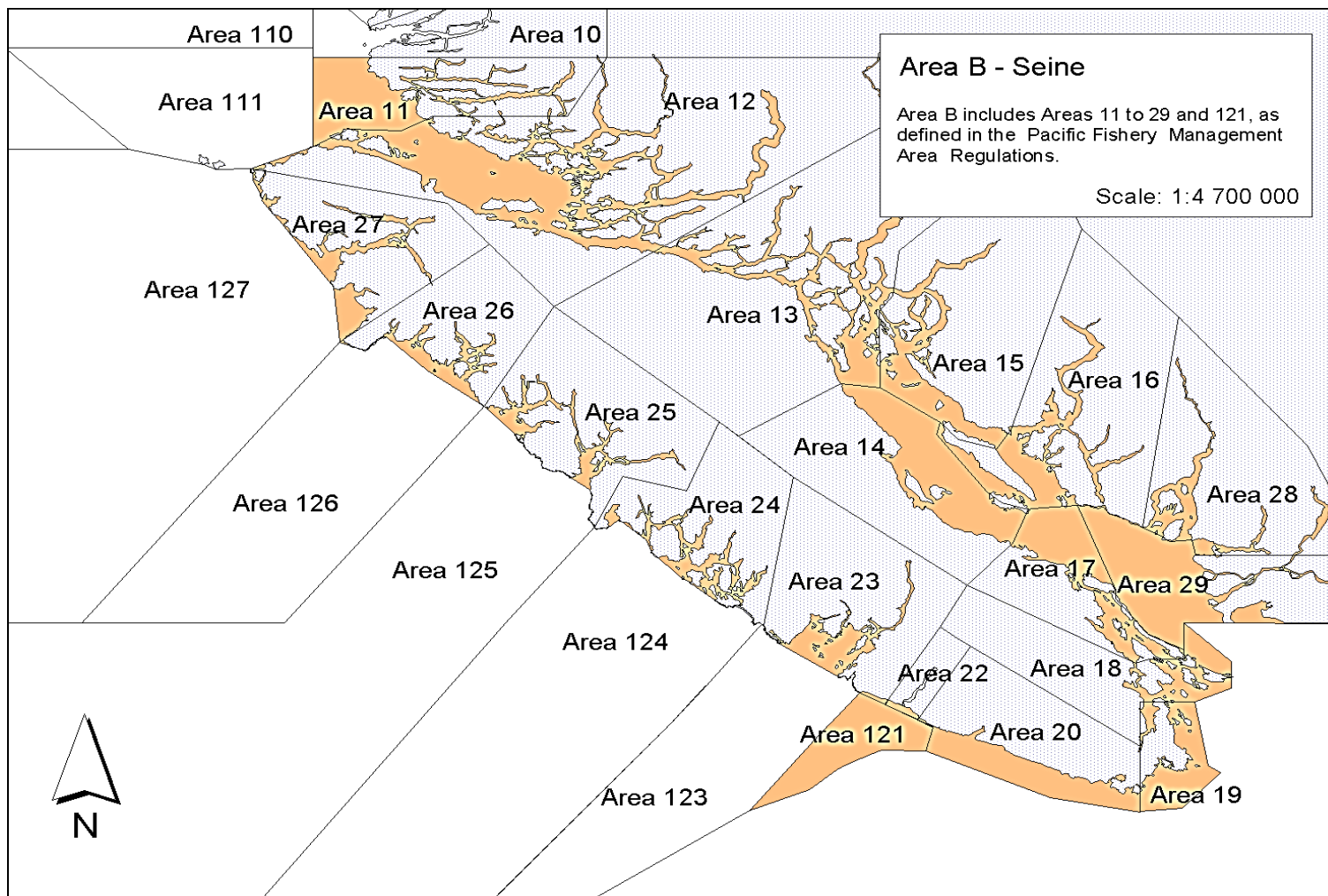
## APPENDIX 3: COMMERCIAL SALMON LICENCE AREAS

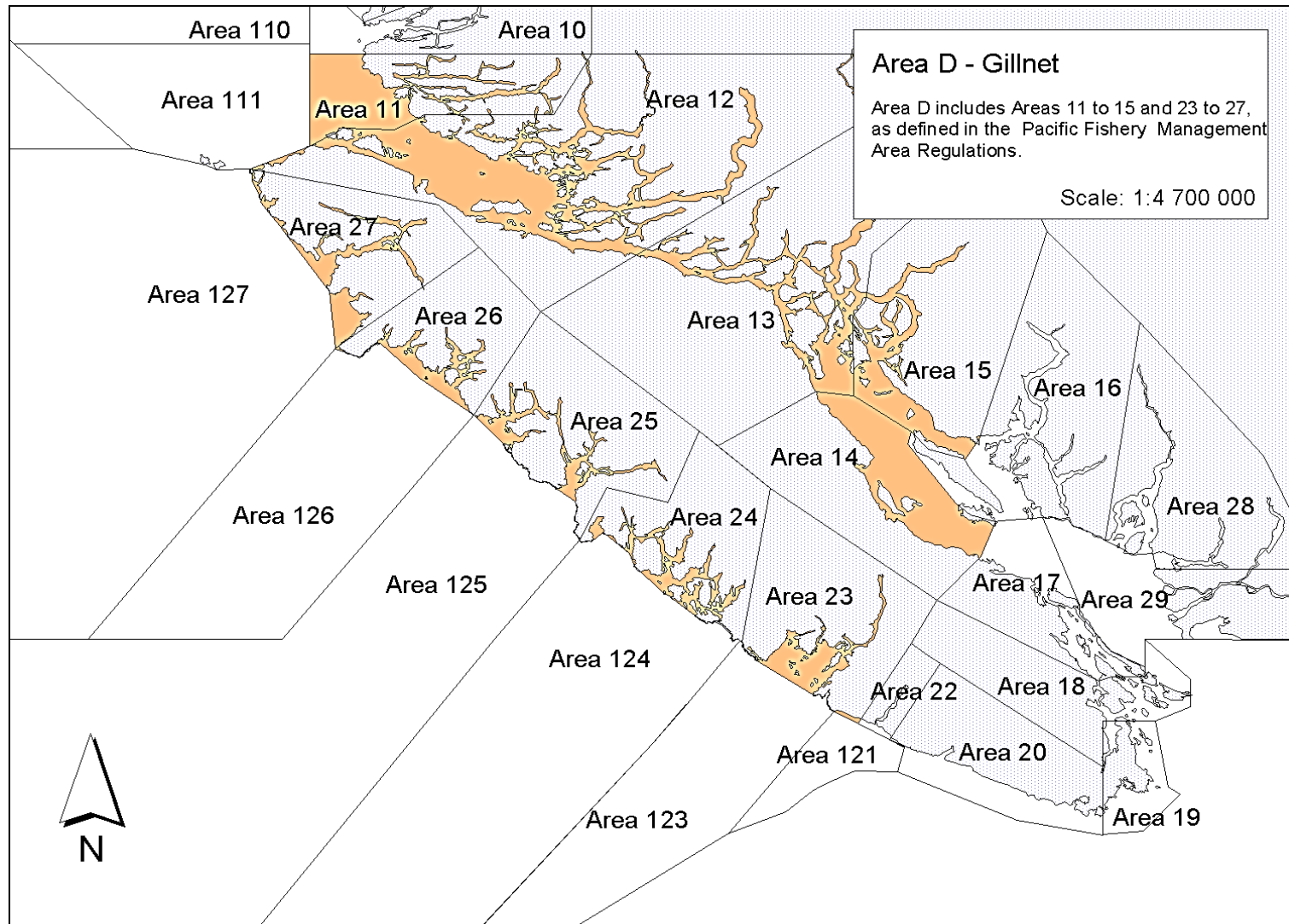
Pacific Salmon Fishing Area	Gear	Corresponding Pacific Fisheries Management Areas (PFMA)
Salmon Area A	Seine	Areas 1 to 10, Subarea 101-7
Salmon Area B	Seine	Areas 11 to 29 and 121
Salmon Area C	Gill net	Areas 1 to 10, Subarea 101-7
Salmon Area D	Gill net	Areas 11 to 15 and 23 – 27
Salmon Area E	Gill 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

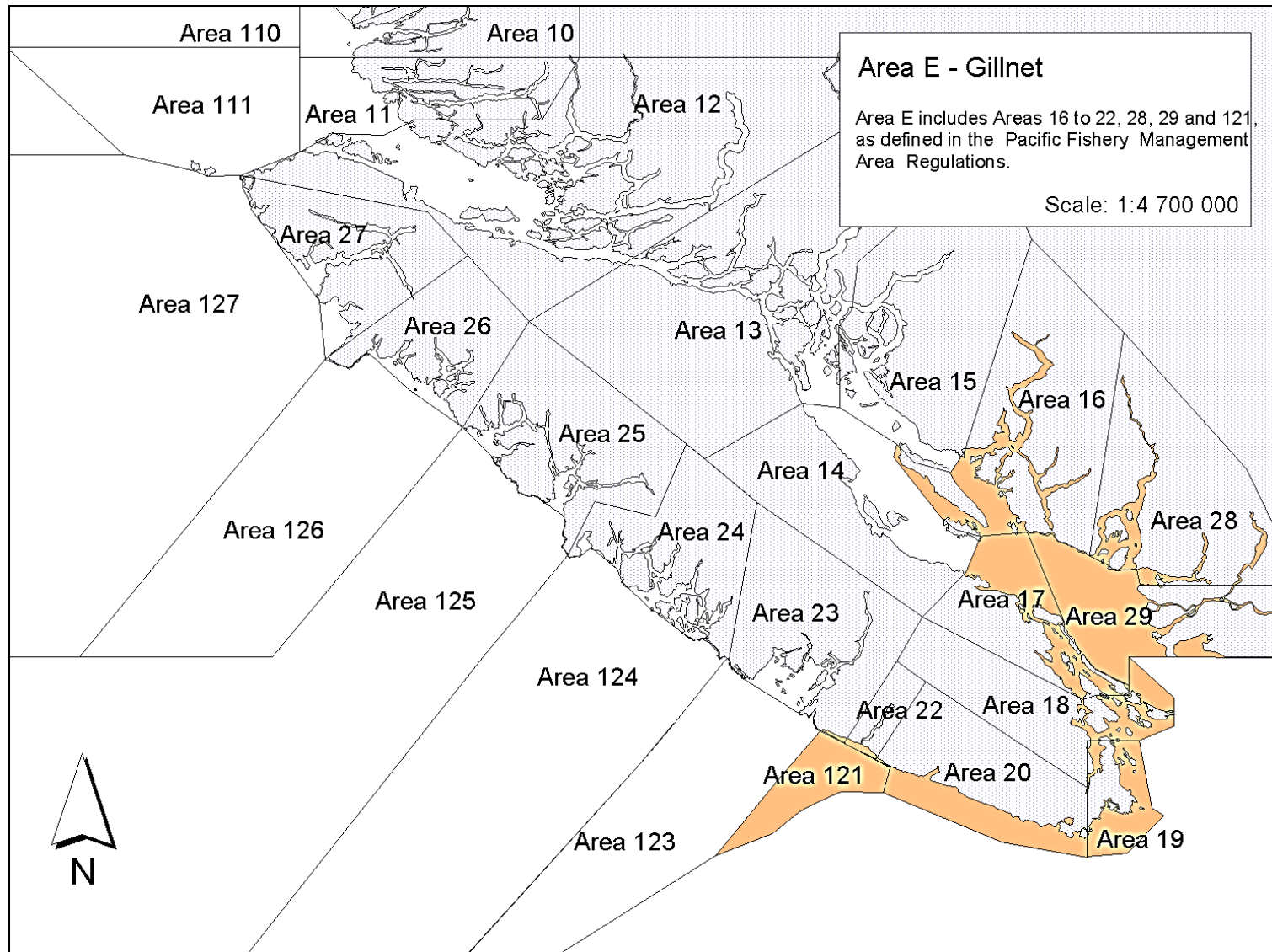
For South Coast PFMA's please see [Appendix 6](#) of this IFMP.

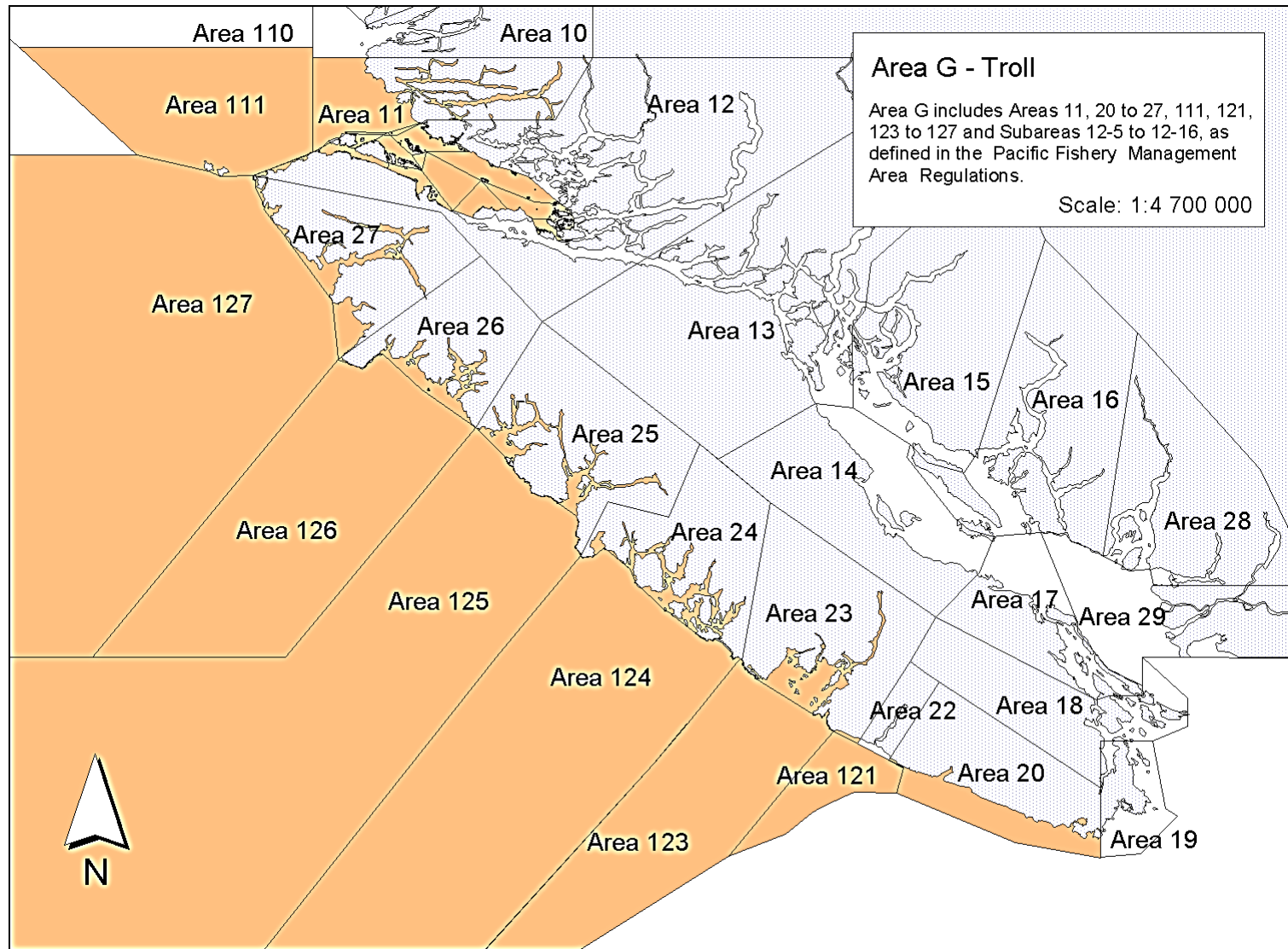
For maps of South Coast commercial licence areas, (Areas B, D, F, G, and H), please see [Appendix 4](#).

## APPENDIX 4: MAPS OF SOUTH COAST COMMERCIAL LICENCE AREAS

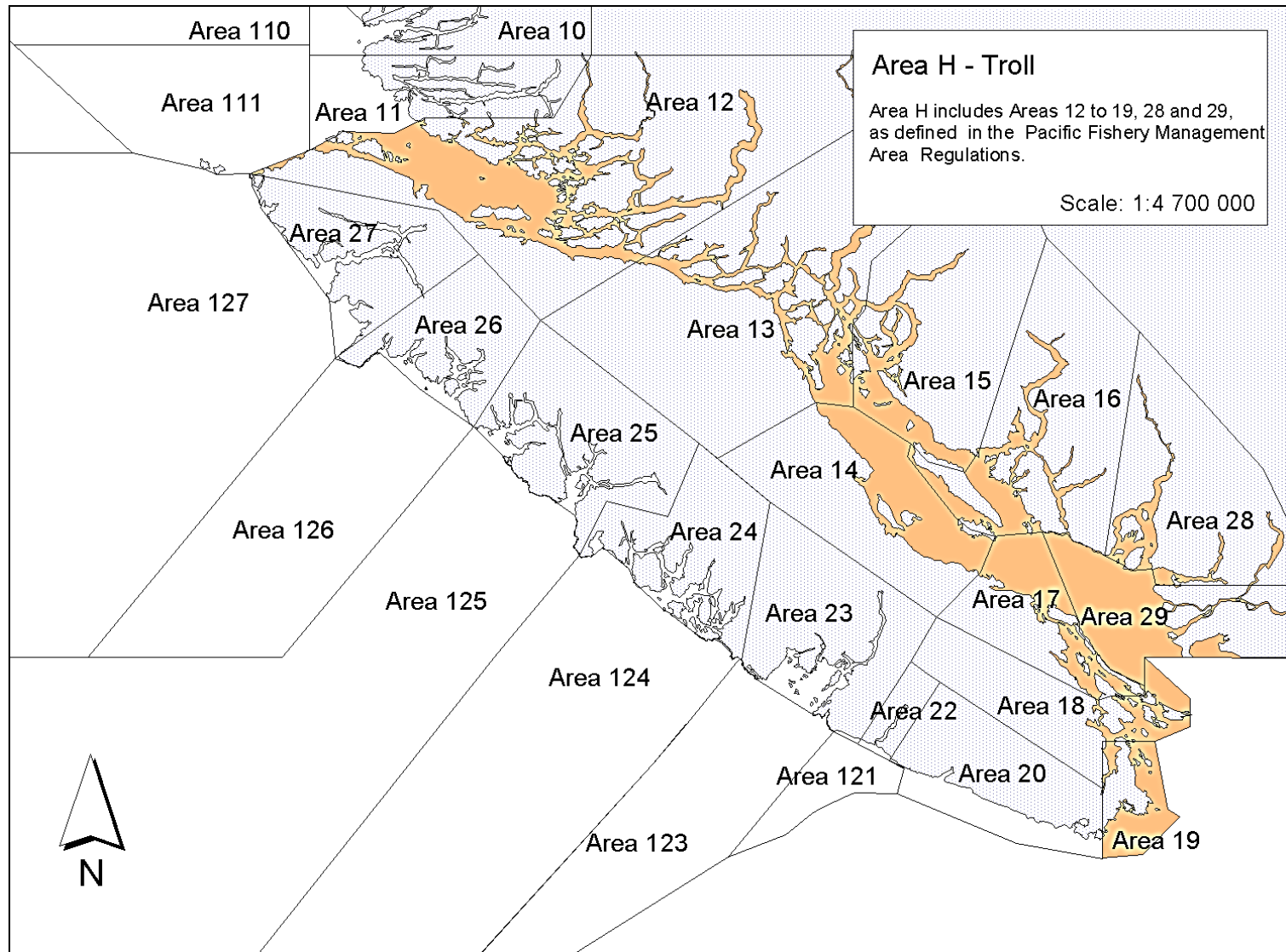












## APPENDIX 5: ADVISORY BOARD MEMBERSHIPS

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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>

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### **PROVINCE (EX-OFFICIO)**

Vacant



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**ALTERNATE**

Vacant

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Vacant

Vacant

Vacant

Vacant

**PROVINCE (EX-OFFICIO) (ONE) MEMBER**

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 2019 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 for 2019 include:

- a) Supporting local area collaboration: to improve integration and collaboration among CSAF Demonstration, commercial marine and First Nation fishers;
- b) Dual Fishing: engage in preliminary discussions regarding dual fishing for salmon, including developing draft dual fishing principles to support implementation of pilot dual fishing demonstrations in the future;
- c) Providing support to local proponents and DFO area staff in reviewing and developing existing and new CSAF demonstration fishery proposals; and
- d) 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 which will take place over 2019. For further details on this work, please see section 12.4. Any

proposed changes will be included in the draft 2020 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 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 3.0 below. No changes have been suggested for the 2019 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 2019 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 12.4 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 2019 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). No changes have been recommended for the 2019 season.

- 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 for Temporary Commercial Salmon Share Transfers, Section 12.13);
- 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 (to be reviewed in 2019 for 2020 implementation), 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. There are no proposed changes for 2019.

**CATEGORY 3: ADDITIONAL ELEMENTS FOR DISCUSSION:**

In addition to commercial allocation arrangements within Section 12.4 of the IFMP and those listed above in Category 2: *Flexibility to Harvest Shares*, there are a number of additional

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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 12.13 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 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. New proposals for 2019 included within this final IFMP have been highlighted in bold font. 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 2019 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.

Year Approved	Salmon Coordinating Committee	Commercial Salmon Advisory Board
	<u>Northern B.C.</u>	<u>Northern B.C.</u>
2016	Central Coast hatchery Chum (Heiltsuk/Kitasoo) 4.1 and 4.2	Central Coast Coho (Area F) 4.10
2017	Central Coast Chum and	
2018	Central Coast Chinook (Nuxalk) 4.3	

<b>Year Approved</b>	<b>Salmon Coordinating Committee</b>	<b>Commercial Salmon Advisory Board</b>
2016	Nass River Sockeye (2 proposals from Nisga'a Lisims Government and Gitanyow) 4.4 and 4.5	
2016	Skeena Sockeye - Area 4 (NCSFNSS) 4.6	
2018	Skeena Pink – Area 3 / 4 (NCSFNSS) 4.7	
2017	Haida Gwaii Coho (CHN) 4.8	
2018	Coho bycatch within existing Pink ESSR (Wet'suwet'en) 4.9	
	<u>Southern B.C.</u>	<u>Southern B.C.</u>
2016	Cowichan Chum (Cowichan Tribes) 4.11	Fraser River Sockeye, Pink, Chum - alternate gear (Area E) 4.14
2017	Goldstream Chum (Saanich Tribes) 4.12	Qualicum/Puntledge (Chum Area D) 4.15
2017		Area 12 – 9 Encounter study (Area D) 4.16
2017		Mainland/Inlet Pink and Chum (Area H) 4.17
2018	Bute Inlet Chum (Homalco First Nation) 4.13	Bute Inlet Chum (Area H) 4.18;
2018		Bute Inlet Chum (Area D) 4.19

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.

**In an effort to reduce the length of the CSAF section in the IFMP, CSAF proposals have been condensed to only reflect key components and any significant changes proposed by the proponent for the coming season. As per previous years, a CSAF demonstration fishery may only operate with a final fishing plan being approved in the area and sufficient returns available.**

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 <NEW FOR 2019>

##### 4.1.1 TERMINAL CHUM (K'OMOKS FIRST NATION)

	Terminal Chum
<b>Included in Final IFMP</b>	2019
<b>Status (Implemented/Developing)</b>	Developing Fishing Plan
<b>Allocation*</b>	13% of Southern Inside Chum.
<b>Location</b>	A portion of 14 (TBC)
<b>Size</b>	1- 2 seines or 3-5 gillnet vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	TBC – consistent with commercial marine fisheries
<b>Communication</b>	A K'omoks Tribes Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the K'omoks fishery and will be the primary contact for all communication with DFO and fishers.
<b>Further Information</b>	Kent Spencer – Aboriginal Affairs Advisor

\*Shares change annually based the respective gear shares for the production Area and licences in DFO Inventory. In 2018 shares were based on 24 Area B, 16 Area D, 68 Area E, and 19 Area H licences in the DFO Inventory.

##### 4.1.2 NANAMO TERMINAL CHUM (SNUNEYMUXW FIRST NATION)

	Nanaimo Terminal Chum
<b>Included in Final IFMP</b>	2019
<b>Status (Implemented/Developing)</b>	Developing Fishing Plan
<b>Allocation*</b>	13% of Southern Inside Chum.
<b>Location</b>	Nanaimo River Approach Areas/Portions of Departure Bay (TBC)
<b>Size</b>	1- 2 seines or 3-5 gillnet vessels. Final number based on the number of fish to be harvested. (TBC)
<b>Catch Monitoring (Key Elements)</b>	TBC – consistent with commercial marine fisheries

<b>Communication</b>	A Snuneymuxw Tribes Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the Snuneymuxw fishery and will be the primary contact for all communication with DFO and fishers.
<b>Further Information</b>	Terry Palfrey – Fisheries Manager/Kent Spencer – Aboriginal Affairs Advisor

\*Shares change annually based the respective gear shares for the production Area and licences in DFO Inventory. In 2018 shares were based on 24 Area B, 16 Area D, 68 Area E, and 19 Area H licences in the DFO Inventory.

#### 4.1.3 MAINLAND INLET PINK & CHUM FISHERY: AREA 12 BROUGHTON ARCHIPELAGO (AREA H)

	Mainland Inlet Pink & Chum – Area 12 Broughton Archipelago (Area H)
<b>Included in Final IFMP</b>	2019
<b>Status (Implemented/Developing)</b>	Developing fishing plan
<b>Allocation</b>	Existing share of Southern Inside Chum as per the CSAF.
<b>Location</b>	Sub-Areas 12 -26 to 12-30 and 12-35 to 12-42 (TBC)
<b>Size</b>	5 vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	Start, end, pause, cancel and daily catch reporting; logbook or E-log entry for each day of fishing; monitoring program to be determined.
<b>Communication</b>	Communication protocols with other fisheries and participants and DFO would be coordinated with the Resource Manager. The same type of program that occurs for southern inside Chum is envisioned.
<b>Further Information</b>	Christine Bukta – DFO Fisheries Manager

#### 4.1.4 METLAKATLA FIRST NATION

	Skeena Sockeye
<b>Included in Final IFMP</b>	2019
<b>Status (Implemented/Developing)</b>	Developing final fishing plan
<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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

## 4.2 KITASOO FIRST NATION

	Trout Bay Chum (Kitasoo First Nation)
Included in Final IFMP	2016
Status (Implemented/Developing)	2016: insufficient returns 2017: insufficient returns 2018: insufficient returns
Allocation*	15.72% of Chum
Location	7-5
Size	1 seine or 2- 6 gillnet vessels. Final number based on the number of fish to be harvested.
Catch Monitoring (Key Elements)	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
Communication	Kitasoo Fisheries Program will be responsible for all pre-season, in-season and post-season communications with DFO and participating FNs.
Further Information	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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

### 4.3 MCLOUGHLIN 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
<b>Allocation*</b>	15.72% 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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

### 4.4 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)
<b>Allocation*</b>	15.72% of Chum and 14.06% of Chinook.
<b>Location</b>	8-10, Portions of 8-11 and 8-12 and 8-15
<b>Size</b>	2-3 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
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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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.5 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
<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. In 2018 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

#### 4.6 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
<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>Proposed Changes Submitted for 2019</b>	Annual overage/underage provisions as included in the proposal will not be implemented. However, continued discussions on in-season flexibility to support this demonstration fishery achieving shares continues. Any proposed changes will be discussed with all relevant commercial and First Nations fisheries prior to implementation.
<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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.7 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
<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
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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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.8 SKEENA 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
<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. In 2018 shares are based on 88 Area C and 19 Area A licences held in the DFO Inventory.

#### 4.9 HAIDA GWAI 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)
<b>Allocation*</b>	3.1-10% 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>	Peter Katinic – DFO Fisheries Manager

\*The Haida share depends on the allocation of the 21 Area F licences with no Chinook quota in the DFO Inventory.

#### 4.10 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
<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>	Peter Katinic – DFO Fisheries Manager

#### 4.11 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

<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 in DFO Inventory. In 2018 shares were based on 24 Area B, 16 Area D, 68 Area E, and 19 Area H licences in the DFO Inventory.

#### 4.12 COWICHAN CHUM (COWICHAN TRIBES)

	Cowichan Terminal Chum (Cowichan Tribes)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/Developing)</b>	2016: Implemented 2017: Implemented 2018: Implemented
<b>Allocation*</b>	13% of Southern Inside Chum.
<b>Location</b>	A portion of 18-6, a portion of 18-7, a portion of 18-8.
<b>Size</b>	1- 2 seines or 3-5 gillnet vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	At-sea observer; mandatory landing site; 100% at-sea coverage; monitoring plan, in-season reporting
<b>Communication</b>	A Cowichan Tribes Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the Cowichan fishery and will be the primary contact for all communication with DFO and fishers.
<b>Further Information</b>	Terry Palfrey – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences in DFO Inventory. In 2018 shares were based on 24 Area B, 16 Area D, 68 Area E, and 19 Area H licences in the DFO Inventory.

**4.13 GOLDSTREAM CHUM (SAANICH TRIBES)**

	Goldstream Chum (Saanich Tribes)
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/Developing)</b>	2017: Insufficient returns 2018: Implemented
<b>Allocation*</b>	13% of Southern Inside Chum.
<b>Location</b>	A portion of 19-8, subareas 19-10, 19-11, and a portion of subarea 19-12
<b>Size</b>	1- 2 seines or 3-5 gillnet vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	At-sea patrols; mandatory landing site; 100% dock side monitoring; monitoring plan, in-season reporting
<b>Communication</b>	A Saanich Tribes Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the Saanich fishery and will be the primary contact for all communication with DFO and fishers.
<b>Further Information</b>	Terry Palfrey – DFO Fisheries Manager

\*Shares change annually based the respective gear shares for the production Area and licences in DFO Inventory. In 2018 shares were based on 24 Area B, 16 Area D, 68 Area E, and 19 Area H licences in the DFO Inventory.

**4.14 BUTE INLET CHUM (HOMALCO FIRST NATION)**

	Bute Inlet Chum (Homalco First Nation)
<b>Included in Final IFMP</b>	2018
<b>Status (Implemented/Developing)</b>	2018: insufficient returns; final fishing plan pending
<b>Allocation*</b>	13 % of Southern inside Chum
<b>Location</b>	13-21
<b>Size</b>	3-5 gillnet vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	To be determined in discussion with DFO
<b>Communication</b>	A Homalco First Nations representative will be identified and will be responsible for the coordination of the Bute Inlet fishery and will be the primary contact for all communication with DFO and fishers.



<b>Further Information</b>	Kent Spencer – DFO Aboriginal Affairs Advisor
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\*Shares change annually based the respective gear shares for the production Area and licences in DFO Inventory. In 2018 shares are based on 24 Area B, 16 Area D, 68 Area E, and 19 Area H licences in the DFO Inventory.

#### 4.15 SOCKEYE, PINK AND CHUM ALTERNATE GEAR (AREA E)

	<b>Fraser River Sockeye, Pink and Chum Alternate Gear (Area E)</b>
<b>Included in Final IFMP</b>	2016
<b>Status (Implemented/Developing)</b>	2016/2017: not implemented, insufficient interest 2018: not implemented, final fishing plan pending
<b>Allocation</b>	Existing share of Area E Fraser River Sockeye, Pink and Chum as per the CSAF.
<b>Location</b>	Fraser River main stem
<b>Size</b>	Up to 15 shallow seines to harvest Pinks, Sockeye, Chum. 1-3 beach seine for Chum. The numbers of shallow seines and the beach seines would be limited by the uncaught Area E allocation.
<b>Catch Monitoring (Key Elements)</b>	Dock side monitoring for the shallow seines and on grounds monitor for the beach seines; 3 landing sites; 25% roving observer coverage
<b>Communication</b>	Area E would appoint a spokesperson for communication with other fisheries and DFO. It is expected that there would be at least weekly in-season communications with DFO and or a local harvest committee if one is struck.
<b>Further Information</b>	Barbara Mueller – DFO Fisheries Manager

#### 4.16 QUALICUM AND PUNTLEDGE CHUM (AREA D)

	<b>Qualicum and Puntledge Chum (Area D)</b>
<b>Included in Final IFMP</b>	2017
<b>Status (Implemented/Developing)</b>	2017: implemented 2018: insufficient returns
<b>Allocation</b>	Existing share of Southern Inside Chum as per the CSAF
<b>Location</b>	Area 14
<b>Size</b>	4 vessels
<b>Catch Monitoring (Key Elements)</b>	Start, end, pause, cancel and daily catch reporting; logbook or e-log entry for each day of fishing

<b>Communication</b>	Communication in-season would be via the Chum working group committee
<b>Further Information</b>	Ryan O'Connell – DFO Fisheries Manager

#### 4.17 AREA 12-9 ENCOUNTER (AREA D)

	Area 12-9 Encounter Study (Area D)
<b>Included in Final IFMP</b>	2017
<b>Status (Implemented/Developing)</b>	2014: Implemented 2018: Implemented
<b>Allocation*</b>	Existing share of Sockeye as per the CSAF
<b>Location</b>	Subareas 12-9, 12-10, and portion of 12-8
<b>Size</b>	10 to 25 vessels
<b>Catch Monitoring (Key Elements)</b>	Minimum of 20% on-board observer coverage; subject to regular Area D Gill Net licence conditions; logbook or e-log entry for each day of fishing
<b>Communication</b>	Communication in-season would be via the Fraser harvest committee
<b>Additional Comments</b>	The results for this demonstration fishery from 2014 and 2018 are under review by the Department to determine whether Subarea 12-9 may be included in the regular Area D fishing area for Fraser Sockeye in 2019.
<b>Further Information</b>	Greg Hornby – DFO Fisheries Manager

#### 4.18 BUTE INLET CHUM (AREA D)

	Bute Inlet Chum (Area D)
<b>Included in Final IFMP</b>	2018
<b>Status (Implemented/Developing)</b>	2018: insufficient returns; final fishing plan pending
<b>Allocation</b>	Existing share of Southern Inside Chum as per the CSAF.
<b>Location</b>	Areas 13-20-22
<b>Size</b>	Limited entry fleet (4-5 vessels). Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	Start, end, pause, cancel and daily catch reporting; logbook or E-log entry for each day of fishing

<b>Communication</b>	Communication in-season would be via the Chum working group committee.
<b>Further Information</b>	Greg Hornby – DFO Fisheries Manager

#### 4.19 MAINLAND INLET PINK & CHUM – JERVIS INLET (AREA H)

	Mainland Inlet Pink & Chum – Jervis Inlet (Area H)
<b>Included in Final IFMP</b>	2017
<b>Status (Implemented/Developing)</b>	2017: Not implemented - low forecast; final fishing plan pending 2018: Not implemented - low forecast; final fishing plan pending
<b>Allocation</b>	Existing share of Southern Inside Chum as per the CSAF.
<b>Location</b>	Areas 12 to 19 and 28
<b>Size</b>	2-3 vessels. Final number based on the number of fish to be harvested.
<b>Catch Monitoring (Key Elements)</b>	Start, end, pause, cancel and daily catch reporting; dockside catch validation; logbook or E-log entry for each day of fishing
<b>Communication</b>	Communication protocols with other fisheries and participants and DFO would be coordinated with the Resource Manager. The same type of program that occurs for southern inside Chum is envisioned.
<b>Further Information</b>	Christine Bukta – DFO Fisheries Manager

#### 4.20 BUTE INLET CHUM (AREA H)

	Area 13 – Bute Inlet Chum (Area H)
<b>Included in Final IFMP</b>	2018
<b>Status (Implemented/Developing)</b>	2018: insufficient returns; final fishing plan pending
<b>Allocation</b>	Existing share of Southern Inside Chum as per the CSAF.
<b>Location</b>	Areas 13-20 and 23
<b>Size</b>	4 vessels
<b>Catch Monitoring (Key Elements)</b>	Start, end, pause, cancel and daily catch reporting; logbook or E-log entry for each day of fishing; monitoring program to be determined.

<b>Communication</b>	Communication protocols with other fisheries and participants and DFO would be coordinated with the Resource Manager. This fishery should form part of the southern inside Chum coordinated management program.
<b>Further Information</b>	Christine Bukta – DFO Fisheries Manager

## APPENDIX 7: AREA B AND AREA H FRASER SOCKEYE AND PINK ITQ DEMONSTRATION FISHERY

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### 2019 GUIDELINES

The following information is provided as a guide to the Area B and Area H Individual Transferable Quota Demonstration fishery. These guidelines are intended for general purposes only. Where there is a discrepancy between the guidelines and the licence conditions, the Conditions of 2019/2020 Salmon Area B Licence or the Conditions of 2019/2020 Salmon Area H Licence are the final authority.

#### **TOTAL MORTALITY APPROACH FOR MANAGING AREA B AND H INDIVIDUAL TRANSFERABLE QUOTA SHARES FOR FRASER SOCKEYE AND PINK:**

- Individual licence holders will have the flexibility to decide how to use their available quotas (ITQs) of Sockeye and Pink during fishery openings and subject to conditions of licence.
- Accounting of ITQs for Fraser River Sockeye will be based on total mortalities, including retained catch and assessed release mortalities; for Fraser Pink accounting will only include retained catch (release mortalities will not be tracked).
- For any Pink or Sockeye retained, catches will be attributed to available vessel ITQ on a 1 for 1 basis.
- All Fraser Sockeye and Pink retained will be verified by 100% mandatory landing and independent dockside monitoring.
- Sockeye release mortality will also be attributed to available vessel ITQ based on the steps below.
- **All Sockeye retained and Sockeye release mortalities will be attributed to ITQs. Sockeye Release mortalities will be assessed as follows:**
  - Step 1: The Sockeye encounter rate will be assessed for both Area B and H fleets. The Sockeye encounter rates will be based on independent At-Sea Observer data. Different encounter rates will be used for each fleet (B vs. H), Area (e.g. Area 12, 13, 18, 29) and time (daily). Note: The same encounter rates will be applied to all

vessels in each fleet in each Area on a given day, except those vessels with a stationary Observer that have an encounter rate less than the fleet average (see Appendix 7C).

- Step 2: The validated Pink catch for a vessel will be used to calculate the Sockeye encounters.
  - if no Sockeye were retained, then Sockeye release mortality will be assessed against the Sockeye ITQ and calculated as the fleet-wide Sockeye encounter rate multiplied by the total Pink landing multiplied by the Sockeye release mortality rate.
  - if Sockeye were retained:
    - in excess of the expected fleet-wide Sockeye encounter rate based on the validated Pink catch for the vessel, then the vessel's Sockeye ITQ is reduced by the number of Sockeye retained on a 1 for 1 basis and no Sockeye release mortality will be applied;
    - less than what would be expected based on the fleet-wide Sockeye encounter rate applied to the validated Pink catch for the vessel, then the vessel's Sockeye ITQ will be reduced by the number of Sockeye retained on a 1 for 1 basis, plus the Sockeye release mortality applied to the difference between the number retained and what would be expected based on the fleet-wide Sockeye encounter rate.
- Step 3: Sockeye release mortality rates will be fixed at 10% for Area H Troll and 25% for Area B Seine.
  - For example:
    - A troll vessel landing 400 Pink and no Sockeye from Area 12 on August 20 with a fleet-wide Sockeye encounter rate from Observer data of 15% Sockeye for that day and area would be assessed a release mortality of 6 Sockeye against their quota as follows:
      - $400 \text{ Pinks} \times 0.15 \text{ encounter rate} \times 0.10 \text{ release mortality} = 6 \text{ Sockeye mortalities}$
    - A seine vessel landing 10,000 Pink and 400 Sockeye from Area 12 on August 28 with a fleet-wide Sockeye encounter rate from Observer data of 7% Sockeye for that day and area would be assessed 475 Sockeye against their quota as follows:

- $10,000 \text{ Pinks} \times 0.07 \text{ encounter rate} = 700 \text{ expected Sockeye encounters}$
  - $700 \text{ expected Sockeye} - 400 \text{ landed Sockeye} = 300 \text{ releases}$
  - $300 \text{ releases} \times 0.25 \text{ release mortality} = 75 \text{ Sockeye release mortalities}$
  - $400 \text{ landed Sockeye} + 75 \text{ Sockeye release mortalities} = 475 \text{ total Sockeye mortalities}$
- (See additional examples in Appendix 7D)

This approach allows for direct transferability of Sockeye and Pink ITQs between Area B and Area H vessels and allows for different release mortality rates for the Area B and H fleets.

### **SETTING TAC AND ASSOCIATED QUOTA SHARES:**

- The Area B Seine Fraser River Sockeye quota will be determined by DFO by dividing the Area B Seine Fraser River Sockeye allocation (percent), by the total number of licensed vessels for Area B multiplied by the available Fraser River Sockeye Commercial Total Allowable Catch (TAC) determined in-season.
- The Area H Troll Fraser River Sockeye quota will be determined using the same formula, i.e. by dividing the Area H Troll Fraser River Sockeye allocation (percent), by the total number of licensed vessels for Area H multiplied by the available Fraser River Sockeye Commercial TAC determined in-season.
- The Fraser River Pink quota will be determined for both the Area B Seine and Area H Troll fleets using a similar approach to the above.
- The quota share will remain fixed in-season subject to amendments for seasonal quota transactions and will be expressed as a percentage of the Commercial TAC.
- The Commercial TAC for both Sockeye and Pink will be distributed over the course of the fishery in increments and will be cumulative over the course of the season.
- The Commercial TAC will be announced by Fishery Notice and adjusted if necessary following Fraser River Panel meetings (usually Tuesday and Friday) depending on abundance and stock composition. Note the Commercial TAC announced will be for the purpose of determining shares in pieces of salmon for the ITQ demonstration fishery only.
- The Pink commercial TAC may be adjusted to account for the proportion of the catch attributable to non-Fraser Pinks.

<b>Sockeye</b>	<b>Area B</b>	<b>Area H</b>
No. of licences	169	78
Fleet share of Sockeye	48.5%	4.8%
Individual licence share (Fleet Share/# licences)	0.28698%	0.06154%

<b>Pink</b>	<b>Area B</b>	<b>Area H</b>
No. of licences	169	78
Fleet share of Pink	82.5%	10%
Individual licence share (Fleet Share/# licences)	0.48817%	0.12821%

### **CALCULATING SOCKEYE ENCOUNTERS:**

- Encounter rates based on Observer data will be assessed daily by gear type and area, and applied to all vessels in each fleet in a given area.
- Encounter rates estimated from individual Observers on the same gear in the same area in the same day will be averaged to provide a single estimated encounter rate (e.g. a single data point below).
- The encounter rates for a given day will be entered into the ITQ database on the next day.
- For same day trips, the encounter rate from the previous day or a projection may be used if the encounter rate is not yet available for the day the catch was landed.
- Examples are provided in Appendix 7C.



**OPENING AND CLOSING THE FISHERY:**

- Areas will be opened normally, using Variation Orders and Fishery Notices.
- Area B and Area H fisheries will open after a Commercial TAC is identified.
- Certain fishing areas may be restricted to fisheries in order to avoid stocks of concern and to move the fleets into areas of lesser impact.
- Areas 12 and 13 as well as Areas 14, 16, 18, 20, and 29 may not be open at the same time due to species and stock composition, diversion rate, observer coverage, and/or Sockeye encounter rate.
- If at any point at the start of, or during, the season there is no Commercial TAC available for Fraser Sockeye, or a conservation constraint (e.g. Cultus Sockeye exploitation rate constraint) limits further commercial Sockeye harvest, then the Department may close the fishery to retention of Sockeye. In this situation, any fishing opportunities for retention of Pink Salmon will continue to be managed using the ITQ demonstration fishery guidelines and Sockeye release mortalities may continue to be tracked. Specific information for this situation will be communicated in-season via Fishery Notice.

**AREA FISHING PLANS:**

Appendix 7A contains more detailed fishing plans, however at this time all fishing plans are very general and subject to change in-season following Fraser River Panel meetings. Fishery Notices will be posted throughout the season to ensure the most up to date information regarding the Area B and Area H fishing plans are available on a timely basis.

- **Areas 12 and 13:** The start date for the Area B and Area H fisheries will be confirmed by Fishery Notice dependent on in-season information. Area B and Area H fisheries are usually planned for five to seven days per week, to be confirmed by Fishery Notice. Fishing restrictions in test fishing areas are outlined in Appendix 7B and will be confirmed by Fishery Notice in-season.
- **Area 14 and 16:** Consideration may be given in-season for Fraser River Sockeye fisheries in Sabine Channel subject to Sakinaw constraints as well as constraints for other stocks of concern.

- **Area 20:** In 2014, the Area B Harvest Committee requested the Department review the Coho release mortality rate previously set at 70%; the release mortality rate was set at 50%. The Coho release mortality rate will remain at 50% for the 2019 fishing season and Observer coverage will be mandatory.
- The anticipated start date for the Area B fishery will be confirmed by Fishery Notice. Opportunities in this fishery will be dependent on in-season assessment information, diversion rate, and Coho impacts. **New for 2019:** In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Island and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2. Effective August 1 to October 31 2019, there will be no commercial salmon fishing in Subareas 20-3 and 20-4.
- **Areas 18 and 29:** Options for fishing off the river in Area 29 and in Area 18 for Area B and Area H will be confirmed by Fishery Notice. A proposal for an Area 29 in-river demonstration fishery for the Area B fishery is outlined in the IFMP. **New for 2019:** In 2019 a combination of fisheries closures and mandatory and voluntary measures have been implemented to support prey availability and promote foraging for SRKW within their identified critical habitat within Strait of Juan de Fuca, Gulf Islands and the Mouth of the Fraser River. These measures are outlined in section 5.3.13.2. Effective August 1 to October 31, 2019, there will be no commercial salmon fishing in portions of Subareas 18-2, 18-4, 18-5 and 18-9.
- **Test Fishing:** To ensure test fishing information is not compromised during the ITQ fishery, restrictions are in effect when fishing near assessment boats (Appendix 7B). **Sub-area and opening times will be modified in-season and announced on the grounds by DFO representatives and by Fishery Notice. If any conflicts arise, changes to the opening times and fishing areas will be announced by Fishery Notice.**

## **CATCH MONITORING AND VALIDATION:**

- Verification of at-sea releases is essential to the continued MSC certification of Fraser River Sockeye and Pink fisheries. Data collected by At-Sea Observers may be used to calculate fleet-wide releases. Poor compliance with permitting Observers on-board to collect this data will impact future fishing opportunities.

- The level of coverage for At-Sea Observers will be determined in-season based on areas open to fishing, effort, and gear type for each day of fishing.
- Start, end, pause, cancel, and daily catch reports (as per Conditions of Licence) must be made by, or on behalf of, all Area B and Area H vessel masters by cellular (call or text), land line, or satellite phone to the Salmon Catch Monitoring Service provider or by E-log (please refer to your conditions of licence).
- Vessel masters must complete a logbook or E-log entry for each day of fishing. The vessel master must print and sign their name and Fisher Identification Number (FIN) beside each record made in the paper harvest log.
- Catch validation, which will include dockside and designated packer landings, is a requirement of ITQ fisheries and must be arranged in advance by, or on behalf of, Area B and Area H vessel masters.
- Upon validation of the catch (including bycatch species) the vessel master must review and sign the validation form. The catch (including bycatch species) data will be entered into the ITQ database no later than 12 hours after the validation is complete.
- Mandatory fish hold checks will be performed.
- Conditions of Licence list the designated offload ports.

For reference purposes, Area B Seine Fishery and Catch Reporting Requirements are attached in Appendix 7A for Johnstone Strait, Area 20, and Area 29. The appendices also include further information regarding restrictions when fishing in designated seine test fishing locations (Appendix 7B), the management approach for this fishery (Appendix 7C), and examples of quota calculations for illustrative purposes (Appendix 7D).

### **CATCH VALIDATION REQUIREMENTS:**

- Catch validation is mandatory and individual licence holders are required to make their own arrangements with a Landing Observer Service Provider authorized by the Department. Licence holders that plan to harvest Sockeye and Pink are encouraged to register with the Landing Observer Service Provider in advance of the fishery to confirm arrangements. The Landing Observer Service Provider will be announced by Fishery Notice prior to the fishery.

- Prior to any dockside landing of fish, the vessel master shall call in to the landing observer service provider and provide the following information:
  - vessel name;
  - vessel registration number;
  - name and Fisher Identification Number of the vessel master;
  - contact phone number;
  - date, time, port and location of landing of the fish;
  - name of fish buying station where fish are to be landed;
  - product type;
  - estimated number of pieces by species, by day;
  - area fished; and
  - number of sets made.
- **Note:** As much notice as possible should be given so the Landing Observer Service Provider can make arrangements for a Landing Observer to be present for the landing which is a mandatory licence requirement.
- A salmon Landing Observer shall be present during all landings of catch to record the number and weight of each species of salmon delivered. This information will be entered into the ITQ database not later than 12 hours after validation has occurred.
- All salmon shall be landed at one of the following locations:
  - Area B Seine: Campbell River, French Creek, Greater Vancouver, Port Hardy, Port McNeill, Port Renfrew, Quadra Island or to a packer designated for the quota fishery.
  - Area H Troll: Campbell River, Comox, Cowichan Bay, French Creek, Greater Vancouver, Kelsey Bay, Nanaimo, Port Hardy, Port McNeill, Quadra Island or to a packer designated for the quota fishery. Or if pre-arranged, any other mutually agreed upon location between the designated Landing Observer Service Provider and the vessel master.

**QUOTA TRANSFERS:**

- Licence holders or designates are encouraged to register with the Quota Officer prior to the fishing season. The contact information will be used in season to contact the licence holder, designate or skipper in the event of an overage or discrepancy with catch data. Licence holders/designates can confirm their available quota by

contacting the Quota Officer. The Quota Officer and contact information will be announced by Fishery Notice prior to the season.

- Quota may be reallocated as a percent (for the season) or by pieces (for example, to temporarily cover an overage). Note that once any pieces have been transferred from a licence you can no longer transfer the entire remaining percentage.
- Quota will be transferable within each licence area (e.g. Area B to Area B or Area H to Area H) as well as between licence areas (e.g. Area B to Area H or Area H to Area B). The Department may consider transfers outside of Area B and Area H. Refer to Section 12.13 Transfer Guidelines for the Temporary Transfer of Commercial Salmon Shares of the 2019-2020 South Coast Salmon IFMP for more details.
- Where the Department has received for processing two or more conflicting requests for trading, all of the requests for trading will be denied.
- Given the short window of fishing opportunity, quota transfers will be permitted while vessels are on-grounds, however if a vessel is in an overage situation they cannot continue to fish until that overage has been covered.
- DFO staff will enter the quota transfer into the ITQ database during normal working hours (8am to 4pm Monday to Friday). If required, additional hours will be available in-season.
- Quota reallocation forms will be available from:

Erika Watkins (250) 286-5882 or [Erika.Watkins@dfo-mpo.gc.ca](mailto:Erika.Watkins@dfo-mpo.gc.ca)

Christine Bukta (250) 286-5888 or [Christine.Bukta@dfo-mpo.gc.ca](mailto:Christine.Bukta@dfo-mpo.gc.ca)

## **OVERAGES:**

- **Overages must be covered by a quota reallocation within 24 hours of landing and validation** (the '24 hour rule'). Vessels are not permitted to recommence fishing until all overages have been covered.
- If a vessel recommences fishing when in an overage situation, Conservation and Protection (C&P) will be notified immediately. Vessels are not permitted to recommence fishing until all overages have been covered.

- An increase in the TAC cannot be used to cover an overage. The quota being transferred to a vessel in an overage situation must be quota that was available prior to the TAC increase.
- Overages as a result of a run downgrade must be covered by a quota reallocation.
- An overage occurring as a consequence of a decrease in the TAC will not have to be covered if the fishery is closed for the duration of the season.

**TRANSHIPPING:**

- Area B and Area H vessels will be permitted to move fish from one licenced vessel to another licenced vessel (Area B and H only) on the grounds.
- If a vessel transports and lands fish from other licenced vessels, quota reallocations must be made within 24 hours of landing with the catch assigned to the landing vessel only when the landing vessel has a quota overage.
- All vessels are required to document in the Offload Catch Report section of the logbook or E-log, when fish has been pooled (transhipped) onto another vessel or vessels.
- Transporting vessels must document in a Transfer Log as required in Part 3 Section 2 of the Conditions of 2019/2020 Salmon Area B or Area H Licence, and provide to the Landing Observer Service Provider, detailed information on the name of the vessel that caught the fish, the date the fish were caught, the location (subarea) in which the fish were caught and the amount of each species retained and landed.
- Refer to the Part 3 Section 2 of the Conditions of 2019/2020 Salmon Area B or Area H Licence for all transporting requirements.
- Note that as stated in the Conditions of 2019/2020 Salmon Area B and Area H Licence, no salmon of species that are not permitted to be caught and retained in the commercial salmon fishery from which this vessel is receiving fish shall be on board this vessel when commercially caught salmon are on board.

**PACKER-BASED VALIDATION INFORMATION:**

- Vessel masters shall deliver only to packers designated for the quota fishery.
- To become a packer designated for the Area B and Area H Fraser Sockeye and Pink ITQ Demonstration Fishery refer to the Fishery Notice released prior to the opening.

- All packers for the quota fishery carrying multiple vessels catch will be required to carry an on-board validator.
- On-board validators will follow the Landing Observer Service Provider's established procedures for verifying catch and performing mandatory hold checks.
- Any Packers wanting to carry fish without an On-board validator will have to contact the manager identified in the Fishery Notice released prior to the opening to obtain approval.
- Packers without On-board validators will only be able to carry catch from one vessel participating in the ITQ fishery and must not have any salmon of any species caught in another fishery.
- Packers without On-board validators are responsible for recording and providing to the Dockside Monitoring Service Provider the Hail Number verifying the landing vessels contacted the Dockside Monitoring Service Provider prior to delivering to the packer. If the landing vessel does not have a hail number the packer shall instruct the vessel master to call the Dockside Monitoring Service Provider. These packer vessel masters are responsible for assuring that all fish are offloaded and that the totals are recorded on the transfer log, as required in the Conditions of 2019 Transport Licence.
- Refer to the Conditions of 2019 Transport Licence for all transporting requirements.

**VESSEL VALIDATION INFORMATION:**

- **To avoid discrepancies in quota and validation records, vessel masters must review and sign the validation slip.**
- When reporting catch to the service provider, vessel masters must provide an accurate breakdown of daily catch so that the service provider can enter the data in the ITQ database.

**SERVICE PROVIDER REQUIREMENTS:**

- The service provider is to provide DFO with copies of all Validation and Tally forms. Copies of the validations forms must be provided to DFO within 24 hours of completing the validation, and Tally forms must be provided after the fishery closes for the season or upon request by the Department.
- The catch (including bycatch species) validation data will be entered into the ITQ database no later than 12 hours after the validation is complete.

- The service provider is required to perform quality assurance and quality control checks on all data entered into the ITQ database both in-season and post season. Regular checks must be completed to verify the accuracy of the data entry.



## APPENDIX 7A

### AREA B SEINE FISHERY AND CATCH REPORTING REQUIREMENTS BY AREA

This document is for information purposes only. Fishers must have a valid 2019/2020 Salmon Area B licence, complete with Conditions of 2019/2020 Salmon Area B Licence. Where there is a discrepancy between this document and the Conditions of 2019/2020 Area B Seine Licence, the Conditions of Licence shall prevail.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a rolling window closure throughout Southern BC to protect Interior Fraser River Steelhead in 2019. Areas and dates for the window closure are identified in Appendix 9.

<b>Johnstone Strait Seine</b>	
Opening dates/times	Seines open, as per in-season Fishery Notices, in portions of Areas 12 and 13. Fishery openings and closures will also be announced on the grounds by the Charter Patrol vessel.
Target Species	In Areas 12 and 13, the target species in the fishery is Fraser River Sockeye and Pink, subject to in-season abundance information. The incidental catch and retention of Chum may be permitted in the areas open to fishing. There will be non-retention of Coho, Chinook and Steelhead.
Gear specifics	Min Bunt Mesh 70 mm.  The use of power skiffs is not permitted.  Seine vessel masters are reminded that mandatory brailing and sorting of catch is required, as is the use of revival tanks.
Monitoring	The Department will work with the Area B and H Harvest Committee representatives and the At-Sea Observer Service Provider to determine how best to deploy Observers based on Areas open to fishing, predicted fleet-size and previous Sockeye encounter rate estimates. The final decision for deploying Observers rests with the Department.

On Ground reporting requirements	Start Fishing Report, Daily Catch report, End Fishing Report, Cancel Trip Report. In addition Test Fishing Zone Catch Reports may be required. The Test Fishing Zone Catch Reports are additional catch reporting requirements that may be in effect while fishing in the Test Fishing Zones. Please see Appendix 7B for more information. When fishing in Subarea 12-3, it is important to differentiate between fishing in Subarea 12-3W (West of Robson Bight) and 12-3E (East of Robson Bight).
Test Fishing	Vessel masters are reminded that test fishing vessels will be operating during the fishery in Areas 12 and 13. Vessels planning to fish near the test fishing locations are not to interfere with test fishing operations. Test fishing information is a key component of the in-season assessment of Fraser River Sockeye returns. If interference with test fishing activities occurs, fishery closures in test fishing locations will be considered. Please see the attached Appendix 7B for more detail pertaining to fishing in the Test Fishing Zones.
DFO Contacts	Christine Bukta      250-286-5888

<b>Area 20 Seine Fishery and Catch Reporting Requirements</b>	
Opening dates/times	Seines open, as per in-season Fishery Notices, in a portion of Subareas 20-1, in waters deeper than 55 meters (30 fathoms).
Target Species	In Area 20, the target species in this fishery is Fraser River Sockeye Salmon, subject to in-season abundance information. There will be non-retention of Coho, Chum, Chinook and Steelhead.
Gear specifics	Min Bunt Mesh 100 mm.  Power skiffs are permitted to be used.  Seine vessel masters are reminded that mandatory brailing and sorting of catch is required, as is the use of revival tanks.
Monitoring	Increased observer coverage may be required for fisheries in this area.

On Ground reporting requirements	<p>Start Fishing Report, Daily Catch Report, End Fishing Report, Cancel Trip Report. When fishing in Area 20 the following additional On-Grounds Catch Reporting information must be reported during the fishery:</p> <p><u>On-Grounds Reporting:</u> Upon completion of a set (after brailing is completed), the Vessel Master shall report, to the At-Sea Observer, the set number for the current day's fishing, time the set was made, set location (grid area) and the number of all species of fish caught and retained or released. Log sheets for recording and reporting individual set information will be provided by DFO or the At-Sea Observer prior to commencement of the fishery. The Observer will relay the information to the DFO manager upon completion of the set. As communications may be limited, the set by set information may need to be provided to the DFO manager at the end of each fishing day.</p> <p>The Observer or DFO will provide the fishing vessel skippers participating in this fishery a chart prior to the commencement of the fishery. This chart divides the fishing area into grid areas and catches by set will be recorded in correspondence to the grid areas.</p>				
Test Fishing	<p>Vessel masters are reminded that test fishing vessels will be operating during the fishery in Area 20. Vessels planning to fish near the test fishing locations are not to interfere with test fishing operations. Test fishing information is a key component of the in-season assessment of Fraser River Sockeye returns. If interference with test fishing activities occurs, fishery closures in test fishing locations will be implemented.</p>				
DFO Contacts	<table> <tr> <td>Terry Palfrey</td><td>250-756-7158</td></tr> <tr> <td>Christine Bukta</td><td>250-286-5888</td></tr> </table>	Terry Palfrey	250-756-7158	Christine Bukta	250-286-5888
Terry Palfrey	250-756-7158				
Christine Bukta	250-286-5888				

**Area 29 Seine Fishery and Catch Reporting Requirements**

**APPENDIX 7: AREA B AND AREA H FRASER SOCKEYE AND PINK ITQ DEMONSTRATION FISHERY**

Opening dates/times	Seines open, as per in-season Fishery Notices, in portions of Area 29. Typical Subareas that may open include 29-3, 29-4, and 29-6. Options to fish in the latter Subareas, as well as portions of Subareas 29-7, 29-9, and 29-10 will be determined in-season and announced by Fishery Notice. Fishery openings and closures will also be announced by Fishery Notice.
Target Species	In Area 29, the target species in this fishery is Fraser River Sockeye Salmon, subject to in-season abundance information. The incidental catch of Chum may be retained in the areas open to fishing. There will be non-retention of Coho, Chinook and Steelhead.
Gear specifics	Min Bunt Mesh 70 mm.  Power skiffs are permitted to be used.  Seine vessel masters are reminded that mandatory brailing and sorting of catch is required, as is the use of revival tanks.
Monitoring	Increased Observer coverage may be required for fisheries in this area.
On Ground reporting requirements	Start Fishing Report, Daily Catch Report, End Fishing Report, Cancel Trip Report.
Test Fishing	Vessel masters are reminded that test fishing vessels may be operating during the fishery in Area 29. Vessels planning to fish near the test fishing locations are not to interfere with test fishing operations. Test fishing information is a key component of the in-season assessment of Fraser River Sockeye returns. If interference with test fishing activities occurs, fishery closures in test fishing locations will be implemented.
DFO Contacts	Barb Mueller                      604-666-2370  Christine Bukta                      250-286-5888

## APPENDIX 7B

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### 2019 FRASER SOCKEYE COMMERCIAL FISHERY RESTRICTIONS IN DESIGNATED SEINE TEST FISHING LOCATIONS

In-season test-fishing assessment information in the marine approach areas is critical in estimating abundances of returning Fraser River Sockeye stocks and identifying available harvest levels.

Commercial fisheries must be structured and scheduled to ensure that test fishing assessment information is not compromised.

This is particularly critical in the Area B Seine Individual Transferable Quota (ITQ) fishery which provides for additional days of fishing than would be permitted under a derby-style fishery.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a rolling window closure throughout Southern BC to protect Interior Fraser River Steelhead in 2019. Areas and dates for the window closure are identified in Appendix 9.

#### JOHNSTONE STRAIT AREA B SEINE ITQ FISHERY RESTRICTIONS:

##### AREA 12

- Subarea 12-3 is a Test Fishing Zone. **Catch reports must differentiate between fish caught in 12-3W (West of Robson Bight) and 12-3E (East of Robson Bight).**
- DFO and the PSC will need the cooperation from as many ITQ vessels as possible fishing in the Test Fishing Zone to record set-by-set information. All ITQ vessels must have set-by-set data sheets or E-logs onboard while fishing in the Test Fishing Zone. Data sheets will be available for pickup from the test vessel or from the Charter Patrol in that area. **ITQ vessels fishing in the Test Fishing Zone are required to record set-by-set catch and effort information;** this includes the duration of set times from time when the net goes in the water until the time when the rings are up (closed). E-log software has been modified so that vessel masters are able to send individual set-by-set information. Please note: E-log software can handle set-by-set catch information, but at this time, set times and duration of sets cannot be reported by the E-log software. Vessel masters are requested to record set times and set durations separate from the E-log entries.

- Test fishing vessels will announce their fishing pattern on the grounds for each four (4) day test fishing period.
- Test fishing vessel will start at the lower areas 1<sup>st</sup> (Fine Beach or Robson Bight) and work seaward towards Blinkhorn.
- Test fishing vessel will start fishing 1 hour earlier each day from the previous years (net in the water by 07:00 hours).
- Below Robson Bight will be assessed every 2<sup>nd</sup> day; Robson Bight will be assessed every day.
- Test fishing vessel's first set each day will be 07:00 hours at either Fine Beach or Robson Bight and proceed seaward towards Blinkhorn. During this time no vessel will be permitted to fish in front of the test fishing vessel, within 1 net length of the beach. The test fishing vessel will announce when they have closed their net, after which ITQ vessels can commence fishing in that location. **Please note: Commercial opening times and areas will be announced by Fishery Notice.**
- **ITQ vessels must hail their intention to fish to the test fishing vessel or to the on-grounds Charter Patrol vessel prior to conducting any fishing in the Test Fishing Zone.**
- **If there is interference with the test fishing vessel additional time and area closures will be implemented during the fishery between Fine Beach and Blinkhorn.**

## **AREA 13**

### **Area B Seine ITQ Fishery Restrictions:**

- Loggers Point to Little Bear Bight is a Test Fishing Zone.
- Regular lower boundary in effect at Loggers Point.
- **ITQ vessels must hail their intention to fish to the test-fishing vessel or to the on-grounds Charter Patrol vessel prior to conducting any fishing in the Test Fishing Zone.**
- All ITQ vessels must have set-by-set data sheets or E-logs onboard while fishing in the Test Fishing Zone. Data sheets will be available for pickup from the test vessel or from the charter patrol in that area. **ITQ vessels fishing in the Test Fishing Zone are required to record set-by-set catch and effort information;** this includes the duration

of set times from time when the net goes in the water until the time when the rings are up (closed). E-log software has been modified so that vessel masters are able to send individual set-by-set information. **Please note:** E-log software can handle set-by-set catch information, but at this time, set times and duration of sets cannot be reported by the E-log software. Vessel masters are requested to record set times and set durations separate from the E-log entries.

- Priority access for the test vessel is required in all designated test fishing locations.
- **If there is poor compliance, additional closures will be implemented during the fishery starting with a lower boundary at Bodega Point.**

## APPENDIX 7C

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### 2019 FRASER RIVER SOCKEYE AND PINK INDIVIDUAL TRANSFERABLE QUOTA AREA B SEINE AND AREA H TROLL DEMONSTRATION FISHERY MANAGEMENT APPROACH

Fisheries and Oceans Canada has created this working document at the request of the Area B and H Salmon Harvest Committees to help guide pre-season Fraser Sockeye and Pink fishery planning. This document outlines some of the management approaches that will be used by the Department, but ultimately the management structure must remain flexible in order to respond to in-season information.

Given ongoing declines in Interior Fraser River Steelhead escapement and the designation of the Thompson and Chilcotin River Steelhead as Endangered by COSEWIC, DFO is implementing a rolling window closure throughout Southern BC to protect Interior Fraser River Steelhead in 2019. Areas and dates for the window closure are identified in Appendix 9.

#### AREAS

The following Areas may be open to commercial Sockeye and/or Pink directed fisheries:

- Area H Troll- Areas 12, 13, 18, and 29.
- Area B Seine- Areas 12, 13, 14, 16, 18, 20, and 29.

#### OBSERVERS

In 2011, Area H Troll vessels had very limited Observer coverage. After preliminary review of the Observer data early in the fishery, it was assumed that the Sockeye encounter rate for troll vessels was less than the Sockeye encounter rate for seine vessels. An additional Observer day in late August lends support to this assumption. As troll vessels did not provide Observers for most of the fishery the Sockeye encounter rate for Area B Seine fleet was applied; this procedure may have in fact penalized troll vessels as the seine encounter rate was assumed to be higher.

Area B Seine vessels provided Observers in Areas 12, 13, and 29. The Observers in Area 12 were split between Area 12 North (Subareas north of 12-4) and Area 12 South (Subareas 12-4, 12-3, and 12-1), with additional Observers for some vessels that experimented with shallow seine gear modifications. Area 29 Observers were placed on vessels fishing outside the 45m



contour line and on vessels with shallow seine gear modifications fishing the “flats” (inside the 45m contour line). Those vessels fishing the flats with shallow seine nets had increased Observer coverage to address concerns with Coho, Chinook, and Steelhead bycatch, and to monitor and record crab encounters and release condition (of crabs and Coho).

For 2013, the Department required daily Observer coverage in each Area where vessels were actively fishing. The number of Observers required was based on the estimated fleet size fishing in a given Area on a given day. Given that Sockeye were not to be retained, and the Sockeye quota was to account for releases during the Pink fisheries, Observer coverage was critical in determining the Sockeye encounter rates by Area. Observer coverage in Areas 12 and 29 were adequate, but the Observer coverage in Area 13 was poor, with vessels avoiding taking Observers during the opening.

For 2019, the Department will require daily Observer coverage in each Area where vessels are actively fishing. The number of Observers required will be based on the estimated fleet size fishing in a given Area on a given day, with a requirement for more Observers early in the fishery when the Sockeye encounter rates are high (>10%, assuming there is sufficient Sockeye quota) and the Sockeye/Pink composition is fluctuating, as well as in transition areas (moving from Johnstone Strait to Area 29 fisheries). As the fishery progresses and Sockeye encounter rates decrease and stabilize, the requirement for Observer coverage may decrease, except in those Areas of special concern (due to stocks or species present or any habitat concerns).

For Area H troll vessels, Observers will be necessary periodically during the fishery to verify the assumption that Area H vessels have a lower Sockeye encounter rate versus seines. For those days on which Area H vessels take Observers, the average fleet-wide encounter rate will be based on the Area H Observer data for that fishing Area. If the assumption that Area H vessels have a lower Sockeye encounter rate than Area B vessels continues, for those days and Areas fished by troll vessels without any Observer coverage, the average Sockeye encounter rate for seines will be applied. If it is determined that the Sockeye encounter rate is higher for troll vessels than for seine vessels, the Department will require the troll fleet to provide additional Observers to determine the daily Sockeye encounter rates. The additional Observer coverage will be subject to fleet size and Areas actively being fished.

For Area B seine vessels fishing in Johnstone Strait, two to four Observers will be required daily in each Area early in the fishery as determined by the Department. As the fishery progresses and the Sockeye encounter rates decrease and stabilize this requirement may decrease. A decrease in Observers will be subject to fleet size and in-season assessments of risks to Sockeye

by Area Managers. As fisheries transition to the mouth of the Fraser River, increased Observer coverage will be required to confirm Sockeye encounter rates and to monitor bycatch species (Coho, Chinook, and Steelhead) and crab encounters. Those vessels fishing shallower depth will require increased Observer coverage. This increased Observer coverage will extend to those vessels that may potentially fish in-river.

Fishing opportunities may also exist for Area B seine vessels in Areas 14, 16, 18 and 20. Participation in these Areas is likely to be limited however observer coverage will be required when vessels are actively fishing in these areas.

## **DEPLOYING OBSERVERS**

The Department will work with the Area B and H Harvest Committee representatives and the At-Sea Observer Service Provider to determine how best to deploy Observers based on Areas open to fishing, predicted fleet-size and previous Sockeye encounter rate estimates. The final decision for deploying Observers rests with the Department.

## **ROVING VS. STATIONARY OBSERVERS**

Observers in Johnstone Strait may be stationary or roving. Roving Observers are defined as Observers that board a vessel after a set is completely closed prior to the brailing of any fish from the net and remain on that vessel until the last fish is removed from the net. Stationary Observers are defined as Observers that board a vessel at the start of a fishing trip prior to the commencement of any fishing and remain on the vessel for the entire fishing trip until the vessel has ended the fishing trip by landing the catch.

## **CALCULATION OF SOCKEYE ENCOUNTER RATE**

Encounter rates based on Observer data will be assessed daily by gear type and Area, and applied to all vessels in each fleet in a given Area. Encounter rates estimated from individual Observers on the same gear in the same Area in the same day will be averaged to provide a single estimated encounter rate for that Area and gear. The encounter rates for a given day will be entered into the ITQ database on the next day.

Note, those vessels with stationary Observers will receive the lower of two options:

- Their vessels daily Sockeye encounter rate; OR
- The average fleet-wide Sockeye encounter rate.

## **TEST FISHERY DATA**

Now that the Department has transitioned back to the use-of-fish to finance salmon test fishery activities, test fishery data may be more reliable than recent years as some fish will be taken on board.

The test fishery data may be used to supplement or augment the Sockeye encounter rate data generated by the seine fleet. For example, in 2011 the test fishery data was used to supplement the Observer data from Area 12 on September 6 as the stationary Observer vessel had very poor fishing, catching 0 Sockeye and 8 Pinks vs. the Area 12 seine test vessel which caught 35 Sockeye and 1,571 Pinks.

## **DFO CONTACTS**

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## APPENDIX 7D

NOTE: These examples are for illustration purposes only. Actual quota amounts (in pieces) could vary substantially from those used in the examples and will be determined based on in-season assessment information.

Example 1: Cumulative TAC with Sockeye & Pink retention

	Week 1 - 1st week August				Week 2				Week 3				Week 4				Week 5 - last week Aug/1st week Sep				Week 6			
Hypothetical Sockeye TAC-Cumulative	224,000		PK "catch":	20,600	235,000		PK "catch":	7,600	235,500		PK "catch":	38,000	270,500		PK "catch":	1,794,000	277,500		PK "catch":	1,794,000	278,000		PK "catch":	60,800
Hypothetical Pink TAC-Cumulative	2,000,000		PK "avail":	30,000	2,000,000		PK "avail":	275,000	4,000,000		PK "avail":	1,100,000	8,400,000		PK "avail":	2,200,000	8,400,000		PK "avail":	1,900,000	8,400,000		PK "avail":	560,000
	Area B		Area H		Area B		Area H		Area B		Area H		Area B		Area H		Area B		Area H		Area B		Area H	
Calculations	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink
Initial ITQ allocation	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%
Initial ITQ (pieces)	647	9,821	141	2,632	678	9,821	148	2,632	680	19,643	149	5,263	781	41,250	171	11,053	801	41,250	175	11,053	803	41,250	176	11,053
ITQ Remaining (pieces)	647	9,821	141	2,632	33	9,721	25	2,582	35	19,543	23	5,113	136	41,150	40	10,403	81	41,150	40	8,903	58	21,150	25	7,403
<u>Sockeye Encounters</u>																								
Fleet-wide sockeye encounter rate	55%	n/a	55%	n/a	30%	n/a	30%	n/a	10%	n/a	10%	n/a	3%	n/a	3%	n/a	1%	n/a	1%	n/a	0.1%	n/a	0.1%	n/a
Sockeye release mortality rate	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a
<u>Hypothetical Weekly Landing</u>																								
Retained Catch	645	100	123	50	-	-	-	100	-	-	-	500	-	10,000	-	1,500	-	10,000	15	1,500	-	-	-	800
<u>Release mortalities Charged</u>																								
Expected sockeye encounters	55		27.5		0		30		0		50		300		45		100		15		0		0.8	
Assessed sockeye released	0		0		0		30		0		50		300		45		100		0		0		0.8	
Additional Release Mortality Assessed	0		0		0		3		0		5		75		5		25		0		0		0	
Total Mortality (catch plus release mortality assessed)	645	100	123	50	-	-	3	100	-	-	5	500	75	10,000	5	1,500	25	10,000	15	1,500	-	-	0	800
Cumulative Catch	645	100	123	50	645	100	126	150	645	100	131	650	720	10,100	136	2,150	745	20,100	151	3,650	745	20,100	151	4,450
ITQ Remaining at end of week	2	9,721	18	2,582	33	9,721	22	2,482	35	19,543	18	4,613	61	31,150	35	8,903	56	21,150	25	7,403	58	21,150	25	6,603

Example 2: Cumulative TAC with Pink retention only (sockeye released)

	Week 1 - 1st week August				Week 2				Week 3				Week 4				Week 5 - last week Aug/1st week Sep				Week 6			
Hypothetical Sockeye TAC-Cumulative	224,000		PK "catch":	3,800	235,000		PK "catch":	259,600	235,500		PK "catch":	962,000	270,500		PK "catch":	1,794,000	277,500		PK "catch":	1,794,000	278,000		PK "catch":	542,000
Hypothetical Pink TAC-Cumulative	2,000,000		PK "avail":	30,000	2,000,000		PK "avail":	275,000	4,000,000		PK "avail":	1,100,000	8,400,000		PK "avail":	2,200,000	8,400,000		PK "avail":	1,900,000	8,400,000		PK "avail":	560,000
	Area B		Area H		Area B		Area H		Area B		Area H		Area B		Area H		Area B		Area H		Area B		Area H	
Calculations	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink
Initial ITQ allocation	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%
Initial ITQ (pieces)	647	9,821	141	2,632	678	9,821	148	2,632	680	19,643	149	5,263	781	41,250	171	11,053	801	41,250	175	11,053	803	41,250	176	11,053
ITQ Remaining (pieces)	647	9,821	141	2,632	678	9,821	146	2,582	564	18,143	143	5,113	516	34,250	160	10,403	454	24,250	160	8,903	430	14,250	135	7,403
<u>Sockeye Encounters</u>																								
Fleet-wide sockeye encounter rate	55%	n/a	55%	n/a	30%	n/a	30%	n/a	10%	n/a	10%	n/a	3%	n/a	3%	n/a	1%	n/a	1%	n/a	0.1%	n/a	0.1%	n/a
Sockeye release mortality rate	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a
<u>Hypothetical Weekly Landing</u>																								
Retained Catch	-	-	-	50	5	1,500	-	100	15	5,500	-	500	10	10,000	-	1,500	-	10,000	25	1,500	-	3,000	25	500
<u>Release mortalities Charged</u>																								
Expected sockeye encounters	0		27.5		450		30		550		50		300		45		100		15		3		0.5	
Assessed sockeye released	0		27.5		445		30		535		50		290		45		100		0		3		0	
Additional Release Mortality Assessed	0		3		111		3		134		5		73		5		25		0		1		0	
Total Mortality (catch plus release mortality assessed)	-	-	3	50	116	1,500	3	100	149	5,500	5	500	83	10,000	5	1,500	25	10,000	25	1,500	1	3,000	25	500
Cumulative Catch	-	-	3	50	116	1,500	6	150	265	7,000	11	650	348	17,000	15	2,150	373	27,000	40	3,650	373	30,000	65	4,150
ITQ Remaining at end of week	647	9,821	139	2,582	562	8,321	143	2,482	415	12,643	138	4,613	433	24,250	156	8,903	429	14,250	135	7,403	429	11,250	110	6,903

# APPENDIX 7: AREA B AND AREA H FRASER SOCKEYE AND PINK ITQ DEMONSTRATION FISHERY

Example 3: Cumulative TAC with Sockeye & Pink retention and 15% drop in sockeye TAC in week 2

	Week 1 - 1st week August				Week 2				Week 3				Week 4				Week 5 - last week Aug/1st week Sep				Week 6			
Hypothetical Sockeye TAC-Cumulative	224,000				190,400				190,900				225,900				232,900				233,400			
Hypothetical Pink TAC-Cumulative	2,000,000				2,000,000				4,000,000				8,400,000				8,400,000				8,400,000			
	PK "catch": 20,600				PK "catch": -				PK "catch": -				PK "catch": 248,400				PK "catch": 1,839,600				PK "catch": 542,000			
	PK "avail": 30,000				PK "avail": 275,000				PK "avail": 1,100,000				PK "avail": 2,200,000				PK "avail": 1,900,000				PK "avail": 560,000			
	Area B				Area H				Area B				Area H				Area B				Area H			
	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink	sockeye	pink
Initial ITQ allocation	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%	0.2887%	0.4911%	0.0632%	0.1316%
Initial ITQ (pieces)	647	9,821	141	2,632	550	9,821	120	2,632	551	19,643	121	5,263	652	41,250	143	11,053	672	41,250	147	11,053	674	41,250	147	11,053
ITQ Remaining (pieces)	647	9,821	141	2,632	(95)	9,721	(3)	2,582	(94)	19,543	(2)	5,213	7	41,150	20	11,003	21	40,350	20	9,503	(2)	30,350	18	7,403
<u>Sockeye Encounters</u>																								
Fleet-wide sockeye encounter rate	55%	n/a	55%	n/a	30%	n/a	30%	n/a	10%	n/a	10%	n/a	3%	n/a	3%	n/a	1%	n/a	1%	n/a	0.1%	n/a	0.1%	n/a
Sockeye release mortality rate	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a	25%	n/a	10%	n/a
<u>Hypothetical Weekly Landing</u>																								
Retained Catch	645	100	123	50	-	-	-	-	-	-	-	-	-	800	-	1,500	-	10,000	-	2,100	-	3,000	-	500
<u>Release mortalities Charged</u>																								
Expected sockeye encounters	55		27.5		0		0		0		0		24		45		100		21		3		0.5	
Assessed sockeye released	0		0		0		0		0		0		24		45		100		21		3		0.5	
Additional Release Mortality Assessed	0		0		0		0		0		0		6		5		25		2		1		0	
Total Mortality (catch plus release mortality assessed)	645	100	123	50	-	-	-	-	-	-	-	-	6	800	5	1,500	25	10,000	2	2,100	1	3,000	0	500
Cumulative Catch	645	100	123	50	645	100	123	50	645	100	123	50	651	900	128	1,550	676	10,900	130	3,650	677	13,900	130	4,150
ITQ Remaining at end of week	2	9,721	18	2,582	(95)	9,721	(3)	2,582	(94)	19,543	(2)	5,213	1	40,350	15	9,503	(4)	30,350	17	7,403	(3)	27,350	18	6,903

## APPENDIX 8: DRAFT CATCH MONITORING AND REPORTING RISK ASSESSMENTS FOR PACIFIC SALMON

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The purpose of this Appendix is to share 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*. Thirteen initial evaluations of commercial salmon fisheries have been completed so far and work is underway to complete the remaining commercial risk assessments and to begin the assessments for recreational and First Nations fisheries.

The Department sought feedback on completed draft risk assessments during this year's IFMP consultation process. Feedback received is now being reviewed and will inform next steps to finalize the risk assessments.

Each draft risk assessment (Table 13.5-20) was completed by a DFO evaluation panel, including resource managers and biologists. The panels have evaluated each fishery using a Risk Assessment Tool, which includes a fishery description, identification of resource management issues, and a scoring system on the level of ecosystem risk to main species, bycatch, and community & habitat, which contributes a final "Risk of Fishery Score". The "Risk of Fishery Score" identifies a target level of monitoring for the fishery (either low, generic, or enhanced) and is compared to the current level of catch monitoring in place for that fishery.

For more information on how each fishery was scored, please contact the Pacific Salmon Regional Management Team at [DFO.PacificSalmonRMT-EGRSaumondupacifique.MPO@dfo-mpo.gc.ca](mailto:DFO.PacificSalmonRMT-EGRSaumondupacifique.MPO@dfo-mpo.gc.ca).

The below diagram (Figure 13.5-12) outlines the Catch Monitoring and Reporting Risk Assessment process being used for Pacific salmon fisheries.

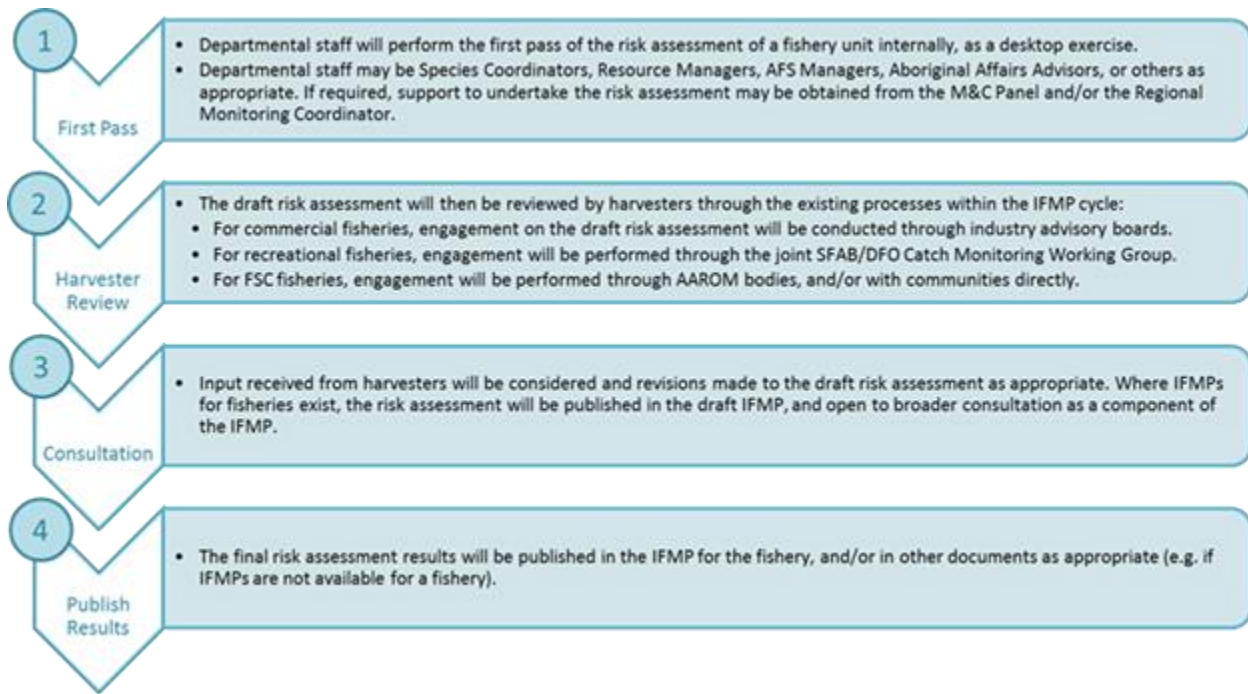


Figure 13.5-13: The Catch Monitoring and Reporting Risk Assessment process used for Pacific salmon fisheries.

Of the 13 commercial risk assessments completed so far, 8 have received a “generic” score for a target level of monitoring using the Risk Assessment Tool. Factors contributing to this score may include one or more of the following for each fishery: potential impact(s) to red Conservation Units (CUs) through the targeted fishery, bycatch of species of concern (including some Chinook and Coho stocks, IFR Steelhead, etc.), and disturbance to Southern Resident Killer Whales (SRKW) and Stellar Sea Lions.

Table 13.5-20: Draft Commercial Salmon Risk Assessments that received a “Generic” Score for a Target Level of Monitoring.

Area	Gear	Species Targeted	Target Level of Monitoring <sup>12</sup>	Current Level of Monitoring
A	Seine	Nass and Skeena Sockeye	Generic	Generic
A	Seine	Haida Gwaii, Skeena, Nass Pink and Haida Gwaii and Central Coast Chum	Generic	Generic

<sup>12</sup> As scored by the Risk Assessment Tool

Area	Gear	Species Targeted	Target Level of Monitoring <sup>12</sup>	Current Level of Monitoring
B (including Cowichan EO and Goldstream EO)	Seine	ECVI and Mainland Pinks, Inside Southern Chum Terminal, and Fraser Chum (Terminal/in river Pink and Chum fisheries)	Generic	Generic
C	Gillnet	Nass Sockeye, Rivers and Smiths Inlets Sockeye and Skeena Sockeye	Generic	Generic
C	Gillnet	Central Coast Chum and Haida Gwaii Chum	Generic	Generic
C	Gillnet	Central Coast ISMB Chinook and Skeena-Nass Chinook	Generic	Generic
D and E	Gillnet	Inside Southern Chum Terminal, WCVI Chum- other, WCVI ISBM Chinook, and WCVI Chum- Nitinat	Generic	Generic
E	Gillnet	Fraser Chum	Generic	Generic <sup>13</sup>

The remaining fisheries that have been evaluated have received an initial “enhanced” score for a target level of monitoring using the Risk Assessment Tool. Contributing factors leading to this scoring can be seen in the table below.

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<sup>13</sup> Note that current monitoring levels are higher than “generic” due to partial independent observer coverage, but not enough to categorize as an “enhanced” level of monitoring



Table 13.5-21: Draft Commercial Salmon Risk Assessments that received an “Enhanced” Score for a Target Level of Monitoring.

Area	Gear	Species Targeted	Target Level of Monitoring	Current Level of Monitoring	Contributing Factors (leading to the score received for a target level of monitoring)
B	Seine	Fraser Sockeye, Fraser Pink and Barkley/Somass Sockeye	Enhanced	Enhanced	The enhanced level of monitoring currently in place is largely driven by the need to manage the ITQ fishery. Potential to impact red CU Sockeye stocks (Fraser [Sakinaw & Cultus] & Barkley [Henderson L.]), although low likelihood due to mitigated management actions. Potential bycatch species include some Coho and Chinook stocks and co-migrating IFR Steelhead. Also some concern during Pink years when Sockeye abundance is low. Possibility for marine mammal entanglements and disturbance to SRKW.
D	Gillnet	Fraser Sockeye and WCVI Barkley/Somass Sockeye	Enhanced	Generic	Potential to impact red CU Sockeye stocks (Fraser [Sakinaw & Cultus] & Barkley [Henderson L.]), although low likelihood due to mitigated management actions. Potential bycatch species include Coho, Chinook, and IFR Steelhead. Potential encounters of sea birds and marine mammals.
H	Troll	Fraser Sockeye and Fraser Pink	Enhanced	Enhanced	The enhanced level of monitoring currently in place is largely driven by the need to manage the ITQ fishery. Potential impacts to red CU Sockeye Stocks [Sakinaw & Cultus], although low likelihood due to mitigated management actions. Potential bycatch species include some Coho and Chinook stocks, IFR Steelhead and Rockfish, although encounter rates are low. Also some concern during Pink years when Sockeye abundance is low.

**Appendix 8: Draft Catch Monitoring and Reporting Risk Assessments**

Area	Gear	Species Targeted	Target Level of Monitoring	Current Level of Monitoring	Contributing Factors (leading to the score received for a target level of monitoring)
F	Troll	Northern Coho, Pink Chum, and Northern AABM Chinook	Enhanced	Enhanced	Potential risk to WCVI Chinook and Fraser Chinook. Potential bycatch species include Rockfish (Boccaccio and Yelloweye), although encounter rates are low. There are also potential encounters with Stellar Sea Lions.
E	Gillnet	Fraser Sockeye	Enhanced	Generic	Potential to impact red CU Sockeye stocks, although low likelihood due to mitigated management actions. Potential bycatch species include Sturgeon, IFR Coho, Steelhead, Harrison Chinook and other Chinook stocks (although bycatch is mostly Summer 4 <sub>1</sub> ). Management actions in place to address and mitigate bycatch concerns are: window closures, revival boxes, mesh size restrictions, maximum soak times and reduced net lengths.

## APPENDIX 9: ROLLING WINDOW CLOSURES TO BE IMPLEMENTED IN 2019 TO PROTECT INTERIOR FRASER RIVER STEELHEAD

Table 13.5-22: Interior Fraser River Steelhead rolling window closure dates by area to be implemented in 2019.

This table outlines IFR Steelhead window closure dates by area. These are generalized dates that apply to the entire fishing area unless otherwise stated in the species specific fishing plans contained in Section 13. Fishing plans outlined in Section 13 may include slight modifications to these dates that result from applying the closure window to more specific fishing areas. Note that the duration of the closure window will not be shortened in applying these adjustments.

Also note that all sub-Areas listed in this table under the “Fraser River” section will be included as part of “Fraser River fisheries”. For additional clarity, all fisheries occurring in Areas 29-6, 29-7, 29-9, and 29-10 are included within the Fraser River measures.

Fishery Location		27-day window closure (commercial troll fisheries and FSC fisheries occurring in the Fraser River)		42-day window closure (commercial gill net, purse seine, beach seine, and shallow seine fisheries and recreational fisheries occurring in the Fraser River)	
		Start	End	Start	End
Fraser River	Area 29: 29-6, 29-7, 29-9 and 29-10	28-Sep	24-Oct	21-Sep	1-Nov
	Mouth to Mission	28-Sep	24-Oct	21-Sep	1-Nov
	Mission to Hope	29-Sep	25-Oct	22-Sep	2-Nov
	Hope to Sawmill Creek	3-Oct	29-Oct	26-Sep	6-Nov
	Sawmill Creek to Lytton (Thompson Confluence)	5-Oct	31-Oct	28-Sep	8-Nov
	Lytton to Texas Creek	8-Oct	3-Nov	1-Oct	11-Nov
	Texas Creek to Kelly Creek	10-Oct	5-Nov	3-Oct	13-Nov
	Kelly Creek to Deadman Creek	13-Oct	8-Nov	6-Oct	16-Nov
	Deadman Creek to Chilcotin River	16-Oct	11-Nov	9-Oct	19-Nov
	Chilcotin River	19-Oct	14-Nov	12-Oct	22-Nov
	Thompson River – Thompson Confluence to Bonaparte	8-Oct	3-Nov	1-Oct	11-Nov
	Thompson River – Bonaparte River to Kamloops Lake	12-Oct	7-Nov	5-Oct	15-Nov

**Appendix 9: Proposed Fishery Closures Under a List Decision for Steelhead**

Fishery Location		27-day window closure (commercial troll fisheries and FSC fisheries occurring in the Fraser River)		42-day window closure (commercial gill net, purse seine, beach seine, and shallow seine fisheries and recreational fisheries occurring in the Fraser River)	
		Start	End	Start	End
Strait of Georgia	Area 29: 29-8	28-Sep	24-Oct	21-Sep	1-Nov
	Area 29: 29-1 to 29-5	23-Sep	19-Oct	16-Sep	27-Oct
	Area 28	23-Sep	19-Oct	16-Sep	27-Oct
	Area 18	24-Sep	20-Oct	17-Sep	28-Oct
	Area 17	23-Sep	19-Oct	16-Sep	27-Oct
	Area 16	22-Sep	18-Oct	15-Sep	26-Oct
	Area 15	21-Sep	17-Oct	14-Sep	25-Oct
	Area 14	21-Sep	17-Oct	14-Sep	25-Oct
Johnstone Strait	Area 13	17-Sep	13-Oct	11-Sep	22-Oct
	Area 12	12-Sep	8-Oct	6-Sep	17-Oct
	Area 11	11-Sep	7-Oct	5-Sep	16-Oct
	Area 111	10-Sep	6-Oct	4-Sep	15-Oct
West Coast Vancouver Island	Area 19	22-Sep	18-Oct	15-Sep	26-Oct
	Area 20	19-Sep	15-Oct	12-Sep	23-Oct
	Area 21	18-Sep	14-Oct	11-Sep	22-Oct
	Area 121	18-Sep	14-Oct	11-Sep	22-Oct
	Area 123	16-Sep	12-Oct	9-Sep	20-Oct
	Area 124	13-Sep	9-Oct	6-Sep	17-Oct
	Area 125	11-Sep	7-Oct	4-Sep	15-Oct
	Area 26	8-Sep	4-Oct	1-Sep	12-Oct
	Area 126	8-Sep	4-Oct	1-Sep	12-Oct
	Area 27	6-Sep	2-Oct	30-Aug	10-Oct
	Area 127	6-Sep	2-Oct	30-Aug	10-Oct

Table 13.5-23: Terminal fishery areas that are excluded from 2019 IFR Steelhead window closures.

This table outlines Pacific Fishery Management Areas that are understood to fall outside of the migratory path of Interior Fraser River Steelhead and will not be subject to window closures implemented for IFR Steelhead conservation in 2019. Additional details for portions of areas listed below will be contained in the species specific fishing plans in Section 13.

Area	Sub Area Description
11	11-3 to 11-10
12	12-22, 12-23, 12-25 to 12-48
13	13-20, 13-21, 13-22, 13-24, 13-37, 13-38, 13-42, 13-43 portions of 13-3, 13-5, 13-19
14	14-1, 14-8, 14-10, 14-11, 14-14, 14-15 portions of 14-4, 14-5, 14-7 and 14-9
15	15-4, 15-6 portions of 15-1, 15-2, 15-5
16	16-3 to 16-16
17	17-2 to 17-9, 17-13 to 17-21 portions of 17-12
18	18-7 and 18-8 portions of 18-6
19	19-7 to 19-12
20	20-2, 20-6, 20-7
22	Entire Area
23	All Sub Areas
24	All Sub Areas
25	All Sub Areas
26	26-1 to 26-10
27	27-3, 27-7 to 27-11 portions of 27-2
28	28-3 to 28-5, 28-11 to 28-14 portions of 28-2