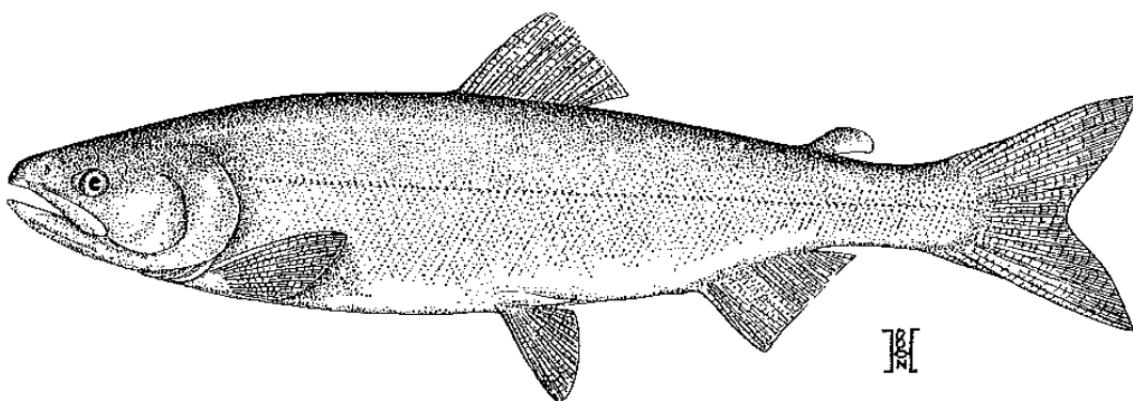


PACIFIC REGION

INTEGRATED FISHERIES MANAGEMENT PLAN

SALMON SOUTHERN BC

JUNE 1, 2016 TO MAY 31, 2017



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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Resource Manager – WCVI (Areas 20 to 26)
Resource Manager – WCVI (Areas 20 to 26)
RM Program Co-ordinator - ECVI (Areas 11 to 20, 27)
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INDEX OF WEB-BASED INFORMATION

National Main Page: www.dfo-mpo.gc.ca

Our Vision, Latest News, Current Topics

Pacific Region Main Page: www.pac.dfo-mpo.gc.ca/index-eng.html

Twitter DFO Pacific @DFO_Pacific
En Français @MPO_Pacifique

By topic:

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

Acts, Orders, and Regulations: www.dfo-mpo.gc.ca/acts-loi-eng.htm

Aquaculture Management: www.pac.dfo-mpo.gc.ca/aquaculture/index-eng.html

Commercial Fisheries: www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/comm/index-eng.htm

Consultation Secretariat: www.pac.dfo-mpo.gc.ca/consultation/index-eng.htm

Fisheries Notices: [www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm?](http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm)

Register your name and/or company at the web-site address above if you wish to receive fishery notices directly via email. It's quick, it's easy and it's free.

National On-line Licensing System (NOLS): <https://fishing-peche.dfo-mpo.gc.ca/>

E-mail: fishing-peche@dfo-mpo.gc.ca

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

Telephone: 1-877-535-7307

Fax: 613-990-1866

TTY: 1-800-465-7735

Oceans Program: www.pac.dfo-mpo.gc.ca/oceans/index-eng.html

Pacific Salmon Treaty: www.psc.org/

Publications Catalogue: www.pac.dfo-mpo.gc.ca/publications/index-eng.htm

Listing of information booklets and fact sheets available through Communications branch

Recreational Fisheries: www.bcsportfishingguide.ca

Reports and Publications: www.dfo-mpo.gc.ca/reports-rapports-eng.htm

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

Species at Risk Act (SARA): www.dfo-mpo.gc.ca/species-especes/index-eng.htm

Waves (Fisheries and Oceans Canada online library catalogue):

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

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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/gloss-eng.html>

List of acronyms used in this plan:

AABM	Aggregate Abundance-Based Management
AAROM	Aboriginal Aquatic Resource and Oceans Management
AHC	Area Harvest Committee
AFS	Aboriginal Fisheries Strategy
ATP	Allocation Transfer Program
CCTAC	Canadian Commercial 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
CSAP	The Centre for Scientific Advice Pacific
CSAS	The Canadian Science Advisory Secretariat
CSAF	Commercial Salmon Allocation Framework
CSAB	Commercial Salmon Advisory Board
CWT	Coded Wire Tag
DIDSON	Dual Frequency Identification Sonar
ER	Exploitation Rate
ESSR	Excess Salmon to Spawning Requirements
FNFC	First Nations Fishery Council
FRP	Fraser River Panel
FSC	Food, Social and Ceremonial

ITQ	Individual Transfer Quota
IHPC	Integrated Harvest Planning Committee
ISBM	Individual Stock-Based Management
LAER	Low Abundance Exploitation Rates
LGS	Lower Strait of Georgia
LRP	Lower Reference Points
MCC	Marine Conservation Caucus
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
MVI	Mid Vancouver Island
NOLS	National On-line Licensing System
PICFI	Pacific Integrated Commercial Fisheries Initiative
PFMA	Pacific Fisheries Management Areas
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
RCA	Rockfish Conservation Area
SARA	Species at Risk Act
SEG	Sustainable Escapement Goal
SEP	Salmonid Enhancement Program
SFAB	Sport Fishing Advisory Board
SHMF	Selective Hatchery Mark Fishery
TAC	Total Allowable Catch
TAM	Total Allowable Mortality
WCVI	West Coast Vancouver Island
WSP	Wild Salmon Policy (<i>Canada's Policy for Conservation of Wild Pacific Salmon</i>)

FOREWORD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the Southern BC 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 2016/2017

State of the Pacific Ocean and Freshwater Environmental Conditions:

Returns of most Pacific salmon stocks have been increasingly variable due to a combination of factors such as: numbers of parental spawners and the changing freshwater and marine environment affecting subsequent production from these spawners at various life history stages. The 2016 outlook for salmon returns shows this variation but also suggests a period of continued reduced productivity. Reasons include the extremely warm water temperatures in the central NE Pacific ocean (the “warm blob”) starting in late 2013, current El Nino conditions, and the resulting changes in the marine food web – zooplankton composition, density, and distribution. For Pacific salmon, the full implications of these conditions are uncertain; however, these conditions have been linked to reduced survival and / or growth for salmon in the past. These conditions could also affect returning adults in 2016 through changes in age-at-return, fish condition, migration routes, and run timing.

DFO utilizes a range of information to manage fisheries in-season and decision making often incorporates science advice on the impact of environmental factors on in-season indicators of salmon returns, migration and fish condition. For 2016, environmental conditions and associated uncertainties may require additional adjustments to the fisheries management approaches outlined in this IFMP. For example, these adjustments could include changes to planned openings, harvest levels and timing of fisheries; management adjustments to account for adverse environmental conditions; time or area closures in specific locations to protect spawners that may be aggregating due to poor migratory conditions; additional selective fishing requirements; or other measures necessary to achieve sufficient spawner requirements. Further information on specific management actions will be communicated in-season by Fisheries Notice.

Interior Fraser Coho

The Canadian Interior Fraser coho exploitation rate objective and approach for 2016 fisheries; please refer to Section 6.5 for more information.

Fraser River Sockeye

The 2016 Escapement Plan and Harvest Rate Calculations; please refer to the Fraser River Sockeye section of the Southern Sockeye Salmon Fishing Plan in Section 13 for more information.

Catch Monitoring

Electronic Logbooks:

E-log pilot programs have been successfully used in several commercial, recreational and First Nations fisheries. DFO is now advancing an initiative to expand the current E-log initiative to a national program. The vision of the project is to develop and implement, over a phased multi-year approach, a national, integrated, electronic catch and effort system designed to enable ongoing solutions for the fishing industry to meet their evolving data capture and traceability needs. DFO will develop specific standards for E-log software along with a certification process to ensure that all E-log software meets these standards. Harvesters can continue to use their existing E-logs as long as no software changes are required to meet licence conditions. If software changes are required to meet licence conditions, harvesters can select to use paper logbooks or arrange for software updates with a service provider; harvesters will be responsible for any associated costs.

Use of Fish for Financing Salmon Science Activities

The list of Southern B.C. salmon projects planned for 2016 is similar to those projects in 2015. These include: 9 Fraser Panel projects for Fraser River sockeye and pink; Albion chinook/chum gillnet; Johnstone Strait chum seine; and Barkley Sound sockeye seine. One new project is proposed for 2016 (Brooks Peninsula Chinook). Details of Southern B.C. salmon test fisheries are listed in Section 12.5.

Commercial Salmon Allocation Framework

In the 2015/16 salmon IFMP's, the Department outlined changes to the CSAF based on recommendations received from the First Nations Fisheries Council's Salmon Coordinating Committee (SCC) and the Commercial Salmon Advisory Board (CSAB). The background on this work and the details of the approved updates are outlined in Appendix 8 of the 2015/2016 Salmon IFMP.

Key recommendations approved include the following:

- Approval of defined shares for commercial fleets at the species, fleet and fishery production areas for a period of 5 years starting in 2015 with provisions to review the allocations after year 4;
- Approval of principles and operational guidelines that would form the basis of incremental testing of flexibilities (alternatives fishing locations and methods) to harvest shares, with potential for testing starting in 2016 prior to wider implementation; and
- Support for recommendations to develop a revised collaborative advisory process to coordinate the collective interests of First Nations economic fishery and A-H commercial fleet fisheries.

As part of operationalizing changes to the CSAF, the Department indicated that it would adopt an incremental approach to implementation of harvesting flexibilities starting in 2016, pending the development of a revised collaborative process and a common evaluation framework to review proposals submitted. An initial review has been completed and those proposals which the Department is seeking further feedback on prior to implementing in 2016 are included in Appendix 6.

As part of the work to provide additional harvesting flexibilities, the Department has also received recommendations on updates to the interim Transfer Guidelines which have been in place since 2013. The Department is seeking further feedback on these proposed updates as part of the review of the draft IFMP.

***Please see Appendix 6 for details of proposals for consideration through the CSAF process for 2016 as well as the recommendations on revisions to the interim transfer guidelines which the Department is seeking further feedback on.**

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>

1 OVERVIEW

1.1 Introduction

The Southern BC Salmon Integrated Fisheries Management Plan (IFMP) covers the period June 1, 2016 to May 31, 2017.

This IFMP provides a broad context to the management of the Pacific salmon fishery and the interrelationships of all fishing sectors involved in this fishery. Section 2 considers stock assessment, while Sections 3 and 4 consider the shared stewardship arrangements and the social, cultural, and economic performance of the fishery. Section 5 describes the broader management issues, and the objectives to address these issues are identified in Section 6. Sections 7 and 8 describe allocation and compliance plans. 2015 Post season review information is outlined in Section 9. Sections 10 to 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.

1.2 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.

1.3 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.

1.4 Location of Fishery

This IFMP covers fisheries in tidal and non-tidal waters from Cape Caution south to the to the BC/Washington border, including the Fraser River watershed (Figure 1-1).

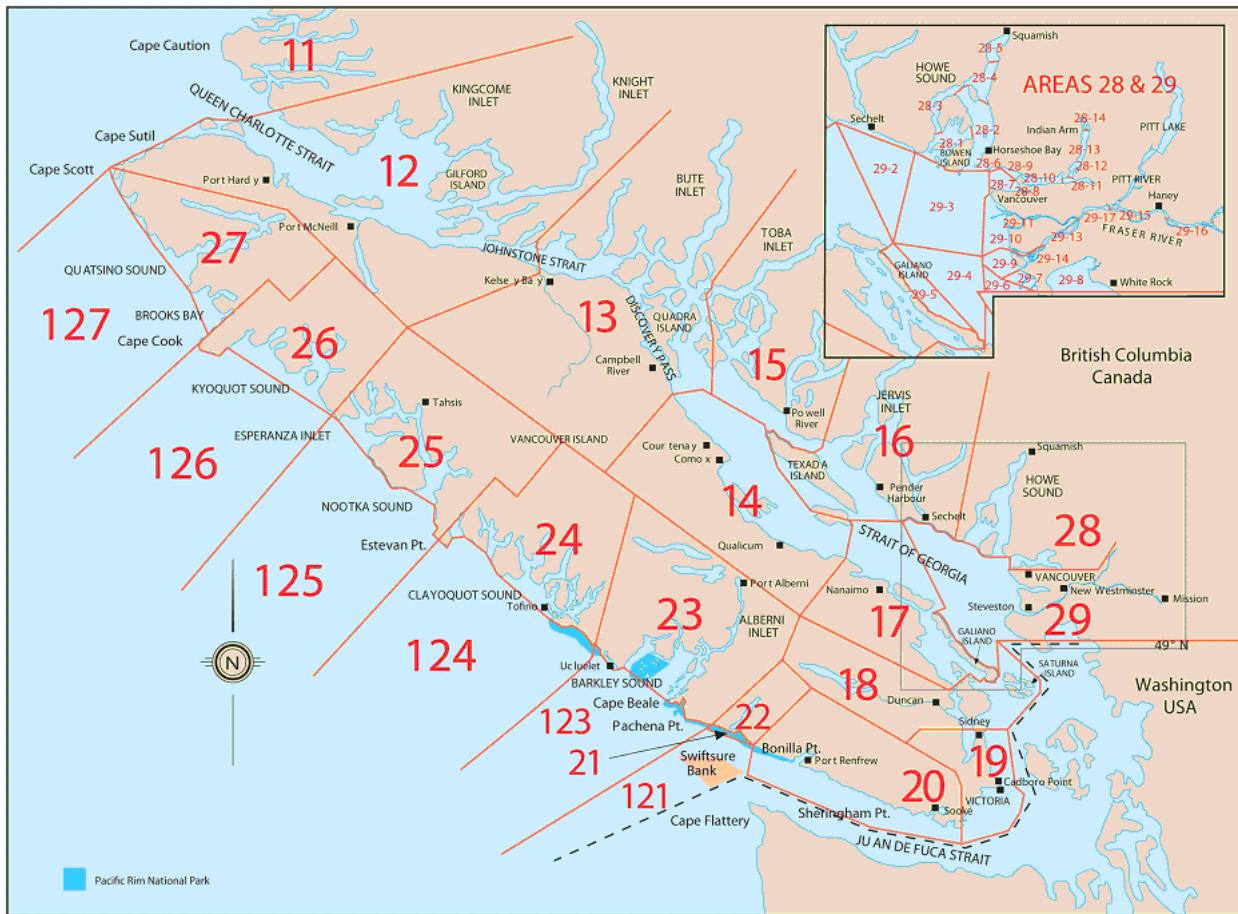


Figure 1-1: Management Areas for Southern BC

1.5 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.
- 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.
- The Department is actively working with the five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island – Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht for opportunities for the 2016-2017 seasons.

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.

1.6 Governance

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

1.6.1 Policy Framework for the Management of Pacific Salmon Fisheries

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

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/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>

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.

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/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm>

1.6.2 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.

In addition to fishing opportunities for FSC purposes, DFO acknowledges that in *Ahousaht Indian Band et al. v. Canada and British Columbia*, the courts have found that five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht,

Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht – have “aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck”. The Department is actively working with the First Nations to accommodate their rights without jeopardizing Canada’s legislative objectives and societal interests in regulating the fishery.

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, with resources of \$22.05M per year, of the Pacific Integrated Commercial Fisheries Initiative.

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 the spring of 2012. The Framework outlines how consistent risk assessment criteria can be applied to each fishery to determine the level of monitoring required, while allowing for final monitoring and reporting programs to reflect the fishery's unique characteristics. More info is available at:

http://www.pac.dfo-mpo.gc.ca/fm-gp/docs/framework_monitoring-cadre_surveillance/page-1-eng.html

1.7 Consultation

This plan incorporates the results of consultations and input from the Integrated Harvest Planning Committee (IHPC). The IHPC was developed to allow First Nations, recreational and commercial advisors, and the Marine Conservation Caucus (MCC), which represents a coalition of “conservation” organizations, to come together to discuss issues and concerns related to the management of salmon. Where possible; potential significant changes to provisions in the IFMP will be identified to the Integrated Harvest Planning Committee (IHPC) prior to implementation. However there may be times when changes will be made without prior notification.

Fisheries and Oceans Canada will continue to consult with First Nations (through regional and bilateral processes, with recreational and commercial harvesters, and with the MCC to also seek IFMP input and to further co-ordinate fishing activities as the season unfolds.

Consultative elements of an Improved Decision Making discussion paper have been implemented through establishment of the Consultation Secretariat, which works to improve the flow of information between stakeholders and the Department. Up-to-date information pertaining to on-going consultations can be found on the Secretariat's website at:

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

Further information on salmon consultations, including terms of reference, membership, meeting dates and records of consultation can be found on the Salmon Consultation website at:

<http://www.pac.dfo-mpo.gc.ca/consultation/fisheries-peche/smon/ihpc-cpip/index-eng.htm>

1.8 Approval Process

This plan is approved by the Minister of Fisheries and Oceans Canada.

2 STOCK ASSESSMENT, SCIENCE AND TRADITIONAL ECOLOGICAL KNOWLEDGE

2.1 Biological Synopsis

Pacific salmon include five species belonging to the genus *Oncorhynchus* family *Salmonidae*: 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 that collectively account for about 75% of the total salmon production.

Pacific salmon are anadromous; salmon breed and spend varying portions of their life in fresh water, then travel to the ocean to feed until maturity. Physical characteristics, life histories and spawning habits vary from species to species. Total life spans range from two years (for pink) up to six or seven years (for some sockeye and chinook). Pacific salmon migrate into rivers and streams to spawn from spring to fall; after courtship, eggs are released, fertilized and then buried in gravel. Both adults die after spawning. In mid-winter the eggs hatch into alevins. In spring, the young emerge and stay in freshwater streams and lakes from one week to two years. Most then go to sea for one to five years, undertaking a large ocean-feeding migration, although sockeye have also developed a land-locked form (kokanee). 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, the 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).

Pacific salmon complete their life cycle by returning to their natal stream to spawn, in many cases to the particular gravel bed where they were hatched. Homing of Pacific salmon to their natal stream is an important biological characteristic of salmon stocks. Each stock is genetically adapted to the environment in which it resides, and exhibits unique characteristics such as life history, migration route, migration timing, and productivity. Sockeye and chinook travel the farthest upstream to spawn, as far as 1,500 kilometers. Chum, coho and pink usually spawn closer to the sea. However, some chum salmon travel more than 3,200 km up the Yukon River.

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, many 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.

Chinook are the largest of the species and typically live the longest. Chinook migrate upstream from the spring through the fall as far as 1,500 kilometers inland. Chinook fry may go to sea soon after hatching or, after one to two years in fresh water. Chinook mature at age three to

seven years. Jacks, defined as two-year-old sexually mature adult males that return to spawn are common among chinook, coho and sockeye.

Adult coho generally return from late summer and early fall. Most choose streams close to the ocean, although some journey as far as 1,500 kilometers inland. In contrast to other salmon, young coho fry remain in their spawning stream for a full year after emerging from the gravel. Their age at maturity is normally three years.

Sockeye spawn in streams with lakes in their watershed, young sockeye spend between one and three years in a lake before migrating to sea. They move rapidly out of the estuaries and thousands of miles into the Gulf of Alaska and the North Pacific where they feed. They return to their natal spawning stream at ages three to six years. Chum salmon generally spawn in early winter usually in the lower tributaries along the coast, rarely more than 150 kilometers inland. Fry emerge in the spring and go directly to sea. Chum generally matures in their third, fourth, or fifth year.

Pink salmon live only two years almost entirely in ocean feeding areas. Adults leave the ocean in the late summer and early fall and usually spawn in streams not fed by lakes, a short distance from the sea. Fry migrate to the sea as soon as they emerge from the gravel.

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 by First Nations and commercial net fishermen, but also in recreational fisheries.

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. 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. Strategy 3 further identifies the actions required to incorporate ecosystem values as:

- Identify indicators (biological, physical and chemical characteristics) to use in monitoring the status of freshwater ecosystems, and
- Monitor annual variation in climate and ocean conditions, integrate the monitoring with assessments of marine survival of Pacific salmon, and incorporate this knowledge into the annual forecasts of salmon abundance and management processes.

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 Conservation Units 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. These programs include:

- The Strait of Georgia Ecosystem Research Initiative:
<http://www.pac.dfo-mpo.gc.ca/science/oceans/detroit-Georgia-strait/index-eng.html>
- Fraser River Watershed 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.pac.dfo-mpo.gc.ca/science/oceans-eng.html>

2.3 Aboriginal Traditional Knowledge (ATK)/Traditional Ecological Knowledge (TEK)

As defined herein, both Aboriginal Traditional Knowledge (ATK) 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. ATK is knowledge held by Aboriginal peoples and communities, while TEK is local knowledge held by Non-Aboriginal communities, including industry, academia, and public sectors. While qualitatively different both are cumulative knowledge gathered over time and are regionally and locally specific and can often be utilized to improve the management process. The growing

awareness of the value of ATK and TEK is reflected in the increasing requirements for both to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and all coastal management decision-making processes. ATK 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 consider ATK 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 acknowledges the importance of integrating Aboriginal Traditional Knowledge and Traditional Ecological Knowledge into the strategic planning process. The Department is exploring best practices to develop an approach for incorporating ATK and TEK into WSP integrated planning. The Department may identify potential partnerships with First Nation organizations to develop an approach for integrating ATK 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 scientific information for conservation and management of salmon resources. Stock assessment describes the past and present status of salmon stocks and may provide forecasts of future status of stocks. 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 Nation 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, the 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 of the Salmon and Freshwater Ecosystem Division. External partners and clients play an increasing role in delivery of the 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 the analytical and peer review elements. Stock assessment staff collaborates 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. The DFO (Holt et al 2009) 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. For each metric, lower and upper benchmarks will delimit three status zones of a CU. Management actions will be determined based on a CU's biological status relative to these benchmarks. Management will be focused on conservation measures for CU's 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 wild salmon 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, the assessment monitoring plans are updated by the 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 a continual 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 (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.

The Canadian Science Advisory Secretariat (CSAS) serves as the primary departmental forum for peer review and evaluation of scientific research and literature, including TEK, on wild 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. The peer review meeting schedule, reports on the status of salmon, environmental and ecosystem overviews, and research documents are available from CSAS web site: <http://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm>

2.5 Information Sources

Existing reports on the status of salmon and the environmental and ecosystem overviews are available from CSAS web site:

<http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp>

Annually, DFO provides a preliminary qualitative outlook of status for salmon management units, the Salmon Outlook, for planning purposes prior to formal forecasts of abundance. The Outlook is available on the DFO website: http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/outlook-perspective/salmon_outlook-perspective_saumon-2015-eng.html. Formal salmon abundance forecasts are generally completed by April.

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 (http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2011/2011_087-eng.html) and status reviewed in 2011 (http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2012/2012_106-eng.html), both through CSAS Regional Peer Review (RPR) processes. DFO completed a CSAS RPR process of WSP benchmarks and status for Southern BC Chinook in February 2014 (<http://www.isdm-gdsi.gc.ca/csas-sccs/applications/events-evenements/result-eng.asp?DateMatch=between&StartDate=2014-02-04&ToDate=2014-02-06&mode=0&desc=®ion=6&mode1=0&location=&B1=Search>), and an assessment of WSP benchmarks and status for Interior Fraser Coho in November 2014 (http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2015/2015_022-eng.html). Work is ongoing to develop a habitat based approach to determine benchmarks for Strait of Georgia and Lower Fraser River Coho Conservation Units (http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2015/2015_045-eng.html).

Additional information about CSAS, the CSAS schedule of RPRs and publications can be found at: <http://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm>

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 (e.g. Interior Fraser River Coho Conservation Strategy, Cultus Lake Sockeye Conservation Strategy) 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/oceanography-oceanographie/accasp/index-eng.html>

- 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 2013, and is available at: <http://www.pac.dfo-mpo.gc.ca/science/oceans/reports-rapports/state-ocean-etat/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/2015/2015_028-eng.html

3 SHARED STEWARDSHIP ARRANGEMENTS

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

¹ 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>

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).

Also referred to as “co-management,” 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 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, are being developed in order to 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 Marine Conservation Caucus, an umbrella group representing eight core environment groups.

4 ECONOMIC, SOCIAL AND CULTURAL IMPORTANCE

The intent of this section is to provide a socio-economic review of the salmon fishery in British Columbia. 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 and commercial fishing sectors (including the Aboriginal communal commercial fishery), the processing sector and the export market. 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

Generally, DFO manages Aboriginal fisheries to provide access for both food, social, and ceremonial (FSC) and in some cases, commercial purposes. With respect to fishing for FSC purposes, DFO manages FSC fisheries to ensure that after conservation needs are met, the FSC fishery has priority over other fisheries. DFO seeks to provide priority for the FSC fishery in order to ensure that its management is consistent with the Supreme Court of Canada (SCC) decision in *R. v. Sparrow*, and subsequent case law, which found that where there is an aboriginal right to fish for FSC purposes, this fishery must be given priority over other uses.

First Nations view the harvesting and consumption of salmon as providing a range of social, cultural and health benefits. Fisheries chapters in modern First Nation treaties may articulate a treaty fishing right for FSC purposes that could be protected under Section 35 of the Constitution Act, 1982. Commercial access may be provided either through the general commercial fishery or a Harvest Agreement, which is negotiated at the same time as the treaty and is referenced in the treaty, but is not protected under the Constitution Act.

Four modern treaties (Nisga'a Final Agreement, Tsawwassen First Nation Final Agreement (TFA), Maa-nulth First Nations Final Agreement (MNA)), Tla'amin Final Agreement have been ratified in British Columbia. These agreements articulate a treaty right to food, social and ceremonial harvest of fish and describe the role for First Nations in fisheries management.²

Five Nuu-chah-nulth First Nations have aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck.

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

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

AFS agreements serve as a guide for DFO and First Nations on the collaborative management of First Nations fisheries, and support a range of fishery co-management arrangements. Currently the Pacific Region accounts for roughly two-thirds of these agreements Canada-wide. In the region in 2014-2015, there were 85 AFS agreements, representing 164 First Nations that contain provisions relating to salmon management including, but not limited to, FSC fishery arrangements. Among the areas, BC Interior had 18 agreements, Lower Fraser had 13, North Coast had 18, South Coast had 32, and the Yukon had 4.

In addition to AFS, the Aboriginal Aquatic Resources and Oceans Management (AAROM) program has been implemented to fund aggregations of First Nation groups to build the capacity required to coordinate fishery planning and program initiatives. AAROM is focused on developing affiliations between First Nations to work together at a broad watershed or ecosystem level where there are common interests and where decisions and solutions can be based on integrated knowledge of several Aboriginal communities. In the conduct of their activities, AAROM bodies are working to be accountable to the communities they serve, while working to

² Details of the Nisga'a Final Agreement can be found at <http://www.ainc-inac.gc.ca/al/ldc/ccl/fagr/nsga/nis/nis-eng.asp>
Details of the TFA, MNA and Tla'amin agreements can be found on the BC Treaty Commission website at www.bctreaty.net

advance collaborative relationships between member communities, DFO and other interests in aquatic resource and oceans management.

4.2 Recreational Sector

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 a range of benefits to the participants as well as contribute directly and indirectly to the economy. 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 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 million³.

In order to fish for salmon an angler needs either a tidal or a freshwater licence; however, in order to keep salmon the licence must also have a Pacific Salmon Conservation (PSF) Stamp. Licence data show that the number of non-resident licences sold annually has declined almost continuously since 1999, dropping by 50%. However, up until 2008/09, the total number of licences had held fairly steady thanks to a generally increasing amount of resident licences. Following that one year dip, the number of resident licences have recovered, and in fact have increased noticeably over the last couple of years (Figure 4-1, below). The number of PSF Stamps also shows a marked increase in the last 2 years.

³ DFO Internal Analysis; Note that values paid for final goods (such as angler expenditures on fishing trips) should not be considered measures of economic impact of a sector.

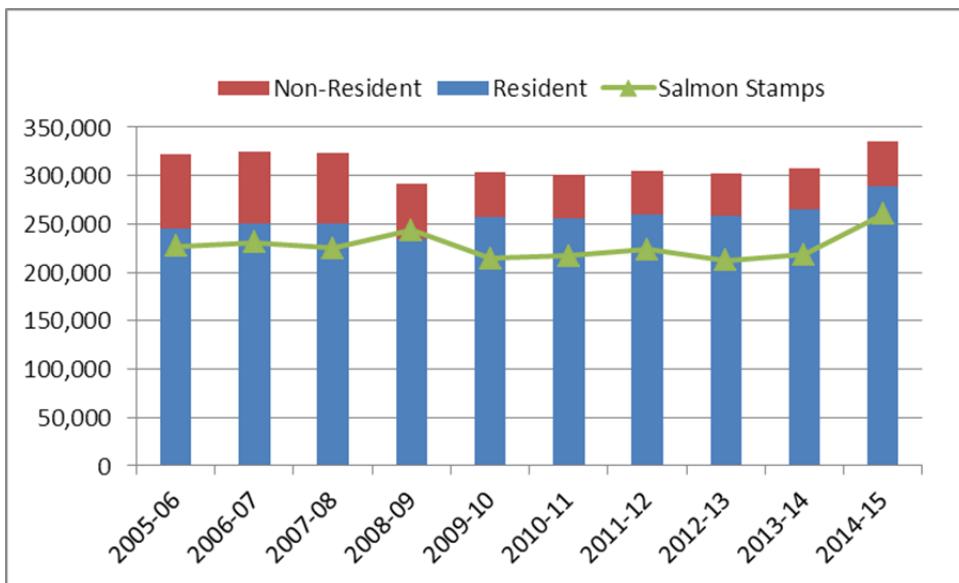


Figure 4-1: Tidal Water Recreational Fishing Licences (left) and Pacific Salmon Conservation Stamps (right) Sold, 2005/06 to 2014/15

Source: DFO internal data and <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/licence-permis/index-eng.htm>

The Survey of Recreational Fishing in Canada provides an estimate of individual expenditures and investment for recreational fishing. 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. 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. 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 experience⁴. 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 angling⁵. A further 19% would have shortened their stay in the province.

⁴ The British Columbia's Fisheries and Aquaculture Sector (2013) report 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.

⁵ 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.

	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: Recreational Fishing Direct and Package Expenditures and Investments, in constant (2010) dollars

Source: Survey of Recreational Fishing in Canada, multiple years

Figure 4-2 (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 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 Sector

In BC, the salmon fishery is a limited access fishery, mostly managed as a competitive fishery⁶; 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.

During the last decade, salmon contributed an average of 12% of the landed value and 10% of the volume of BC wild caught seafood. In 2014 dollars, the value ranged from a high of \$121 million in 2014 to a low of \$24.5 million in 2008 (Figure 4-3, below). On average, sockeye was the most important species in terms of landed value, followed by chinook and chum. But every other year, pink is also quite valuable and in fact in 2013 it was the most valuable salmon species bringing in an estimated \$12.8 million.

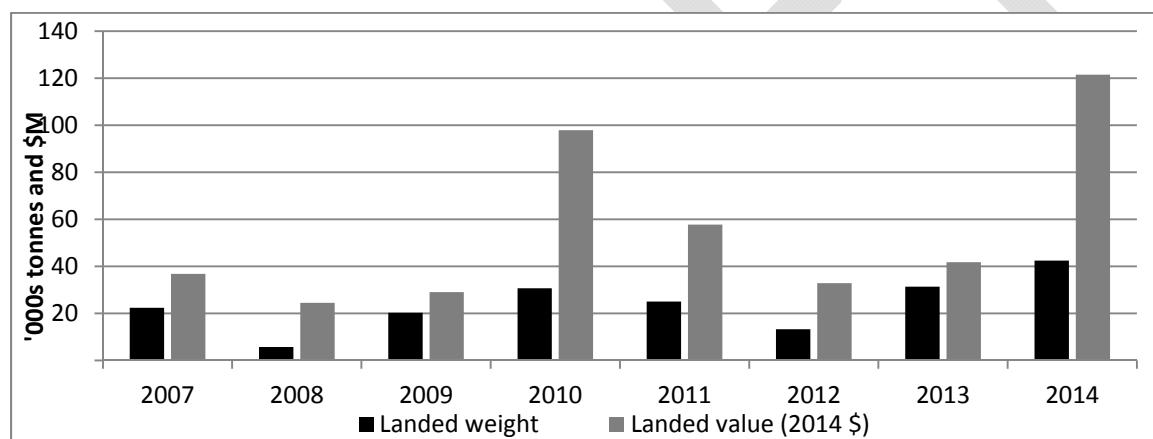


Figure 4-3: Pacific Region salmon harvest and landed value (2014 dollars)

Source: From 2007 to 2011 logbook data only is used representing A- H fisheries. From 2012 to 2014 the data also includes treaty, test, demo and inland fisheries. DFO prices estimates are based on sale slips and BC Seafood Year in Review

Note: "Salmon" here refers to salmon harvested by commercial fisheries and does not include aquaculture production.

In the decade preceding 2010, the South Coast fishery was responsible for an average of 35% of the volume of salmon landings and 40% of the landed value. However, the record Fraser River sockeye runs in 2010 and 2014 meant that the South Coast accounted for 89% and 75% of the landed value in those years respectively. Even without counting the high Fraser return years, the

⁶ Other names for this style of fishery include derby and Olympic style fishery

South Coast accounts, on average, for approximately 40% of BC wild caught salmon landings and value, with strong annual variations. Landings and landed value of the South Coast salmon harvest have been variable and do not have an overall trend up or down (Figure 4-4, below). The most significant impact is due to the collapse of the Fraser sockeye harvest in 2007 to 2009, and the strong rebound in the 2010 cycle.

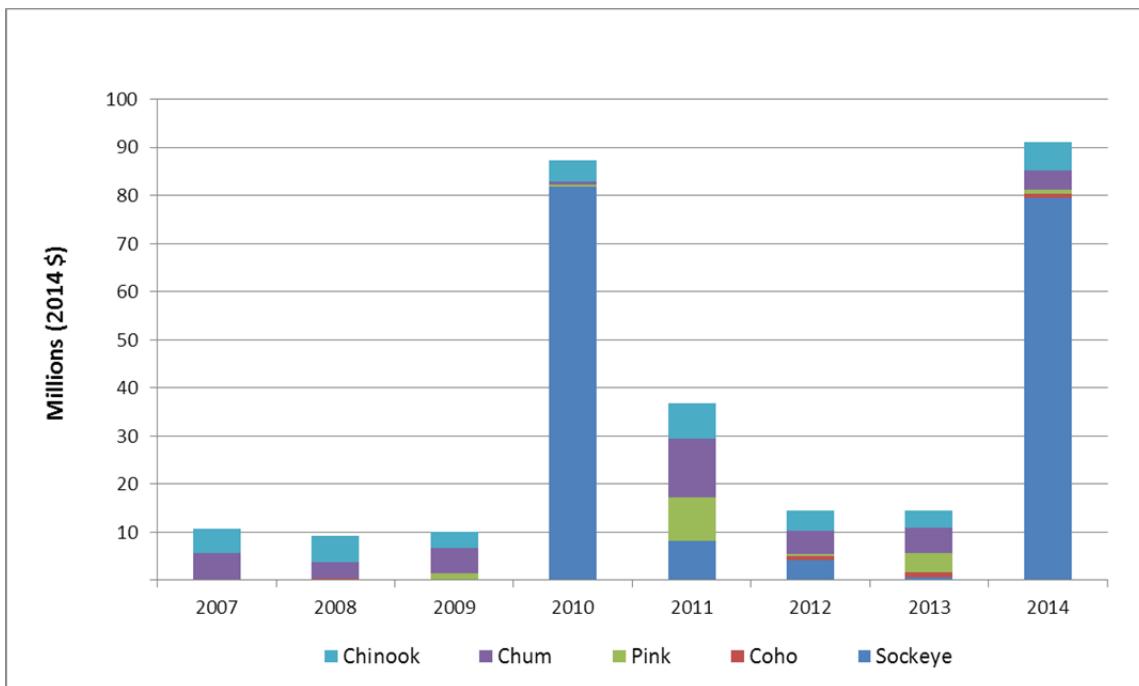


Figure 4-4: South Coast salmon value by species, (2014 dollars)

Source: [DFO logbooks \(quantities\) and sale slip \(prices\)](#)

Salmon licence values declined steadily from 2005 to 2010, reflecting poor returns to the fleets.⁷ 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;⁸ this was reiterated in the 2009 financial snapshot.⁹ The results also suggested a positive financial performance for the troll fleet, which was enhanced further by participation in other fisheries. Breaking down the analysis by licence area, however,

⁷ Nelson, Stuart. Various years West Coast Fishing Fleet: Analysis of Commercial Fishing Licence, Quota, and Vessel Values. <http://waves-vagues.dfo-mpo.gc.ca/waves-vagues/>

⁸ Nelson, Stuart. 2009. Pacific Commercial Fishing Fleet: Financial Profiles for 2007. <http://www.dfo-mpo.gc.ca/Library/343814.pdf>

⁹ Nelson, Stuart. 2011. Pacific Commercial Fishing Fleet: Financial Profiles for 2009. <http://www.dfo-mpo.gc.ca/Library/343762.pdf>

it is apparent that the South Coast troll is smaller and less productive than the BC average.¹⁰ 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 in Gislason, 2011.

The Department's general approach is that Aboriginal commercial harvest opportunities are managed using similar rules to the commercial fishery. In addition, the Department is actively working with the five Nuu-chah-nulth First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht – First Nations to accommodate their rights ("aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck") without jeopardizing Canada's legislative objectives and societal interests in regulating the 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.

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 7% of commercial licences in the South Coast, were reduced fee licences. 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 were in the South Coast in 2014.

Since 1994, DFO has acquired a total of 480 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), 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 2016, 159 communal commercial salmon licence eligibilities were issued to First Nations under the AFS and ATP, 45 were issued under PICFI,

¹⁰ Gislason, Gordon. 2011. British Columbia's salmon fleet financial profile 2009. <http://www.dfo-mpo.gc.ca/Library/343812.pdf>

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 21 were used for treaties or other contingencies. Additional details on the 2016 proposed demonstration fisheries are in Section 13 – Species Specific Salmon Fishing Plans.

The Tsawwassen First Nations and Maa-nulth First Nations also have commercial fisheries covered by Harvest Agreements outside of their Treaties. The Tsawwassen agreement came into effect in April 2009, and the Maa-nulth agreement came into effect in April 2011.

4.4 Processing Sector

Since 2000, salmon accounted for an average of 25% of the total wholesale value from the processing of wild caught seafood in BC¹¹. The latest BC Fish Processing Employment Survey estimates that processing wild caught salmon provided about 1,473 positions or a little over 30% of the BC total fish processing employment¹². A 2008 report estimates that approximately 80% of employment is to process domestic landings, with processing occurring primarily in the Greater Vancouver (47%) and the Skeena-Queen Charlotte (38%) regional districts.¹³ Most salmon harvested in the South Coast areas went to processing facilities in the Greater Vancouver Regional District; however, substantial amounts of chum, coho, pink and sockeye caught along the central coast were processed in the Skeena-Queen Charlotte Regional District. Nanaimo and Comox-Strathcona regional districts were important processing locations for some parts of south coast harvest.

4.5 Export Market

British Columbia benefits from a strong seafood exports sector, valued at \$903M in 2013, which is supplied by the domestic wild harvest, aquaculture and raw imports. The BC Year in Review further reports that pink and chum salmon are among the most widely exported seafood products in 2013; being shipped to 25 and 22 countries, respectively. Over the five-year period from 2011 to 2015, BC exported wild salmon to some 59 countries. On average over this period, the United States accounted for 36% of the export value (\$38.6 million in 2014 dollars), followed by Japan (15% and \$16.2 million) and the United Kingdom (11% and \$12 million). Japanese imports of BC salmon closely follow trends in sockeye production, Japan absorbing much of the windfall arising from the large harvest of Fraser sockeye in 2010 and 2014. China, which had grown as a

¹¹ British Columbia Seafood Industry Year in Review. Various years, BC Ministry of Environment and Ministry of Agriculture. For years 2010 and earlier available at: <http://www.env.gov.bc.ca/omfd/index.html>. For 2011 and forward available at: <http://www.agf.gov.bc.ca/stats/>

¹² BC Ministry of Agriculture, <http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles>.

¹³ Fraser and Associates 2008, Linkages Between the Primary Fish Production and Fish Processing Sectors in British Columbia, The actual % of wild salmon processing employment supported by domestic landings varies greatly year-to-year.

market in recent years with a real export value of \$14.2 million in 2013 returned to its role as a minor market as its export value fell to \$9.7 million in 2014, and again to \$3.6 million in 2015.

The value of wild caught salmon exports averaged \$107 million (2014 dollars) from 2011 to 2015. On average, sockeye accounted for 38% of this value; pink for 22% and 10% originated from the sale of salmon roe, which is often produced from pink salmon.

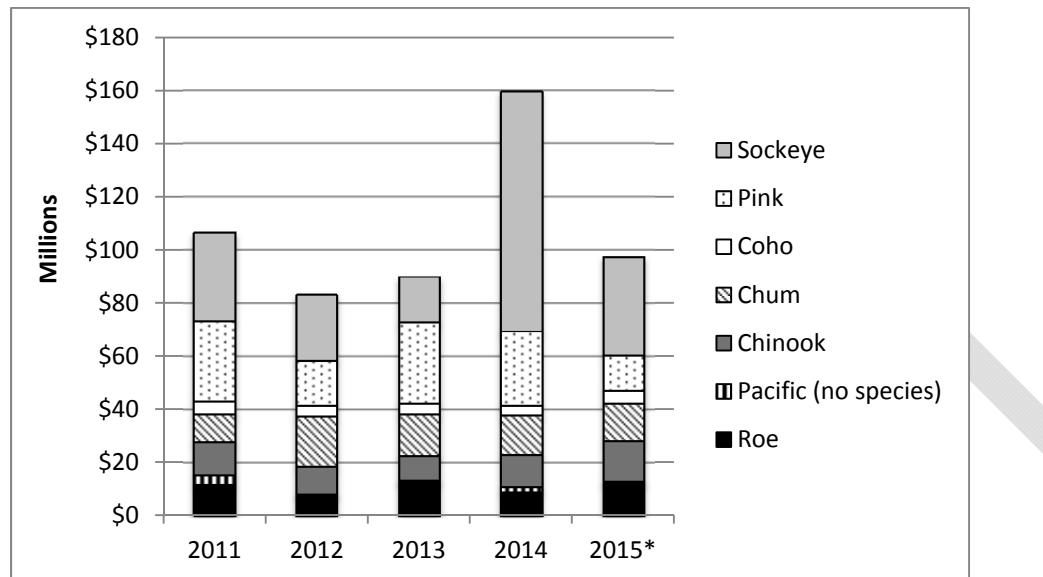


Figure 4-5: Salmon Export Value by Species, 2011-2015 (2014 dollars)

Source: Statistics Canada. December 2014.

5 MANAGEMENT ISSUES

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 behaviour 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. Consistent with the Policy, the Department has taken an incremental approach to WSP implementation, with the focus in the first years principally on the development of technical methods and tools to support the assessment of salmon conservation units, supplemented by some work to assess habitat and ecosystems as part of integrated strategic planning pilots in key areas.

Currently, the Department is preparing a new Wild Salmon Policy Implementation Plan, which will allow alignment with changes to legislation and programs since the policy was released in 2005, such as 2012 changes to the Fisheries Act, implementation of the Fisheries Protection Program, and release of the Sustainable Fisheries Framework, as well as increased knowledge with respect to wild Pacific salmon and implementation of the WSP. In addition, recommendations from the Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River (2012) and an independent review of the policy by Gardner Pinfold (2011) will be considered. The Department's intention is to start engaging First Nations and stakeholders on this work in the near future.

Additional details regarding the WSP can be found at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/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. Various chapters in Annex IV of the Treaty have been renegotiated and ratified since 1985.

The Pacific Salmon Commission (PSC), established under the Pacific Salmon Treaty, provides regulatory and policy advice as well as recommendations to Canada and the United States (US) with respect to intercession 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. In 1985, the United States and Canada entered into an August 13, 1985 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 through the feasibility of parentage-based genetic tagging. Results of this work may be found at <http://www.psc.org/pubs/pbt/pbtreport.pdf>).

The chapters in Annex IV outline the joint conservation and harvest sharing arrangements between Canada and the US for key stocks and fisheries subject to the Treaty. On December 23, 2008, Canada and the US ratified new provisions for five chapters under Annex IV of the Pacific Salmon Treaty. The new provisions in these chapters came into effect on January 1, 2009 and are in effect through December 31, 2018. Chapter 4, which covers Fraser River sockeye and pink salmon, was renegotiated in 2013, with formal ratification by both Parties occurring on May 16, 2014. The provisions contained within Chapter 4 are in effect through December 31, 2019.

Fisheries and Oceans Canada and US agencies continue to implement the management regimes under Annex IV for the 2016 and 2017 seasons. Key details from the chapters under Annex IV relevant to the South Coast are identified, below:

Chapter 3 (Chinook Salmon): Building on improvements made in 1999, the current chapter maintains an abundance-based management regime for chinook, including the existing aggregate abundance based management fisheries and individual stock based management fisheries.

To address conservation concerns in both countries, harvest reductions of 15% below the 1999 catch ceiling in the Southeast Alaskan aggregate abundance based management (AABM) fishery and 30% below the 1999 catch ceiling in the Canadian West Coast Vancouver Island AABM fishery were agreed to by the parties and are detailed in Table 1 of the chinook chapter. The chapter also includes provisions to protect weak stocks, including the potential for further harvest reductions in the Southeast Alaska and Northern British Columbia AABM fisheries, as well as the individual stock-based management (ISBM) fisheries in both countries, should certain stocks fail to meet escapement objectives outlined in the agreement.

The agreement also includes provisions for a bilateral funding framework to support implementation of the chinook chapter. Key elements include: (i) \$30M for Canada to help mitigate the impacts of commercial harvest reductions of chinook on the West Coast of Vancouver Island; (ii) \$15M (\$7.5M from each country) over five years to support the coast-wide coded-wire tag program; (iii) \$10M from the Northern and Southern Endowment Funds for a "Sentinel Stocks Program"; (iv) \$1M from the US to improve the analytical models to implement the chinook agreement.

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 the Aboriginal Fisheries Exemption.

Chapter 5 (Coho Salmon, Southern BC and Washington State): The current coho chapter incorporates the joint Southern Coho Management Plan developed in 2002 with the abundance-based management (ABM) framework established in 1999. Under this regime, annual exploitation rate caps for each country are established based on an annual categorical status assessment of Coho Management units (9 units in the U.S. and 4 in Canada). Parties to the Treaty have raised some concern about the countries' respective capacities to support the relatively data-intensive requirements of the ABM regime as it is currently described in Chapter 5. The Southern Endowment fund has agreed to fund a workshop to explore potential alternative management strategies for southern coho and a project to support establishment of status-specific fishery reference points and associated exploitation rate caps for Canadian coho management units.

Chapter 6 (Chum Salmon, Southern BC and Washington State): The current chum chapter includes a 20% fixed harvest rate in Johnstone Strait, linking the initiation of US chum fisheries to in-season abundance assessment from Southern Inside chum mixed stock area and from the Fraser River. At a Southern Inside chum abundance estimate (as measured by the Johnstone Strait chum test fishery) of less than 1 million, or a Fraser River abundance estimate (as measured by the Albion test fishery) of less than 900,000 chum, the US would restrict its fisheries in Area 7 and 7A to 20,000 chum subsequent to being informed that required abundance thresholds would not be achieved. At abundance levels above these thresholds, the U.S. harvest cap on chum in 7 and 7A is 130,000 pieces. There is also a defined annual start date of October 10, for US fisheries in Areas 7 and 7A.

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 three principles: sustainable development, integrated management, and the precautionary approach.

The *Oceans Act*, the *Canada Wildlife Act*, and the *National Marine Conservation Areas Act* have given rise to several initiatives on the BC coast, which are listed below. As goals, objectives, and management plans are finalized for these initiatives, the Department's management of fisheries

will be adapted as appropriate, in consultation with interested parties through Integrated Fisheries Management processes.

For more information on the *Oceans Act*, please visit:

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

5.3.2 Pacific North Coast Integrated Management Area

An integrated management plan for the Pacific North Coast Integrated Management Area (PNCIMA) has been 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. An electronic copy of the draft plan is available online at www.pncima.org.

5.3.3 Marine Protected Area Network Planning

The *Oceans Act* mandates the Minister of Fisheries and Oceans with leading and coordinating the development and implementation of a national system (or network) of marine protected areas. The National Framework for Canada's Network of Marine Protected Areas (National Framework) provides strategic direction for the design of a national network of marine protected areas (MPAs) that will be composed of a number of bioregional networks. This is an important step towards meeting Canada's domestic and international commitments to establish a national network of marine protected areas. Regionally, the Canada-British Columbia Marine Protected Area Network Strategy has been developed jointly by federal and provincial agencies and reflects the need for governments to work together to achieve common marine protection and conservation goals. Bioregional marine protected area network planning may identify new areas of interest for protection by DFO, Parks Canada, Environment Canada, the Province of BC, and any other agencies with a mandate for protecting marine spaces. Future networks of MPAs may overlap and/or include salmon fishing areas, depending on the type and nature of the MPA.

More information on MPA Network Planning can be found at the following links:

<http://www.dfo-mpo.gc.ca/oceans/planning/marineprotection-protectionmarine/index-eng.htm>
<http://www.dfo-mpo.gc.ca/oceans/planning/marineprotection-protectionmarine/bc-mpa/index-eng.html>

5.3.4 Marine Protected Areas

DFO is also responsible for designating Marine Protected Areas (MPAs) under Canada's Oceans Act. Under this authority, DFO has designated two MPAs in the Pacific Region. The Endeavour Hydrothermal Vents, designated in 2003, lie in waters 2,250m deep 250 km southeast of Vancouver Island. The SGaan Kinglas-Bowie Seamount Marine Protected Area (SK-B MPA), designated in 2008, is 180 km west of Haida Gwaii (formerly known as the Queen Charlotte Islands), rising from a depth of over 3,000 m to within 25 m of the sea surface. MPA regulations and management plans articulate any restrictions on activities taking place within the MPA, where applicable. At this time, all fisheries are restricted within the Endeavour and SK-B MPAs, except for a limited Sablefish trap fishery within the SK-B MPA.

The SK-B MPA has been established to conserve and protect the unique biodiversity and biological productivity of the area's marine ecosystem. The Government of Canada and the Council of the Haida Nation signed a MOU in April 2007 which established the SK-B Management Board to facilitate the cooperative management and planning of the proposed MPA. As a result, DFO and the Council of the Haida Nation are collaboratively developing a management plan for the SK-B MPA which will consider advice from an advisory committee, stakeholders through existing processes, and the public. This management plan will elaborate on the regulations to implement the conservation and management objectives for the MPA and will address matters such as monitoring, enforcement and compliance.

Commercial fishing activities within the SK-B MPA are managed through the Integrated Fisheries Management process. Three zones are identified, some of which are fisheries closures which are used to manage the sablefish fishery (see Groundfish IFMP for details). All other commercial fisheries are not permitted to occur in any zones of the MPA.

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). Work also continues towards designating the Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Area of Interest as a Marine Protected Area under the *Oceans Act*. The glass sponge reefs are located at depths of 140m to 240m in Hecate Strait and Queen Charlotte Sound. Designation of the Hecate AOI as an MPA is anticipated in 2016. Changes to existing IFMPs with respect to fishing activities may be required upon MPA designation. In addition, DFO will produce a management plan for any newly designated MPA, and will seek to align the plan with relevant IFMPs.

The protection of coral and sponge reefs is a key component to a number of international commitments made by Canada through the United Nations Convention on Biological Diversity and the United Nations Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries.

More information on integrated management planning, Pacific Region MPAs and Pacific MPA planning under Canada's *Oceans Act* can be found at the following links www.pac.dfo-mpo.gc.ca

mpo.gc.ca/oceans/index-eng.htm and <http://www.dfo-mpo.gc.ca/oceans/marineareas-zonesmarines/mpa-zpm/index-eng.htm>.

5.3.5 National Marine Conservation Areas

Gwaii Haanas

Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site is a 5000 km² land-and-sea protected area in the southern portion of Haida Gwaii (formerly the Queen Charlotte Islands), approximately 100 km off the north coast of British Columbia. The Haida Nation declared 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 the two parties have been managing the area cooperatively since 1993. In 2010, following an extensive public consultation process, the marine area of Gwaii Haanas was given the designation of National Marine Conservation Area Reserve.

Gwaii Haanas is managed by the Archipelago Management Board, a cooperative body made up of equal representation from the Government of Canada (represented by Fisheries and Oceans Canada and Parks Canada) and the Council of the Haida Nation. The Gwaii Haanas marine area is currently managed under the Interim Management Plan and Zoning Plan, which includes "balancing protection and ecologically sustainable use" in its guiding principles. The Zoning Plan identifies six areas that are closed to commercial and recreational fishing.

Development of a long-term management plan for the Gwaii Haanas marine area is underway and will be completed in 2015. This process will take place in consultation with the commercial and recreational fishing sectors through Fisheries and Ocean's established integrated fisheries planning and advisory processes. Annual fishing plans will be developed in consultation with stakeholders.

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.

Southern Strait of Georgia

Parks Canada, in partnership with the Government of British Columbia, launched a feasibility assessment for an NMCA reserve 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 an 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 Aboriginal 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. More information on the proposed National Marine Conservation Area Reserve in the Southern Strait of Georgia is available on the internet at:

www.pc.gc.ca/eng/progs/amnc-nmca/dgs-ssg/index.aspx

DFO is also working with other federal and provincial agencies to coordinate efforts towards establishing a national system of Marine Protected Areas to fulfill Canada's commitments to the UN Convention on Biological Diversity.

More information on integrated management planning and Pacific MPAs under Canada's Oceans Act can be found at: <http://www.pac.dfo-mpo.gc.ca/oceans/index-eng.htm>

5.3.6 Marine National Wildlife Areas

Under the Canada Wildlife Act, Environment Canada may establish marine National Wildlife Areas (NWAs). The Scott Islands marine National Wildlife Area, located on off the northern tip of Vancouver Island, has been proposed for designation through amendment to the Wildlife Area Regulations. Fisheries and Oceans Canada would continue to regulate and administer fisheries within the proposed area. Environment Canada and Fisheries and Oceans will develop a collaborative approach and agreement regarding management of fisheries in the area.

More information on NWAs can be found at:

<http://www.ec.gc.ca/ap-pa/default.asp?lang=En&n=2BD71B33-1>

5.3.7 Committee on the Status of Endangered Wildlife Species Assessment

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 serves as an independent body of experts responsible for identifying and assessing wildlife species considered as being at risk. This is the first step towards protecting wildlife species 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.

To search the full list of species identified and assessed by COSEWIC, please visit:

http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm

5.3.8 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:

<http://www.sararegistry.gc.ca/default.asp?lang=En&n=24F7211B-1>

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

Fish

1. [Basking Shark](#) – Endangered
2. [Green Sturgeon](#) – Special Concern
3. [Longspine Thornyhead Rockfish](#) – Special Concern
4. [Rougheye Rockfish Types I & II](#) – Special Concern
5. [Sixgill Shark](#) – Special Concern
6. [Soupfin Shark \(Tope\)](#) – Special Concern
7. [White Sturgeon](#) – Upper Fraser Designatable Unit – Endangered
8. [White Sturgeon](#) – Upper Columbia Designatable Unit – Endangered
9. [White Sturgeon](#) – Nechako Designatable Unit – Endangered
10. [White Sturgeon](#) – Kootenay River Designatable Unit – Endangered
11. Yelloweye Rockfish [Inside](#) and [Outside](#) populations – Special Concern

Mammals

1. [Blue Whale](#) – Endangered
2. [Fin Whale](#) – Threatened
3. [Grey Whale](#) – Special Concern
4. [Harbour Porpoise](#) – Special Concern
5. [Humpback Whale](#) – Threatened
6. Killer Whale – [Northern Resident Population](#) – Threatened

7. Killer Whale – [Southern Resident Population](#) – Endangered
8. Killer Whale – [Offshore Population](#) – Threatened
9. Killer Whale – [Transient Population](#) – Threatened
10. [North Pacific Right Whale](#) – Endangered
11. [Sea Otter](#) – Special Concern
12. [Sei Whale](#) – Endangered
13. [Steller Sea Lion](#) – Special Concern

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

Shellfish

1. [Northern Abalone](#) – Endangered
2. [Olympia Oyster](#) – Special Concern

Some marine mammals and marine or anadromous species of fish assessed by the COSEWIC that are currently under consideration for listing under SARA include:

Fish

1. Bocaccio Rockfish – assessed as Threatened
2. Canary Rockfish – assessed as Threatened
3. Darkblotched Rockfish – assessed as Special Concern
4. Quillback Rockfish – assessed as Threatened
5. Yellowmouth Rockfish – assessed as Threatened
6. Eulachon – Fraser River Designatable Unit – assessed as Endangered
7. Eulachon – Central Pacific Coast Designatable Unit – assessed as Endangered
8. Eulachon – Nass/Skeena Rivers Designatable Unit – assessed as Special Concern
9. North Pacific Spiny Dogfish – assessed as Special Concern

Mammals

1. Northern Fur Seal – assessed as Threatened

Salmon and SARA

Three populations of salmon have been assessed by COSEWIC as *Endangered* including: Cultus Lake sockeye (assessed in 2003), Sakinaw Lake sockeye (2003), and Interior Fraser River coho (2002); and, one as *Threatened* (Okanagan Chinook (2006). Following extensive public and stakeholder consultation processes for each population, the Government of Canada did *not* list these populations on Schedule I of SARA (Cultus Lake sockeye (decision in 2005), Sakinaw Lake sockeye (2005), Interior Fraser River coho (2006) and Okanagan chinook (2010)).

However, recovery efforts are continuing for each population.

DFO, in cooperation with the Interior Fraser River coho Recovery Team, has developed the *Conservation Strategy for Coho Salmon, Interior Fraser River Populations*. This strategy is an integral tool in effecting recovery of these unique coho populations. It is a science-based document that describes the species' biology, habitats and threats. The strategy also identifies a recovery goal, with accompanying principles and objectives designed to guide activities to

achieve recovery. To view the conservation strategy, please visit: www.dfo-mpo.gc.ca/Library/329140.pdf

Conservation Strategies for Cultus and Sakinaw Lake sockeye have also been finalized, and can be viewed at:

www.dfo-mpo.gc.ca/Library/337479.pdf

http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/conservation/docs/Sakinaw_conservation_jan08-eng.pdf

Specific conservation objectives for these and other stocks are found in Section 5.

It should also be noted that the following salmon populations are slated for assessment or re-assessment by COSEWIC in the coming few years: Fraser River sockeye, Interior Fraser River Coho, Okanagan chinook, and Sakinaw Lake sockeye. Assessment dates for these populations will be included on COSEWIC's schedule of species assessments, found here:

http://www.cosewic.gc.ca/eng/sct2/sct2_4_e.cfm

Shark Codes of Conduct

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 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 by-catch 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-especes/shark-requin/conduct_shark-conduite_requin-eng.html

Code of conduct for Basking Sharks: http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/shark-requin/conduct_basking-conduite_pelerin-eng.html

Whale, Turtle and Basking Shark Sightings

The Department welcomes assistance in the reporting of any whale, turtle, or Basking Shark sightings or entanglement. Sightings of Basking Shark, Leatherback and other turtle species, as well as many whale species are infrequent in Pacific Canadian waters, and the collection of sightings data is very useful to scientists in determining population size and distribution. Establishing this information can in turn help in recovery planning under SARA.

To report a whale sighting, contact the BC Cetacean Sightings Network:

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

Fax: (604) 659-3599

Email: sightings@vanaqua.org

Internet: <http://wildwhales.org/sightings/>

To report a turtle sighting, contact the Sea turtle Sighting Network:

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

Fax (604) 659-3599

Email: turtles@vanaqua.org

<http://www.bcreptiles.ca/reportsightings.htm#1>

To report sick, injured, distressed or dead marine mammals and sea turtles contact the Marine Mammal Incident Reporting Hotline:

Toll free: 1-800-465-4336

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

Toll free: 1-877-50-SHARK

Email: BaskingShark@dfo-mpo.gc.ca

<http://www.pac.dfo-mpo.gc.ca/science/species-especes/elasmobranch/baskingshark-lepelerin-eng.html>

5.3.9 Northern and Southern Resident Killer Whales

Two distinct populations of 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*. An Action Plan is being developed and near completion which identifies implementation priorities to reduce anthropogenic threats and address research needs for resident killer whales. The *Recovery Strategy for Northern and Southern Resident Killer Whales (Orcinus orca) in Canada* was finalized in March 2008 and amended in 2011. It can be viewed at: 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 through the issuance of an order. The Recovery Strategy also identifies current threats as environmental

contaminants, reduced prey availability, disturbance, noise pollution and mortality in fishing gear.

Prey:

Northern and Southern Resident Killer Whales are dietary specialists and feed primarily on chinook salmon. 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.

Because Southern Residents also are listed as endangered pursuant to the United States Endangered Species Act, DFO has joined with the National Oceanic and Atmospheric Administration (NOAA) to collaboratively evaluate the status of the relevant science and analyses. The two agencies designed a series of three scientific workshops to undertake a transparent, collaborative and scientifically rigorous review of the available information about resident killer whales, their feeding habits, and the potential effects of salmon fisheries on the whales through prey reduction. A panel of independent scientists was selected to oversee and participate in the process and produce a report documenting its findings.

The final report of the Independent Science Panel of the Bilateral Scientific Workshop Process to evaluate the effects of salmon fisheries on Southern Resident Killer Whales is available here: <http://www.nwr.noaa.gov/Marine-Mammals/Whales-Dolphins-Porpoise/Killer-Whales/ESA-Status/upload/KW-Chnk-final-rpt.pdf>

Contaminants:

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

Disturbance:

All cetaceans, including Resident Killer Whales, are subjected to increasing levels of disturbance from vessels, aircraft and other sources of anthropogenic noise. Industrial activities such as: dredging, pile driving, construction, seismic testing, military sonar and other vessel use of low and mid-frequency sonars may result in acoustic disturbance. 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.pac.dfo-mpo.gc.ca/fm-gp/species-especes/mammals-mammifères/view-observer-eng.html>

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

Critical Habitat:

In the March 2008 Recovery Strategy for the northern and southern resident killer whales, their critical habitat was defined. On February 23, 2009 a Species at Risk Act Section 58(4) Order by the Ministers of Fisheries and Oceans, and Environment was posted to protect that critical habitat from destruction. The Recovery Strategy identifies specific actions intended to protect killer whale critical habitat and its features. These actions include enforcement, protection, management, research, stewardship and public education. These actions are undertaken by multiple DFO sectors and the outcomes will inform further actions.

Marine Mammal Management Plans

Fisheries Depredation:

Depredation (the removal of fish from fishing gear) by killer whales has been reported by groundfish longline, salmon troll and recreational harvesters in BC.

Depredation is a learned behaviour that can spread throughout whale social groups and once established is impossible to eliminate. It is critical that BC 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 and sperm 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 MarineMammals@dfo-mpo.gc.ca or by calling (250) 756-7253. Reporting all incidents will assist DFO and fish harvesters in understanding this problem and help in developing strategies to avoid it.

Marine Mammal Incident Response Program and Marine Mammal Sightings Network:

Marine mammals incidents comprise a range of occurrences which may include; live strandings, dead, sick or injured animals, entanglements or potential violations (disturbance, harm or harassment).

To report a marine mammal incident, including violations, call DFO's Observe Record, Report (ORR) line at 1-800-465-4336. All entanglement or by-catch of marine mammals must be reported by current log book/reporting requirements.

Observations of orphaned seal pups may be reported to the Vancouver Aquarium Marine Mammal Rescue and Rehabilitation (604) 258-SEAL (7325). In many cases seal pups are not truly orphaned, and staff at these facilities will assess the circumstances.

To report a sightings of a cetacean (whale, dolphin, or porpoise) or sea turtles contact the BC Cetacean Sightings Network as soon as possible by phone at 1-866-I SAW ONE (472-9663) or <http://www.vanaqua.org>

You may also participate in a formalized logbook program by calling or contacting the Network.

Contacts for marine mammal inquiries:

Fisheries and Oceans Canada Contacts:

MarineMammals@dfo-mpo.gc.ca

Paul Cottrell (604) 666-9965

5.3.10 Environment Canada Assessing the Impact of Salmon Gill Net Fishing on local Seabird Populations

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

A number of seabird species around the world have declined in recent years; seabird by-catch is a part of the reason.

Seabird by-catch 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 salmon 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, has started 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 Toxicologist, Environment Canada
Canadian Wildlife Service, Delta, BC
Telephone: (604) 940-4679
Email: laurie.wilson@canada.ca

5.3.11 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 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 assesses, makes decisions and issues aquaculture licences.

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). Public reporting is undertaken to ensure the transparency and accountability of the management of aquaculture in BC. 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 licencing, 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 Departmental 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. Information relating to AMAC meetings is posted on the DFO Consultations web pages: <http://www.pac.dfo-mpo.gc.ca/consultation/aquaculture/index-eng.htm>. Meetings are open to the public.

More information on IMAPs and AMACs is available through IMAPS@dfo-mpo.gc.ca.

5.3.12 Salmonid Enhancement Program

The Salmonid Enhancement Program (SEP) in British Columbia, Canada is comprised of nearly 300 projects across the province and the Yukon and includes hatcheries, fishways, spawning and rearing channels, and small classroom incubators. Projects range in size from spawning channels producing nearly 100 million juvenile salmon annually to school classroom incubators releasing fewer than one hundred juveniles.

SEP enhances chinook, chum, coho, pink, and sockeye salmon at the population level throughout the Pacific Region, supporting sustainable fisheries through fish production that provides harvest opportunities. Fish production from the program also supports stock assessment and conservation, both of which enable harvest management as well as community involvement and public education.

The program is delivered through three components:

1. Major Operations (OPS) SEP facilities that rebuild stocks and provide harvest opportunities through hatcheries and spawning channels;
2. The Community Involvement Program (CIP), which includes the Community Economic Development Program (CEDP) that operates contracted SEP facility operations with local community groups and First Nations, and Public Involvement Program (PIP) projects that are divided into designated (DPI) and non-designated categories. The latter are smaller projects that focus on outreach, stewardship and educational activities, which do not produce large numbers of fish.
3. The Resource Restoration Unit supports habitat improvements, stock assessment, effectiveness monitoring, watershed planning, and partnerships related to habitat initiatives.

Steelhead and cutthroat trout are produced at some SEP facilities in partnership with the province of British Columbia; however, targets and release numbers are not included in SEP production planning as the province is responsible for management of these species.

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. This production planning process operates within the consultative framework of an integrated harvest planning process that is used to develop the IFMP.

Production planning meetings involve most DFO sectors (SEP, Science, and Fisheries Management), and external consultation and involvement includes the IFMP process. Based on these production planning meetings, a draft production plan is assembled, taking into account production priorities and the results of post-season fishing and production reviews. This process operates through an annual planning cycle, while at the same time planning for the longer-term. Priorities are established annually based on the national and regional priorities using a consistent approach across the program.

The production planning cycle establishes maximum numbers of eggs to be collected and juveniles to be released, 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. Operationally, SEP production targets for a given facility are set for individual populations or stocks. Each individual stock or population together with its run timing, release site, life-history stage and the associated release numbers, is known as a production group and has a specific production objective. A single regional production plan is produced, that comprises donor stocks, release sites, egg-take and juvenile salmon release targets, and stages at release for each SEP facility. Production targets are considered upper limits and will be documented as such in each Facility PAR licence.

The risks of salmon enhancement to wild populations include undesirable genetic effects, disease implications, ecological interactions, harvest impacts and marine carrying capacity. DFO is aware of potential interactions of enhanced fish with wild stocks, and has developed an array of risk mitigation and management procedures, guidelines, and practices. Hatchery programs are designed to avoid or minimize these risks.

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. Facilities may also enhance steelhead and cutthroat trout; however, targets are not included as management of these species is under the authority of the Province of British Columbia.

There are two datasets available: **Post-Season Production** from the 2014 brood year (i.e. 2015 releases, and #'s on hand for 2016 release), and the **Production Plan**, which include proposed targets for the upcoming 2016 brood year. The Production Plan dataset is preliminary, and the final version will be available by June 1 at:

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

5.3.13 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 WorksafeBC to ensure coordinated approaches to improving fishermen's safety. See Appendix 2 for more information.

6 FISHERY MANAGEMENT OBJECTIVES FOR STOCKS OF CONCERN

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.

In the 2016 Salmon Outlook, LGS chinook are classified as low to near target given recent returns that suggest continued rebuilding, and an above average return of jacks to the Cowichan River in 2015. The Cowichan River is the primary indicator of marine survival and exploitation for the LGS fall chinook.

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. The terminal area sport restrictions may be increased to provide additional protection as required by in-season concerns such as low river flow levels. 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. These processes are linked to the Southern BC Chinook Technical Working Group and are applicable to other stocks.

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 in 2015/2016 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 South West Vancouver Island 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. Since 1999, a WCVI recreational fishery “chinook management corridor”, extending one nautical mile offshore from the surfline has been in place along the West Coast of Vancouver Island in order to lower the exploitation rate on adult female chinook that are travelling along the shoreline back to their natal streams.

2016 is the eighth year that the Annex IV provisions of the 2008 PST agreement will be implemented. The fishing regime as outlined in this annex will remain in force through the end of 2018. The 2016 allowable catches include a 15% reduction for the South East Alaska (SEAK), 0% reduction for Northern BC, and a 30% reduction for WCVI AABM fisheries from the allowable catches under the 1999 PST agreement.

6.3 Fraser Spring 4₂ Chinook

The Department has updated the wording of the Fraser Spring 4₂ management objective to clarify the intent of our management approach. The general management approach implemented in recent years to restrict fisheries impacts on these populations is intended to continue and fisheries management actions are now outlined in Section 13 Southern Chinook Salmon Fishing Plan - Southern ISBM Chinook.

The objective for Fraser Spring 4₂ chinook is 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.

In the 2016 Salmon Outlook, Spring 4₂ chinook has been classified as at *low* abundance given depressed parental abundance and unfavourable marine conditions in recent years. Expectations for 2016 are for continued modest improvements over brood. Returns of Spring 4₂ chinook in 2016 will come primarily from a parent generation of approximately 7300 spawners (this includes actual spawners to the following systems: Deadman, Coldwater, Nicola, Spius and Bessette but does not include the escapement to the Bonaparte system) in 2012.

Fraser Spring 4₂ chinook have historically been encountered in Fraser River First Nation 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.

For further information on the management of Fraser Spring 4₂ chinook refer to the Southern Inside Chinook ISBM fishery section in Section 13 Southern Chinook Salmon Fishing Plan.

6.4 Fraser Spring 5₂ and Summer 5₂ Chinook

The objective for Fraser Spring and Summer (age 5₂) chinook is to conserve these populations consistent with the management zones outlined in Section 13 Southern Chinook Salmon Fishing Plan under the Southern ISBM Chinook section.

In the 2016 Salmon Outlook, Spring 5₂ and Summer 5₂ chinook stocks have been classified as *low* abundance given depressed parental abundance and unfavourable marine conditions in recent years. For the return in 2016, the parental brood year (2011) escapement index was approximately 30,700 spawners. 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. Additionally, a run-reconstruction analysis 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 5₂ and Summer 5₂ chinook stocks (including those streams that are not monitored regularly). The run-reconstruction model estimate of the 2011 Spring 5₂ and Summer 5₂ escapement was 39,700 spawners.

The Southern BC Chinook strategic planning initiative will likely inform future management approaches for Fraser River Spring and Summer 5₂ Chinook.

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 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. From that time to 2013, Canadian fisheries impacting these stocks were curtailed to limit the exploitation rate to 2 to 3 percent (currently 3 percent or less), with an additional 10 percent permitted in US fisheries (as per the Pacific Salmon Treaty management regime). Escapements from 2008 through 2013 increased. However, in 2014 and 2015, escapements and total returns were well below expectations, with poor marine conditions assumed to be an important contributing factor. 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 in the relatively high productivity period of 1978-1993.

The *Conservation Strategy for Coho Salmon (Oncorhynchus kisutch), Interior Fraser River Populations* (October 2006) 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:

1. Short Term Objective 1: 3 year geometric mean¹ 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
2. 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 importance (through heavier weighting) of smaller escapements to genetic diversity.)

For fishery 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 currently undergoing a review by CSAS.

Management measures for Interior Fraser River coho are generally in place 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 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 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.

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 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 as outlined in the Fraser sockeye escapement plan (see Section 13 – Southern Sockeye Salmon Fishing Plan under Fraser Sockeye section).

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 will be 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

The recovery objectives as outlined in the *National Conservation Strategy for Cultus Lake Sockeye Salmon (Oncorhynchus nerka)* (Cultus Lake sockeye Recovery Team, 2009) can be found online at: <http://www.dfo-mpo.gc.ca/Library/337479.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.

Work is underway 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. Annual genetic analysis on Cultus Lake sockeye has demonstrated that genetic diversity in the population has been retained throughout the period of critically low abundance by the combined contributions of natural and hatchery spawning adults, especially due to the captive brood component of hatchery production. This diversity will be maintained in the absence of captive breeding only if abundance is increased to lower abundance benchmark

levels at greater than current rates; continued low escapements into the future could lead to extirpation of the population.

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.

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 2016 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 upper 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 in Johnstone Strait and until August 15 in the northern Strait of Georgia.
- Recreational fisheries in Queen Charlotte Strait, Johnstone Strait, and upper 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 upper 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 2015, 695 (462 captive brood origin and 233 natural spawner origin) adults and 26 jacks (20 captive brood origin and 6 natural spawner origin) sockeye returned to Sakinaw Lake, coming from a smolt count of 252,535 (224.5K captive brood origin and 28K natural spawner origin) in 2013. The combined marine survival estimate of 0.28% is a continued concern (Marine survival estimate of the captive brood origin fish was a very low 0.2%, but marine survival of natural spawner origin was 0.83%) The expectation for 2016 is for a lower number of adults due to a lower number of smolts (126,000) contributing to the return.

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. The escapements in 2012 and 2013 were similar around 73,000 sockeye. The most recent escapement estimate in 2014 is 112,000 sockeye. The 2015 estimate has not been completed at this time. 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

The objective for Interior Fraser River steelhead is to minimize the impact of Canadian fisheries managed by DFO, taking into account conservation concerns for these populations.

Based on the management framework developed by the province and endorsed by DFO, the limit reference point (LRP) for minimum spawning escapements identified for the Thompson and Chilcotin River steelhead groups is 1250 fish. Monitoring of stock abundance will continue.

There are ongoing discussions between DFO and the Province about potential fisheries for harvesting Fraser River chum consistent with the Interior Fraser River steelhead management objective. Additionally, a tri-partite First Nations / Canada, / B.C. Thompson Steelhead Committee has been in operation in recent years, serving as a forum for discussions and analysis related to stock recovery and management.

For Fraser River commercial gill net fisheries, the strategy will be to protect 80% of the Interior Fraser River steelhead run with a high degree of certainty. In addition, other commercial south coast fisheries are to release to the water with the least possible harm all steelhead caught incidentally in fisheries targeting other species.

The Department will continue to engage with the Province, First Nations and stakeholders on objectives and strategies for addressing steelhead impacts in fisheries.

6.10 Inshore Rockfish

The management objective for 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. The most recent additions were implemented February 1, 2007 in the Strait of Georgia area. Fish harvesters are reminded prior to fishing to check with the local DFO office to verify RCA and other closures currently in effect. A description of all RCAs can be found at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/maps-cartes/rca-acs/index-eng.htm>.

Consultations with First Nations will continue so that management of their fisheries will be consistent with conservation objectives and Departmental obligations with respect to priority access for food, social, and ceremonial purposes.

7 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>

Table 7-1 describes a generalized framework by which fishing opportunities are allocated to different fishing groups at different abundance levels.

Table 7-1: Allocation guidelines

	Low Abundance		High Abundance		
First Nations FSC	Non-retention / closed	By-catch Retention	Directed	Directed	Directed
Recreational	Non-retention / closed	Non-retention	By-catch Retention	Directed	Directed
Commercial	Non-retention / closed	Non-retention	By-catch Retention	By-catch 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 of concern is referred to as *by-catch*. 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 *by-catch* 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 by-catch/incidental harvest allocations. However, the Department does not allocate by-catch 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 by-catch 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).

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 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.

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.

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

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

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.

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*.

In addition to fishing opportunities for FSC purposes, DFO acknowledges that in *Ahousaht Indian Band et al. v. Canada and British Columbia*, the courts found that five Nuu-chah-nulth

First Nations located on the West Coast of Vancouver Island - Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht – have “aboriginal rights to fish for any species of fish within their Fishing Territories and to sell that fish, with the exception of geoduck”. The Department is actively working with the First Nations to accommodate their rights without jeopardizing Canada’s legislative objectives and societal interests in regulating the fishery.”

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.

The Department is continuing to work with First Nations to develop information summaries to inform specific performance measures for incorporation in the future.

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.

8 COMPLIANCE PLAN

8.1 Compliance Management Objectives

Conservation and Protection Program Description

The Conservation and Protection (C&P) program promotes and maintains compliance with legislation, regulations and management measures implemented to achieve the conservation and sustainable use of Canada’s aquatic resources, and the protection of species at risk, fish habitat and oceans.

The program is delivered through a balanced regulatory management and enforcement approach including:

- promotion of compliance through education and shared stewardship;

- monitoring, control and surveillance activities;
- Management of major cases /special investigations in relation to complex compliance issues.

In carrying out activities associated with the management of Pacific salmon as outlined in this management plan, C&P will utilize principle-based approaches and practices which are consistent with the National Compliance Framework and the DFO Compliance Model.

8.2 Regional Compliance Program Delivery

For the salmon fisheries in the Pacific Region, C&P will be utilizing a broad scope of tools and approaches to manage compliance towards achieving conservation and sustainability objectives, including:

- Maintain and develop relationships with First Nations communities, recreational groups and commercial interests through dialogue, education and shared stewardship.
- Intelligence-led investigations may specifically target repeat and more serious offenders for increased effectiveness of enforcement effort. Illegal sales of salmon will continue to be a regional priority.
- Prioritize enforcement efforts on measures directed towards conservation objectives.
- Fish habitat protection remains a key focus of fishery officer efforts coordinated regionally by the Fisheries Protection Program.
- Utilize ‘Integrated Risk Management’ to ensure fishery officer efforts are focused and directed at problems of highest risk.
- Continue high profile fishery officer presence through patrols by vehicle, vessel and aircraft to detect and deter violators.
- Monitor and support at-sea observers and dockside monitors to ensure accurate catch monitoring and reporting.
- Support traceability initiatives within the salmon fishery to enhance accountability. Monitor and verify catches and offloads of salmon to ensure accurate and timely catch reporting and accounting, including coverage of Dual Fishing opportunities.
- Priorities and direct compliance efforts where there is a risk to salmon stocks of concern.
- Use of enhanced surveillance techniques, and new available technology as well as covert surveillance techniques as a means to detect violations and gather evidence in fisheries of concern.
- Patrols during open timed fisheries to increase intelligence gathering, build relationships with stakeholders and ensure compliance to licence conditions.
- Inspect fish processors, cold storage facilities, restaurants and retail outlets for compliant product.
- Maintain a violation reporting 24-hour hotline to facilitate the reporting of violations.
- Continue to promote ‘Restorative Justice’ principles in all fisheries.

8.3 Consultation

C&P works closely within the Fisheries and Aquaculture Management sector and the Fisheries Protection Program to ensure that fishery management plans are enforceable and implemented in a controlled, fair manner and that habitat is protected. C&P has a multi-faceted role as educator, referee, mediator and law enforcer.

C&P participates on a regular basis in consultations with the fishing community and general public. Education, information and shared stewardship are a foundation of C&P efforts. C&P participates in all levels of the advisory process. The importance of local field level fishery officer input to these programs has proven invaluable and will continue.

C&P will continue meeting at the local level with individual First Nations, through the fishery officer First Nation Liaison Program and with First Nations planning committee meetings that involve many First Nations' communities at one time.

C&P officers participate in local fishery management 'roundtables' and sport fishery recreational advisory committees in their respective areas and participate at Sport Fishery Advisory Board meetings.

Fishery officers are viewed as the public face of the department. During their day-to-day activities, the fishing community and general public provide comment and input that is promptly communicated to C&P managers, fisheries managers and habitat management staff. This public feedback is critical in identifying issues of concern and providing accurate feedback on emerging issues.

8.4 Compliance Strategy

In 2016, specific objectives for the salmon fishery will be to focus compliance management efforts on:

- Support development and implementation of the Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries.
- Monitoring in-river and in marine approach waters using intelligence to target priority fisheries and compliance issues.
- Work with stakeholders to improve regulatory compliance.

Salmon fishery compliance continues to be a priority for C&P for 2016. There are, however, other competing priorities such as supporting the Fisheries Protection Program in protecting habitat, the Canadian Shellfish Sanitation Program, and the protection of Species at Risk. These priorities often occur during the same periods as the salmon fisheries.

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 ensures that resources are allocated appropriately. Resource utilization is dependent on availability of program funding.

9 PERFORMANCE/EVALUATION CRITERIA

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 (e.g. 2015 season) follow below:

9.1 2015/2016 Post Season Review for Stocks of Concern

NOTE: The objectives shown in bold below is the wording from the 2015/16 Integrated Fisheries Management Plan.

9.1.1 Lower Strait of Georgia Chinook

2015/2016: The objective for Lower Strait of Georgia (LGS) chinook was to reduce fishery exploitation in known areas of significant impact.

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

In 2015, chinook return to the Cowichan River was similar to recent years. The preliminary estimated return was 7,000 (all ages) including 421 brood stock taken for the Cowichan River Hatchery. Approximately 75% of the spawners are age 3+ ('adults') and the other 25% are age 2 ('jacks' and 'jills'). This level of return is in the WSP amber zone. The upper WSP abundance benchmark (Smsy: spawners at maximum sustained yield) is 6,500 adults and the lower benchmark (Sgen: spawners required to get to Smsy within 1 cycle) is approximately 1,300 chinook.

For the Cowichan indicator stock, the most recent 5 year (2010-2014) average total fishery mortality is 63% (range 53%-68%) including an average of 43% (range 31%-57%) in Canadian ocean fisheries, 13% (range 7-16%) in US fisheries, and an average 7% (range 4-18%) in all terminal river fisheries. Cowichan Chinook are regularly caught in rivers other than the Cowichan River.

Assessment of fishery exploitation in 2015 will not be completed until April 2016.

The preliminary estimate for Nanaimo River fall run chinook return in 2015 is 3,000-3,500.

9.1.2 West Coast of Vancouver Island (WCVI) Chinook

2015/2016: 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 2015 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. Additional conservation measures included the '2 chinook per day under 77 cm maximum size limit', imposed within the 1-mile surfline corridor of the near-shore WCVI to protect the large female WCVI origin chinook. 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.

2015 escapement estimates for extensively surveyed WCVI streams are not completed yet. The post-season exploitation rate estimates for Canadian ocean fisheries are not yet available.

9.1.3 Fraser River Spring 4₂ Chinook

2015/2016: The objective for Fraser Spring 4₂ chinook was to conserve these populations by continuing to minimize incidental harvests in Canadian ocean fisheries. For directed fisheries in the Fraser River, the objective is to minimize directed harvests of Spring 4₂ chinook until July 15th. Fisheries beginning July 15th were to be managed consistent with the management zone identified for Fraser Spring 5₂ and Summer 5₂ chinook given timing overlaps between these populations for much of the adult migration period.

In 2015 specific fishery management actions were implemented to protect the Spring 4₂ 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 4₂ management unit is Nicola River.

The 2015 CWT Cohort analysis that provides information on total fishing mortalities is not yet available.

The spawner abundance for the aggregate (excluding Bonaparte) was approximately 5,650 chinook compared with 2,230 in the brood year. The escapement estimate for the Nicola indicator stock was 4,693 based on an intensive mark-recapture study.

9.1.4 Fraser Spring 5₂ and Summer 5₂ Chinook

2015/2016: The objective for Fraser Spring 5₂ and Summer (age 5₂) chinook was to conserve these populations consistent with the management zones outlined below.

The abundance of Spring and Summer 5₂ chinook returning to the Fraser River is estimated in-season based on chinook catch observed in the Albion test fishery. In 2015, the combined Spring and Summer 5₂ aggregate terminal run size was estimated at 48,880 chinook (95% PI: 34,000 to 71,000). This estimate, provided on June 15th, resulted in a Zone 2 management approach.

The post-season terminal run size estimate (based on outputs from the Fraser River Run Reconstruction model) is not yet available.

The preliminary 2015 index of spawning escapement, as enumerated using various stock assessment techniques, was approximately 55,000 chinook; an increase from the 2010 brood year spawning escapement index of 46,800. 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

2015/2016: The objective for Interior Fraser River coho (including Thompson River coho) was to limit Canadian fisheries to an exploitation rate to 10% or less.

This information to update this section will not be available until late March. This section will be updated in the final version of the IFMP.

The final in-season exploitation rate estimate of total returns and the total Canadian exploitation in southern BC fisheries on Interior Fraser coho for 2015 is not yet available. The spawning escapement estimate of Interior Fraser River coho salmon for 2015 was 12,436 much lower than the brood escapement of 54,365 in 2012. The 3 year geometric mean spawner abundance for 2013-2015 was 23,639; just above the 20,000 short term conservation objective.

9.1.1 Cultus Lake Sockeye

2015/2016: Cultus Lake Sockeye were to be managed within the constraints of the exploitation rate identified for the Late Run aggregate. The maximum allowable exploitation rate for Cultus Lake Sockeye was be the greater of a) the low abundance exploitation rate 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 was intended to allow for fisheries on more abundant co-migrating stocks. For Late Run sockeye, management was based on an abundance-based Total Allowable Mortality as outlined in the Fraser sockeye escapement plan.

The preliminary 2015 post-season exploitation rate estimate for Cultus Lake sockeye is well under 10%. This estimate may change dependent on post season run size assessment evaluations. The preliminary escapement estimate to the Sweltzer fence of 1,407 Cultus Lake sockeye (1,220 through the fence plus 196 kept for broodstock) is approximately 20% of the brood year escapement of 7,464 (including broodstock).

9.1.2 Sakinaw Lake Sockeye

2015/2016: 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. 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.

Table 9-1: 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	
2011	550	963	224,600	28,000	2015
2012	243	856	121,500	4,400	2016
2013	114	320	16,500	600	2017
2014	452	645			2018
2015	695				2019

9.1.3 Nimpkish Sockeye

2015/2016: The objective was to minimize the impact of Canadian fisheries during periods of low abundance.

In 2015, DFO 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. There are plans to continue the development of this assessment program into the future. As an educational tool for member youth, the Namgis First Nation conducted a drag seine fishery in the lower river. They harvested less than 500 sockeye for FSC requirements in 2015.

In 2015, there were no directed commercial and recreational Fraser River sockeye fisheries in Johnstone Strait and Queen Charlotte Strait. Limited First Nations FSC sockeye harvest occurred due to poor sockeye returns to the Fraser River. The marine FSC fishery opened for sockeye retention in Johnstone Strait and Queen Charlotte Strait on July 25, 2015 and closed to sockeye retention on August 12, 2015. In order to protect Nimpkish River sockeye, First Nations fisheries targeting Fraser River sockeye were restricted to the waters south of Lewis Point on Vancouver Island until the end of July. 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. Additionally, it is likely that further protection of Nimpkish sockeye occurred as the majority of the FSC sockeye harvest occurred just prior to the closure of sockeye retention in FSC fisheries.

Final evaluation of the Nimpkish return in 2015 has not been completed (due to the implementation of the new program), but preliminary results show escapements above average and likely similar to the 2012 brood year.

9.1.4 Interior Fraser River Steelhead

2015/2016: The objective for Interior Fraser River steelhead was to minimize the impact of Canadian fisheries and to increase spawner abundance.

Weak sockeye salmon returns to the Fraser River in 2015 restricted First Nations FSC, recreational, and commercial opportunities. Lower than expected pink salmon returns to the Fraser River in 2015 restricted First Nation FSC, recreational, and commercial opportunities. Returns of chum to Southern BC were strong in 2015. Commercial chum fisheries occurred in Johnstone Strait, and in terminal areas on Vancouver Island. Strong returns of chum were observed within the Fraser River, triggering First Nations FSC, recreational and commercial chum fisheries. A comprehensive evaluation of the impacts of these fisheries on Interior Fraser Steelhead is not available at this time.

With respect to management measures in the in-river, commercial gillnet fleet aimed at protecting 80% of the run with a high degree of certainty, DFO assessment demonstrates that the actual 2015 fishing plan protected 80 % of the run with a certainty level ranging from 78% to 100% (range depending on assumptions regarding migration timing through the Lower Fraser area in which the gillnet fleet operates).

The most recent escapement information available for Interior Fraser Steelhead is shown in Figure 9-2. In-season information provided on November 2, 2015 indicated that the 2015 escapement (2016 spawners) to the Thompson steelhead group would be 400, less than the Provincial management target of 850 fish.

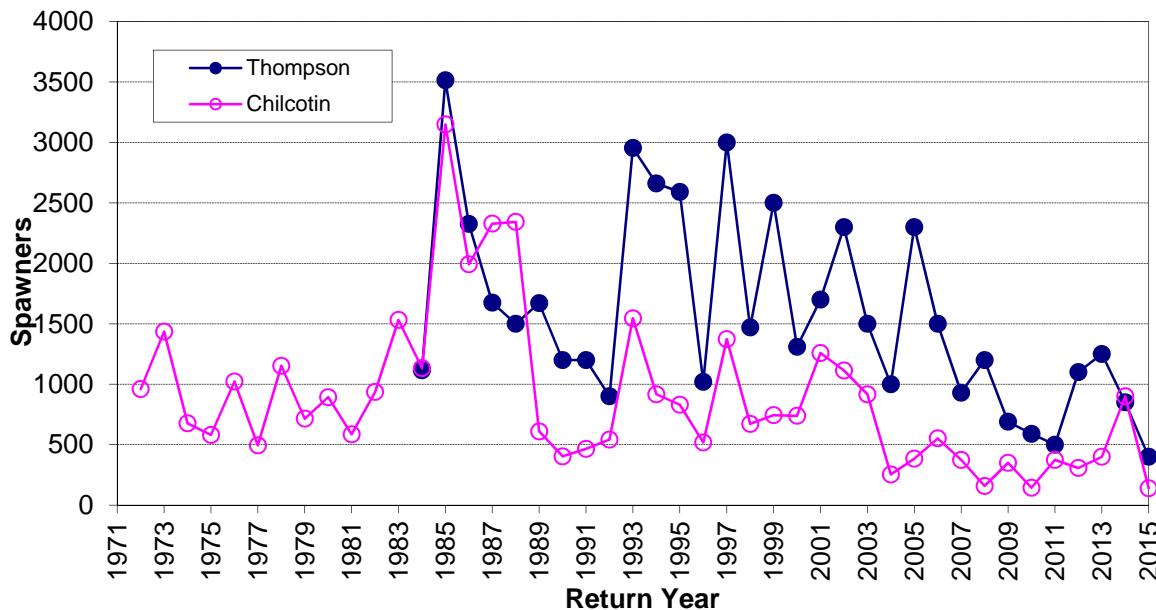


Figure 9-1: Historic trend of Interior Fraser Steelhead spawner abundance*

*2015 data is preliminary at this time.

9.1.5 Inshore Rockfish

2015/2016: The management objective for inshore rockfish species (which include yelloweye, quillback, copper, china and tiger) was to continue conservation strategies that will ensure stock rebuilding over time.

To ensure stock rebuilding over time, Rockfish Conservation Areas (RCA's, no fishing zones for gear that impact on rockfish), have been implemented within the Strait of Georgia and in all outside waters including the Queen Charlotte Islands. The conservation strategy for rockfish along the coast of British Columbia is long term. Rockfish are a long-lived species with a low level of productivity and therefore rebuilding will take several decades.

First Nations are encouraged to employ fishing methods or fish in locations to avoid the harvest of inshore rockfish. First Nations fishing for food, social and ceremonial purposes is permitted in RCAs. Post Season Review of Access and Allocation Objectives

9.1.6 International Objectives

2015/2016: 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>

9.1.7 Domestic Allocation Objectives

2015/2016: The objective is to manage fisheries in a manner that is consistent with the Allocation Policy for Pacific Salmon and the 2012 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.

9.1.8 First Nation Objectives

2015/2016: 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.

DFO continued to consult and negotiate with the Ahousaht, Ehattesaht, Hesquiaht, Mowachaht/Muchalaht, and Tla-o-qui-aht First Nations pursuant to the rights found by the courts, to find "the manner in which their rights can be accommodated and exercised without jeopardizing Canada's legislative objectives and societal interests in regulating the fishery." In 2015, salmon demonstration fisheries were conducted in the T'aaq-wiihak fishing area on the West Coast of Vancouver Island for AABM chinook and ISBM chinook (e.g. Conuma and Burman in Area 25) chinook and with some incidental retention of other species.

Harvest opportunities for First Nations FSC fisheries in the South Coast and Fraser River in 2015 in many cases did not meet expectations and were affected by conservation measures that restricted opportunities. As in recent years, restrictions were implemented to protect 90% of the Early Stuart component through a series of window closures 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.

9.1.9 Recreational and Commercial Objectives

2015/2016: 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, the objective to improve the economic performance of fisheries so that they can reach their full potential, to provide certainty to participants, and to optimize harvest opportunities was achieved due to generally higher than forecast levels on some stocks.

9.2 Post Season Review Compliance Management Objectives

Inspections are carried out on vessels, buying stations, processors, transporters, cold storage facilities and brokers. The results of the inspections and the effort consumed are recorded in a database. This information is reviewed to evaluate whether compliance objectives have been met and if the compliance strategies were effective. Narrative information is also collected and shared. Compliance rates are calculated for each area and fishery but it must be recognized that these are subjective. Using the information collected in-season and during post-season activities, priorities are revalidated and adjustments made as necessary.

10 SOUTHERN BC / FRASER RIVER FIRST NATIONS FISHERIES

10.1 Catch Monitoring and Reporting Initiatives

The Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries (see Section 1.6.4) is being applied in First Nation FSC fisheries across the region including First Nation FSC fisheries. Work towards this includes assessing current monitoring practices, programs and gaps. 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 Nation Band offices.

10.1.1 First Nations Electronic Reporting 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. The electronic 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 licencing system, allowing First Nations to track FSC catch and other fishing information for their members.

The ultimate goal of this initiative is to improve the efficiency and accuracy of reporting FSC catch and other fishing information to the Department.

Since its beginnings as a Microsoft Access program, the database expanded to other 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. Work on this new system is ongoing and the expected completion date of a production release is early 2017. Currently 3 Nations are using the new AHMS system as a pilot program. FSC data is now being collected by DFO in the FSC Managers Database as an interim measure until the Regional FSC database is completed.

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

10.1.2 Chinook and Coho Coded Wire Tag (CWT Sampling) – Salmon Head Recovery Program

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. Sample the entire catch and collect all heads that contain CWTs from the entire catch of randomly selected landings or at fish processing plants using designated observers, 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. All hatchery-marked chinook and coho do not 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, one label may be placed in a sealed bag with multiple heads.
3. Provision of catch information (# 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. Catch information 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,
Phone: Salmon Head Recovery Program 1-866-483-9994 (toll-free)

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 10-1 below. Actual opportunities and catches will be dependent on, among other factors; in-season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

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

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

Table 10-1: Communal Licence Harvest Target Amounts

	South Coast First Nations *	Lower Fraser Area First Nations * #	Mid/Upper Fraser First Nations	Total
Sockeye:				
· Fraser River	266,850	434,000	350,000	1,050,850
· Non-Fraser River	15600**	0	20,000	35,600
Coho	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 possible where IFR coho are present.			
Pink	48,850	124,800	500	174,150
Chum	139,000	91,300	500	230,800
Chinook	26,760	25,300	18,000	70,060
Total Salmon	497,060	675,400	389,000	1,561,460

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

#Note: these harvest targets are initial amounts prior to a 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-us 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, 479 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 similar rules to 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. For 2016, 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 similar rules 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 Section 13 – Species Specific Salmon Fishing Plans.

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. A series of similar meetings is expected to occur in January, March and April 2016. 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 Nation 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 Nation Treaties came into effect on April 3, 2009 and April 1, 2011, respectively. The Tla’amin First Nation Treaty will come 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 Nation 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>

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.

For more information, the legal description of the Tla’amin Fishing Area can be accessed through the Appendix N-1 at: <http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-negotiations/first-nations-a-z-listing/tla-amin-nation-sliammon-first-nation>

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.

11 SOUTHERN BC / FRASER RIVER RECREATIONAL FISHERIES

Recreational fishing opportunities for salmon are regulated by the *British Columbia Sport Fishing Regulations, 1996* made under the *Fisheries Act*. The regulations are generally summarized in the *British Columbia Sport Fishing Guide*.

In addition, detailed information on tidal and freshwater salmon sport fishing regulations is found online at www.bcsportfishingguide.ca

To sign up to have recreational fishery notices sent directly to your email, please visit our website, there is a link to subscribe to fishery notices on the right hand side of the page.

A Vision for Recreational Fisheries in British Columbia was developed cooperatively by DFO, the Province of BC and the SFAB. 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 is available at:

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

11.1 Proposed Changes to Recreation Fisheries for 2016/2017

The following represents a list of proposed changes to recreational fisheries for the upcoming year. This information is subject to change in-season if additional conservation concerns arise or if additional recreational opportunities become available. Changes will be communicated through Fishery Notices, media reports, telephone information lines and/or postings on the Pacific Region Fisheries and Oceans Canada website at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.html>

11.1.1 Tidal Waters

Areas 11 to 13: Wild coho opportunities may be permitted in these Areas, though anticipate greater restrictions than in 2014 and 2015; changes to fishery management actions will be announced by Fishery Notice.

Areas 23 to 27: Some wild coho retention opportunities in inshore WCVI areas are planned for local WCVI coho; limits may be reduced compared to recent years given expectations for lower abundance.

Chinook DNA sampling programs will be continuing in 2016 as part of a 3 year study and the Department will be reviewing and assessing these data. The Department will consult with the SFAB on any potential future changes.

Area 29 (Fraser River Mouth: Subareas 29-6, 29-7, 29-9, and 29-10): Management measures designed to protect Fraser bound chinook salmon have been implemented to better align with in-river management actions. You may not retain chinook salmon in these Subareas effective

March 1, 2016. The end date of this management action will be announced via a Fishery Notice and will be dependent on in-season information from the Albion Test Fishery.

11.1.2 Non-Tidal Waters

Region 2:

- **Squamish River** – The daily limit for chum salmon is planned to be one per day from November 1 to November 30th, subject to further consultation with local SFAC.

11.2 Catch Monitoring and Reporting Initiatives

The SFAB has been working with DFO on initiatives to strengthen fishery monitoring and catch reporting in the recreational fishery a plan has been developed to meet the objectives of the Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries (see sec. 1.6.4). Creel surveys for boat based angling in marine waters are the main source of recreational catch and effort information in the highest risk fisheries.

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. This requirement also includes responding to email requests through the iREC survey.

Recreational harvesters may be requested by a Fishery Officer or designated DFO representative, such as a creel interviewer or an internet survey, to provide catch and effort information or biological samples either on the water or at the dock. The information is used to estimate boat based angling harvest of finfish in marine waters and salmon in fresh waters throughout B.C.

In addition to creel surveys, a variety of other catch reporting programs are being conducted. The Department is continuing to conduct the monthly Internet Recreational Effort and Catch (iREC) survey, which began in July 2012. 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. Information on the iREC survey is available at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/irec/index-eng.html>

A separate online survey conducted annually requests catch records of 20,000 licence holders. In this survey, referred to as the Internet Annual Recreational Catch (iARC) 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 working with sport fishing guides, associations, and the Sport Fishing Institute of B.C. to implement logbooks in areas of highest risk or areas conducive to reporting through 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 capture catch and other fishing information and to report this information to the Department. Data captured and sent is retained by the client for reference and is sent to DFO for further analysis. Depending on your location and business needs, there are up to three components to the Rec E-Log.

- 1) 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 each boats 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. As well summary data can be entered. 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.

The development of the on-water or mobile component continues to be refined in partnership with the Sport Fishing Institute. A ‘fisher app’ is in initial stages of development which will provide mobile access to Fishery Notices, maps, the fishing guide, and more.

The development of an improved catch monitoring regime will continue to be a priority in the management of recreational fisheries. Fisheries and Oceans Canada is working with the Sport Fishing Institute of B.C. and Sport Fishing Advisory Boards to develop catch monitoring and reporting standards for the recreational fishery.

In 2015, 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: BC Tidal water number of fisher records of catch

Item	Number obtained in 2015
Creel survey interviews	17,663
iREC & iARC survey responses	31,592 & 4,738
Guide logs	6,060

11.2.1 Chinook and Coho Wire Tag (CWT) Sampling – Recreational Fisheries Salmon Head Recovery Program

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, all hatchery-marked chinook and coho do not 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, one label may be placed in a sealed bag with multiple heads.
- Provision of catch information (# 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. Catch information 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:

PHONE: Salmon Head Recovery Program 1-866-483-9994 (toll-free)

SEARCH: DFO Salmon Head Recovery

11.2.2 Recreational Electronic Logbooks

The development of an improved catch monitoring regime will continue to be a priority in the management of recreational fisheries. Fisheries and Oceans Canada is working with the Sport Fishing Institute of B.C. and Sport Fishing Advisory Boards to develop catch monitoring and reporting standards for the recreational fishery.

Since 2007 the Department has been working with Sport Fishing Institute of B.C., a number of Resorts and a number of Recreational fishers, to develop a Recreational Electronic Logbook (Rec E-Log) as a tool to capture catch and other fishing information and a tool to report this information to the Department. Data captured and sent is retained by the client for reference and is sent to DFO for further analysis. Depending on your location and business needs, there are up to three components to the Rec E-Log.

- 4) 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.
- 5) Dockside Component – Captures catch and other fishing information at the dock as fishers and guides return from fishing.
- 6) 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 2016/17, 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 / FRASER RIVER COMMERCIAL FISHERIES

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.

The Department finalized the “Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries” in 2012. The paper outlines a consistent approach to determining the level of monitoring required for all fisheries. Key components of the framework include the development of standardized criteria to be used to determine the required level of monitoring for all Pacific fisheries. The application of the criteria is based on the level of risk the fishery presents to the resource and management regime.

The proposed criteria will be used in discussions with commercial, aboriginal and recreational fisheries harvesters to determine specific monitoring objectives.

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 pilot programs were developed to address deficiencies that have been identified with the minimum requirements. These pilot programs will continue in 2016 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, the key fisheries identified for the pilots at this time are listed below. Competitive (full-fleet) fisheries will be expected to implement pilot catch monitoring programs in the following areas:

Area D Gill net: sockeye (Johnstone Strait), Area E Gill net: sockeye (Fraser River), Area G Troll: chinook (WCVI). Details on the catch monitoring programs are being discussed with Area Harvest Committee representatives and will be communicated via Fisheries Notices and the 2016 Conditions of Licence.

12.2 Mandatory Coded Wire Tag (CWT) Sampling

Sampling for CWTs is a mandatory catch monitoring requirement for commercial chinook and coho retention fisheries that intercept CWT indicator stocks. Fisheries and Oceans Canada will use designated observers (federally-contracted Mark Recovery Program (MRP) CWT samplers to sample the entire catch from randomly selected vessels at fish landing stations or processors using electronic detection equipment or visual protocols.

CWT target sample rates are established to meet bilateral Pacific Salmon Treaty standards for statistically significant data. The minimum required sample rate is 20% of the estimated catch for troll and mixed stock net fisheries and terminal net fisheries. 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.

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 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 Area G troll licences, unless the license is listed in a fisheries notice that identifies the Area G troll licenses that are exempted from retaining salmon heads during the 2016 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
- (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.

Because of the small number of vessels in Area G that freeze their catch at sea, 100% of the Area G troll fleet have been required to retain salmon heads in past fishing seasons. In 2016, the Department may adjust this requirement by introducing exemptions to reduce the number of vessels required to retain salmon heads while still ensuring that target sample rates are met.

For complete head retention requirements, trollers freezing their catch 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 by-catch 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. Reports on previous demonstration fisheries can be found on-line at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/species-espèces/salmon-saumon/pol/index-eng.html>

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 as well as further detail on recommendations approved and items for further discussion are outlined in Appendix 6 of this plan.

Commercial Allocation Implementation Plan for the 2015 – 2019 period

Shares will 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 be considered if circumstances warrant 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 Nation 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 areas have been approved 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% ^a	20% ^b	*
Rivers/Smiths Inlets	9 to 10	5%	95%	^c

Notes on sockeye allocation (north):

^aby-catch provisions

^bshare reflects current sockeye by-catch during pink directed fisheries

^cpotential for re-negotiation of sharing arrangements in event of a future directed sockeye fishery

^dpotential 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% ^c	0.0%
South - Fraser	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0.0% ^d	4.8%

Notes on sockeye allocation (south):

^cpotential for future re-negotiation

^da 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% ^a	2.0%
Central	6 to 10	95.0%	5.0% ^b	*

Notes on pink allocations (north):

^aby-catch provision

^bSkeena sharing 75% seine: 25% gillnet

^cpotential for future re-negotiation

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
Fraser	11 to 20, 29, 121, 123 to 127	82.5%	4.0% *	3.0% *	0.5% ^c	10.0%
Mainland	12 to 13 (mainland inlets only)	73.0%	9.0%	0.0%	0.0%	18.0%

Notes on pink allocations (south):

*pink by-catch provision required for fisheries on more abundant species

^cpotential for future re-negotiation. Pink by-catch required for fisheries on more abundant species

<<NEW PRODUCTION AREA STARTING 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% ^a
North	3 to 5	55.0% ^b	45.0% ^b	*
Central	6 to 10	45.0% ^c	55.0%	*

Notes on chum allocations (north):

^brecent chum non-retention; fishery allows by-catch of chum only

^ccurrently chum non-retention

^aby-catch 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% ^d	98.0%	0.0%	2.0%	0.0%

Notes on chum allocations (south):

^aby-catch provision

^dpotential 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% ^b	0.0%

Notes on coho allocations (south):

^aTBD currently no directed fisheries in this area. Will be reviewed should future directed opportunity develop.

Principles to be drafted regarding how to distribute impacts.

^bcoho 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% ^a
Central	6 to 10	*	100.0% ^b	* ^c

<< NEW PRODUCTION AREA STARTING IN 2015 >>

North-Inside	3 to 5	*	100.0% ^d	*
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Notes on chinook allocations (north):

^aby-catch provisions

^bNorthern BC AABM chinook harvest

^cnear-terminal fisheries (primarily hatchery origin)

^dreview potential re-entry of troll into Production Areas 6 + 7. By-catch provisions

^eby-catch provision and near-terminal directed fisheries (e.g. Skeena)

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South- Inside	11 to 20, 29	1.0% ^e	3.0%	90.0% ^f	0.0%	6.0%
South - WCVI AABM Chinook	21, 23 to 27, 121 to 127	*	*	0.0%	100.0% ^g	0.0%

<< NEW PRODUCTION AREA STARTING IN 2015 >>

South- WCVI Inside	21 to 27	5.0% ^h	75.0% ⁱ	5.0% ⁱ	15.0% ^j	0.0%
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Notes on chinook allocations (south):

^esubject review pending completion of southern BC chinook initiative

^fdirected Fraser chinook fishery

^gthis is WCVI AABM chinook fishery

^hArea 23 sharing arrangement currently 33.3% seine: 66.7% gill net. May need to review

ⁱArea 25 fishery (potential for future review. 75% fishery to D (e.g. Conuma Bay fishery); potential 5% to E if future surplus at Nitinat; otherwise default to D)

^jwinter troll fishery

12.5 Test Fishing

DFO uses a range of methodologies to determine in-season stock abundance and composition. Historically, test fisheries have played an essential role in collecting the data necessary to set user TACs and to ensure that conservation objectives are met. Since the 1980's, the Minister of Fisheries and Oceans regularly assisted industry to finance their part of collaborative science and management activities through use-of-fish arrangements. This ended in June 2006 when the Federal Court of Appeal ruled that the Minister of Fisheries and Oceans did not have this authority under the existing Fisheries Act. To avoid significant disruption of the most critical collaborative science activities (where allocation of fish had been a key component), \$58 Million of relief funding over 5 years (2007-2012) was provided while a new legislative authority was established. In 2012, an amendment to the Fisheries Act granted the Minister the authority to allocate fish for financing purposes.

DFO adopted a two track approach and will collaborate with First Nations and stakeholders to implement the new regulatory authority.

Track one includes 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 2.

Track two includes 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 list below (Table 12-1) outlines the Southern B.C. salmon projects proposed for 2016. These include: 9 Fraser Panel projects for Fraser River sockeye and pink; Albion chinook/chum gillnet; Skeena gillnet all species, Johnstone Strait chum seine and Barkley Sound sockeye seine. Note that due to weak anticipated returns for Fraser sockeye in 2016, the Fraser Panel is considering a reduced program, which is depicted in Table 12-1 below.

The Department is also considering Use of Fish arrangements for a proposed chinook assessment fishery on the Brooks Peninsula – please refer to WCVI AABM chinook section in the Section 13 – Southern Chinook Salmon Fishing Plan.

Table 12-1: 2016 Proposed Test Fisheries

Test Fisheries, Southern B.C. Salmon	Proposed Proponent	Test Fishery Purpose	Potential dates (regular program - preliminary ^a)		Potential dates (reduced sx program -		Advisory proces ^b
			Start Date	End Date	Start Date	End Date	
Area 20 GN	PSC Secr.	Fraser Sockeye / Pink	01-Jul	15-Aug	11-Jul	10-Aug	Fraser Panel (primary) FN Fr. Forum / IHPC
Area 20 SN	PSC Secr.	Fraser Sockeye / Pink	20-Jul	25-Aug	22-Jul	12-Aug	Fraser Panel (primary) FN Fr. Forum / IHPC
Cottonwood GN	PSC Secr.	Fraser Sockeye / Pink	11-Jul	15-Sep	07-Jul	01-Sep	Fraser Panel (primary) FN Fr. Forum / IHPC
Whonnock GN	PSC Secr.	Fraser Sockeye / Pink	20-Jun	30-Sep	30-Jul	15-Aug	Fraser Panel (primary) FN Fr. Forum / IHPC
Gull TR	PSC Secr.	Fraser Sockeye / Pink	NA	NA	NA	NA	Fraser Panel (primary) FN Fr. Forum / IHPC
Area 12 SN	TBD	Fraser Sockeye / Pink	20-Jul	25-Aug	21-Jul	12-Aug	Fraser Panel (primary) FN Fr. Forum / IHPC
Area 13 SN	TBD	Fraser Sockeye / Pink	20-Jul	25-Aug	TBD	TBD	Fraser Panel (primary) FN Fr. Forum / IHPC
Round Island Ck GN	TBD	Fraser Sockeye / Pink	09-Jul	15-Aug	11-Jul	10-Aug	Fraser Panel (primary) FN Fr. Forum / IHPC
Naka Ck GN	TBD	Fraser Sockeye / Pink	09-Jul	31-Jul	TBD	TBD	Fraser Panel (primary) FN Fr. Forum / IHPC
Mission GN ^d	PSC Secr.	Fraser Sockeye / Pink					
Qualark	PSC Secr.	Fraser Sockeye / Pink	01-Jul	31-Aug	01-Jul	31-Jul	Fraser Panel (primary) FN Fr. Forum / IHPC
Albion GN	3-way	Fraser	24-Apr	23-Nov			FN Fr. Forum / IHPC
Area 12 SN	Namgis / Atlegay	Mixed Stock Chum	12-Sep	30-Oct			FN Fr. Forum / IHPC
Barkley Sound SN	Hupacasath / Tseshaht	Somass Sockeye	May	June			A23 Round Table (primary) IHPC
Brooks Peninsula	TBD	WCVI Chinook	15-Jul	31-Aug			Nuu-chah-nulth / Area G /IHPC

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

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

^c FN Fr. Forum = First Nations Forum on Conservation and Harvest Planning

^d Not anticipated to operate in 2015

^e 3-way arrangement between proponent, DFO and test fisherman

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

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 authorised to fish under the authority of a salmon licence are also permitted to fish for schedule ii species according to the conditions of each licence, transport fish 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, gillnet or troll. Gear selection was permanent. Area selections for seine were area A or B; for gillnet, 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
Aboriginal Individual	\$ 380.00	\$ 650.00	\$ 2670.00

Non-Aboriginal	\$ 430.00	\$ 710.00	\$ 3880.00
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There is no licence renewal fee associated with communal commercial licences.

12.6.5 Licence Application and Issuance

Renewal of a commercial salmon 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 commercial salmon licenses not renewed by March 31, 2017 will cease and licence issuance requests will be unable to be considered in future.

Prior to licence issuance, vessel owners and/or licence eligibility holders must ensure that:

1. Any Ministerial conditions placed on the licence eligibility have been met
2. Any conditions of the previous year's licence have been 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-uscscs@dfo-mpo.gc.ca; and
 - Submission of all fish slips (for further information contact the Regional Data Unit at (604) 666-2716).

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

2016/2017 Salmon licence documents are valid from the date of issue to March 31, 2017.

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>

VESSEL REPLACEMENT (Category A only)

The owner(s) of a commercial 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.

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 gillnet 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>

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 Log-Book and In-season Catch Reporting Program

12.7.1 Commercial Harvest Logs and Electronic Logbooks (E-logs)

There is a mandatory log-book and in-season reporting program for catch information for all commercial fisheries. Commercial salmon harvesters shall maintain a harvest log of all harvest operations. Harvest logs are a record of fishing activities and are required to be kept under commercial conditions of licence and applies to both hard copy (paper) versions and electronic (E-Log) versions unless otherwise specified. To facilitate reporting of information, harvesters may enlist the services of an approved third party service provider. Participants in the E-Log program will not be required to also have a log book. Sample logbook pages are provided in Appendix 1.

DFO is now advancing an initiative to expand the current commercial E-log initiative to a national program. The vision of the project is to develop and implement, over a phased multi-year approach, a national integrated electronic catch and effort system designed to enable ongoing solutions for the fishing industry to meet their evolving data capture and traceability needs. DFO will develop specific standards for E-log software along with a certification process to ensure that all E-log software meets these standards. 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 paper logbooks or arrange to pay for any associated costs for software updates with a 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

In 2016, the Department will work with Area Harvest Committee representatives to continue 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, brailing for seine vessels, and revival tanks.

12.10.1 Other Conservation Measures

In 2016, Fisheries and Oceans Canada 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 until 24 hours prior to any fishery opening for their respective gear type. Information on this management initiative can be obtained from Department charter patrol vessels on the grounds and from Fisheries and Oceans Canada offices.

12.10.2 Bocaccio and Yelloweye 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 4.7 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 located at: <http://www.dfo-mpo.gc.ca/Library/361424.pdf>

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). Additional information is available in Appendix 9 of the Groundfish IFMP located at: <http://www.dfo-mpo.gc.ca/Library/361424.pdf>.

Taking into consideration advice provided by fishing interests, the Department will introduce initial management measures for 2016 to make steps towards the mortality cap described above and has committed to future discussions in 2016 to define a more comprehensive plan for achieving the 100 MT mortality cap. Initial management measures include a 39% reduction in the commercial groundfish TAC and slight adjustments to the apportionment of the TAC between Groundfish Management Areas, a 33% reduction in recreational fishing opportunities, and a focus on improved reporting and avoidance of Yelloweye in the salmon troll fishery (retention of Yelloweye is already prohibited). The rebuilding plan will be updated in future years to reflect this more comprehensive plan.

12.11 Commercial Fisheries

Details regard specific commercial fisheries is 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.

The following proposals have been submitted by the Area Harvest Committees for review and consultation.

Details regard demonstration fisheries that the department is considering are contained in Section 13 - Species Specific Salmon Fishing Plans.

12.13 Interim Guidelines for Temporary Salmon Share Transfers

There are proposed changes to the current interim guidelines for temporary salmon share transfers. Please see Appendix 6 for the details.

13 SPECIES SPECIFIC SALMON FISHING PLANS

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1. SOUTHERN CHINOOK SALMON FISHING PLAN

Southern Chinook Salmon

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1 SOUTHERN CHINOOK OVERVIEW

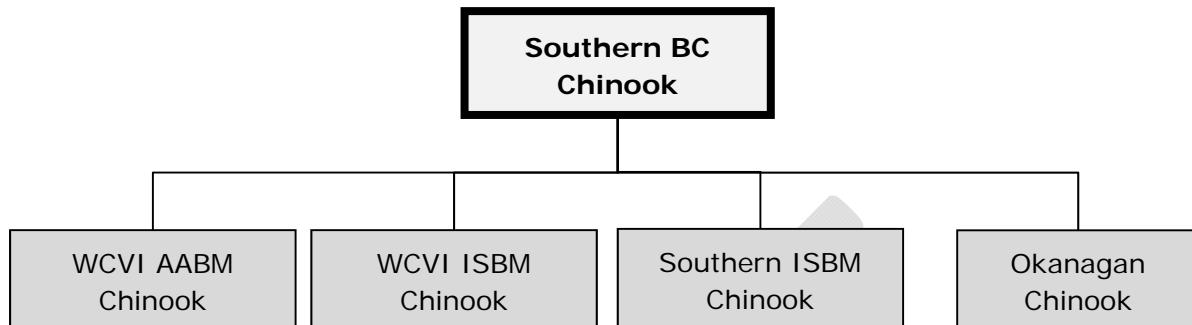


Figure 1-1: Overview of Southern BC Chinook

Chinook salmon fisheries in B.C. 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, revised for implementation in 2009, maintains the abundance-based management framework established under the 1999 Agreement. This chapter expires in 2018.

Further explanation and the text of the chinook salmon agreements can be found on the PSC website at: www.psc.org/Index.htm.

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

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

- The West Coast of Vancouver Island (WCVI) troll fishery in Areas 21, 23-27, and Areas 121, 123-127
- 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

Under the PST, an ISBM fishery is an abundance-based regime that constrains to a numerical limit the total catch or the total adult equivalent mortality rate within the fisheries of a jurisdiction for a naturally spawning chinook salmon stock or stock group. For Canadian ISBM fisheries, the agreement identifies a general obligation that limits the total adult equivalent mortality rate for individual stock groups to 63.5% of that which occurred in the 1979 to 1982 base period.

ISBM management regimes apply to all chinook salmon fisheries subject to the PST that are not AABM fisheries and include marine and freshwater salmon fisheries from northern British Columbia to northern Oregon coast. ISBM fisheries 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:

- BC Interior:
 - Shuswap River hatchery
 - Spius Creek hatchery
- BC South Coast:
 - Big Qualicum River hatchery
 - Conuma River hatchery
 - Little Qualicum River hatchery
 - Nitinat River hatchery

- Puntledge River hatchery
- Quinsam River hatchery
- Robertson Creek hatchery
- BC Lower Fraser:
 - Capilano River hatchery
 - Chehalis River hatchery
 - Chilliwack River hatchery
 - Tenderfoot 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 2014 brood year (i.e. 2015 releases, and #'s on hand for 2016 release), and the **Production Plan**, which includes proposed targets for the upcoming 2016 brood year. These are available on the DFO website at:

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

Southern BC Chinook – SEP proposals for 2016/2017

- Chinook: Sooke Harbour seapens. A proposal to increase Chinook production from the Sooke Harbour seapens is under development with community partners. Nitinat River Chinook have been released from both the Nitinat system and the Sooke system since 1981, with seapen releases in Sooke Harbour beginning in 1992 brood year. The Sooke Harbour seapen enhancement objective is to support a local recreational fishery. The objective is to increase the contribution of Chinook salmon to local fisheries while maintaining an aggregate target SWVI chinook production of approximately 13M smolts by reducing an equivalent number released from Nitinat Lake. There will be a tagged group to assess contribution both to local fisheries and to adult escapement to Sooke River and any potential straying to other systems.
- Chinook aggregate production management on the ECVI. A reallocation of 200,000 fall Chinook smolt production target from Quinsam River Hatchery to Puntledge River Hatchery will maintain an aggregate target ECVI chinook production of approximately 14M smolts while increasing the contribution to local recreational fisheries. This increase is not expected to have impacts on Puntledge summer chinook, based on analyses of marine survival rates historically at this level of production.

1.1 WCVI AABM Chinook

1.1.1 Snapshot Overview and Map of Management Unit



Figure 1-2: Overview of WCVI AABM Chinook

The AABM fishery includes commercial and First Nations troll caught chinook salmon in Pacific Fishery Management Areas 21, 23–27, and 121–127. 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-dependant.

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

1.1.2 Stock Assessment Information

1.1.2.1 Pre-season

The Chinook Technical Committee (CTC) provides a final calibration of the Chinook Model annually. That calibration is provided in April each year, and provides the estimated allowable catches for the fishing year from the previous October 1 until September 30th in the year of the calibration. The completed calibration provides the Abundance Indices (AI) that are required for determining the pre-season estimated allowable catches for the three AABM fisheries. Calibration work for the 2015-2016 season will be completed in April 2016, and it is anticipated that it will provide AI's for the three AABM fisheries for October 2015-September 2016.

Effective January 1, 2009 the renegotiated PST terms were put into effect including, the implementation of a 30% reduction in the Total Allowable Catch (TAC) for the WCVI AABM. The allowable catch below reflects this change.

Pre-season Abundance indices and associated allowable catches will be announced in mid-April for the October 1, 2015 to September 30, 2016 South Coast AABM Fisheries:

Table 1-1: Pre-season Abundance indices and associated allowable catches for the October 1, 2015 to September 30, 2016 AABM fisheries

	SEAK	NBC	WCVI
Abundance Index			
Allowable Catch			

1.1.2.2 In season

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

A small assessment fishery near the Brooks Peninsula has been proposed 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. The sample size is anticipated to be approximately 1,000 chinook. In addition, as part of a larger study, sampling of chinook salmon in the inshore areas of the WCVI will occur in 2016.

1.1.3 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.

Total catch limits in the WCVI AABM fishery are set annually and vary based on the Abundance Index according to an agreed values specified in the Pacific Salmon Treaty in Annex IV Chapter 3. AABM fisheries are managed annually so as not to exceed the specified catch limit based on the pre-season predictions of the Abundance Index as determined by the Chinook Technical Committee (CTC).

In addition, domestic conservation concerns may reduce overall harvests below the TAC identified under the PST Chinook AABM fisheries.

When there is a TAC identified for the AABM management area, targeted chinook fisheries are planned for First Nations, recreational, and commercial sectors. The TAC is allocated between the three sectors in accordance with the *Allocation Policy for Salmon, 1997*.

The commercial TAC is calculated by subtracting the expected Food, Social and Ceremonial (FSC) catch of 5,000, the Maa-nulth treaty entitlement and the expected recreational catch of 60,000.

Adjustments to the commercial harvest level may be made in season, typically in September, based upon differences between expected and observed recreational catches.

1.1.4 Incidental Harvest, By-catch and Constraints to AABM Chinook Fisheries

AABM fisheries may be managed to avoid domestic stocks of concern follow in Table 1-2.:

Table 1-2: Risk of Impact on Stocks of Concern

Fishery Period	Risk of impact on stocks of concern
Oct. – Feb	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 ₂ , Fraser River Spring and Summer 5 ₂ chinook. 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.
Mar. – May	Moderate - High risk. Specific concerns for Fraser River Spring 4 ₂ , Fraser River Spring and Summer 5 ₂ chinook. Increased incidence of Lower Strait of Georgia (LGS) chinook especially in May.
June - mid-Sept	Moderate - High risk. Potential concern for impacts on Fraser River Spring 4 ₂ , Fraser River Spring and Summer 5 ₂ 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 prevalent. Risk increases as coho recruit to fishery. Concerns for impacts on returning local WCVI chinook stocks. Concerns for impacts on LGS chinook.
Mid-Sept	Low risk. WCVI chinook may be avoided by area restrictions. Concerns for impacts on LGS chinook and Interior Fraser coho impacts reduced because end of migration out of WCVI area.

Table 1-3: Summary of management actions anticipated in AABM chinook fisheries to limit impacts on stocks of concern.

Stock of Concern (constraint)	First Nations FSC 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	WCVI - Time and area closures on WCVI (i.e. avoid inshore fisheries during the time period July to September)
		Maximum size limits inside the management corridor, time and area restrictions.	Northern BC - measures in the North Coast troll fishery to limit ER to 3.2%
Fraser River Spring 4₂ Chinook	No impacts on WCVI First Nations fisheries anticipated	No impacts on WCVI recreational fisheries anticipated	Time and area closures and effort limits
Fraser River Spring and Summer 5₂ Chinook	No impacts on WCVI First Nations fisheries anticipated	No impacts on WCVI recreational fisheries anticipated	Time and area closures and effort limits
			Proposed June and July closure if returns are in management zone 1
Lower Strait of Georgia Chinook	Harvest levels outlined in Harvest documents and communal licences	Time and area closures Catch limits and minimum size limits Measures will vary by area	2009 AABM harvest rate reduction should reduce 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

Stock of Concern (constraint)	First Nations FSC 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	WCVI - Time and area closures on WCVI (i.e. avoid inshore fisheries during the time period July to September)
		Maximum size limits inside the management corridor, time and area restrictions.	Northern BC - measures in the North Coast troll fishery to limit ER to 3.2%
South Coast Coho (Interior Fraser River coho management objective)	Harvest levels outlined in Harvest documents and communal licences. By-catch retention may be considered during fisheries for other species.	Coho retention limited to selective hatchery mark fishery (SHMF) in most areas. Consideration for retention of wild coho in inside waters on the WCVI may be considered subject prevalence of IFR coho and local abundance of WCVI coho.	Potential consideration of coho retention after mid-September in WCVI troll fisheries.

1.1.5 Allocation and Fishing Plans

1.1.5.1 First Nation Fisheries

Food Social and Ceremonial

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

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

Treaty Fisheries

Maa-nulth Fisheries (Domestic)

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

Each year, the Maa-nulth Fish Allocation for chinook salmon is:

An amount of Ocean Chinook Salmon equal to 1,875 pieces plus 1.78% of the Ocean Chinook Salmon Canadian Total Allowable Catch.

Fishery Monitoring and Catch Reporting

Fishery monitoring will be conducted by DFO and the First Nation 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.

1.1.5.2 Recreational Fisheries

The AABM recreational fishery includes all catch in northwest WCVI (Areas 25–27, 125–127) from October 16 to June 30, and the catch outside of the surf line (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.

The minimum size limit for chinook in recreational AABM fisheries is 45 cm and the annual limit for chinook is 30. The daily limit for chinook in all Areas is two. 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: www.bcsportfishingguide.ca.

Allocation

For planning purposes an expected catch of 60,000 pieces is set aside for the recreational AABM fishery. If the recreational harvest is forecast in season to be less than 60,000, the expected remainder is transferred to the commercial TAC for September.

Recreational Conservation Measures

Since 1999, a recreational fishery “chinook management corridor”, extending one nautical mile offshore from the surfline has been 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*.

Management actions for 2016 in the WCVI Chinook management corridor are under review and changes may be considered in this area.

Fishery Monitoring and Catch Reporting

Catch monitoring programs including creel surveys, log books 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.

1.1.5.3 Commercial Fisheries

AABM commercial chinook fisheries take place annually and may be permitted in Areas 21, 23-27, and Areas 121, 123-127.

Specific Conservation Measures

For the 2015/2016 season, which ends September 30, 2016, pre-season fishing plans could be subject to change pending the results of consultations focussing on the conservation and protection of Fraser River, LGS and WCVI chinook stocks. The consultation process begins in the early spring period as part of the IFMP planning process.

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 4₂ chinook, Fraser River Spring and Summer 5₂ chinook, WCVI chinook, LGS chinook, and Interior Fraser River coho.

Fraser River Spring 4₂ chinook, Fraser River Spring and Summer 5₂ 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.

For Fraser River Spring and Summer 5₂ chinook, management actions are based on 3 zones of abundance (i.e. zone 1-3 correspond with low, moderate, abundant). Each year management is based on a cautious zone 1 approach until an in season update is available (mid-June). Zone 1 and Zone 2 management measures are presented in the figure below.

ZONE 1 MANAGEMENT MEASURES		March		April		May		June		July		August	
Fishery	Area	1	15	31	1	15	30	1	15	31	1	15	31
Area G Troll	NWVI (Areas 125 to 127)	Open	Closed March 16 - April 18	April 19 to May 30 managed to boat day effort/ catch target limit		Closed June 01 - July 23	Open July 24 until target catch achieved						
	SWVI Area 124		Closed March 1 - April 30	May 01-30 Managed to boat day effort/ catch target limits									
	SWVI Area 123		Closed March 1 - May 06	May 7-30 managed to boat day effort/ catch		Closed June 01 - July 31	Open August 01 until target catch achieved						

ZONE 2 MANAGEMENT MEASURES		March		April		May		June		July		August	
Fishery	Area	1	15	31	1	15	30	1	15	31	1	15	31
Area G Troll	NWVI (Area 125 to 127)	Open	Closed March 16 - April 18	April 19 to June 15 open. Managed to monthly boat day effort/ catch target limits		Closed June 16 - July 23	Open July 24 until target catch achieved						
	SWVI Area 124		Closed March 1 - April 30	May 01-June 15 open. Managed to monthly boat day effort/ catch target limits									
	SWVI Area 123		Closed March 1 - May 06	May 7-June 15 open. Managed to monthly boat day effort/ catch target limits		Closed June 16 - July 31	Open August 01 until target catch achieved						

Figure 1-3: Fraser River Spring and Summer 5₂ chinook Zone 1 and Zone 2 management measures

The management zone may be updated in mid-June based on in season abundance of chinook at the Albion test fishery in the Fraser River. In the event that the in season abundance indicates a different management zone than what was identified pre-season, the Department will implement management actions consistent with the in season management zone. These actions will be in addition to management actions for Spring 4₂ chinook.

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 PST agreement should continue to provide sufficient protection for LGS chinook. In addition, the fishery will be managed to disperse harvests throughout the fishery 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 the previous year will be implemented to protect this stock. The objective for commercial troll fisheries in 2016/2017 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 South West Vancouver Island 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. The 5/2 nautical mile boundary may be reduced to 1 nautical mile as the WCVI chinook migration comes to an end. If further restrictions were required for conservation purposes, zone/area and time closures could be implemented.

1.1.5.3.1 Allocation

Table 1-4: Commercial Allocation Implementation Plan for the 2015 – 2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South - WCVI AABM Chinook	21, 23 to 27, 121 to 127	*	*	0.0%	100.0% ^g	0.0%

Notes on chinook allocations:

*by-catch provisions

^g 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 and 60,000 expected recreational catch from the overall chinook WCVI AABM TAC.

Negotiations are ongoing with the T'aaq-wiihak First Nations for a commercial demonstration fishery for AABM chinook. The allocation for this fishery is expected to be determined as a portion of the commercial TAC.

1.1.5.3.2 WCVI AABM Commercial Chinook Fishing Plan

Area G Troll Fishing Plan

The following fishing plan is subject to change to account for domestic stocks of concern passing the WCVI changes to a. 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 US 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.

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. The status of Fraser River Spring 4₂ chinook is stock of concern. Fraser River Spring 4₂ chinook appears 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 4₂ 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 4₂ chinook in SWVI though 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 5₂ 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 while Area 123 opens May 7. These management actions are implemented in order to avoid interception of Fraser River Spring 4₂ chinook and reduce release rates for sub-legal chinook. For May 1 through May 30 the boat day cap is 1000 boat days.

Dependent on the status of Fraser River Spring 4₂ chinook, Fraser River Spring and Summer 5₂ chinook stocks further management measures may be implemented during this fishing period including area closures. The boat day cap of 650 boat days from the June period will be moved to April and May if Zone 1 management measures are implemented.

June 16 to late July

Through July, stock composition data indicate the relative abundance of Fraser and US 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 125-127, commencing July 24.

Late July to early August

Through August, stock composition data indicate the relative abundance of Fraser and US bound chinook (Puget Sound, Columbia, Oregon) in the fishery remains high during this period. Many of these stocks are relatively abundant. 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 by-catch during the chinook fishery may be considered. The September fishing period permits the harvest of remaining WCVI AABM TAC as the chinook model calendar year ends on September 30th.

The September commercial harvest level may be adjusted based on the available WCVI AABM TAC remaining after accounting for First Nation and recreational fisheries. Any harvest opportunities prior to September 15 may be managed to avoid interception of Interior Fraser River coho and WCVI chinook. Further fisheries depend on reaching escapement milestones into Nitinat Lake and indications of abundance through commercial fishing, test fishing and stream enumeration.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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.

1.1.5.3.3 WCVI AABM First Nations Commercial Chinook Harvest

Demonstration Fisheries

2015/16 T'aaq-wiihak First Nations (Ahousaht et al Plaintiffs) Salmon Fishery

The First Nations and the Department are currently considering demonstration fishery opportunities for the 2016 season. The scope of these deliberations does not preclude the potential to include any or all salmon species available with the T'aaq-wiihak First Nations' Fishing Territories as described by the courts. Where the Department and the T'aaq-wiihak reach agreement on the approach for 2016, this IFMP will be updated to reflect the agreed to approach for the T'aaq-wiihak fishery.

Harvest Agreements

There are no Harvest Agreements for AABM chinook.

Economic Opportunities

There are no EO fisheries for AABM chinook.

1.1.5.4 ESSR Fisheries

There are no ESSR fisheries for AABM chinook.

1.2 WCVI ISBM Chinook

1.2.1 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.

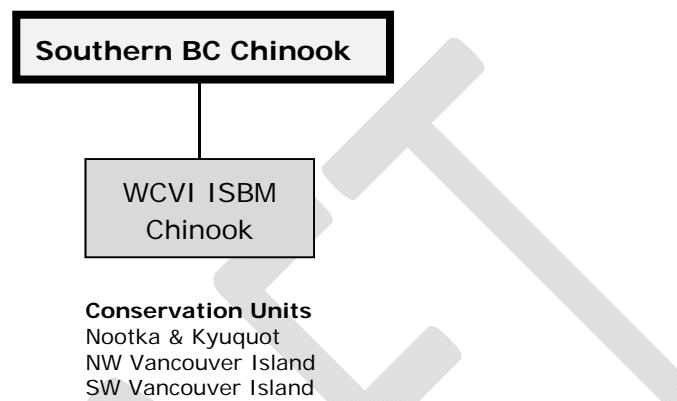


Figure 1-4: Overview of WCVI ISBC Chinook

1.2.2 Stock Assessment Information

1.2.2.1 Pre-season

The 2016 pre-season forecast of chinook returns to the terminal areas of Alberni Inlet/Stamp River, Nootka (Conuma hatchery) and Nitinat are anticipated to be available in April.

Table 1-5: Stock outlook anticipated in WCVI ISBM chinook fisheries

Conservation Unit	Stock Outlook for 2016
WCVI Chinook	Adult returns of WCVI hatchery chinook in 2016 will be comprised mostly of 3, 4 and 5 year old fish returning from the 2013, 2012 and 2011 brood years, respectively. Based on the observed return of younger age classes in 2015, the survival rate of the 2012 brood was about average. However the survival rates of the other two brood years were apparently either very low (2011) or low (2013). A very low forecast abundance of 5 year olds may result in concern for sufficient female spawners as the younger age classes produce fewer females. (<i>2015 Outlook Category was 3.</i>) Wild populations have been well below target for several generations showing limited or no signs of rebuilding. While in recent years stocks in the NWVI CU showed moderate improvement, this trend is not generally observed in SWVI populations; particularly those from Clayoquot Sound. Expectations are for continued low abundance in 2016. (<i>2015 Outlook Category was 1</i>)

1.2.2.2 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.

1.2.3 Decision Guidelines and Management Actions

The PST imposes a limit on the adult equivalent mortality rate for individual stock groups. In Canada, the adult equivalent mortality rate in all ISBM fisheries was limited to 63.5% of the historic base period (1979-1982) adult equivalent mortality rate on each stock group.

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 may be amended 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 Nuchalaht First Nations, the Area D Harvest Committee, the local Sport Fishery Advisory Committee, the Nootka Sound Watershed Society, local municipal governments and DFO. The Area 25 Roundtable is intending to develop a detailed local management plan for chinook in Nootka Sound and Esperanza Inlet. The Decision Guidelines in this IFMP may be amended once the detailed local plan has been completed through the Area 25 Harvest Committee.

1.2.4 Incidental Harvest, By-Catch and Constraints to WCVI ISBM Chinook Fisheries

Table 1-6: Actions to protect wild chinook stocks

First Nation (FN) Fishery	Recreational Fishery	Commercial Fishery
<ul style="list-style-type: none">- Harvest Documents and Communal licence harvest targets- Conservation measures under discussion.	<ul style="list-style-type: none">- Time and area closures- Size limit inside the WCVI management corridor and other areas shoreward of the management corridor- Some areas will be 2 chinook/day; with only 1 $>77\text{cm}$ or 2 $<77\text{cm}$ depending on area- Catch limits- Measures will vary by area.	Time and area closures during the July to October period

1.2.5 Allocation and Fishing Plans

1.2.5.1 First Nation 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 in Southern BC / Fraser River First Nations Fisheries. Note that AABM and ISBM chinook amounts are combined.

Specific Conservation Measures for First Nation Fisheries

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 Nation 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

Fishery Monitoring and Catch Reporting

Fishery monitoring will be conducted by DFO and the First Nation 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.

1.2.5.2 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-October 15, and in Areas 25 to 27 are July 1-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 –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 30. The daily limit for chinook in all areas is two (2), and the possession limit is four (4). Updates to recreational fisheries are provided via Fishery Notice and published on the recreational fisheries website at: www.bcsportfishingguide.ca.

Recreational Fisheries Specific Conservation Measures

ISBM chinook fisheries

Conservation measures for ISBM fisheries are designed largely to protect wild chinook returning to the WCVI. These decisions are primarily made pre-season and go into effect when stock

outlooks are low and require some level of protection. In season changes can be made based on local chinook returns to rivers. Harvests largely target hatchery production. Management actions for 2016 will remain the same as in 2015 in most areas, with the exception of Area 23. In Area 23, chinook retention will return to 1>77 cm inshore of the surfline Aug 1 – October 15. Opportunities will be provided in the WCVI to keep one or two chinook > 77cm in terminal areas where surplus enhanced chinook are prevalent. Surpluses are anticipated for Conuma, Burman, Somass and Nitinat enhanced stocks in 2016.

Fishery Monitoring and Catch Reporting

Catch monitoring programs, including creel surveys, log books 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.

1.2.5.3 Commercial Fisheries

1.2.5.3.1 Allocation

Table 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% ^h	75.0% ⁱ	5.0% ⁱ	15.0% ^j	0.0%

Notes on chinook allocations (south):

^hArea 23 sharing arrangement currently 33.3% seine: 66.7% gill net. May need to review

ⁱArea 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)

^jwinter troll fishery

1.2.5.3.2 WCVI ISBM Commercial Chinook Fisheries

Area D Gill Net Potential Fisheries

Mid-August to Early September - Area 23

Gill net opportunities in Alberni Inlet will be dependent on the forecast (which will be available in final IFMP).

Mid-August - Area 25

Gill net opportunities in Tlupana Inlet will be dependent on the forecast (which will be available in final IFMP).

Area B Seine Potential Fisheries

Mid-August to Early September - Area 23

Seine opportunities in Alberni Inlet will be dependent on the forecast (which will be available in final IFMP).

Fishery Monitoring and Catch Reporting

Potential Area B fishery would be conducted as a pooled fishery with 100% dockside monitoring program.

Southern Chinook Demonstration Fisheries

Area E Gill Net Nitinat Hatchery Chinook Pooled Demonstration Fishery

Area E has proposed a fishery in Nitinat Lake, Area 22 or in the outside waters near the entrance to the lake in Area 21. The objective of conducting this fishery is to test the feasibility and explore the potential benefits of accessing surplus Nitinat hatchery Chinook, using pre-determined pools fishing to a defined catch target. This demonstration directly controls the total harvest by limiting the participation in the fishery and setting limits on the harvest amount. This fishery is in the planning and feasibility stage, further consultation required prior to moving ahead.

REGION – South Coast Area, Nitinat Lake

PARTICIPANTS – Voluntary pool concept where all Area E license holders with a valid 2016 salmon license will be eligible to register for pools. Area E license holders will have an opportunity to voluntarily organize into pooled fisheries and identify a catcher vessel for each pool. Pools will be organized prior to any commercial fishing in 2016

LOCATION OF FISHERY – Nitinat Lake and directly outside Nitinat Lake

GEAR TYPE – Selective Chinook Net (8" minimum)

TIME FRAME – Target dates are early August to Early September

TARGET STOCK – This fishery will target surplus Nitinat hatchery Chinook

ALLOCATION – The fishery will be based on surplus return of Nitinat Lake hatchery chinook. Other commercial harvesters may also harvest chinook under harvest management plans, the appropriate sharing of harvest will be determined in a manner similar to the Area 23 Harvest Committee.

SELECTIVITY – This fishery uses various selective fishing techniques, including; mesh size restrictions, short set times, location and time restrictions, and revival boxes to minimize mortality on potential by-catch.

MONITORING PLAN – 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. The selection and coordination of the service provider will be handled by the Area E Harvest Committee (HC). The cost for the observer, and catch validation will be required by the Demonstration Fishery (DF) participants.

1.2.5.3.3 WCVI ISBM First Nation Commercial Chinook Harvest

Demonstration Fisheries

2016/17 T'aaq-wiihak First Nations (Ahousaht et al Plaintiffs) Salmon Fishery

The First Nations and the Department are currently considering demonstration fishery opportunities for the 2016 season. The scope of these deliberations does not preclude the potential to include any or all salmon species available with the T'aaq-wiihak First Nations' Fishing Territories as described by the courts. Where the Department and the T'aaq-wiihak reach agreement on the approach for 2016, this IFMP will be updated to reflect the agreed to approach for the T'aaq-wiihak fishery.

Economic Opportunities

Negotiations to provide economic opportunities to 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 comparable rules to the commercial fishery. This IFMP will be updated to reflect the agreed to approach for 2016.

1.2.5.4 ESSR Fisheries

There is the potential for ESSR fisheries at the Conuma, Robertson and Nitinat hatcheries when broodstock collection targets will be met. These fisheries are implemented in collaboration with local First Nations and DFO hatchery staff.

1.3 Southern ISBM Chinook

1.3.1 Snapshot Overview and Map of Management Unit

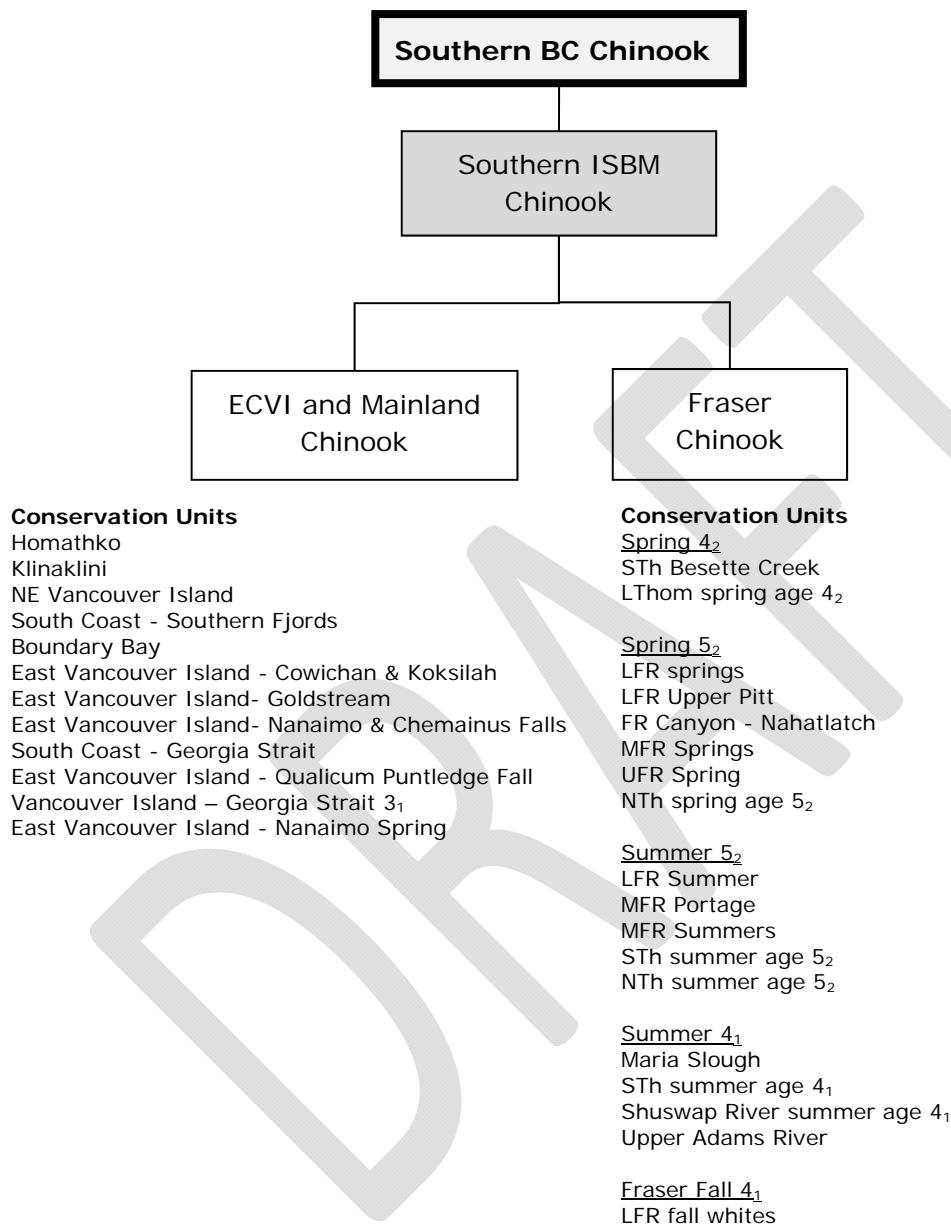


Figure 1-5: Overview of Southern ISBM Chinook

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 in 2016, Fraser chinook stocks will be managed using the Spring 4₂, Spring 5₂, Summer 5₂, Summer 4₁ and Fraser Fall 4₁ 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 and Wild Salmon Policy conservation units (CUs) is shown in the diagram below.

Table 1-8: Relationship between current Pacific Salmon Treaty escapement reporting units, Wild Salmon Policy (WSP) conservation units (CUs) and spawning locations.

PST Unit	CU #	CU Name	Spawning Locations
Spring 4 ₂ Chinook	16	STh Bessette Creek	Bessette Creek;
	17	LTHOM spring	Bonaparte River; <i>Coldwater River</i> ; Deadman River; <i>Louis Creek</i> ; Nicola River; <i>Spius Creek</i>
Spring 5 ₂ Chinook	4	LFR springs	<i>Birkenhead River</i>
	5	LFR Upper Pitt	Pitt River-upper
	8	FR Canyon-Nahatlatch	Nahatlatch River
	10	MFR springs	Cariboo River-upper; <i>Chilako River</i> ; <i>Chilcotin River upper</i> ; Chilcotin River-lower; <i>Cottonwood River</i> ; Horsefly River; Narcosli Creek; Naver Creek; West Road River
	12	UFR springs	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

PST Unit	CU #	CU Name	Spawning Locations
			Creek; Willow River
Spring 5 ₂ Chinook	18	NTHOM spring	Blue River; Finn Creek; Raft River
Summer 5 ₂ Chinook	6	LFR summers	Big Silver Creek; Chilliwack/Vedder River; Cogburn Creek; Douglas Creek; Green River; Lillooet River; Lillooet River-lower; Lillooet River-upper; Sloquet Creek; Weaver Creek
	9	MFR Portage	Portage Creek
	11	MFR summers	Bridge River; Cariboo River lower; Chilko River; Endako River; Kazchek Creek; Kuzkwa River; Nechako River; Quesnel River; Seton River; Stellako River; Stuart River;
	14	STh summer age 5 ₂	Eagle River; Salmon River;
	19	NTHOM summer age 5 ₂	Barriere River; Clearwater River; Mahood River; North Thompson River
Summer 4 ₁ Chinook	7	Maria Slough	Maria Slough
	13	STh summer age 4 ₁	Adams River; Little River; South Thompson River; Lower Thompson River;
	15	Shuswap River summer age 4 ₁	Shuswap River-lower; Shuswap River-middle
Fraser Fall 4 ₁ Chinook	3	LFR fall white	Harrison River

Table 1-5 Notes:

Six early-timed chinook stocks shown in italics.

Chilcotin River upper not part of PST Spring 5₂ aggregate due to short time series.

Salmon River (Salmon Arm), Eagle, Bridge River and Endako River currently included with PST Spring 5₂ aggregate.

STh Summer age CU could be changed to STh Spring age CU.

Bridge and Endako suggest for MFR Spring CU.

Raft River may belong with North Thompson Summers based on timing. Currently included with PST Summer 5₂ aggregate.

Fraser Spring 4₂ Chinook

Spring 4₂ 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 are the PST exploitation rate indicator stock used to assess survival and exploitation rates of Spring 4₂ chinook in Canadian and US fisheries. Based on CWT recoveries from fisheries, Fraser Spring 4₂ chinook have historically been encountered in Fraser River First Nation 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 5₂ Chinook

Spring 5₂ 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 5₂ 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 not a PST indicator stock for these management units, however; information from past CWT recoveries (e.g. Dome Creek, a Spring 5₂ indicator) from these populations indicates that Spring 5₂ chinook have been encountered in many of the same areas as Spring 4₂ chinook. Summer 5₂ 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 5₂ stocks.

There are no pre-season forecasts for this group but an in season abundance estimate for this aggregate is determined based on catch per unit of effort (CPUE) in the Albion test fishery in the lower Fraser River.

Fraser Summer 4₁ Chinook

The Summer 4₁ 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, Coded wire tagged (CWT) from the Lower Shuswap River indicator stock is 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 4₁ Chinook

Fall 4₁ 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. These are the only Fraser River chinook population for which quantitative forecasts are produced.

1.3.2 Stock Assessment Information

1.3.2.1 Pre-season

Table 1-9: Stock outlook anticipated in ISBM chinook fisheries

Conservation Unit	Stock Outlook for 2016
Fraser Chinook - Spring 4 ₂	The Outlook is <i>low</i> . Expectations for 2016 are for continued modest improvements over the 2012 parental brood escapements, however overall abundance is expected to remain fairly low due to ongoing unfavorable and highly variable marine survival conditions. Expect continuation of fisheries restrictions.
Fraser River Spring and Summer 5 ₂ Chinook	The Outlook is <i>low</i> . Expectations are for modest improvements again in 2016, but continued overall low escapements related to depressed parental abundance and continuing unfavorable and highly variable marine survival conditions.
Fraser River Summer 4 ₁ Chinook	The Outlook is <i>low</i> . Instability in smolt to adult survival rates, combined with poor escapements in 2012, temper the outlook for this aggregate. The 2012 brood year escapement was the second lowest aggregate escapement since 1996.
Fraser Lates	The Outlook is <i>low</i> . Current marine conditions appear unfavorable, thus expectations for escapements in 2016 are highly uncertain, and tempered by the low parent brood escapement in 2012.
Lower Strait of Georgia Chinook	Lower Strait of Georgia chinook abundance remains <i>low</i> . Recent returns to Cowichan suggest that rebuilding is continuing, whereas Nanaimo returns remain low but stable. Hatchery chinook returns to major facilities also remain low

	but stable.
North Vancouver Island / Johnstone Strait Chinook	Outlook is similar to recent years with wild stocks at low level and hatchery stocks likely <i>near target</i> .

Harrison Chinook Pre-season Forecast

The 2016 forecast estimate of the spawner abundance (i.e. returns to the spawning grounds after all ocean and freshwater fisheries removals) for Harrison chinook will be available in early spring and will be updated in the final IFMP.

1.3.2.2 In season

Fraser River Spring and Summer 5₂ chinook

An assessment of abundance determined 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 is used to determine the management actions that will be in place for fisheries.

Updates of the predicted return of Spring and Summer 5₂ 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 by the third Monday in June. Management actions for the appropriate management zone will be announced following the final in season update.

1.3.3 Decision Guidelines and Management Actions

All ISBM Fisheries

The PST imposes a limit on the adult equivalent mortality rate for individual stock groups. In Canada, the adult equivalent mortality rate in all ISBM fisheries was limited to 63.5% of the historic base period (1979-1982) adult equivalent mortality rate on each stock group.

Fraser Spring 4₂ Chinook

Management measures to protect Spring 4₂ Chinook will continue to be required in Juan de Fuca and Strait of Georgia recreational fisheries, and in WCVI commercial troll fisheries, consistent with recent years. For directed chinook fisheries in the Fraser River, First Nations management actions implemented since 2010 to protect and conserve Fraser Spring 4₂ chinook in the Fraser River are planned to continue. Actual fishing plans will be developed collaboratively between First Nations and DFO. Directed chinook recreational fisheries in the Fraser River are proposed to remain closed until August. Management actions for Fraser Spring 4₂ chinook populations are identified separately in each of the First Nations, recreational and commercial sections that follow.

Fraser Spring and Summer 5₂ Chinook

Annually, fisheries will be planned based on a cautious approach and management will be based on Zone 1 as outlined in Table 5.1 until such time as a final in season abundance estimate is confirmed. Salmon fisheries in 5 primary areas where these populations are most likely to be encountered will be managed consistent with the management zones which may change in mid-June including:

- **Northern (Area F) commercial troll fisheries**
- **West Coast of Vancouver Island (Area G) commercial troll fisheries;**
- **Juan de Fuca (Victoria area) recreational fisheries;**
- **Fraser River recreational fisheries; and**
- **Fraser River First Nation FSC fisheries.**

Specific management actions for Zone 1 and 2 are identified separately in each of the First Nations, recreational and commercial sections that follow.

Table 1-10: Fraser Spring and Summer 52 chinook Management Zone Approach

Zone	Predicted Return to the Fraser River	Actions
3	Greater than 85,000 Rationale: Manage to meet expected spawner abundance of at least 60,000. Populations rebuilding towards maximum sustained yield (MSY) levels.	First Nations directed fisheries. Directed recreational and commercial fisheries consistent with Allocation policy.
2	45,000 to 85,000 Rationale: Manage to meet expected spawner abundance of at least 30,000 and up to 60,000. Caution is required to avoid population declines. Populations well below MSY levels.	First Nations directed fisheries subject to abundance. By-catch retention/ limited directed Fraser recreational fisheries may be initiated. Management actions to reduce by-catch or incidental harvest in commercial fisheries.

1	<p>Below or equal to 45,000</p> <p>Rationale: Expected spawner abundance will likely be 30,000 or less.</p> <p>Significant conservation concerns.</p> <p>Very high risk of extremely low spawning populations.</p>	<p>By-catch retention /limited directed First Nations fisheries.</p> <p>Non-retention/closed recreational and commercial chinook fisheries in the Fraser River and tributaries.</p> <p>Management actions to reduce by-catch or incidental harvest in other recreational and commercial fisheries.</p>
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Maximum sustained yield (MSY) is defined in the Wild Salmon Policy as: the largest catch (yield) that can be taken on average from a population under existing environmental conditions. Catch will vary annually due to variation in a population's survival rate.

Rationale for Escapement Objectives for Fraser Spring and Summer 5₂ Chinook

While PST escapement targets and exploitation rate targets have not been formally identified for Fraser Spring and Summer 5₂ Chinook, biological factors were nonetheless a principal consideration in establishing the breakpoints between the management zones:

Zone 3: Populations rebuilding towards maximum sustained yield (MSY) levels (>85,000 terminal return; expected spawner abundance of at least 60,000).

Preliminary analysis of the number of spawners required to utilize the productive capacity of the habitat to produce maximum sustained harvests (S_{MSY}) for these populations is approximately 138,000 spawners (including ~80,000 Spring 5₂ and ~57,000 Summer 5₂). The number of spawners at 40% of S_{MSY} , a metric suggested as a lower abundance benchmark, is 55,000 spawners. The original PST base period doubling goal is approximately 60,000 spawners. In 15 of the 34 years from 1979-2012 spawner abundances greater than 60,000 were observed; the highest spawner abundance recorded for these populations was 102,000 in 2003.

Zone 2: Caution is required to avoid population declines. Populations well below MSY levels (45,001 to 85,000 terminal return; expected spawner abundance of at least 30,000).

The average escapement of Fraser Spring and Summer 5₂ chinook during the 1979-1982 base period was about 30,000 spawners; a level at which substantial management actions were taken to rebuild populations. This number of spawners is half of the value of 40% S_{MSY} increasing the likelihood of extremely low spawner abundance in CUs.

Zone 1: Significant conservation concerns. Very high risk of extremely low spawning populations (<45,000 terminal returns; Expected spawner abundance will likely be 30,000 or less).

Only four of the 34 years from 1979-2012 had spawner abundances less than 30,000.

Fraser Summer 4₁ Chinook

A management objective for the Summer 4₁ has not been established. However, the Department is working on developing a management objective for the PST process which requires an escapement objective to be developed consistent with maximum sustained yield (MSY) or other agreed biologically-based escapement goals.

The Lower Shuswap River is the CWT indicator stock for Fraser River's South Thompson 4₁ Chinook aggregate, however to date, the continuous time series of data is too short (12 years: 2004-2014) to undertake stock-recruit analyses to estimate the number of spawners required to produce maximum sustained yield (S_{MSY}). Based on preliminary analysis from habitat models, S_{MSY} for the Lower Shuswap indicator population is estimated at approximately 14,000 spawners. Mark-recapture estimates of adult escapements to the Lower Shuswap River were close to or slightly above the estimated S_{MSY} in 2004 (17,000), 2005 (18,000), 2007 (16,000) and 2008 (15,000); exceeded the S_{MSY} value in 2006 (59,000), 2009 (~25,000), 2010 (~71,000), 2011 (~19,000) 2013 (~29,000) and 2014 (~44,000); and was well below in 2012 (~4,000).

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 4₂ chinook, Spring/Summer 5₂ chinook, Fraser Fall chinook, Fraser River sockeye, and Interior Fraser River coho.

In 2016, while returns to this unit have been healthy and exhibiting an increasing trend in recent years, the 2016 return is coming from a poor brood year escapement. Care will be taken to ensure overall fisheries impacts are not increased in 2016.

Fraser Fall 4₁ (Harrison) Chinook

The PST approved escapement goal for the Fall 4₁ (Harrison) chinook is a range of 75,100 to 98,500 spawners.

While the overall exploitation rates on this chinook management unit are low, averaging approximately 25%, additional fishery management actions including chinook non-retention in commercial fisheries in the Fraser River and recreational fisheries on the Harrison River will be considered if the forecast is below the escapement goal range.

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 but the escapements are still below target.

1.3.4 Incidental Harvest, By-catch and Constraints to Inside Chinook ISBM Fisheries

ISBM fisheries are constrained in order to meet PST obligations and domestic management objectives.

1.3.5 Allocation and Fishing Plans

1.3.5.1 First Nation Fisheries

First Nation Food Social and Ceremonial

Marine Waters

First Nations target local and passing salmon stocks for FSC purposes throughout the Inner South Coast.

Non-tidal Waters (excluding Fraser River)

Some First Nations chinook directed fisheries occur in freshwater systems throughout Southern Inside waters.

Fraser River

First Nations target Fraser River chinook for FSC purposes throughout the Fraser River mainstem and in many tributary areas.

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

Specific Conservation Measures for First Nation 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 Nation communities, and include processes such as the Cowichan Fisheries Roundtable prior to development of fishing plans.

Fraser River Spring 4₂ and Spring and Summer 5₂ Chinook

For Fraser River First Nations fisheries, fishing plans will be developed collaboratively between First Nations and DFO with the objective of limiting overall fishing pressure. This will result in limited or reduce fisheries openings or fishing times; actual plans will be announced in season.

January 1 to July 15: Management actions implemented since 2010 to protect and conserve Fraser Spring 4₂ chinook in the Fraser River are planned to continue in 2016. First Nations fisheries taking place during the Spring 4₂ migration period will be managed taking into account conservation requirements for this stock.

All in-river fisheries beginning July 15th will be managed consistent with the management zone identified for Fraser Spring and Summer 5₂ chinook given timing overlaps between these populations for much of the adult migration period. Fishery impacts will need to take into account harvests in chinook directed fisheries and/or as by-catch in sockeye directed fisheries.

Zone 1: Expected exploitation rates on Spring and Summer 5₂ chinook reduced by at least 45% compared with the 2000 to 2006 period.

Zone 2: Expected exploitation rates on Spring and Summer 5₂ chinook similar to those of the 2000 to 2006 base period.

Zone 3: Harvests of Spring and Summer 5₂ chinook may occur during chinook-directed fisheries or as by-catch in sockeye-directed fisheries.

For 2016, the Department is continuing to consult with First Nations on specific fishing plans for FSC fisheries.

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 Nation Final Agreement are as follows:

1. Non-terminal Chinook

A maximum of 200 Chinook salmon, that 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.

The allocation will be determined by an abundance-based formula.

2. 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 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 Nation 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.

Lower Fraser

In the Lower Fraser, 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 of Chinook salmon for mark rate information and coded-wire tags (CWTs) in recent years to support the Salmon Head Recovery Program.

BC Interior

For fisheries on the Fraser watershed above Sawmill Creek, catch monitoring programs are managed through Fisheries Agreements negotiated between the Department and the First Nations. Catch monitoring programs vary but typically range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

1.3.5.2 Recreational Fisheries

Recreational Conservation Measures

All ISBM Fisheries

ISBM recreational chinook fisheries in inside waters 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 and the annual limit for chinook is 15. The minimum size limit in waters south of Cadboro Point through Juan de Fuca Strait is 45 cm and the annual limit is 20. The daily limit for all areas is two. Updates to recreational fisheries are provided via Fishery Notice and published on the recreational fisheries website at: www.bcsportfishingguide.ca.

LGS Chinook

Management measures are in place to protect Lower Georgia Strait chinook, including the Nanaimo, Chemainus and Cowichan River chinook stocks. These include seasonal time and area closures in specific locations in the Strait of Georgia and the approach waters of these systems.

Fraser River Spring 4₂ and Spring and Summer 5₂ Chinook

Management measures will be in place to conserve Fraser chinook stocks in Juan de Fuca Strait and the Southern Strait of Georgia. Management measures are put in place to protect Spring 4₂ chinook from March 1st to June 17th. Following June 17th, the management measures currently vary depending on the zone, and are put in place to protect Spring and Summer 5₂ chinook.

Juan de Fuca recreational fishery (Subareas 19-1 to 19-4 and Subarea 20-5)

March 1 through June 17th, two chinook per day which may be wild or hatchery marked between 45 and 67 cm or hatchery marked greater than 67 cm in Subareas 19-1 to 19-4 and 20-5.

Zone 1: June 18th through July 15th, two chinook per day which may be wild or hatchery marked between 45 and 85 cm or hatchery marked greater than 85 cm.

Zone 2 and 3: June 18th through July 15th, two chinook per day of which only one may be greater than 67 cm. (This measure is to protect Spring 4₂ chinook.)

For 2016, the Department has received proposals from the SFAB and First Nations seeking a review of management actions in this area. Further discussions are required.

Strait of Georgia recreational fishery (Subareas 18-1 to 18-6, 18-9, 18-11, 19-5, and portions of Subareas 29-4 and 29-5):

Zone 1: Commences the Monday following the first Saturday of May each year through June 17th, two chinook per day of which only one may be greater than 67 cm. The minimum size limit is 62 cm. (This measure is to protect Spring 4₂ chinook.) June 18th to July 15th, two chinook per day between 62 cm and 85 cm.

Zone 2 and 3: Commences the Monday following the first Saturday of May each year through July 15th, two chinook per day of which only one may be greater than 67 cm. The minimum size limit in these areas is 62 cm in length. (This measure is to protect Spring 4₂ chinook.)

Fraser River Mouth (Subareas 29-6, 29-7, 29-9 and 29-10)

	before mid-July	mid-July to early August	early August to December 31
Zone 1	no retention of chinook salmon	no retention of chinook salmon	2 chin per day > 62 cm
Zone 2	no retention of chinook salmon	no retention of chinook salmon	2 chin per day > 62 cm
Zone 3	no retention of chinook salmon	2 chin per day > 62 cm	2 chin per day > 62 cm

Fraser River tidal waters and non-tidal waters of Region 2:

	before mid-July	mid-July to early August	early August to August 31	September 1 to December 31
Zone 1	no fishing for salmon	no fishing for salmon	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 62 cm
Zone 2	no fishing for salmon	no fishing for salmon	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 62 cm
Zone 3	no fishing for salmon	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 50 cm	4 chin per day, 1 > 62 cm

Fraser River, Regions 3

Fraser River: (some exceptions listed below under tributaries)

- **January 1 through July 15**, no fishing for salmon.
- **Zone 1:** July 16th to August 21st closed to fishing for salmon. August 22nd to September 16th, four chinook per day, none over 50 cm.
- **Zone 2 and 3:** early August to September 16, four chinook per day, none over 50cm. (This fishery is targeting Summer 4₁ jack chinook).

Tributaries:

Zone 1:

- Thompson River from Kamloops Lake downstream to the confluence of the Fraser River: Closed to fishing for salmon until August 21st.
- Bridge River, Clearwater and North Thompson Rivers: No fishing for salmon.
- South Thompson River: No fishing for salmon to August 15th.

Zone 2:

- Thompson River from Kamloops Lake downstream to the confluence of the Fraser River, July 16th to August 21st, four chinook per day, none over 50 cm. Note: No fishing for salmon at the mouths of the Deadman River, the Bonaparte River or the Nicola River.
- Clearwater and North Thompson Rivers: August 1st to August 21st, one chinook per day.

There is a proposal to change these dates to August 7 to August 28th

- Bridge River/ Fraser River near Bridge River – approx. June 17 – July 3rd Sun to Thurs each week, one chinook per day.
- South Thompson River: No fishing for salmon to August 15th.

Zone 3:

- Thompson River from Kamloops Lake downstream to the confluence of the Fraser River, July 16th to August 21st, four chinook per day, none over 50cm. Note: No fishing for salmon at the mouths of the Deadman River, the Bonaparte River or the Nicola River.
- Clearwater and North Thompson Rivers: August 1st to August 31st, four chinook per day, only two over 50 cm
- Bridge River/ Fraser River near Bridge River – approx. June 17 – July 15 Sun to Thurs; weekly, four chinook per day only one over 50 cm.
- South Thompson River: No fishing for salmon to August 5th

Fraser River, Region 5A

- **January 1 to July 15**, no fishing for salmon.
- **Zone 1:** January 1 to December 31, no fishing for salmon, except after August 10 in Horsefly Bay, no fishing for chinook salmon and September 15th to September 30th on the mainstem Fraser River; no fishing for chinook salmon.
- **Zone 2:** One chinook per day between 30cm and 77cm at the following dates and locations: July 15 to Sept 01 (Quesnel River); July 25 to Aug 16 (Chilko River); July 25 to Aug 16 (Cariboo River)
- **Zone 3:** Two chinook per day at the following dates and locations: July 15 to Sept 01 (Quesnel River); July 25 to Aug 16 (Chilko River); July 25 to Aug 16 (Cariboo River)

Fraser River, Region 7

- **January 1 to July 15, no fishing for salmon.**
- **Zone 1:** January 1 to December 31, no fishing for salmon, except after August 27 in the Nechako River downstream of the Foothills Bridge, no fishing for chinook salmon.

- **Zone 2:** One chinook per day between 30cm and 77cm at the following dates and locations: August 15 to August 27 (Nechako River at Prince George); July 15 to Aug 15 (Bowron River)
- **Zone 3:** Two chinook per day between at the following dates and locations: August 15 to August 27th (Nechako River at Prince George); July 15 to Aug 15 (Bowron River)

Please refer to the Fisheries and Oceans website at (<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.htm>) for the exact descriptions of these opportunities.

Fishery Monitoring and Catch Reporting

Marine Waters

Catch monitoring programs including creel surveys, log books 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.

Lower Fraser (Region 2 and Tidal waters of the Fraser River)

A recreational creel survey is conducted during periods when study area is open to fishing for salmon. Catch estimates are generated for all salmon species harvested (kept) and released in the study area; the creel survey program concludes on September 30.

Mid and Upper Fraser Watershed (Regions 3, 5A, 7 and 8)

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 by-catch, and any biological sampling requirements will be taken into account when planning the catch monitoring program for these areas.

1.3.5.3 Commercial Fisheries

There are no directed commercial chinook fisheries in Southern Inside marine waters; as well chinook non-retention is in place in most times and places.

1.3.5.3.1 Allocation

Table 1-11: 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	1.0% ^e	3.0%	90.0% ^f	0.0%	6.0%

Notes on chinook allocations (south):

^esubject review pending completion of southern BC chinook initiative

^fdirected Fraser chinook fishery.

1.3.5.3.2 Southern ISBM Commercial Chinook Fisheries

Due to concerns for Lower Strait of Georgia stocks, no directed chinook fisheries are planned for 2016 and there will be non-retention in fisheries directed at other stocks.

Area B Seine

There will be no directed chinook fisheries and non-retention is in effect.

Area D Gill Net

There will be no directed chinook fisheries and non-retention is in effect.

Area E Gill Net

Due to the low outlook for Summer 4₁, and high likelihood of insufficient commercial sockeye to cover sockeye by-catch, there will be no chinook directed commercial demonstration fisheries in the Fraser River in 2016. Retention of chinook as by catch during chum fisheries will be dependent on the pre-season forecast for Fall 4₁.

Area H Troll

There will be no directed chinook fisheries and non-retention is in effect.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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.

1.3.5.3.3 Southern ISBM First Nation Commercial Chinook Harvest

Demonstration Fisheries

RWS RiverFresh Wild Salmon Ltd – In-River Sockeye, Pink and Chinook Fisheries

RWS RiverFresh Wild Salmon Ltd (RiverFresh) is a Commercial Fishing Enterprise incorporated in September 2012 as a partnership between four Secwepemc communities of the Shuswap Nation Tribal Council. For 2016 the Secwepemc Fisheries Commission (SFC) will continue to function as the operational planning and business management team on behalf of RiverFresh. SFC has been coordinating demonstration fisheries and conducting business feasibility analyses since 2005.

Expectations for the chinook demonstration fishery are uncertain and will be reviewed with the SFC based on pre-season expectations of abundance of the Area F allocation in the Northern BC AABM fishery and stock composition of south Thompson chinook. If no commercial chinook allocations are identified, by catch may be identified and retained for food, social and ceremonial purposes subject to dual fishing guidelines.

SFC will build on previous year's experiences and expand their knowledge and abilities participating in larger scale fisheries.

PARTICIPANTS – SFC, Adams lake Indian Band and other partners to be determined

LOCATION OF FISHERIES – Kamloops 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 (4₁); potential start date is August 22 ending Sept. 23.

ALLOCATION –

Chinook fishery – the initial chinook allocation f 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 id information if it is available.

MONITORING PLAN – Fishery will be monitored using designated landing sites, electronic log book system (ELOG) and Independent validation of catch at the processing plant and independent validation releases when required.

1.3.5.4 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

1.4 Okanagan Chinook

1.4.1 Snapshot Overview and Map of Management Unit

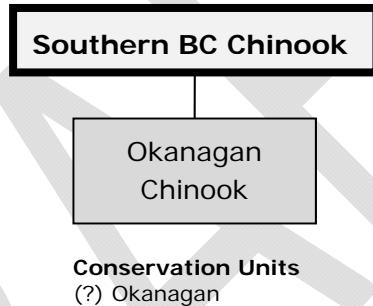


Figure 1-6: Overview of Okanagan Chinook

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 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.

1.4.2 Stock Assessment Information

1.4.2.1 Pre-season

No pre-season information is available.

1.4.2.2 In season

Preliminary indications of returns can be done via adult chinook counts past Zozel dam at the outlet of Osoyoos Lake. A high degree of uncertainty exists with this count as an unknown number of fish likely 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.

1.4.3 Decision Guidelines and Management Actions

This stock is listed as Threatened by the Committee of Endangered Species and Wildlife in Canada. There are no Canadian directed fisheries on this stock.

1.4.4 Incidental Harvest, By-Catch and Constraints to Fisheries

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. Non-retention measures are in effect in Canadian fisheries.

1.4.5 Allocation and Fishing Plans

There are no directed fisheries on this stock.

2. SOUTHERN CHUM SALMON FISHING PLAN

Southern Chum Salmon

DRAFT

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2 SOUTHERN CHUM - OVERVIEW

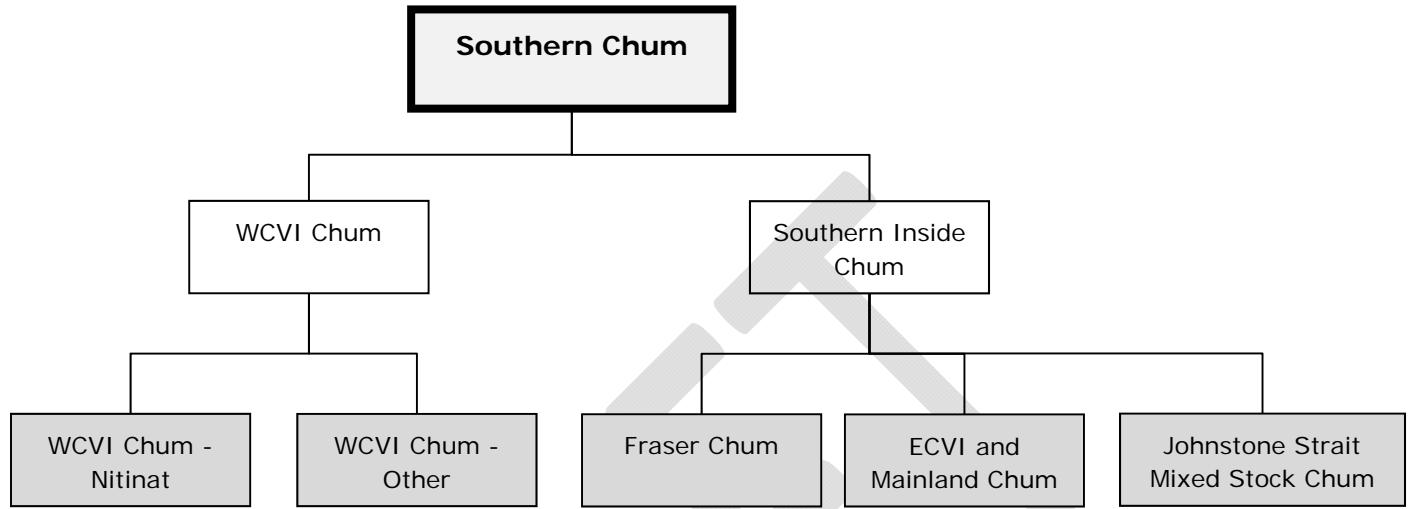


Figure 2-1: Overview of Southern Chum

Southern Chum Enhancement Information:

The major DFO operation enhancement facilities that produce chum are:

- **BC South Coast:**
 - **Big Qualicum River hatchery**
 - **Conuma River hatchery**
 - **Little Qualicum River hatchery**
 - **Nitinat River hatchery**
 - **Puntledge River hatchery**
 - **Quinsam River hatchery**
- **BC Lower Fraser:**
 - **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 2014 brood year (i.e. 2015 releases, and #'s on hand for 2016 release), and the Production Plan, which includes proposed targets for the upcoming 2016 brood year. <http://www.pac.dfo-mpo.gc.ca/sep-pmvs/ifmp-pgip-eng.html>.

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2.1 Southern Inside Chum - Overview

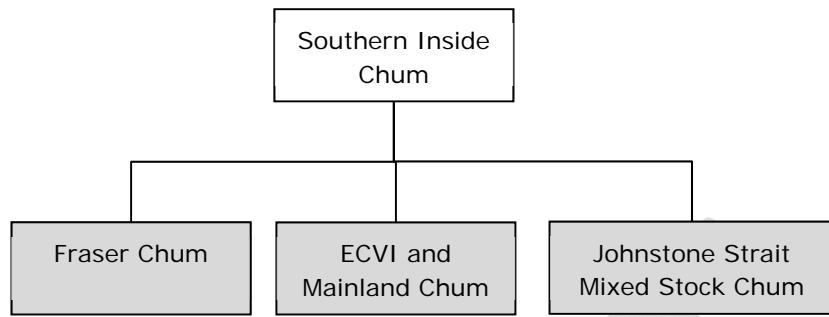


Figure 2-2: Overview of Southern Inside Chum

Southern Inside Chum salmon spawn throughout Inner South Coast (ISC) and in the Fraser River watershed, with Fraser stocks typically making up a significant portion of the returning abundance. Southern Inside Chum are managed in 2 distinct fall timed (mid-September into December) groups: Fraser Chum with 2 Conservation Units (CU) and Inner South Coast Chum with 7 CUs. Inner South Coast Chum are further split into 2 geographic areas for salmon assessment (Figure 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 by-catch in Fraser directed sockeye and pink fisheries.

Fisheries target the Southern Inside chum aggregate are the Johnstone Strait mixed-stock fishery. The mixed-stock fishery is constrained to a 20% exploitation rate ceiling on the aggregate Southern Inside Chum. 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 Southern Inside 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 Southern Inside Chum populations are typically estimated through visual surveys of index systems, with some higher quality estimate 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 in most of the CUs.

Hatchery programs for Southern Inside Chum are mostly done to supplement harvest (Fraser: Chehalis, Chilliwack, Inch, Weaver channel, ISC: Big Qualicum, Little Qualicum, Puntledge), but there are also some rebuilding programs (e.g. Nimpkish Chum).

2.1.1 Fraser Chum

2.1.1.1 Snapshot Overview and Map of Management Unit

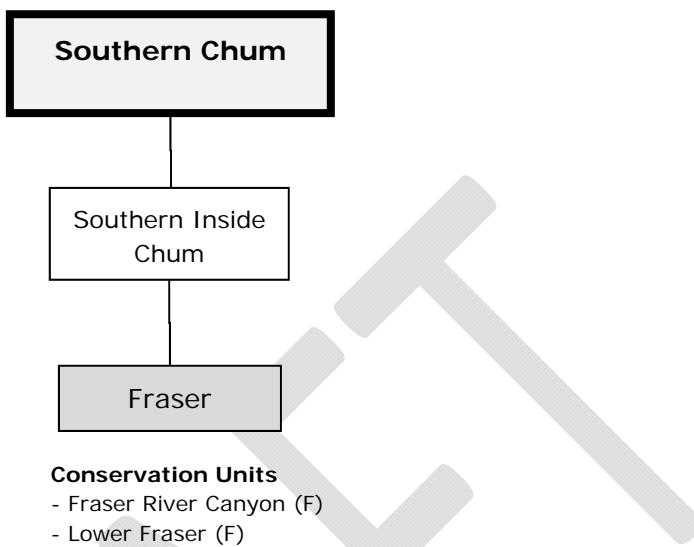


Figure 2-3: Overview of Fraser Chum

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 two WSP Conservation Units: Lower Fraser chum and Fraser Canyon chum. 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 US 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 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.

2.1.1.2 Stock Assessment Information

2.1.1.2.1 Pre-season

Formal quantitative forecasts are not prepared for Fraser River chum, but the qualitative Salmon Outlook for 2016 is “abundant”. Estimated escapements in 2012 and 2013 were approximately 1.4 million and 920,000 chum respectively. Escapement estimates are not yet available for 2015, but observations from on-going assessments indicate that the escapement goal of 800,000 was exceeded. Directed fisheries are likely for the 2016 season, subject to in season assessments.

2.1.1.2.2 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 21st through the end of November, the Chum salmon test fishery operates daily. 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 2-1: Planned Chum Test Fisheries

Test Fishery	Proposed Proponent	Test Fishery Purpose	Potential Dates (preliminary ^a)	
			Start	End
Albion GN	DFO	Fraser Chum	01-Sep	23-Nov

^a All dates subject to change based on in season factors.

2.1.1.3 Decision Guidelines and Management Actions

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 run strength 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 900,000, the Canadian commercial chum salmon fisheries within the Fraser River and in associated marine areas (Area 29), will be suspended. Catch will also be restricted in US Areas 7 and 7A if a terminal Fraser Chum return of less than 900,000 is identified.

Table 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	Main stem Fraser River closed, restricted openings on tributaries
500,000 to 800,000 in Fraser	Directed fisheries limited to FSC	Normal	Closed	Main stem 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	Main stem 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 (35,000-105,000)	Open
>1,050,000 in Fraser	Commercial catch not to exceed 15% for chum.	Normal	Open (105,000 plus)	Open

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.

If the initial Fraser River terminal run-size assessment in mid-October indicates that abundance is in excess of 1,050,000, consideration may be given for Area B fisheries to precede Lower Fraser gill net fisheries, including Area E gill net and First Nation Economic Opportunity (EO) gillnet fisheries; further details and target allocations will be determined as part of the in season planning process. If in season abundances are lower than the threshold run size of 1,050,000, consideration will be given for Area B to access commercial allocation remaining after Lower Fraser gill net fisheries have concluded. 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 31st 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.

First Nations FSC fisheries will be initiated in early October, after most of the Interior Fraser coho return has moved through the Lower Fraser River. 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 harvest rate of less than 10%.

Implementation of the Wild Salmon Policy will require the development of lower and upper escapement “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.

2.1.1.4 Incidental Harvest, By-catch and Constraints to Fraser Chum Fisheries

Chum fisheries within the Fraser River will be managed to minimize by-catch of co-migrating stocks of concern, including Lower Fraser coho, Interior Fraser River coho and Interior Fraser River steelhead.

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 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 of Section 13.

The current approach for managing fisheries which impact Interior Fraser River steelhead has been developed jointly by DFO and the Province of British Columbia. In 2016, management actions will continue to protect 80% of the Interior Fraser River Steelhead run with a high degree of certainty. In order to meet this objective, commercial gill net opportunities will be delayed to avoid the majority of the Interior Fraser steelhead migration period. Other factors, including possible implementation of additional precautionary measures in gillnet fisheries to protect Interior Fraser River steelhead will be taken into account in determining the specific timing of fisheries.

All gears are required to use fishing methods to avoid/reduce steelhead encounters and minimize steelhead mortality. 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.

The Department will continue to discuss with harvesters and with the Province potential strategies to increase flexibility in the conduct of fisheries to address concerns related to safety, improved monitoring and access to available allocations, while achieving a high level of protection for co-migrating stocks of concern.

2.1.1.5 Allocation and Fishing Plans

2.1.1.5.1 First Nation 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 91,300 Fraser chum.

Refer to Section 10.2 for a Table of Communal Licence Harvest Target Amounts for Southern BC / Fraser River First Nations Fisheries.

First Nations will be provided FSC fishing opportunities within the Fraser River as the Interior Fraser River coho window closure ends in each area, beginning in early October. At run sizes deemed to be a conservation concern, 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.

Fishery Monitoring and Catch Reporting

In the Lower Fraser, 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.

Treaty Fisheries

Tsawwassen Fisheries (Domestic)

As per the Tsawwassen Fisheries Operation Guidelines (TFOG), each year the Tsawwassen First Nation (TFN) will develop a Tsawwassen Annual Fishing Plan (T AFP) for the harvest of salmon as per the Tsawwassen First Nation Final Agreement. The T AFP 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 T AFP is then presented to the JFC for their review. The JFC is made up of representatives of Canada (DFO), Province of BC and the Tsawwassen First Nation. The JFC considers the T AFP 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 salmon under the Tsawwassen First Nations Final Agreement is as follows:

In any year, the Tsawwassen Fishing Right Allocation for chum salmon 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.

2.1.1.5.2 Recreational Fisheries

Fishing is open to 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 Alexandra Bridge), the daily limit is two chum. Updates are provided via Fishery Notice and published on the recreational fisheries website: www.bcsportfishingguide.ca.

Fishery Monitoring and Catch Reporting

A recreational creel survey is conducted in the lower Fraser River during a portion of the times and areas open to fishing for salmon. Catch estimates are generated for all salmon species harvested (kept)

and released during the time and area surveyed. Typically, the creel survey in the Lower Fraser concludes on September 30 which is prior to the peak Fraser River chum migration period.

2.1.1.5.3 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 the Johnstone Strait by a number of commercial licence groups (see section on Johnstone Strait Mixed Stock Chum). 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.

2.1.1.5.3.1 Allocation

The following table describes the overall allocation for all Inside Southern chum, which includes Fraser Chum (refer to Sec. 2.1 - Inside Southern Chum figure). These overall allocations are used to balance overall harvest amounts in the JS Mixed stock, ECVI and mainland, and Fraser River commercial fisheries.

Table 2-3: Commercial Allocation Implementation Plan for Southern Inside Chum 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%

2.1.1.5.3.2 *Fraser Commercial Chum Fisheries*

Area B and Area E (Area 29)

- Gill net and seine 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.
- Opportunities for retention of hatchery marked (adipose clipped) coho by-catch may be considered in lower Fraser area commercial chum fisheries in late October and November.

Area H Troll (Area 29)

Mid to Late October/Early November - Area 29

- Potential fishing opportunities for chum in Area 29 will be determined in season based on in season abundance assessments.

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 and 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.
- On-grounds charter patrol and DFO catch monitoring coverage in Fraser River during each Area E gill net openings.
- Roving on-water Observer coverage 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 B Seine Area 29 Chum Fishery

The Area B Harvest Committee has expressed an interest in continuing to further 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

GEAR TYPE - Seine gear using both, regular seine and shallow seine nets, the use of power skiffs is permitted and 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 Southern Inside 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 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 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

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 Southern Inside 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 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.

2.1.1.5.3.3 Fraser First Nations Commercial Chum Harvest

Demonstration Fisheries

2016 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 –Chum: Beach seines only. Beach seines not to exceed a maximum mesh size of 2 $\frac{3}{4}$ inches and a length of 50 fathoms or 360 feet.

LOCATION –Chum: To be determined but will be expressed as a percentage (%) share of the Fraser River Terminal Commercial Total Allowable Catch (FRTCTAC)

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

Fraser chinook: Fraser chinook by-catch retention may be permitted subject to abundance.

Hatchery Marked Coho: Hatchery-marked coho by-catch retention may be permitted subject to abundance.

MONITORING PLAN –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.

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 Nation 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 Nation economic opportunity (EO) fishery), or a general commercial fishery (e.g. Area E). 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 Nation. 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 Commercial Allowable 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.

Economic Opportunity Fisheries

Negotiations to provide economic opportunities to First Nations the lower Fraser River 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 similar rules to the commercial fishery, and opportunities are only afforded if commercial TAC is available. 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 2016, 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 similar rules 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 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.

2.1.1.5.4 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**

2.1.2 Inner South Coast Chum Terminal Fisheries

2.1.2.1 Snapshot Overview and Map of Management Unit

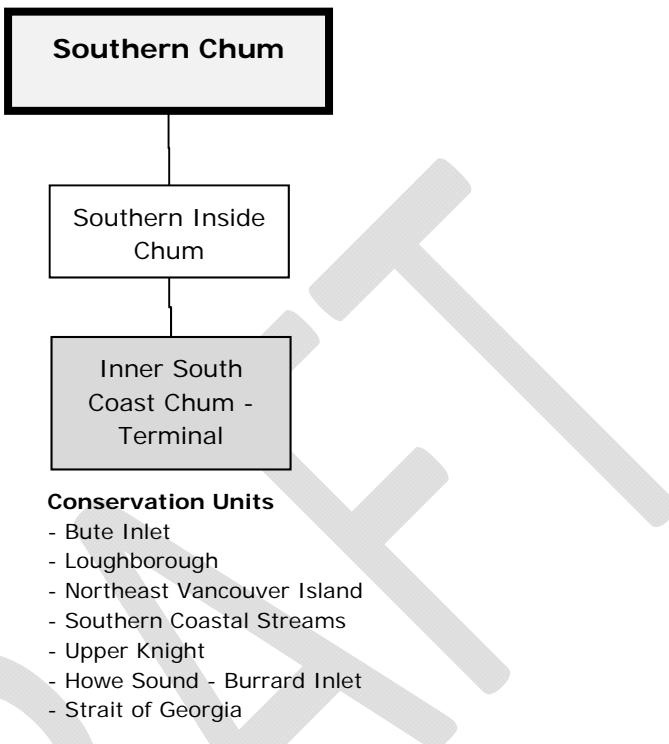


Figure 2-4: Overview of Inner South Coast Terminal Chum

ISC Chum include all chum salmon spawning in watersheds in 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 Fraser River mainstem and tributaries. The major Inner South Coast chum systems, grouped by CU, management and statistical area, include:

Table 2-4: Population Structure of the Inner South Coast chum conservation unit

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.

Conservation Unit	Management Area	Stat Area	Spawning Sites
Southern Coastal Streams	Johnstone Strait	11/12	Driftwood Creek (Area 11), <u>Waldon Creek</u> (Area 12)
	Kingcome	12	<u>Bughouse Creek</u> , Charles Creek, <u>Cohoe Creek</u> , Embley Creek, Hauskin Creek, Dennis Bay Creek, Kenneth River, <u>Kingcome River</u> , <u>Mackenzie River</u> , Nimmo Creek, <u>Scott Cove Creek</u> *, Shelter Bay Creek, Simoom Sound Creek, Sullivan Bay Creek, <u>Wakeman River</u>
	Bond/Knight	12	Ahta River , Ahta Valley Creek, , Gilford Creek, Hoeya Sound Creek, Kakweiken River , Kamano Bay Creek, Lull Creek, Maple Creek, Matsiu Creek, McAlister Creek, Shoal Harbour Creek , Viner Sound Creek *, Wahkana Bay Creek
Upper Knight	Bond/Knight	12	<u>Ahnuhati River</u> , Franklin River, Klinaklini River , Kwalaite Creek , Sim River
Loughborough	Bond/Knight	12	Boughey Creek, Call Creek, Cracroft Creek, Glendale Creek , Port Harvey Lagoon Creeks, Protection Point Creek, Shoal Creek
	Johnstone Strait	12	Fulmore River , Potts Lagoon Creek, Robbers Knob Creek, Tuna River
	Loughborough to Bute	13	Apple River , Bachus Creek, Cameleon Harbour Creek, Chonat Creek, Elephant Creek, Fanny Bay Creek, Frazer Creek , Frederick Arm Creek, Granite Bay Creek , Grassy Creek , Gray Creek , Hanson's Creek, Hemming Bay Creek, Heydon Creek , Kanish Creek, Knox Bay Creek, Owen Creek, Phillips River , Read Creek , St. Aubyn Creek, Stafford River, Thurston Bay Creek, Village Bay Creek , Waiatt Bay Creek, Willow Creek , Wortley Creek
Northeast Vancouver Island	Upper VI	12	Cluxewe River, Keogh River, Nahwitti River, Quatse River *, Shushartie River, Songhees Creek, Stranby River, Tsulquate River
	Johnstone Strait	12	Adam River , Hyde Creek, Kokish River , Mills Creek, New Vancouver Creek, Nimpkish River *, Tsitika River,
		13	Amor De Cosmos Creek , Hyacinthe Creek , Salmon River
	Mid-VI	13	Pye Creek
Strait of Georgia	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
Bute Inlet	Loughborough to Bute	13	Cumsack Creek, Homathko River, Orford River, Southgate River , Teaquaahan River
Strait of Georgia	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 , Oyster River *, Portuguese Creek, Puntledge River *, Rosewall Creek *, 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 , Little Qualicum River *, Nile Creek , Qualicum River *
	Toba Inlet	15	Black Lake Creek, Brem River , Brem River Tributary, Filer Creek, Forbes Bay Creek, Forbes Creek, Klite River, Little Toba River, Okeover Creek , Pendrell Sound Creek, Refuge Cove Creek, Store Creek , Tahumming River, Theodosia River , Toba River, Twin Rivers
	Jervis Inlet	15	Lang Creek *, Lois River, Sliammon Creek *, 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
	Howe Sound / Sunshine Coast	16	Dakota Creek, Mcnab Creek, Mcnair Creek, Potlatch Creek, Rainy River, Twin Creek,

Conservation Unit	Management Area	Stat Area	Spawning Sites
	Lower Vancouver Island	17	Beck Creek, Bloods Creek, Bonell Creek , Bonsall Creek* , Bush Creek , Chase River , Departure Creek, Haslam Creek , Holland Creek , Knarston Creek, Millstone River , Nanaimo River* , Nanoose Creek, Napoleon Creek, Porter Creek, Stocking Creek , Tyee Creek, Walker Creek
	South Vancouver Island	17	Chemainus River*
		18	Cowichan River , Fulford Creek, Koksilah River, Shawnigan Creek
		19	Goldstream River*
Howe Sound – Burrard Inlet	Jervis Inlet	16	Bishop Creek , Shannon Creek
	Howe Sound / Sunshine Coast	16	Wilson Creek
		28A	Avalon Creek, Centre Creek, Eagle Creek, Hutchinson Creek, Langdale Creek , Long Bay Creek, Mannion Creek, Nelson Creek, Ouillet Creek , Terminal Creek, West Bay Creek, Whispering Creek
	Burrard Inlet	28A	Brothers Creek, Capilano River, Hastings Creek, Indian River , Lynn Creek, Mackay Creek, Maplewood Creek, McCartney Creek, Mosquito Creek, Mossom Creek, Noons Creek, Richards Creek, Seymour River
Strait of Georgia	Howe Sound / Sunshine Coast	28A	Chapman Creek, Chaster Creek , Flume Creek, Roberts Creek , 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

Inner South Coast chum 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 (ie. 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.

2.1.2.2 Stock Assessment Information

2.1.2.2.1 Pre-season

Table 2-5: Inner South Coast Terminal Chum 2016 Salmon Outlook

Management Area	Stock Outlook
Johnstone Strait and Mainland Inlet (Area 12 and 13)	<p>Fall chum stocks include those stocks arriving in terminal areas after mid-September; expectations for 2016 are near target. This is based on the strong parental brood abundances of the 2011-2013 returns; the indications of improved early marine survival conditions in 2013 (strong pink and coho returns in 2014), the subsequent poor marine condition in 2014 (poor pink and coho returns to the local area) with an expectation of continued poor marine conditions and the high variability in chum returns.</p> <p>Nimpkish River chum return much later than other ISC chum (peak mid-November). This population continues to be depressed and returns in recent years been very low. Expectations are for Nimpkish River chum to be low in 2016.</p> <p>Summer Chum stocks include those stocks arriving in terminal areas before mid-September. In 2012, stocks were mainly below average throughout the area and will likely stay the same in 2016. Overall, there is high variability in chum returns, and ocean survival rates will be a key factor in the strength of 2016 returns.</p>
Area 14 -	For 2016 an average return is expected and the preseason forecast indicates that a possible surplus may be expected. As there is a high level of uncertainty associated with preseason chum forecasts, the Department will be looking for indications of in season escapement prior to planning any fishing opportunities.
Area 16	For 2016, a below average return is expected in the aggregate of the major chum systems. As there is a high level of uncertainty associated with

	chum forecasts, in season escapement assessments may be used to determine potential fishing opportunities.
Area 17	For 2016 an above average return with a moderate surplus is expected to return to the Nanaimo River. As there is a high level of uncertainty associated with chum forecasts in season escapement assessments will be used to determine potential fishing opportunities.
Area 18	For 2016 an above average return with a moderate surplus is expected to return to the Cowichan River. As there is a high level of uncertainty associated with chum forecasts in season escapement assessments will be used to determine potential fishing opportunities.
Area 19	For 2016 an above average return with a moderate surplus is expected to return to the Goldstream River. As there is a high level of uncertainty associated with chum forecasts in season escapement assessments will be used to determine potential fishing opportunities.

2.1.2.2.2 In season

There are no planned chum Test fisheries in terminal ISC areas, however in some years there has been a Cowichan chum test fishery in the marine approach area. Refer to the harvest plans outlined in Table 4.

Decision Guidelines and Management Actions

Structure of Harvest Management Decision

Overall Southern Inside chum are managed under a precautionary harvest approach to fisheries management, with a focus on identifying fishing opportunities in terminal areas of Johnstone Strait, the 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 entry licencing) and, recently in some areas and by some gear types through share-based demonstration fisheries. 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 by-catch 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.

Harvest Approach for Terminal ISC Chum Fisheries

Management Escapement Goals (MEG) are in place for most chum bearing systems within the ISC 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 2-6 and Table 2-7 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 Inner South Coast typically have short initial openings, and are either extended or closed depending on in season escapement data and catch information from the initial opening.
- Low impact fisheries (e.g. limited number of vessels) on terminal chum stocks generally occur prior to those having a higher impact (e.g. 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.
- Terminal chum fisheries have been restructured to allow low-effort harvests on small local surpluses with “pocket fisheries” in particular inlets with less than 10 vessels. Over the last 5 years commercial harvesters and DFO have developed and refined a collaborative effort-control program (i.e. “limited effort fisheries”). These mostly target chum stocks in terminal fisheries, with short openings and a small number of vessels that can participate. For example, 5 boats out of 240 licence holders are selected by harvesters to fish for a 1-day opening every week. This has occurred in Bute Inlet in recent years when small surpluses were anticipated. Based on agreements among licence holders, similar low-impact terminal fisheries have been designed for chum stocks along both coasts of Vancouver Island. All of these fisheries are managed based on local abundance, not aggregate abundance, and also provide improved abundance data for future management.

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 2-6: 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
MEG	240,000 (incl. 10K hatchery broodstock)	110,000
Based on	These are interim targets based on stock recruit relationships for each of these populations	<i>Habitat area and chum spawning densities in the various rivers, combined for the aggregate</i>

Major Systems	Puntledge (60K goal) Little Qualicum (85K), Big Qualicum (85k)	Tzoonie, Deserted, Brittain, Vancouver and Skwawka Rivers
In season Assessment	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
Implementation strategy	Manage early-season fisheries to meet aggregate spawner goal but also avoid large surpluses (>100k). If forecast exceeds 240k, 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 2-7: 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)
MEG	40,000	160,000	15,000
Based on	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
Major Systems	Nanaimo River	Cowichan	Goldstream
In season Assessment	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	In the past approach water 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 located in the lower river since 2006.	Visual surveys via stream walks by hatchery staff.

	swim surveys to help validate and provide species composition for the DIDSON program.		
Implementation strategy	Commercial openings occur only if in season observations indicate high probability of meeting the spawning goal. The development of a detailed harvest plan is scheduled for the spring of 2016.	Commercial openings occur only if in season observations indicate high probability of meeting the spawning goal. The development of a detailed harvest plan is scheduled for the spring of 2016.	Commercial openings occur only if in season observations indicate high probability of meeting the spawning goal. The development of a detailed harvest plan is scheduled for the spring of 2016.

2.1.2.3 Incidental Harvest, By-catch and Constraints to Inner South Coast Chum Fisheries

Table 2-8: Incidental Harvest, By-catch and Constraints to Inner South Coast Fisheries

Management Area	Incidental Harvest, By-catch and Constraints to Inner South Coast Fisheries
Nimpkish (Area 12-19)	Observations in recent years have shown consistently low abundance of chum returning to the Nimpkish River. Low brood year returns in 2012 and no significant improvements in marine survival leave expectations for Nimpkish chum t well below target in 2016.
Area 14	<p>Beach boundaries are in effect to protect coho and chinook. Boundaries may range from half a mile to one and a half miles depending upon by-catch concerns and time of year. A French 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, and barbless hooks for trollers and mandatory brailing 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> <p>In recent years the Puntledge River has experienced proportionally greater escapements than the two Qualicum Rivers and in the last two years, escapements to the two Qualicum Rivers have been below target. This trend may continue, necessitating continued consideration of fishing strategies to selectively target the Puntledge River return.</p>
Area 16	There is mandatory non-retention of coho. Fishing is limited to terminal areas to minimize impacts on passing stocks.

Area 17	<p>Subarea boundaries protect migrating Fraser River chum and 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>Subarea boundaries protect coho holding off Cherry Point.</p> <p>Beach boundaries are 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.</p> <p>Other coho conservation measures in effect include non-retention, barbless hooks for troll, and mandatory brailing 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 by-catch occurs. This would occur following consultation with the Roundtable and the Chum Advisory Committee.</p>
Area 19	<p>Subarea boundaries; to protect chinook and coho holding in Squally Reach</p> <p>Commercial fisheries will utilize selective fishing techniques to minimize by-catch impacts.</p>

2.1.2.4 Allocation and Fishing Plans

2.1.2.4.1 First Nation Fisheries

First Nations target local salmon stocks for FSC purposes throughout the Inner South Coast. On the Inner South Coast, First Nations harvest of chum salmon is typically small. In addition to these FSC fisheries, local First Nations access chum through ESSR harvests at several hatchery facilities including the Cowichan River hatchery.

Tla'amin Fisheries (Domestic)

The Domestic allocations for salmon under the Tla'amin First Nation 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.

2.1.2.4.2 Recreational Fisheries

Marine Waters

Marine terminal fisheries targeting Inner South Coast chum take place in tidal and non-tidal waters and angler effort is focussed on terminal chum returning to the Puntledge, Qualicum, Nanaimo and Cowichan River systems.

Chum fisheries are open Jan 1-Dec 31, with the majority of marine recreational chum harvest occurring in Areas 14 and 18 from late September to late October. Updates are provided via Fishery Notice and published on the recreational fisheries website, www.bcsportfishingguide.ca. Normal limits are 4/day and 8 in possession in all areas. 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.

For 2016 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, log books 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.

2.1.2.4.3 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 Southern Inside chum including: Johnstone Strait Mixed-Stock fisheries and terminal area fisheries in inside

waters, including the Fraser River. In the terminal areas fishing effort focuses on a terminal harvests in a few larger systems (some of them with substantial hatchery supplementation).

2.1.2.4.3.1 Allocation

Table 2-9: 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%

2.1.2.4.3.2 ISC Terminal Commercial Chum Fisheries

For 2016 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 process. The following opportunities may be available:

The fisheries in each area are managed as follows:

- *Johnstone Strait and Mainland Inlet Terminal fisheries:* Any Johnstone Strait or 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. No fishing opportunities directed at Nimpkish River chum are anticipated due to recent trends of poor returns. In season assessment will confirm the potential for any harvest opportunities; however, there have been no opportunities in recent years.
- *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. The major systems are:
 - Area 14 - Puntledge, Big Qualicum and Little Qualicum: The fishery is directed at the enhanced stocks of three river systems; Puntledge, Little Qualicum and Big Qualicum Rivers. 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.
 - (a) Early October to Late-November:

- Possible Area D gill net openings starting in early October. Further gill net openings are subject to overall abundance in Area 14 and escapements in the Puntledge, Little Qualicum and Big Qualicum Rivers.
- Limited effort Area B seine opportunities may be available in late October dependent on escapement levels, abundance and allocation status. Full fleet opportunities may also be available.
- Possible Area H troll openings starting in early 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 – Sliammon: No targeted commercial fisheries for pink or chum.
- Area 16 - Jervis Inlet: This terminal fishery targets wild chum stocks returning to river systems in the Jervis Inlet area. The main systems are Tzoonie, Deserted and Skwawka Rivers.

(a) Late-October to Mid-November - Area 16 (Jervis Inlet)

- Commercial opportunities are not anticipated due to the recent trend of poor returns; however, this will be confirmed in season.
- Area 17 – Nanaimo: This fishery is directed primarily at Nanaimo River stocks. The Nanaimo River chum stocks are supplemented by the Nanaimo River Hatchery on poor return years.

(a) October to Early November - Area 17

- Possible Area E gill net opening. Openings are subject to in season abundance estimates of Nanaimo River chum.
- Area B seine opportunities will depend on abundance and licence area allocation status.
- Possible Area H troll opening. Openings are subject to in season abundance estimates of Nanaimo River chum.
- Area 18 – Cowichan: This 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.
- Area 19 – Goldstream (Saanich Inlet): This fishery is directed primarily at Goldstream River chum stocks, but some Cowichan River chum are also harvested incidentally.

(a) Late-October to Early December - Areas 18 and 19

- Possible commercial net fisheries in Satellite Channel and Saanich Inlet. Openings are subject to in season abundance estimates for the Cowichan and Goldstream Rivers.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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 a demonstration fishery proposal for Mainland Inlet chum under the Commercial Salmon Allocation Framework process. See Appendix 6 for more details.

2.1.2.4.3.3 ISC Terminal First Nation Commercial Chum Harvest

The First Nation Salmon Coordinating Committee has submitted a demonstration fishery proposal for Cowichan chum under the Commercial Salmon Allocation Framework process. See Appendix 6 for more details.

2.1.2.4.4 ESSR Fisheries

ESSR fisheries may be considered in the following areas: Little Qualicum, Big Qualicum, Cowichan, Puntledge, and Sliammon.

2.1.3 Inner South Coast Chum Mixed Stock Fisheries

2.1.3.1 Snapshot Overview and Map of Management Unit

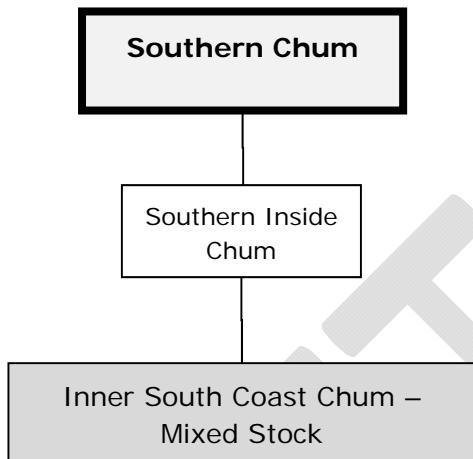


Figure 2-5: Overview of Inner South Coast Chum Mixed Stock Fisheries

The Johnstone Strait chum 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 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 also 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 River Canyon (F)
- Lower Fraser (F)
- Bute Inlet
- Loughborough
- Northeast Vancouver Island
- Southern Coastal Streams
- Upper Knight
- Howe Sound - Burrard Inlet
- Strait of Georgia

2.1.3.2 Stock Assessment Information

2.1.3.2.1 Pre-season

Table 2-10: Inner South Coast Chum 2016 Salmon Outlook

Management Area	Stock Outlook
Johnstone Strait and Mainland Inlet (Area 12 and 13)	<p>Fall chum stocks include those stocks arriving in terminal areas after mid-September; expectations for 2016 are near target. This is based on the strong parental brood abundances of the 2011-2013 returns; the indications of improved early marine survival conditions in 2013 (strong pink and coho returns in 2014), the subsequent poor marine condition in 2014 (poor pink and coho returns to the local area) with an expectation of continued poor marine conditions and the high variability in chum returns.</p> <p>Nimpkish River chum return much later than other ISC chum (peak mid-November). This population continues to be depressed and returns in recent years been very low. Expectations are for Nimpkish River chum to be low in 2016.</p> <p>Summer Chum stocks include those stocks arriving in terminal areas before mid-September. In 2012, stocks were mainly below average throughout the area and will likely stay the same in 2016. Overall, there is high variability in chum returns, and ocean survival rates will be a key factor in the strength of 2016 returns.</p>
Strait of Georgia	<p>Preliminary escapement enumeration data for 2015 returns indicate abundances are below forecast levels but should be close to targets. There is no clear division or difference between northern Strait of Georgia stocks and southern Strait of Georgia stocks. For 2016, returns should be greater than 2015 in the Cowichan, Goldstream and Jervis Inlet stocks, and similar in the Nanaimo and Mid-Island stocks, based on the returns in 2012.</p>
Fraser River (CUs: Fraser Canyon and Lower Fraser)	<p>Fraser Chum salmon escapement trended downward from 1998 to 2010. The escapement decline was halted and reversed with an estimated 1.1 million spawners reported in 2011. Spawning escapement has remained stable through 2014 (2012-2014 estimated escapement averaged 1.2 million spawners). Escapement assessments in 2015 are ongoing; an estimate of the 2015 escapement will be available by March 2016. The escapement goal for Fraser Chum is 800K. The in season estimate of the terminal return (provided on Oct.22, 2015) was approximately 1.78 million chum salmon (with a 96% probability that the run will exceed the escapement goal).</p>

2.1.3.2.2 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 of the Vancouver Island shoreline and the other fishing the Double Bay 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 we 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 2-11: Planned Chum Test Fisheries

Test Fishery	Proposed Proponent	Test Fishery Purpose	Potential Dates (preliminary ^a)	
			Start	End
Area 12	Namgis/A-Tlegay	JS St Chum (mixed stock)	15-Sept	30-Oct

^a All dates subject to change based on in season factors. In season information from initial TFs important to determining timing of subsequent TFs.

2.1.3.3 Decision Guidelines and Management Actions

Harvest Approach for Mixed-Stock Chum Fisheries in Johnstone Strait

The Johnstone Strait mixed-stock chum fishery targets fall run chum stocks that migrate through Johnstone Strait. Most of these fish spawn in systems adjacent to Johnstone Strait and the Strait of Georgia, and in the Fraser River (and tributaries), though a small component is bound for Washington State systems. The main components of the harvest are the Mid-Vancouver Island (MVI) and Fraser River stock groupings. 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.

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 2 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 (Clockwork).

The level of exploitation in Johnstone Strait and a critical abundance threshold of 1.0 million ISC chum used to manage both Canadian and US fisheries is identified within the PST revised Annex IV Chapter 6. The critical abundance threshold for the ISC chum aggregate including Fraser stocks provides a

reference point to either initiate (>1.0 million) mixed stock fisheries in Johnstone Strait and US 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 allocation arrangements determined pre-season.

The implementation of the management Strategy in Johnstone Strait has three distinct benefits:

- To minimize potential impacts on less productive stocks that are not following the aggregate abundance pattern
- To improve stability and predictability for harvesters; and
- 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 Southern Inside Chum aggregate (Johnstone Strait, Strait of Georgia, Fraser). The PST defines this as a critical threshold, and it is used as a Limit Reference Point (LRP) for commercial fisheries.

Table 2-12: Fishery Reference Points and Harvest Plan for Mixed-Stock Fisheries in Johnstone Strait

Management Zone	Run Size Range*	Harvest Guideline	Exploitation Rate Range**
1 – Critical	0 – 1 Million	Non-commercial fisheries only	up to 4%
Fishery Limit Reference Point for Commercial Fisheries = 1 Million run size			
2 – Very Low	More than 1 Million	Commercial harvest up to 15% ER, and non-commercial fisheries at 5% ER.	up to 20%
3 – Low			
4 - Moderate			
5 - High			

* 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:

- *Pre-Season:* The preseasong planning model takes into account average migration timing and spread of the Southern Inside 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). The general outline of the fisheries is as follows:

- (a) Purse Seines- Area B Seine fisheries are managed as two full-fleet competitive (derby) openings. There have been requests by the seine fleet to review the effort-based management approach and develop a revised approach that is better suited to implement share-based (e.g. ITQ) fisheries. Discussions are continuing regarding potential demonstration fishery options for 2016.
- (b) Gill Net- Area D Gill Net fisheries are managed as three full-fleet competitive (derby) openings.
- (c) Troll- Area H Troll Johnstone Strait chum harvest opportunities are managed as an Individual Transferable Boat Day demonstration fishery.

- 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.
- *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 LFRP.

Post-Season: Test fishery information is used for post season representation of the timing and spread of the aggregate return.

2.1.3.4 Incidental Harvest, By-catch and Constraints to Mixed Stock Chum Fisheries

Table 2-13: Incidental Harvest, By-catch and Constraints to Inner South Coast Fisheries

Management Area	Incidental Harvest, By-catch and Constraints to Inner South Coast Fisheries
Johnstone Strait and Mainland Inlets (Areas 12 and 13)	<p>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.</p> <p>Commercial opportunities for chum may be constrained prior to late September to achieve coho management objectives.</p> <p>The implementation of the management Strategy minimizes impacts on less productive stocks that are not tracking the aggregate abundance pattern.</p> <p>A plan to minimize gear interaction between the commercial and recreational sectors was implemented starting in 2007. Fishing opportunities for Area D gillnets during daylight hours on weekends are generally not planned in order to minimize any potential gear interactions with the recreational fishery in lower Area 13. Fishing opportunities for Area D gillnets on weekends are also generally not planned to minimize any processing issues on weekends. Fishing schedules and fishing dates will be confirmed pre-season following consultation with industry, First Nations, and stakeholders through the Chum Working Group process.</p> <p>Subareas 13-6 and 13-7 will be closed to troll fishing during weekends. During weekdays, Subareas 13-6 and 13-7 will be open to the commercial troll fleet.</p>

2.1.3.5 Allocation and Fishing Plans

2.1.3.5.1 First Nation Fisheries

Food Social and Ceremonial

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. In addition to these FSC fisheries, local First Nations may access chum through ESSR harvests at hatchery facilities if a surplus is identified.

Treaty Fisheries

Tla'amin Fisheries (Domestic)

The Domestic allocations for salmon under the Tla'amin First Nation Final Agreement are as follows:

Non-terminal Chum

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 the First Nation 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.

2.1.3.5.2 Recreational Fisheries

Marine Waters

Marine fisheries targeting South Coast chum take place in tidal and non-tidal waters occur throughout the Inner South Coast. Marine angler effort is spread throughout Johnstone Strait and the Strait of Georgia, with the majority catch and effort in Johnstone Strait.

Chum fisheries are open Jan 1-Dec 31, 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, www.bcsportfishingguide.ca. Normal limits are 4/day and 8 in possession in all areas.

For 2016 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, log books 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.

2.1.3.5.3 Commercial Fisheries

2.1.3.5.3.1 Allocation

Canadian commercial fisheries are managed to try and achieve allocation targets between fleets all Southern Inside 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% with allocations in terminal areas allocated to try and balance overall allocations below.

Table 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%

Notes on chum allocations (south):

*by-catch provision

^dpotential for future re-negotiation if chum populations re-build

2.1.3.5.3.2 Mixed-Stock Commercial Chum Fisheries

- Johnstone Strait 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 the May – June time period to begin this planning process. The fishing plan for Johnstone Strait mixed-stock fishery will follow the general outline:

Area B Seine

- First fishery will provide for a one day, 12 hour fishery, at the end of September or first week of October.
- Second fishery will provide for a one day, 10 hour fishery, around the third week of October. Note that the reduction in time to 10 hours is due to reduced daylight hours.
- If effort during the first and/or second fishery is considerably less than anticipated or severe weather hampers the fishery then additional fishing time will be considered.

Area D Gill Net

- Gill net fisheries are scheduled to commence at the end of September or in the first week of October.
- There may be as many as three separate openings throughout the time period of the end of September to the end of October (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.
- If effort during the first and/or second fishery is considerably less than anticipated or severe weather hampers the fishery then additional fishing time will be considered.
- 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

- Troll fisheries are scheduled to commence in late September and to finish by late October/early November.
- This fishery is planned to occur as Individual Transferable Effort (ITE) demonstration fishery (Please see details below in demonstration fishery section).
- Troll fisheries are not planned during Area B seine openings.

Mixed-Stock chum Demonstration Fisheries

Area H Troll Johnstone Strait Chum Individual Transferable Effort (ITE) Demonstration Fishery

It is anticipated that this fishery will be similar to the effort based ITE fishery that occurred in 2009-2015.

REGION- South Coast

PARTICIPANTS- All Area H troll licence holders

LOCATION OF FISHERY- Johnstone Straits (portions of Areas 12 and 13). Restrictions will be in place on weekends and holidays to restrict the fishery above Subarea 13-6

GEAR TYPE - Troll, barbless hooks and revival tanks are mandatory

TIME FRAME OF FISHERY - The fishery is anticipated to commence in late September and continue until early November. The fishery will be divided into two fishing periods. The timing of the two fishing periods and a potential 1 to 2 day closure between fishing periods is under review. There will be closures on seine fishing days depending on the structure of the seine 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.

The allocation of 5 boat days per licence (3 days in fishing period 1 and 2 days in fishing period 2) provided pre-season in 2015 is under review and will be confirmed prior to the start of the 2016 season. Boat days will be permitted to be transferred between other Area H licence holders within fishing periods, but not between periods.

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.

2.1.3.5.3.3 Mixed-Stock First Nation Commercial Chum Harvest

There are no First Nation commercial fisheries for mixed-stock chum.

2.1.3.5.4 ESSR Fisheries

ESSR fisheries are identified in the Fraser and ECVI/Mainland chum sections.

2.2 West Coast Vancouver Island Chum – Overview

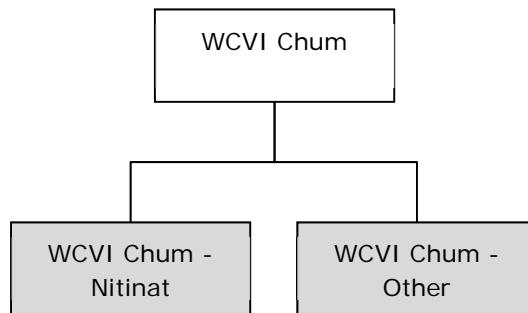


Figure 2-6: Overview of West Coast Vancouver Island Chum

2.2.1 WCVI Chum - Nitinat

2.2.1.1 Snapshot Overview and Map of Management Unit

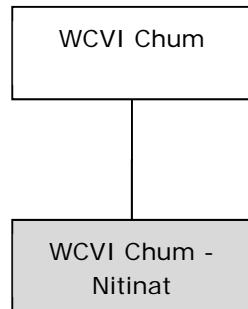


Figure 2-7: Overview of WCVI Chum - Nitinat

2.2.1.2 Stock Assessment Information

2.2.1.2.1 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 forecast abundance of Nitinat chum is anticipated to be available in April.

Accuracy of pre-season forecasts has been very poor.

2.2.1.2.2 In season

Nitinat Hatchery staff work in cooperation with the Ditidaht First Nation 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 fishing, 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 Nation 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 gillnet 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 was operated in Nitinat Lake in the past, however, this is no longer operating.

Decision Guidelines and Management Actions

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

Since 2013, a fixed harvest rate strategy has been used to harvest Nitinat Hatchery chum when the stock abundance is considered above the lower fishery reference point but below the target fishery reference point. The maximum harvest rate for the Nitinat stock is 25% when it is below the target fishery reference point. The management and harvest strategies for WCVI chum stocks are described below.

Stage 1 Limited Entry Assessment Fisheries 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 less than 15%).

Stage 2 Limited Effort fisheries 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 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. In Stage 3 a “surplus-to-escapement” target fishery is implemented. The surplus is the projected abundance above the 325,000 escapement target.

Additional descriptions of the three different commercial fishery stages are provided in the table below:

Table 2-15: Nitinat commercial fisheries by stage category

Fishery	Stage 1	Stage 2	Stage 3
	Assessment Fishery	Commercial Fishery Fixed effort / maximum harvest rate strategy	Commercial Fishery Surplus to Escapement Target strategy
Objective	Assess stock abundance in-season through commercial CPUE	Limit effort to achieve a precautionary harvest rate of 25%, assess run size	Limit effort to achieve the allowable catch
Trigger	Pre-season forecast below the lower fishery reference point of 225,000	Pre-season forecast above the target fishery reference point OR Stage 1 Assessment Fishery indicates abundance is above the lower fishery reference point of 225,000	In-season assessment suggests escapement to Nitinat Lake will exceed the upper fishery reference point of 325,000
Effort	<p>Limited entry and limited effort fishery – i.e. 20 commercial g/n boats maximum participating for 2 days/week.</p> <p>First day fishing on mandatory “grid pattern” – i.e. maximum of 5 vessels per quadrant.</p> <p>Mandatory catch validation at offload + daily hail.</p>	<p>Commercial G/N:</p> <p>Situation 1: Greater than 75 vessels participating: each weekly opening is limited to 1 day.</p> <p>Situation 1. Less than 75 vessels participating: each weekly opening is limited to a total of 120 vessel-days per week.</p> <p>Commercial S/N.</p> <p>2 openings: 1 in Statweek 10/3 and the second in 10/4.</p> <p>Option 1: Limit vessel-days to 80 total, 40 per week.</p> <p>Option 2: Limit vessel-days to 50 total week 10/3 and 15 total week 10/4.</p>	<p>Stage 3 fisheries not planned prior to week 10/3</p> <p>Allowable catch and effort is determined by the expected surplus given escapement observations and timing.</p>

2.2.1.3 Incidental Harvest, By-catch and Constraints to Nitinat Chum Fisheries

No commercial fishing takes place prior to statistical week 10/1 to address Fraser River steelhead by-catch concerns. Commercial gillnet fisheries (stage 2 and 3) in statistical weeks 10/1 and 10/2 will operate inside a one mile boundary between Dare Point and Pachena Point, with a weed line of between 1.2 and 2.0 meters on nets and daylight fisheries only in order to reduce encounters of steelhead and coho. After statistical week 10/2, 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.

When both fleets fish together, gill nets only may be permitted between Bonilla Point and Logan Creek, subject to concerns for coho and other local stocks.

2.2.1.4 Allocation and Fishing Plans

2.2.1.4.1 First Nation Fisheries

Food Social and Ceremonial Fisheries

Ditidaht First Nation 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 in Southern BC / Fraser River First Nations Fisheries.

There are no constraints on FSC fisheries at normal run sizes.

Fishery Monitoring and Catch Reporting

Fishery monitoring will be conducted by DFO and the First Nation 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.

2.2.1.4.2 Recreational Fisheries

Marine Waters

Marine fisheries targeting Nitinat Chum take place primarily in Nitinat Lake (Area 22) Recreational/Tidal: normal limits; finfish closure at mouth of the Nitinat River to prevent foul hooking. Chum fisheries are open Jan 1-Dec 31. Normal limits are 4/day and 8 in possession in all areas.

Updates are provided via Fishery Notice and published on the recreational fisheries website: www.bcsportfishingguide.ca.

For 2016 in Southern BC tidal waters, it is anticipated that chum opportunities will be provided for Nitinat chum.

Freshwater

Recreational fisheries occur mainly from September to November in freshwater areas. In non-tidal waters, chum retention is typically permitted based on observed abundances, and primarily occurs in hatchery systems. In the Nitinat River Retention for chum opens October 15 with normal freshwater daily limits (i.e. 2 chum per day) with some location restrictions. The freshwater recreational fishery is contingent on achieving escapement goals and concern for impacts on spawning fish.

Fishery Monitoring and Catch Reporting

Catch monitoring programs including creel surveys, log books 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.

2.2.1.4.3 Commercial Fisheries

2.2.1.4.3.1 Allocation

In the early portion of the fishery (Oct 01-15), the allocation target will be 75% gill net and 25% seine. The overall fishery allocation targets are outlined below.

Table 2-16: 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%

*by-catch provision

2.2.1.4.3.2 WCVI – Nitinat Commercial Chum Fisheries

The table below provides an outline of potential fisheries by statistical week.

Table 2-17: 2015 Nitinat Chum Fishing Plan

WEEK	GUIDELINES	ACTION
Week 9/4 (Sep 18-Sep 25)	No fisheries prior to week 10/1 due to Interior Fraser River Steelhead concerns.	No fisheries.
Week 10/1	Stage 1 limited entry gillnet assessment fishery may occur if pre-season	Weedlines mandatory. Stage 1 fishery occurs in Area 21 and a

(Sep 26- Oct 2)	<p>forecast is below lower fishery reference point.</p> <p>Stage 2 limited effort gillnet fishery if pre-season forecast is above lower fishery reference point.</p> <p>Escapement milestone of 75,000* (total to date).</p>	<p>portion of 121. Effort limited to 20 boats for two days. Mandatory dockside monitoring program.</p> <p>Stage 2 fishery occurs in Area 21 only. If vessels >75 then only 1 day. If vessels <75 then a maximum of 2 days.</p>
Week 10/2 (Oct 3- Oct 9)	<p>If week 10/1 escapement milestone has been met, Stage 2 fishery continues. If escapement goal not met, only Stage 1 fishery may occur.</p> <p>Escapement milestone of 125,000* (total to date).</p>	<p>Weedlines mandatory</p> <p>Stage 1 fishery occurs in Area 21 and a portion of 121. Effort limited to 20 boats for two days. Mandatory dockside monitoring program.</p> <p>Stage 2 fishery occurs in Area 21 only. If vessels >75 then only 1 day. If vessels <75 then a maximum of 2 days.</p>
Week 10/3 (Oct 10-16)	<p>If week 10/2 escapement milestone has been met, Stage 2 fishery can continue. If escapement goal not met, only Stage 1 fishery may occur. Stage 3 fisheries will commence if in season forecast is greater than 325,000 and escapement goals are met.</p> <p>Escapement milestone of 175,000* (total to date).</p>	<p>Stage 1 fishery occurs in Area 21 and a portion of 121. Effort limited to 20 boats for two days. Mandatory dockside monitoring program.</p> <p>Stage 2 fishery occurs in Area 21 only. If vessels >75 then only 1 day. If vessels <75 then a maximum of 2 days.</p> <p>Stage 3 fisheries occur in Area 21 and portions of 121 and 20. Gillnet fisheries are limited if the catch to date is greater than 200,000.</p>
Week 10/4 (Oct 17- Oct 23)	<p>If week 10/3 escapement milestone has been met, Stage 2 fishery can continue. If escapement milestone not met, only Stage 1 fishery may occur. Stage 3 fisheries can continue/commence if in season forecast is greater</p>	<p>Stage 1 fishery occurs in Area 21 and a portion of 121. Effort limited to 20 boats for two days. Mandatory dockside monitoring program.</p> <p>Stage 2 fishery occurs in Area 21 only. If vessels >75 then only 1 day. If vessels <75 then a maximum of 2 days.</p>

	<p>than 325,000 and escapement milestones are met.</p> <p>Escapement milestone of 225,000* (total to date).</p>	<p>Stage 3 fisheries occur in Area 21 and portions of 121 and 20. Gillnet fisheries are limited if the catch to date is greater than 200,000.</p>
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*With sufficient stock outside. Min weekly influx = 50,000

Seine fisheries are not normally considered for week 10/2 however, if escapement milestones have been exceeded and in season abundance indices suggest a return larger than the target fishery reference point then options for earlier seine fisheries will be discussed with the Area E and B Harvest Committees. In this case, seines and gillnets would initially start with an allocation of 25:75.

No commercial fisheries inside Nitinat Lake (Area 22).

Dependent on pre-season forecast seine fisheries possible October 01-08 inside one mile boundary and north of Dare Point.

Further fisheries depend on reaching escapement milestones into Nitinat Lake and indications of abundance through commercial fishing, test fishing and stream enumeration.

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.

Fishery Monitoring and Catch Reporting

Stage 1 gillnet 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 gillnet and seine fisheries.

2.2.1.4.3.3 WCVI – Nitinat First Nation Commercial Chum Harvest

There are no First Nation commercial fisheries for Nitinat chum.

2.2.1.4.4 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 Nation participates in the ESSR fishery in coordination with Nitinat Hatchery staff and broodstock collection activities.

2.2.2 WCVI Chum - Other

2.2.2.1 Snapshot Overview and Map of Management Unit

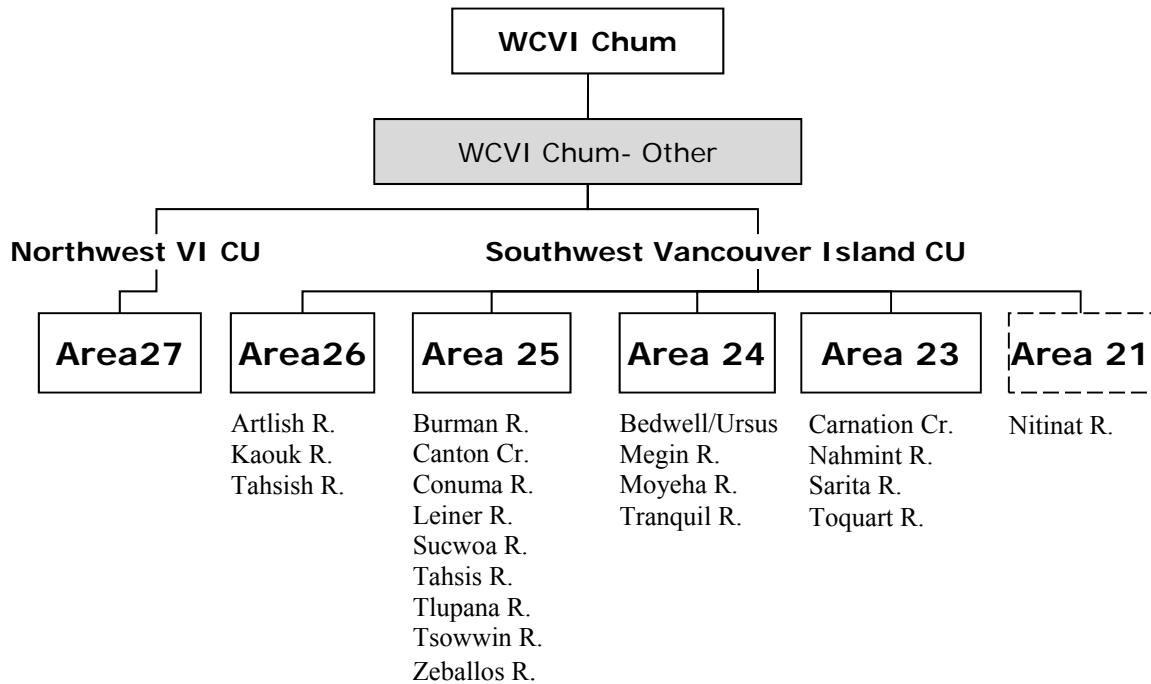


Figure 2-8: Overview of WCVI Chum - Other



Figure 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):

- Southwest Vancouver Island (SWVI) with roughly 170 distinct spawning sites
- 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.
- Area 23: Cous Cr., Effinghan 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 (enhanced), 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

2.2.2.2 Stock Assessment Information

2.2.2.2.1 Pre-season

Method: WCVI chum mature and return to the terminal area as mostly 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 perhaps 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.

Quantitative forecasts are not yet available but will be provided for the final IFMP.

The following is from the Salmon Outlook:

Adult returns in 2016 are from the 2011 to 2013 brood years and 2012 to 2014 sea entry years. Overall, spawner abundances for two of the contributing brood years were relatively low and about moderate for one (2011). Smolt survival rates for the three sea entry years are variable; with two of the sea entry years (2012 and 2014) likely experiencing below average survival and the other (2013) experiencing potentially average survival. Therefore, returns in 2016 are expected to remain below target for many wild stocks, although surpluses may result for hatchery stocks.

2.2.2.2.2 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.

2.2.2.3 Decision Guidelines and Management Actions

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 SMSY (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 (Table 2-18). That is, commercial fisheries will not occur when forecast abundance is below the lower fishery reference point in order to comply with the conditions of MSC certification.

Table 2-18: Lower and Target Fishery Reference Points for WCVI Chum Stocks. Commercial fisheries are not anticipated if the forecast stock abundance is below the Lower Reference Point.

Area/Stock	PFMA	Lower Reference Point (LRP)	Target Reference Point (TRP)	Harvest Strategy	Max Harvest Rate
Nitinat Hatchery/Lake	21/22	225,000	325,000	Mixed*	0.25
Barkley	23	45,000	150,000	Fixed Harvest Rate	.10 to .15
Clayoquot	24	20,000	70,000	Fixed Harvest Rate	.10 to .15
Conuma (Tlupana Inlet)	25	To be determined		Surplus to ESC	
Nootka	25	15,000	55,000	Fixed Harvest Rate	0.20
Esperanza	25	15,000	55,000	Fixed Harvest Rate	.10 to .15
Kyuquot	26	20,000	75,000	Fixed Harvest Rate	.10 to .15

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:

1. 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.
2. 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.

Table 2-19:

Fishery Trigger	Harvest Strategy	Nootka (Enhanced)	Barkley, Clayoquot, Esperanza, Kyuquot
Pre-season forecast below Lower Fishery Reference Point	n/a	No fishery	No fishery
Pre-season forecast between Lower and Upper Fishery Reference Point*	Fixed Harvest Rate	Stage 1: Limited Entry / Limited Effort Fishery	Stage 1: Limited Entry / Limited Effort Fishery
In season forecast above Upper Fishery Reference Point	Fixed Harvest Rate	Stage 2: Limited Effort Fishery	Stage 1: Limited Entry / Limited Effort Fishery
In season forecast above Upper Fishery Reference Point and broodstock capture near target	Surplus to Escapement Goal	Stage 3: Full fleet terminal fishery	n/a

*Must exceed Lower Fishery Reference Point by the FSC allocation amounts in the area.

The Area 25 Harvest Committee is a advisory forum that includes representatives from the Ehattesaht, Mowachaht/Muchalaht, and Nuchalaht First Nations, the Area D Harvest Committee, the local Sport

Fishery Advisory Committee, the Nootka Sound Watershed Society, local municipal governments and DFO. The Area 25 Roundtable is intending to develop a detailed local management plan for chum in Nootka Sound and Esperanza Inlet. The Decision Guidelines in this plan may be amended once the detailed local plan has been completed through the Area 25 Harvest Committee advisory process.

2.2.2.4 Incidental Harvest, By-catch and Constraints to WCVI Chum - Other Fisheries

Bycatch of wild chinook is a concern for these fisheries. To reduce chinook encounters, commercial fisheries will start earlier than September 25 in Kyuquot and Nootka Sounds and no earlier than October 1 in Barkley Sound and October 15 Clayoquot. 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:

Hisnit Inlet is closed during Tlupana Inlet fisheries to protect Deserted River chums as they are no longer enhanced. A stream mouth boundary at Marinas Bay will protect local stocks adjacent to fishing area.

2.2.2.5 Allocation and Fishing Plans

2.2.2.5.1 First Nation Fisheries

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 in Southern BC / Fraser River First Nations Fisheries.

Treaty Fisheries

Maa-nulth Fisheries (Domestic)

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

Chum salmon

Each year, the Maa-nulth Fish Allocation for chum salmon is:

- a. 3,000 pieces, when the return of Terminal Chum Salmon is critical;
- b. 6,500 pieces, when the return of Terminal Chum Salmon is low;
- c. 10,000 pieces, when the return of Terminal Chum Salmon is moderate;
- d. 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.

Fishery Monitoring and Catch Reporting

Fishery monitoring will be conducted by DFO and the First Nation 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.

2.2.2.5.2 Recreational Fisheries

Marine Waters

Marine fisheries targeting Southern Chum take place in inshore and offshore waters of the west coast of Vancouver Island (Areas 21-27, 121-127).

Marine chum fisheries are open Jan 1-Dec 31, with the majority of the catch and effort taking place in September to November in terminal areas. Updates are provided via Fishery Notice and published on the recreational fisheries website, www.bcsportfishingguide.ca. Normal limits are 4/day and 8 in possession in all areas. In non-tidal waters, chum retention is typically permitted based on observed abundances, and primarily occurs in hatchery systems.

For 2016 in Southern BC tidal waters, it is anticipated that chum opportunities will be provided for all areas of the South Coast.

Fishery Monitoring and Catch Reporting

Catch monitoring programs including creel surveys, log books 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.

2.2.2.5.3 Commercial Fisheries

2.2.2.5.3.1 Allocation

Table 2-20: 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% ^d	98.0%	0.0%	2.0%	0.0%

^dpotential for future re-negotiation if chum populations re-build

2.2.2.5.3.2 WCVI – Other Commercial Chum Fisheries

Stage 1 fisheries are initiated if the pre-season forecast is higher than the Lower Fishery Reference Point plus FSC allocations for the area. Stage 1 fisheries are designed to achieve a fixed harvest rate of 10 to 15% by limiting the number of fishing vessels that can participate in the fishery (limited entry), limiting the amount of fishing time (limited effort) and locating the fishery in approach areas where chum are passing and not holding. All Stage 1 fisheries are limited to 4 vessels fishing 2 days per week with the exception of Esperanza Inlet, Kyuquot Sound and Neroutsos Inlet where the number of vessels are limited to 2.

A Stage 2 gillnet fishery (Nootka Sound only) is only initiated if catch rates from the Stage 1 fishery and escapement observations indicate that return is larger than Upper Fishery Reference Point. The Stage 2 gillnet fishery is designed to achieve a fixed harvest rate of 15-20%. This is achieved by limiting the effort to one fishing day per week. This fishery is not limited entry; however if more than 50 vessels participate in the fishery, fishing area and opening times may be reduced or a pool fishery may be implemented.

A Stage 3 gillnet fishery (Tlupana Inlet only) is only initiated if in season abundance indices suggest a return larger than the Upper Fishery Reference Point and broodstock collection for the Conuma hatchery is near target.

Table 2-21:

Fishery Stage	Location	Harvest Rate	# Vessels	# days/week	Earliest Start Date
1	Barkley Sound	10-15%	4	2	Oct. 1
1	Clayoquot Sound	10-15%	4	2	Oct. 15
1	Nootka Sound	10-15%	4	2	Sept. 25
1	Esperanza Inlet	10-15%	2	2	Sept. 25
1	Kyuquot Sound	10-15%	2	2	Sept. 25
1	Neroutsos Inlet	10-15%**	2	2	Oct. 1
2	Nootka Sound	15-20%	n/a	1	Oct. 1
3	Tlupana Inlet - Area 25	n/a	n/a	n/a	n/a

Coho retention in net fisheries may be permitted when abundance permits.

- Effort in the Esperanza Inlet fishery has been limited to 2 vessels, 2 days per week in past years; however, a review of the harvest rate in this area suggests this level of effort is still too high and additional constraints need to be discussed.
- ****Further work is required to evaluate the Neroutsos Inlet fishery. Prior work done in 2007 will need to be continued in conjunction with river escapement work to evaluate the harvest rate targeting the chum populations of the Colonial and Cayeghle systems at the head of the inlet.**

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 by-catch in other directed fisheries, such as the AABM chinook fishery in Areas 23 to 27, and 123 to 127.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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.

South Outside Chum Demonstration Fisheries

None

2.2.2.5.3.3 WCVI – Other First Nation Commercial Chum Harvest

Demonstration Fisheries

2016/17 T'aaq-wiihak First Nations (Ahousaht et al Plaintiffs) Salmon Fishery

The First Nations and the Department are currently considering demonstration fishery opportunities for the 2016 season. The scope of these deliberations does not preclude the potential to include any or all

salmon species available with the T'aaq-wiihak First Nations' Fishing Territories as described by the courts. Where the Department and the T'aaq-wiihak reach agreement on the approach for 2016, this IFMP will be updated to reflect the agreed to approach for the T'aaq-wiihak fishery.

Economic Opportunities

Negotiations to provide an Economic Opportunity Fishery to the Tseshah 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.

2.2.2.5.4 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.

3. SOUTHERN COHO SALMON FISHING PLAN

Southern Coho Salmon

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3 SOUTHERN COHO - OVERVIEW

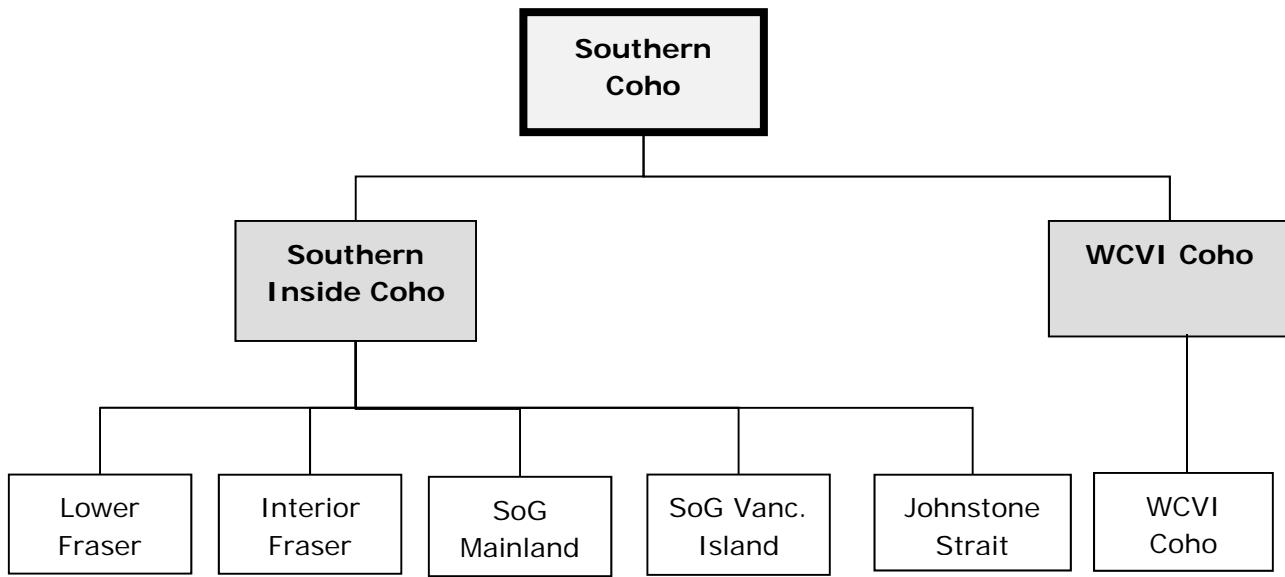


Figure 3-1: Overview of Southern Coho

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 2018.

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 Stillaguamish, 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/Index.htm>.

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 Interior:
 - Spius Creek hatchery
- BC South Coast:
 - Big Qualicum River hatchery
 - Conuma River hatchery
 - Nitinat River hatchery
 - Puntledge River hatchery
 - Quinsam River hatchery
 - Robertson Creek hatchery
- BC Lower Fraser:
 - Capilano River hatchery
 - Chehalis River hatchery
 - Chilliwack River hatchery
 - Inch 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 2014 brood year (i.e. 2015 releases, and #'s on hand for 2016 release), and the **Production Plan**, which includes proposed targets for the upcoming 2016 brood year.

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

3.1 Southern Inside Coho

3.1.1 Snapshot Overview and Map of Management Unit

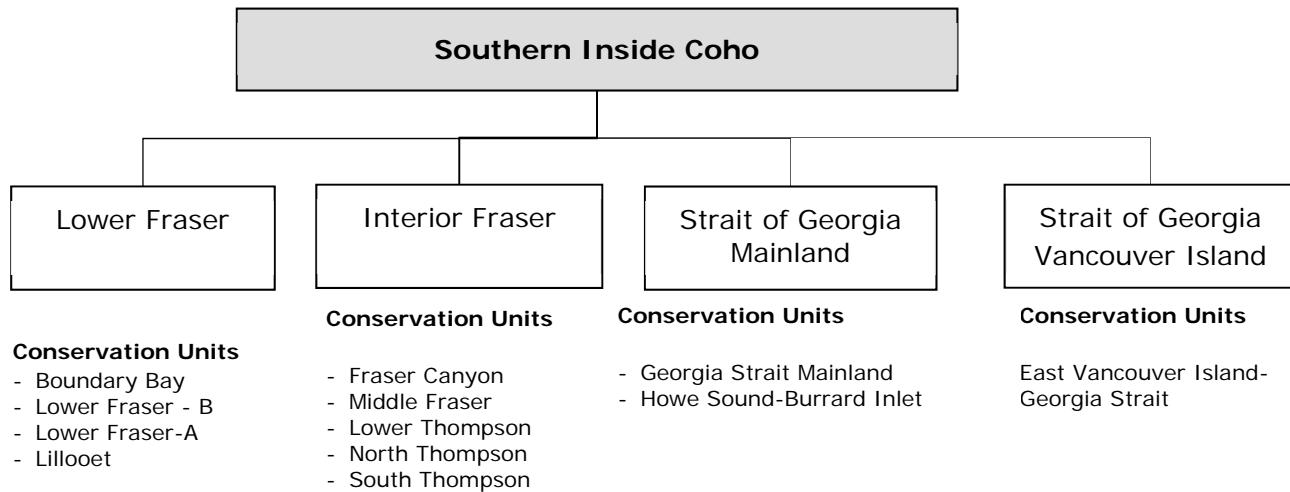


Figure 3-2: Overview of Southern Inside Coho

There are also 4 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 by-catch 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 by-catch considered where abundances permit. Limited FN 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 and some commercial fisheries and permit retention of hatchery-enhanced stocks, while minimizing impacts on wild stocks.

3.1.2 Stock Assessment Information

The WSP biological status of the 5 Interior Fraser River coho CU's 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

Up to and including date for 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.

3.1.2.1 Pre-season

Most adults returning in 2016 will be from the 2013 brood year that smolted in 2015. Ocean indicators suggest conditions affecting early marine survival deteriorated in 2015. Therefore, a continuation of the decline in survival rates seen in 2014 and 2015 is expected in 2016.

A pre-season forecast is produced annually. 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 Goldstream Hatchery stocks, and Black Creek wild stocks. Abundance forecasts are derived for Interior Fraser and Thompson River Aggregates, and selected aggregates from Area 12 and 13.

Forecasts for Southern BC Coho will be released in March 2016.

Johnstone Strait

The 2016 Salmon Outlook for Area 12 coho is *low/near target*. Monitoring of the key indicator streams (Keogh) is still ongoing, but preliminary information suggests very poor returns in 2015. Return levels in 2016 will be influenced by: 1) above average brood year escapement in 2013, 2) above average freshwater survival (based on the Keogh River indicator), and 3) indication of poor marine conditions in 2015 in much of the inside south coast marine waters. Expectations are for similar to slightly improved returns over 2015 but with high uncertainty.

Georgia Strait

In the 2016 Salmon Outlook, stocks in the Strait of Georgia are classified as *low*. Escapement estimates for 2015 for the Strait of Georgia are not available, resulting in high uncertainty about the 2016 outlook. Preliminary surveys suggest low returns to Cowichan and Black Creek and moderate returns to the Quinsam River hatchery. Marine survival continues to be below the long term average suggesting that Strait of Georgia coho remain in a low productivity regime. The Salmon Outlook for Area 13-North, including Quinsam River hatchery indicator, is somewhat better with a *low/near target* rating. 2016 expectations are for returns similar to 2015 (below to near average escapement), but are highly uncertain with wild stocks at *low* and hatchery stocks at *near target*.

Lower Fraser

The 2016 outlook classifies Lower Fraser coho as a *stock of concern* due to current marine conditions. Escapement surveys last fall are not currently available. Parental brood escapements in 2013 were moderate. Sustained improvements in smolt to adult survival will be required to improve outlook further, though this appears unlikely based on current marine conditions.

A formal forecast of smolt-adult survival will be presented in March 2016.

Interior Fraser Coho

The 2015 escapement for Interior Fraser (IFR) coho is estimated to be 12,436 fish (from a brood escapement of 57,371). The 2016 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 escapement in 2013 (brood year for 2016 returns) for Interior Fraser coho was approx. 59,000. However, returns per spawner in 2015 were well below the 1:1 ratio and ocean conditions are expected to be similar for the 2016 returns as those experienced by the 2015 returns.

The 2016 forecast of abundance is 14,277 coho with a forecast range: 5,352 (p10) to 38,080 (p90) based on the ‘like last year’ forecast model. However, forecast results have considerable uncertainty and high prediction error. For example, results from the second best model ‘the 3 year average’, had slightly higher forecast error and generated a forecast of 29,298 coho with a forecast range: 12,159 (p10) to 70,593 (p90). As a result, there is a high likelihood that returns and escapement in 2016 will fall below brood-year levels.

3.1.2.2 In season

At this time, there is no in season assessment done on southern inside coho stocks, with the exception of some programs used to assess local abundance in some terminal areas.

3.1.3 Decision Guidelines and Management Actions

Annex IV, Chapter 5 of the Pacific Salmon Treaty establishes the international management regime for southern BC and southern US 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 US. Until such time as the Parties provide specific maximum exploitation rate targets for each MU which originates within its jurisdiction consistent with attainment of maximum sustained harvest levels, Canada and the US will manage their fisheries consistent with the maximum exploitation rate ranges for three status levels – *low, moderate and high*.

Table 3-1: Pacific Salmon Treaty abundance-based exploitation rate limits on coho salmon stocks in fisheries harvesting southern BC coho.

MU Status	US ER caps	Total ER
<i>Low</i>	10%	Up to 20%
<i>Moderate</i>	12%	>21 to 40%
<i>Abundant</i>	15%	>41 to 65%

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 MU’s 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% 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%. 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, with implications for the following areas and fisheries:

- 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 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 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 main-stem Fraser River fisheries upstream of Sawmill Creek are assumed to be 100% IFR coho.

A post-season estimate of exploitation rate is developed from the same models but using reported catch and release and/or fishing effort data collected during the fishing season. For 2014, standard post-season model outputs were compared with alternative methods including DNA-based analysis for marine fisheries.

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 2016, based on poor marine conditions and poor returns in recent years, 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, the “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, 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% or less.

Looking ahead, the Department is seeking to develop a more comprehensive approach to protect Interior Fraser coho under a range of PST status levels and are seeking your views on the proposed fixed closure dates with some flexibility for the different areas in the Fraser and Thompson Rivers.

Table 3-2: Proposed IFR window closure dates for non-selective fishing gear

IFR Coho Abundance Status	Canadian ER Objective	Window Closure Objective	Dates
Critically Low	Extremely modest	Protect 90%	Sept 1 – Oct 7
Low	<10%	Protect 80%	Sept 7 – Oct 7
Moderate	<28%	Protect 70%	Sept 14 – Oct 7
Abundant	<50%	n/a	n/a

For 2016, the window closure dates will be aligned with the “Critically Low” status dates outlined in the above table. 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. Additionally, the Department is proposing that the fishing areas from “Mission to Hope” and “Hope to Sawmill Creek” be merged into the larger area of “Mission to Sawmill Creek” for the purposes of applying the coho window closure. This will simplify management, and will be aligned with area breakpoints used for the Early Stuart window closure.

2016 Window Closure Dates for non-selective fishing gear

Subareas 29-6, 29-7, 29-9 and 29-10	September 1 to October 7
Fraser River - Below Mission	September 1 to October 7
Fraser River - Mission to Sawmill Creek	September 4 to October 14
Fraser River - Sawmill Creek to Lytton	September 16 to December 31
Fraser River - Lytton to Williams Lake River	September 23 to December 31
Fraser River - Upstream of Williams Lake River	October 1 to December 31
<u>Thompson River</u>	
Downstream of the confluence of the North and South Thompson Rivers	September 23 to December 31
Upstream of the confluence of the North and South Thompson Rivers	October 1 to December 31

3.1.4 Incidental Harvest, By-Catch 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.

3.1.5 Allocation and Fishing Plans

For this draft, measures described in this section are based on previous years' approaches. The 2016 approach is subject to further consultations and an ultimate DFO decision on the coho management approach to be adopted for 2016.

3.1.5.1 First Nation Fisheries

Food Social and Ceremonial

Marine Waters

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.

Recent-year management measures have included:

- 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 B.C., 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 occur in freshwater systems throughout Southern Inside waters subject to local abundance.

Lower Fraser

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 alive and unharmed where possible incidentally-caught unmarked coho salmon. Marked coho salmon may be retained for FSC purposes.

BC Interior

First Nations may retain coho caught incidentally during fisheries taking place on other salmon species. Fisheries directed at coho may occur in some tributaries to the Fraser and Thompson Rivers. These fisheries are generally for very small numbers of coho. Fishing plans are generally discussed and

agreed upon between DFO and the appropriate First Nation once coho have begun to return to the area and terminal abundance sufficient to support some small-scale FSC harvest can be assessed.

By-catch or incidental retention may be permitted during fisheries for other species. Directed harvest may be permitted in specific areas or terminal systems where abundance permits.

Refer to Section 10.2 for Communal Licence Harvest Target Amount Table in Southern BC / Fraser River First Nations Fisheries.

Fishery Monitoring and Catch Reporting

Marine Waters

Fishery monitoring will be conducted by DFO and the First Nation 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.

Lower Fraser River (downstream of Sawmill Creek)

In the Lower Fraser, catch monitoring programs are managed through Aboriginal Fisheries Strategy (AFS) 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. In recent years, specific focus has also been placed on sampling of retained coho salmon for mark rate information and coded-wire tags (CWTs) in recent years to support the Salmon Head Recovery Program.

Fraser River and tributaries (upstream of Sawmill Creek)

For fisheries on the Fraser watershed above Sawmill Creek, catch monitoring programs are managed through Fisheries Agreements negotiated between the Department and the First Nations. Catch monitoring programs vary but typically range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

Treaty Fisheries

Tsawwassen Fisheries (Domestic)

As per the Tsawwassen Fisheries Operation Guidelines (TFOG), each year the Tsawwassen First Nation (TFN) will develop a Tsawwassen Annual Fishing Plan (T AFP) for the harvest of salmon as per the Tsawwassen First Nation 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 Nation Final Agreement 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.

3.1.5.2 Recreational Fisheries

Conservation measures to protect coho will be in place in a number of areas and times.

Marine Waters

Marine fisheries targeting 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 dependent on the stock status of Interior Fraser coho and Strait of Georgia coho, and fishing opportunities are largely based on minimizing impacts on wild coho with opportunities for retention of 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, 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.

For 2016 in Southern BC tidal waters, coho opportunities will primarily be on hatchery marked coho. Some additional wild retention opportunities for the inner South Coast may be permitted during certain times and areas where Interior Fraser Coho can be avoided.

Lower Fraser

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 7. Additionally, in this same area, there will be a ban on using bait while fishing for salmon from September 1 until October 7.

Opportunities for hatchery marked coho, with a daily limit of one, will be provided after the closure dates noted in Table 3-2. Opportunities on tributaries to the Fraser River are provided in those systems where hatchery production can support a coho fishery. Details can be found at www.bcsportfishingguide.ca.

BC Interior

There are no recreational fisheries that target coho. Fisheries for other species may be limited after September 16th if they potentially have impacts on co-migrating coho.

Fishery Monitoring and Catch Reporting

Marine Waters

Catch monitoring programs including creel surveys, log books 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.

Lower Fraser

Region 2 and Tidal waters of the Fraser River

A recreational creel survey is conducted in the lower Fraser River during periods when study area is open to fishing for salmon until the termination of regular creel survey program, usually on September 30th. In some years the program has been extended into October. Catch estimates are generated for all salmon species harvested (kept) and released; the creel survey program concludes on September 30.

BC Interior

Mid and Upper Fraser Watershed (Regions 3, 5A, 7 and 8)

Similar to recent years, 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 by-catch, and any biological sampling requirements will be taken into account when planning the catch monitoring program for these areas.

3.1.5.3 Commercial Fisheries

Commercial fisheries are managed to avoid impacts to South Inside coho. Generally all coho caught incidentally during fisheries targeting other species must be released in a manner that causes the least harm. Estimate 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.

3.1.5.3.1 *Allocation*

Table 3-3: 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):

^{TBD}currently no directed fisheries in this area. Will be reviewed should future directed opportunity develop.

3.1.5.3.2 Southern Inside Commercial Coho Fisheries

Area B Seine

No directed southern inside coho fisheries and coho non-retention in fisheries directed at other stocks.

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 and coho non-retention in fisheries directed at other stocks. During the times specified in Table 3-2 fishing will be restricted to limited selective and / or demonstration fisheries only. The retention of coho (hatchery marked only) by-catch during directed chum fisheries may be permitted.

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 by-catch during directed chinook fisheries.

Coho retention will not be considered prior to September 15 to minimize possible impacts on Interior Fraser coho.

Area H Troll

No directed southern inside coho fisheries and coho non-retention in fisheries directed at other stocks.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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 Inside Coho Demonstration Fisheries

There are no demonstration fisheries targeting Southern Inside coho.

3.1.5.3.3 Southern Inside First Nation Commercial Coho Harvest

There is no First Nation commercial harvest of Southern Inside coho.

Harvest Agreement

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

None

3.1.5.4 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
- Chapman Creek?
- Capilano Hatchery
- Chehalis Hatchery
- Chilliwack Hatchery
- Inch Creek Hatchery

3.2 WCVI Coho

3.2.1 Snapshot Overview and Map of Management Unit

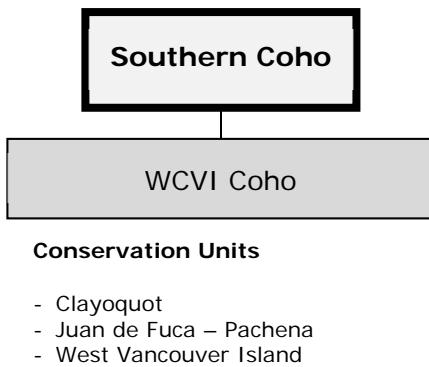


Figure 3-3: Conservation Units within the WCVI Coho Management Unit

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.

3.2.2 Stock Assessment Information

3.2.2.1 Pre-season

In the 2016 Salmon Outlook coho from the West Coast of Vancouver Island-are classified as *low to near target*.

A pre-season forecast is produced every year. 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 Robertson Hatchery and Black Creek wild stocks.

3.2.2.2 In season

At this time, there is no in season assessment of abundance done on WCVI coho stocks.

3.2.3 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.

3.2.4 Incidental Harvest, By-catch 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.

3.2.5 Allocation and Fishing Plans

3.2.5.1 First Nation Fisheries

Food Social and Ceremonial

Management measures to protect stocks of concern, including Interior Fraser coho may constrain WCVI FSC fisheries in the offshore area.

By-catch 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.

Treaty Fisheries

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:
 - i. 1,200 pieces, when the return of Terminal Coho Salmon is critical;
 - ii. 1,850 pieces, when the return of Terminal Coho Salmon is low;
 - iii. 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.

Fishery Monitoring and Catch Reporting

Fishery monitoring will be conducted by DFO and the First Nation 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.

3.2.5.2 Recreational Fisheries

Marine fisheries targeting outside coho take place in inshore and offshore waters of the west coast of Vancouver Island (Areas 21-27, 121-127). 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, www.besportfishingguide.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 2016 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.

Fishery Monitoring and Catch Reporting

Catch monitoring programs including creel surveys, log books 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.

3.2.5.3 Commercial Fisheries

General commercial fishery overview for south outside coho

3.2.5.3.1 *Allocation*

Table 3-4: Commercial Allocation Implementation Plan for the 2015 – 2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South Outside	21 to 27, 121 to 127	9.5%	9.5%	1.0%	80.0% ^b	0.0%

Notes on coho allocations (south):

^bcoho taken primarily in offshore fisheries

3.2.5.3.2 Southern Outside Commercial Coho Fisheries

Area B Seine

No directed WCVI coho fisheries and coho non-retention in fisheries directed at other stocks.

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.

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) by-catch during directed chinook fisheries. Any fishery that allows coho retention will occur after September 15 to minimize possible impacts on Interior Fraser coho.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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 Outside Coho Demonstration Fisheries

There are no proposed demonstration fisheries targeting Southern Outside coho.

3.2.5.3.3 Southern Outside First Nation Commercial Coho Harvest

T'aaq-wiihak First Nations (Ahousaht et al Plaintiffs) Salmon Fishery

The First Nations and the Department are currently considering demonstration fishery opportunities for the 2016 season. The scope of these deliberations does not preclude the potential to include any or all

salmon species available with the T'aaq-wiihak First Nations' Fishing Territories as described by the courts. Where the Department and the T'aaq-wiihak reach agreement on the approach for 2016, this IFMP will be updated to reflect the agreed to approach for the T'aaq-wiihak fishery.

Harvest Agreements

There are no coho directed fisheries.

Economic Opportunities

Negotiations to provide economic opportunities to Tseshah 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 similar rules to the commercial fishery.

3.2.5.4 ESSR Fisheries

ESSR fisheries may occur at DFO hatchery facilities that have a surplus of returning hatchery coho. These fisheries are provided to the local First Nation. In past years, ESSR fisheries have taken place at the Roberson Creek Hatchery and Nitinat Hatchery.

4. SOUTHERN PINK SALMON FISHING PLAN

Southern Pink Salmon

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4 SOUTHERN PINK SALMON - 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.

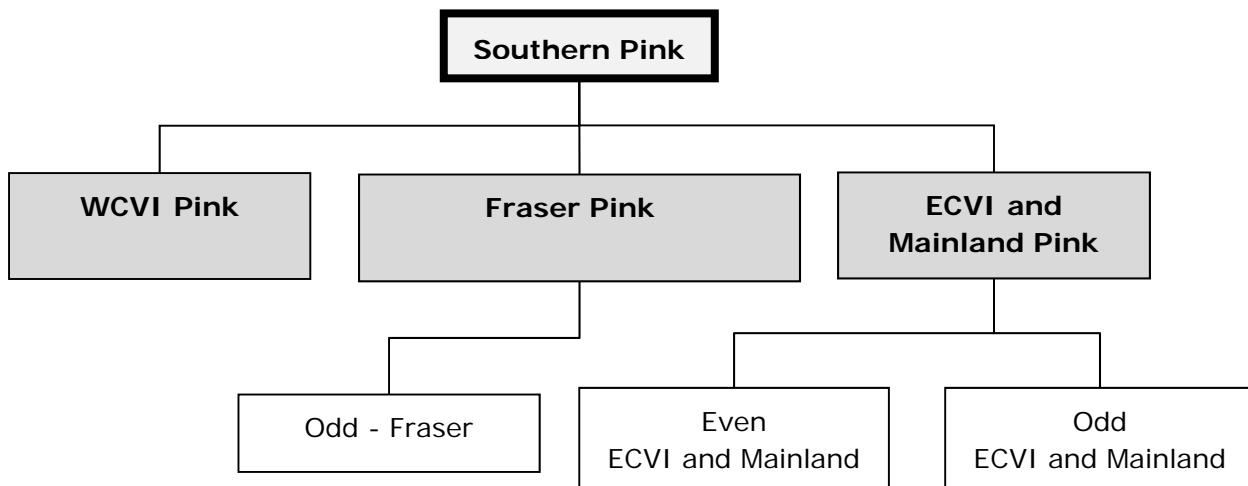


Figure 4-1: Overview of Southern Pink

Southern Pink Salmon Enhancement Information:

The major DFO operation enhancement facilities that produce pinks are:

- BC North Coast:
 - Snootli Creek hatchery
- BC South Coast:
 - Puntledge River hatchery
 - 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 2014 brood year (ie. 2015 releases, and #'s on hand for 2016 release), and the Production Plan, which includes proposed targets for the upcoming 2016 brood year.

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

4.1 Fraser Pink Salmon

4.1.1 Snapshot Overview and Map of Management Unit

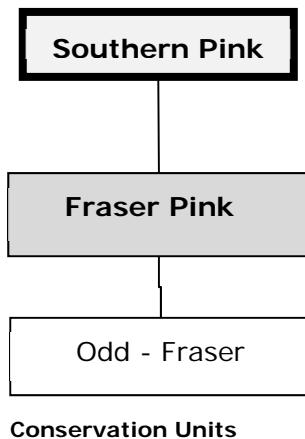


Figure 4-2: Conservation Units in the Fraser Pink Salmon Management Unit (1 CU)

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.

4.1.2 Stock Assessment Information

4.1.2.1 Pre-season

In even numbered years, there are very few returns of pink salmon and a stock outlook is not done.

4.1.2.2 In season

In even numbered years, there is no in season assessment for pink salmon.

In odd years, assessment of Fraser pink run size is conducted by the Pacific Salmon Commission using the Mission Hydro Acoustic site and test fisheries conducted at various locations in Southern BC and the Fraser River.

4.1.3 Decision Guidelines and Management Actions

In even years, there are no fisheries planned to target directly on Fraser pink salmon. In odd years, pink salmon are managed to the decision guidelines in the table below.

Table 4-1: 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.

4.1.4 Incidental Harvest, By-catch and Constraints to Fraser Pink Fisheries

Even year Fraser pink returns are extremely low and fisheries are not planned to target directly on the stock.

Harvest of Fraser pink salmon in odd years is constrained by the management objectives for stocks of concern, particularly Interior Fraser coho salmon. Fisheries targeting pink salmon may be constrained to meet the management objective for IFR coho.

4.1.5 Allocation and Fishing Plan

4.1.5.1 First Nation Fisheries

Food Social and Ceremonial Fisheries

First Nations target local salmon stocks for FSC purposes throughout the South Coast..

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. In even years, minimal catch is thought to occur.

Refer to section 10.2 for a Table of Communal Licence Harvest Target Amounts for Southern BC / Fraser River First Nations Fisheries.

In addition to these FSC fisheries, local First Nations access pink salmon through ESSR harvests at several hatchery facilities.

Fishery Monitoring and Catch Reporting

Marine waters

Fishery monitoring will be conducted by DFO and the First Nation 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 downstream of Sawmill Creek

In the Lower Fraser, 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.

Fraser River and tributaries upstream of Sawmill Creek

For fisheries on the Fraser watershed above Sawmill Creek, catch monitoring programs are managed through Fisheries Agreements negotiated between the Department and the First Nations. Catch monitoring programs vary but typically range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

Treaty Fisheries

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 Nation Final Agreement are as follows:

1. Pink

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.

4.1.5.2 Recreational Fisheries

In most south coast tidal waters, the daily limit will be four pink salmon. Marine recreational pink fisheries typically take place in August and September. Updates are provided via Fishery Notice and published on the recreational fisheries website, www.bcsportfishingguide.ca.

There are no non-tidal, Fraser River opportunities anticipated for Fraser River pink salmon in even numbered years.

Fishery Monitoring and Catch Reporting

Marine Waters

Catch monitoring programs including creel surveys, log books 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.

Lower Fraser (Region 2 and Tidal waters of the Fraser River)

A recreational creel survey is conducted in the lower Fraser River during periods when study area is open to fishing for salmon. Catch estimates are generated for all salmon species harvested (kept) and released; the creel survey program concludes on September 30.

Mid and Upper Fraser Watershed (Regions 3, 5A, 7 and 8)

Similar to recent years, 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 by-catch, and any biological sampling requirements will be taken into account when planning the catch monitoring program for these areas.

4.1.5.3 Commercial Fisheries

In 2016, there are no anticipated commercial fisheries for Fraser River pink salmon. Allocation arrangements for Fraser pink salmon within the commercial fleet is as follows:

Table 4-2: 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% ^c	10.0%

Notes on pink allocations (south):

*pink by-catch provision required for fisheries on more abundant species

^cpotential for future re-negotiation. Pink by-catch required for fisheries on more abundant species

4.1.5.3.1 Fraser Commercial Pink Fisheries

There is no fishable surplus of Fraser pink salmon anticipated in 2016. There is generally an insignificant abundance of pink salmon that return to the Fraser River in even numbered years relative to the odd numbered years.

Area B (Seine) and Area D/E (Gill Net)

No fisheries are anticipated as 2016 is an off-cycle year for Fraser River pinks. Pink retention by-catch is permitted in Fraser River sockeye directed fisheries.

Area G Troll

The 2016 return is an off-cycle year for Fraser River pink salmon. The retention of pink salmon by-catch is permitted in Fraser River sockeye directed fisheries.

Area H Troll

The 2016 return is an off-cycle year for Fraser River pink salmon. The retention of pink salmon by-catch is permitted in Fraser River sockeye directed fisheries.

Fraser Pink Demonstration Fisheries

No Fraser pink targeted demonstration fisheries are planned for 2016.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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.

- Partial independent on-board/at-sea observer coverage for Area B seine fisheries.
- Mandatory dockside validation for Area B seine fisheries.

4.1.5.3.2 Fraser First Nation Commercial Pink Harvest

Demonstration Fisheries

No Fraser pink targeted demonstration fisheries are planned for 2016.

Harvest Agreements

Tsawwassen

TFN have an allocation for commercial catch outside of the Treaty as identified via the “Tsawwassen First Nation 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 Nation economic opportunity (EO) fishery), or a general commercial fishery (e.g. Area E). For 2015, 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. 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 Nation. 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.

Economic Opportunities

No Fraser pink targeted economic opportunity fisheries are planned for 2016.

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.

4.1.5.4 ESSR Fisheries

There are no anticipated ESSR fisheries for Fraser pink salmon.

4.2 East Coast Vancouver Island and Mainland Pinks

4.2.1 Snapshot Overview and Map of Management Unit

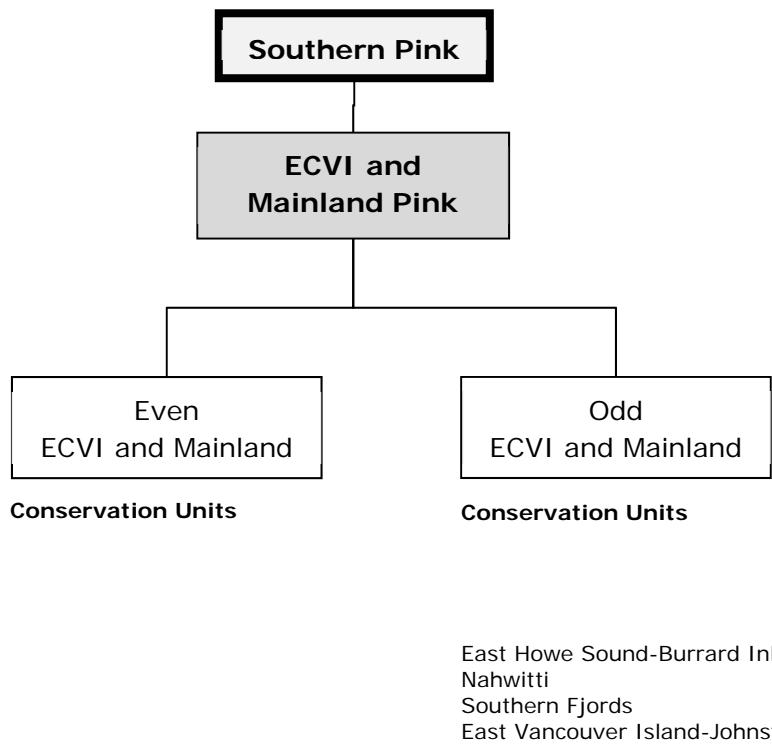


Figure 4-3: Conservation Units in the Inner South Coast Pink Salmon Management Unit (8 CUs)

Inner South Coast (ISC) Pinks are grouped into 8 conservation units (CUs) that extend over the entire East Coast of Vancouver Island as well from Seymour Inlet down 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 tends to be more even-year dominant as you move North within the management unit and more odd-year dominant as you move more South.

These stocks are mainly harvested incidentally or as by-catch during mixed-stock Johnstone Strait Fraser River sockeye and pink directed fisheries. In addition, directed fisheries have occurred in some terminal areas, for instance portions of Howe Sounds, Jervis Inlet, 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.

4.2.2 Stock Assessment Information

4.2.2.1 Pre-season

Inner South Coast Pink stocks have been experiencing a steadily improving trend in abundance of the dominant even year cycle since 2008, with a significant return in the 2012 and 2014 brood years. With the indications of poor marine survival in 2015 ocean entry and the well above brood year returns in 2014, expectations are for below to near target returns in 2016. Historically pink returns have been highly variable and expectations are highly uncertain.

4.2.2.2 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 for this management unit and are typically dependant on funding availability, outlook category and early in season indications of abundance through other programs such as Fraser Sockeye directed test fisheries.

4.2.3 Decision Guidelines and Management Actions

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 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.

4.2.4 Incidental Harvest, By-catch 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.

4.2.5 Allocation and Fishing Plans

4.2.5.1 First Nation Fisheries

Food Social and Ceremonial Fisheries

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 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 in Southern BC / Fraser River First Nations Fisheries.

Fishery Monitoring and Catch Reporting

Marine Waters

Fishery monitoring will be conducted by DFO and the First Nation 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)

The Domestic allocations for salmon under the Tla'amin First Nation Final Agreement are as follows:

1. Pink

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.

4.2.5.2 Recreational Fisheries

The pink return to the Mainland Inlets provide 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 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, www.bcsportfishingguide.ca. Normal limits are 4/day and 8 in possession for both fresh and saltwater areas.

For 2016 in Southern BC tidal waters, it is anticipated that there will be recreational pink fisheries targeting Mainland Pink stocks and hatchery returns to the Quinsam and Campbell Rivers.

Fishery Monitoring and Catch Reporting

Catch monitoring programs including creel surveys, log books 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.

4.2.5.3 Commercial Fisheries

4.2.5.3.1 Allocations

Table 4-3: 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%

4.2.5.3.2 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.

Area B Seine

- Fishing areas in Thompson Sound and Bond Sound
- Fishing areas in 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 the terminal approach areas of Thompson Sound, however boundaries will be determined in season.
- Fishing areas in Jervis Inlet
- Coho sensitive areas may remain closed.

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.

4.2.5.3.3 ECVI and Mainland First Nation Commercial Pink Harvest

Economic Opportunities

There are no economic opportunity arrangements in this area.

Demonstration Fisheries

There are no demonstration fishery arrangements in this area.

Harvest Agreements

There are no harvest agreements in this area.

Fishery Monitoring and Catch Reporting

There is a mandatory log-book 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.

4.2.5.4 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

4.3 WCVI Pink Salmon

4.3.1 Snapshot Overview and Map of Management Unit

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 pink salmon planned for 2016.

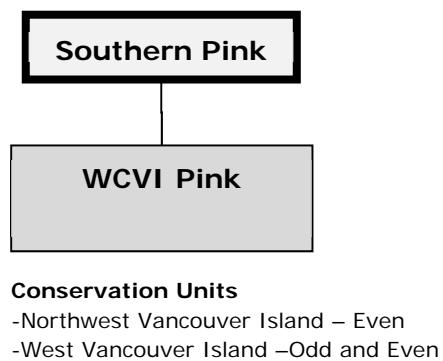


Figure 4-4: Overview of WCVI Pink Salmon

5. SOUTHERN SOCKEYE SALMON FISHING PLAN

Southern Sockeye Salmon

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5 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 BC Sockeye, 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.

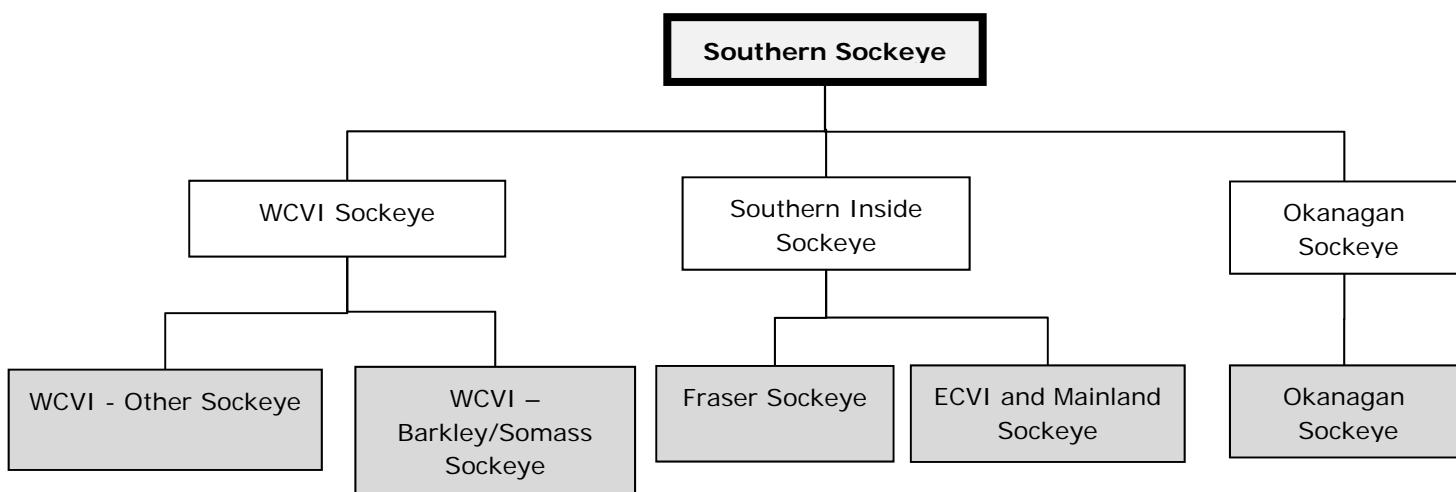


Figure 5-1: Southern Sockeye Overview

Sockeye Enhancement Information:

The major DFO operation enhancement facilities that produce sockeye are:

- BC Interior:
 - Gates Spawning Channel
 - Horsefly Spawning Channel
 - Nadina Spawning Channel
- BC South Coast:
 - Rosewall Creek hatchery
- BC Lower Fraser
 - Inch 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 2014 brood year (i.e. 2015 releases, and #'s on hand for 2016 release), and the **Production Plan**, which includes proposed targets for the upcoming 2016 brood year. These are available on the DFO website at: <http://www.pac.dfo-mpo.gc.ca/sep-pmvs/ifmp-pcip-eng.html>

Fraser River Sockeye – SEP proposals for 2016/2017

- Pitt River sockeye. As a result of annual production review, a 2M to 1M release target adjustment to Pitt River sockeye enhancement is being proposed. Recent Pitt River sockeye escapements have consistently been above both the lower and upper Wild Salmon Policy benchmarks (7,000 and 22,000 spawners, respectively), and enhanced contribution has been above the level outlined in program guidelines. These adjustments align with SEP enhancement objectives, operational priorities, and guidelines.
- Weaver Creek sockeye. Sockeye returns to Weaver Creek spawning channel have experienced extremely low returns in two out of the last four years (2012, 2015) and high pre-spawn mortality. The number of effective females in the channel was only a few hundred females for these years compared to what is normally approximately 16,000. Given that the 2016 return is anticipated to be extremely low as well, a conservation enhancement project of 25K smolts is being planned.
- Horsefly Channel will not be operated in 2016. SEP takes into account a number of factors (including anticipated river escapement and channel productive capacity) in determining the requirement for channel operation for a given cycle/return year. For 2016, it is determined that the operation of Horsefly channel is not required.

5.1 Overview of WCVI Sockeye

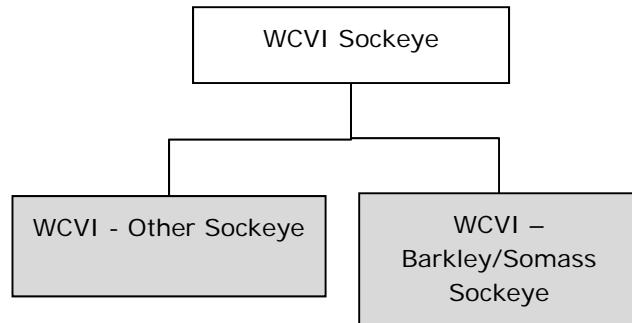


Figure 5-2: Overview of WCVI Sockeye

The WCVI Sockeye Management Unit consists of several sockeye conservation units; including ‘lake-type’ and ‘river type sockeye (Figure 5-4). 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.

5.1.1 WCVI Barkley/Somass Sockeye

5.1.1.1 Snapshot Overview and Map of Management Unit

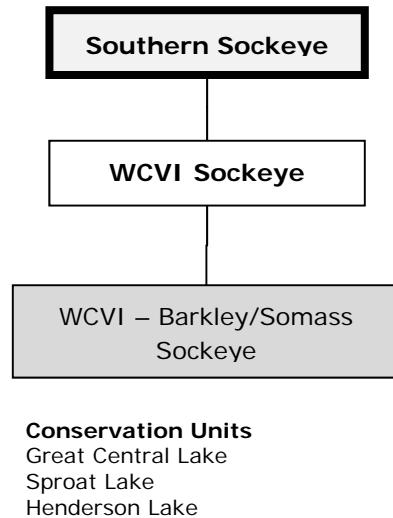


Figure 5-3: Overview of WCVI Barkley/Somass Sockeye

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.

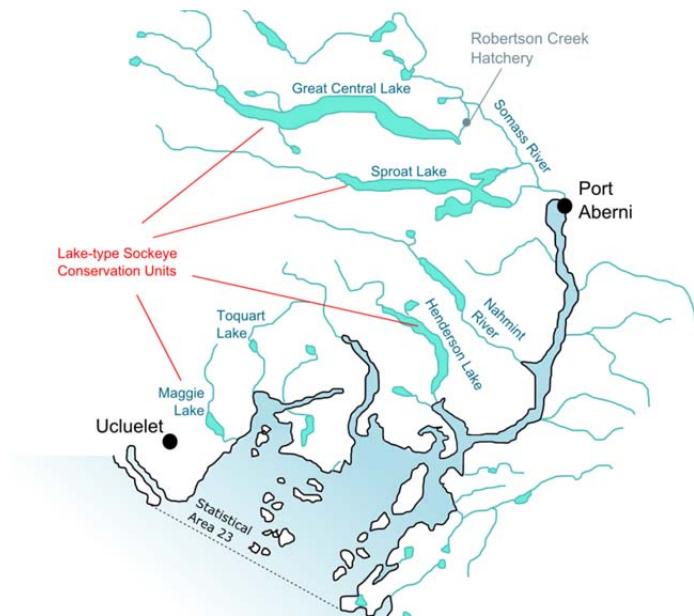


Figure 5-4: Barkley Sound and Alberni Inlet - Major features and salmon conservation units

5.1.1.2 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.

The ability to provide stable funding for stewardship activities such as; maintaining existing lake fertilization programs. 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 no hatchery supplementation of these stocks.

5.1.1.3 Stock Assessment Information

5.1.1.3.1 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 run size is estimated based on in season observations.

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 overall outlook is for an abundant return. After a record return of over 2 million in 2015, abundance is expected to decline in 2016 to a level closer to the long term average run size. Most of the production is expected from the 2011 brood, which produced the large amount of 4-year old fish observed in 2015. Much less production is expected from the 2012 brood, a portion of which return as 4-year old fish in 2016. Indicators of low production for the 2012 brood/2014 sea entry year are; 1) the very low number of 3 year old (or jack) sockeye observed in 2015 and 2) the generally negative signal from ocean correlates associated with marine survival rate for the 2014 sea entry year. A formal forecast is anticipated to be available in April.

5.1.1.3.2 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 5-1: Planned Sockeye Test Fisheries

Test Fishery	Proposed Proponent	Test Fishery Purpose	Potential Dates (preliminary ^a)	
			Start	End
Barkley Sound SN	Hupacasath / Tseshah	Somass Sockeye	June	July

^a All dates subject to change based on in season factors. In season information from initial TFs is important for determining timing of subsequent TFs.

See Section 12.5 for entire table for the 2016 proposed test fisheries.

5.1.1.4 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 sockeye management plan further details management assumptions, actions and scenarios used to guide in season decision-making.

5.1.1.5 Incidental Harvest, By-catch and Constraints to WCVI Barkley/Somass Sockeye Fisheries

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. Somass sockeye gillnet and seine fisheries are managed to an incidental target harvest rate of less than 15%. In season adjustments to reduce impacts to Henderson sockeye may be necessary if higher harvest rates occur.

5.1.1.6 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 Nation 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 in place and in years of low abundance the opening time may be delayed or shortened.

Table 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
1 - Critical	Less than 170,000		170,000	0	0	0	0	0	0
2 - Very Low	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
3 - Low	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
4 - Moderate	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
5 - High	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
6 - Abundant	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

Table 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

13.1.1.1 First Nation Fisheries

Food Social and Ceremonial

The Tseshah 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 in Southern BC / Fraser River First Nations Fisheries.

Treaty Fisheries

Maa-nulth First Nations

Maa-nulth First Nations (Huu-ay-aht, Toquaht, Uchucklesaht, Yu?lu?il?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 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. gillnet 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 Fishery Operation 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:

- a. An amount of Somass sockeye salmon equal to:
 - i. When the Somass Sockeye Canadian Total Allowable Catch is 50,000 or less, 20% of the Somass Sockeye Canadian Total Allowable Catch;
 - ii. 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;
 - iii. 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
 - iv. When the Somass Sockeye Canadian Total Allowable Catch is greater than 412,421, then 22,886;
- b. An amount of Fraser River sockeye salmon equal to 0.13366% of the Fraser River Sockeye Salmon Canadian Total Allowable Catch;
- c. 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;
- d. An amount of Terminal Jansen Lake Sockeye Salmon equal to 50% of the amount of Terminal Jansen Lake Sockeye Salmon that the Minister determines is available for harvest; and
- e. An amount of Terminal Power Lake Sockeye Salmon equal to 50% of the amount of Terminal Power Lake Sockeye Salmon that the Minister determines is available for harvest.

Fishery Monitoring and Catch Reporting

Maa-nulth First Nations

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 Statistical Area 23A and 23B). 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 (DFO Statistical Area 23A and 23B).

5.1.1.6.1 Recreational Fisheries

For 2016, the sockeye return to the Somass River is expected to provide fishing opportunities for all sectors in Area 23. The recreational fishery for sockeye is scheduled to open May 1, 2016 at normal limits and this fishery will be subject to in season management changes dependent on abundance. Fishery updates are provided via Fishery Notice and published on the recreational fisheries website, www.besportfishingguide.ca. Normal limits are 4/day and 8 in possession.

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.

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.

5.1.1.6.2 Commercial Fisheries

5.1.1.6.2.1 Allocation

Table 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% ^c	0.0%

Notes on sockeye allocation (south):

^cpotential for future re-negotiation

5.1.1.6.2.2 WCVI Barkley/Somass Commercial Sockeye Fisheries

Commercial harvesters in possession of an “Area B” seine net licence or “Area D” gillnet licence may participate in the fishery. The preseason outlook for Barkley Sound sockeye is abundant. This is expected to support full fishing opportunities for all net fleets in Area 23 from mid-June to Early August.

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

The Area D sockeye fishery operates throughout Area 23 (notwithstanding conservation closures). However, typically early season commercial gillnet fisheries are restricted to the “outside” portion (Barkley Sound) seaward of “Pocahontas 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 at day between the hours of 06:00 and 18:00. 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 logbook 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 (DFO Statistical Area 23A and 23B). 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 (DFO Statistical Area 23A and 23B).

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 Gillnet

Catch is estimated by summing individual logbook 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 (DFO Statistical Area 23A and 23B). 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 (DFO Statistical Area 23A and 23B).

South Local Sockeye Demonstration Fisheries

There are currently no demonstration fisheries planned on these stocks.

5.1.1.6.2.3 WCVI Barkley/Somass First Nation 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 Nation 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

Negotiations to provide economic opportunities to Tseshah and Hupacasath First Nations to terminal sockeye returns 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. These fisheries will be conducted separately from FSC fisheries, under similar rules 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 Tseshah and Hupacasath First Nations following the development of an Annual Harvest Plan and through the in season decision-making process.

The Tseshah 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 gillnets. 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 estimated by summing landing slip information as collected by First Nation 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 Nation 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 is 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.

5.1.1.6.3 ESSR Fisheries

An ESSR for sockeye is rare but may occur at Robertson Creek Hatchery

5.1.2 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 2016. However, there are directed First Nations FSC harvests that occur on many of these stocks.

5.1.2.1 Snapshot Overview and Map of Management Unit

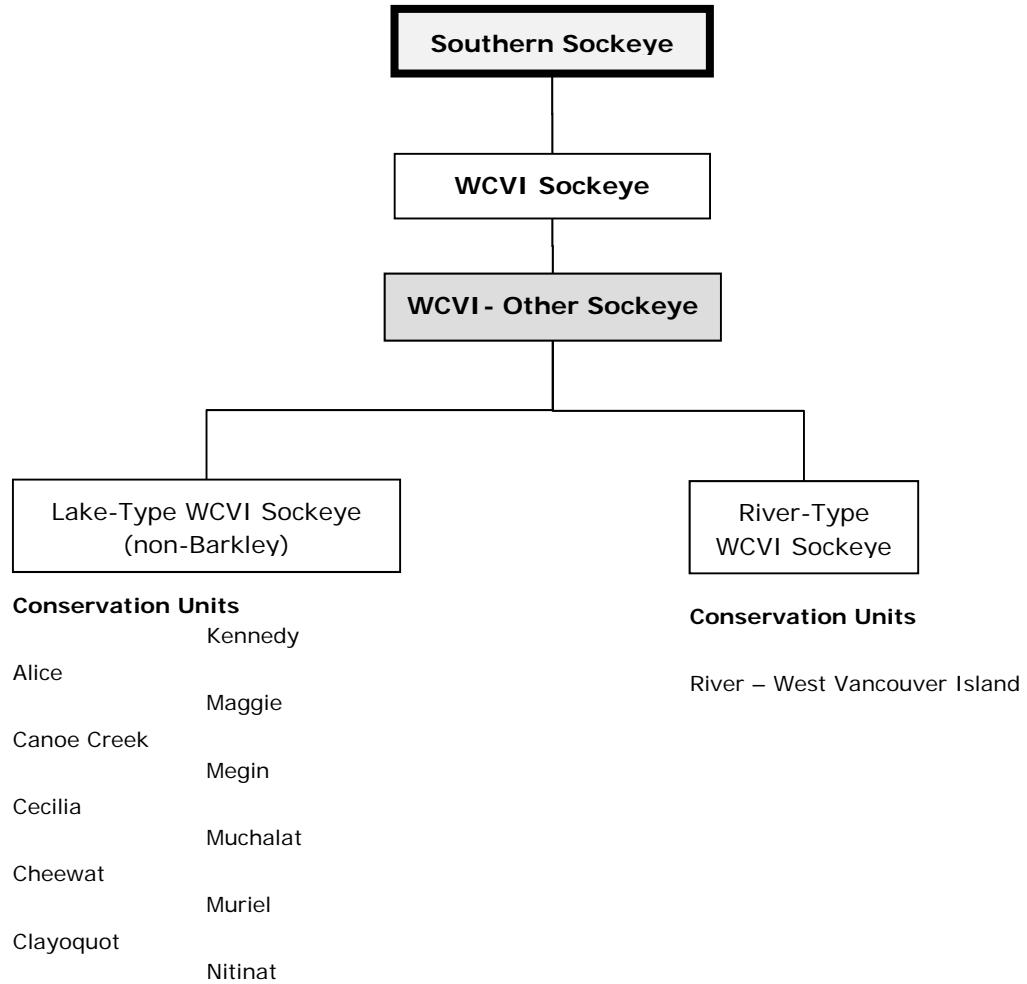


Figure 5-5: Overview of WCVI - Other Sockeye

5.2 Overview of Southern Inside Sockeye

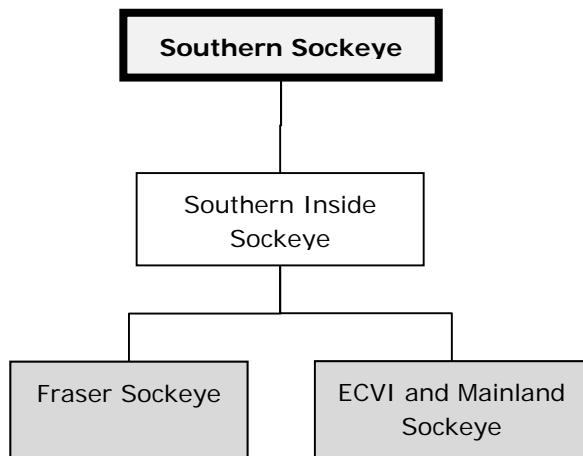
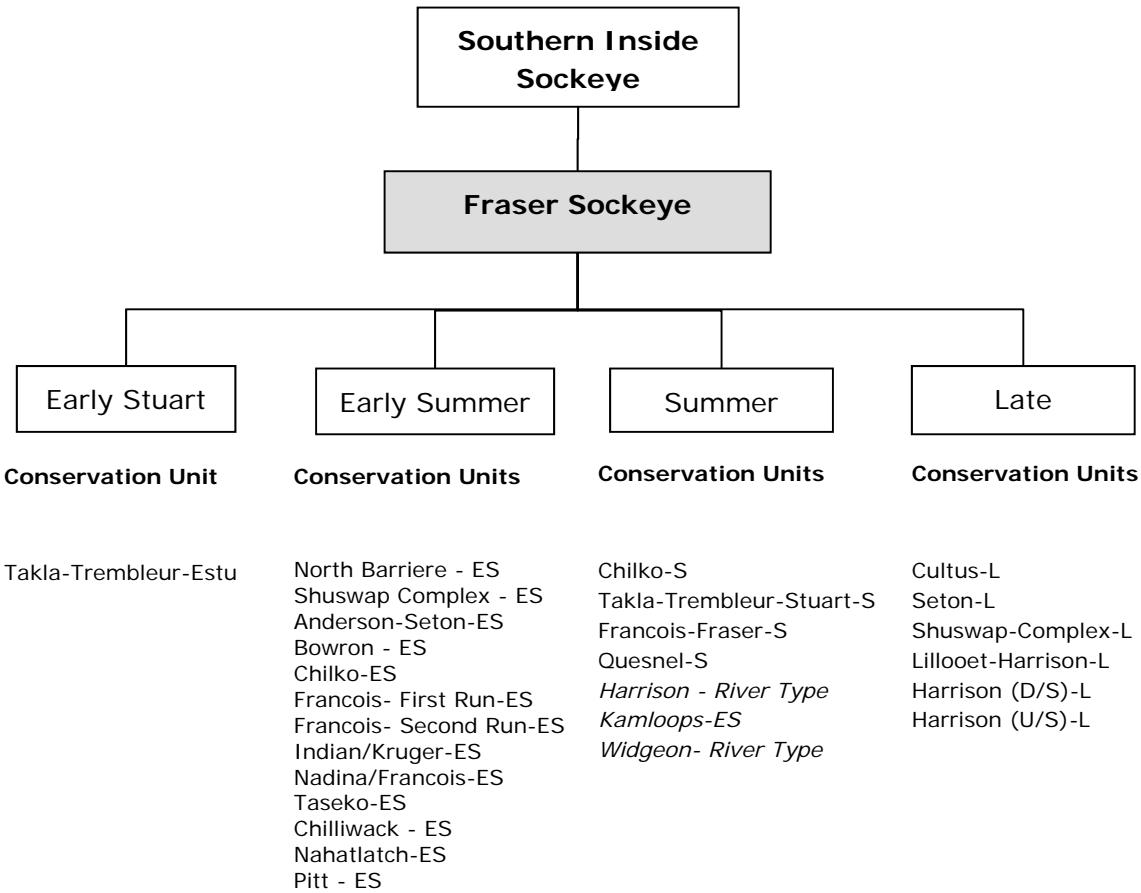


Figure 5-6: Overview of Southern Inside Sockeye

5.2.1 Fraser Sockeye

5.2.1.1 Snapshot Overview and Map of Management Unit



Note: *italicized* CUs have been managed as part of the Summer run aggregate since the 2012 season.

Figure 5-7: Overview of Fraser Sockeye

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/Wild Salmon Policy process was initiated in 2006 and is used to inform escapement strategy options (refer to DFO's consultation website for details <http://www.pac.dfo-mpo.gc.ca/consultation/wsp-pss/index-eng.html>).

Fisheries targeting on Fraser sockeye may also encounter some inner south coast sockeye. There are 23 conservation units. These populations are not actively managed.

5.2.1.2 Stock Assessment Information

5.2.1.2.1 Pre-season

Prior to each fishing season, decisions are made about the spawning escapement plan, management priorities and identification of conservation constraints. In season information including estimates of abundance, run timing, stock composition, and other technical information are used to assess potential fishing opportunities based on pre-season management plans.

2016 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. Fraser sockeye run size forecasts are highly uncertain, largely due to the wide variability in annual survival rates and the lack of indicators to predict this variation. Fraser sockeye survival for most stocks (notable exceptions include Late Shuswap and Harrison) went through a period of decline that concluded in record low survivals in the 2009 return year, and has subsequently improved (2010 to 2014).

The 2016 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 814,000 to 8,181,000 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 of the total forecast distribution (50% probability) is 2,271,000 (there exists a one in two chance the return will be at or below this value). Forecast returns are dominated by Summer Run stocks in 2016, which at the p50 have an estimated return of 1,677,000, comprised mainly of Chilko and Harrison, and to a much lesser extent Early Summer Run stocks at a total return 447,000. A very low return of Late Run is expected with a p50 forecast total return of 111,000 (Table 5-5).

For further details, refer to the Canadian Science Advisory Secretariat (CSAS) Pacific Region Science Response: Pre-season run size forecasts for Fraser River Sockeye (*Onchorhynchus nerka*) and Pink (*O. gorbuscha*) salmon in 2016 (DFOa *in press*).

To support the 2016 Fraser sockeye forecast, an additional CSAS Regional Peer Review (RPR) process occurred to summarize data on fish condition and/or survival from the 2012 parental spawners and their offspring. This work will be published in a separate Pacific Region Science Response: Supplement to the Pre-Season Return Forecasts for Fraser Sockeye Salmon in 2016 (DFOb, *in press*).

Run sizes for Fraser sockeye will be updated in season.

Table 5-5: 2016 Pre-season sockeye return forecasts by stock and timing group (DFO, in press)

Run timing group Stocks	Mean Run Size		Probability that Return will be at/or Below Specified Run Size ^a					
	all cycles ^c	2016 cycle ^d	10%	25%	50%	75%	90%	
Early Stuart	301,000	128,000	13,000	22,000	36,000	59,000	89,000	
Early Summer	--	--	120,000	217,000	447,000	1,003,000	2,703,000	
<i>(total excluding miscellaneous)</i>	502,000	423,000	97,000	158,000	286,000	585,000	1,527,000	
Bowron	37,000	29,000	1,000	2,000	4,000	8,000	13,000	
Fennell	24,000	32,000	6,000	9,000	14,000	23,000	39,000	
Gates	54,000	124,000	24,000	40,000	76,000	138,000	231,000	
Nadina	75,000	118,000	24,000	45,000	90,000	179,000	331,000	
Pitt	71,000	78,000	42,000	60,000	90,000	147,000	212,000	
Scotch	98,000	10,000	300	2,000	12,000	89,000	698,000	
Seymour	143,000	32,000	0	100	400	1,000	3,000	
Misc (Early Shuswap) ^e	--	--	2,000	4,000	8,000	13,000	24,000	
Misc (Taseko) ^e	--	--	100	400	1,000	1,000	2,000	
Misc (Chilliwack)	--	--	17,000	46,000	138,000	378,000	1,101,000	
Misc (Nahatlatch) ^f	--	--	4,000	8,000	14,000	26,000	49,000	
Summer	--	--	640,000	992,000	1,677,000	2,962,000	5,023,000	
<i>(total excluding miscellaneous)</i>	3,866,000	2,620,000	637,000	986,000	1,667,000	2,942,000	4,983,000	
Chilko ^g	1,405,000	1,781,000	459,000	658,000	1,002,000	1,573,000	2,283,000	
Quesnel	1,324,000	55,000	6,000	9,000	15,000	25,000	40,000	
Late Stuart	544,000	175,000	42,000	86,000	192,000	427,000	880,000	
Stellako	457,000	448,000	86,000	144,000	256,000	454,000	761,000	
Harrison ^{h & i}	105,000	104,000	33,000	73,000	176,000	425,000	957,000	
Raft ^h	31,000	57,000	11,000	16,000	26,000	38,000	62,000	
Misc (N. Thomp. Tribs) ^{h & j}	--	--	600	1,000	2,000	4,000	9,000	
Misc (N. Thomp River) ^{h & j}	--	--	1,000	3,000	4,000	9,000	19,000	
Misc (Widgeon) ^k	--	--	1,000	2,000	4,000	7,000	12,000	
Late	--	--	41,000	65,000	111,000	203,000	366,000	
<i>(total excluding miscellaneous)</i>	3,169,000	689,000	33,000	51,000	84,000	155,000	282,000	
Cultus ^g	38,000	22,000	1,000	2,000	4,000	9,000	17,000	
**Late Shuswap	2,379,000	29,000	0	100	4,000	25,000	76,000	
Portage	41,000	16,000	0	200	400	1,000	2,000	
Weaver	346,000	345,000	2,000	4,000	8,000	15,000	29,000	
**Birkenhead	365,000	277,000	30,000	45,000	68,000	105,000	158,000	
Misc non-Shuswap ^k	--	--	8,000	14,000	27,000	48,000	84,000	
TOTAL SOCKEYE SALMON	--	--	814,000	1,296,000	2,271,000	4,227,000	8,181,000	
<i>(TOTAL excluding miscellaneous)</i>	7,838,000	3,860,000	780,000	1,217,000	2,073,000	3,741,000	6,881,000	

- a. Probability that return will be at, or below, specified projection.
- b. See Table 4 for model descriptions
- c. Sockeye: 1953-2012 (depending on start of time series)
- d. Sockeye: 1955-2012 (depending on start of time series)
- e. Misc. Early Shuswap stocks use Scotch and Seymour R/EFS in forecast; Misc. Taseko uses Chilko R/EFS in forecast
- f. Misc. Nahatlatch uses Early Summer Run stocks R/EFS in forecast
- g. Brood year smolts in columns C & D (not effective females)
- h. Raft, Harrison, Miscellaneous North Thompson stocks moved in current forecast to Summer Run timing group due to changes in run timing of these stocks
- i. Harrison are age-4 (column C) and age-3 (column D).
- j. Misc. North Thompson stocks use Raft & Fennel R/EFS in forecast
- k. Misc. Late Run stocks (Harrison Lake down stream migrants including Big Silver, Cogburn, etc.), and river-type Widgeon use Birkenhead R/EFS in forecast

Definitions: BY: Brood year; BY11: brood year 2011; BY12: brood year 2012; EFS: effective female spawners; Ei (Entrance Island sea-surface-temperature); Pi (Pine Island sea-surface temperature); PDO (Pacific Decadal Oscillation); 4-: model used to forecast four-year old returns; 5-: model used to forecast five year old returns.

Table 5-6: Age composition of 2016 forecasted returns for each stock at the 50% probability level

Sockeye stock/timing group	Model	2016 Fraser Sockeye Forecasts			
		FOUR YEAR OLDS 50% ^a	FIVE YEAR OLDS 50% ^a	TOTAL 50% ^a	Four Year Old Proportion
Early Stuart	<i>Ricker (Ei)</i>	36,000	100	36,000	100%
Early Summer		334,000	112,000	447,000	75%
Bowron	<i>MRS</i>	200	4,000	4,000	5%
Fennell	<i>power</i>	8,500	5,000	14,000	61%
Gates	<i>Larkin</i>	61,000	15,000	76,000	80%
Nadina	<i>MRJ</i>	88,000	2,000	90,000	98%
Pitt	<i>Larkin</i>	18,000	72,000	90,000	20%
Scotch	<i>Larkin</i>	12,000	0	12,000	100%
Seymour	<i>Larkin</i>	400	0	400	100%
Misc (EShu)	<i>R/S</i>	2,000	6,000	8,000	25%
Misc (Taseko)	<i>R/S</i>	300	300	600	50%
Misc (Chilliwack)	<i>Ricker</i>	137,000	1,000	138,000	99%
Misc (Nahatlatch)	<i>R/S</i>	7,000	7,000	14,000	50%
Summer		1,462,000	215,000	1,677,000	87%
Chilko	<i>power (juv) (Pi)</i>	976,000	26,000	1,002,000	97%
Quesnel	<i>4-Ricker-cyc; 5-sibling</i>	1,000	14,000	15,000	7%
Late Stuart	<i>R1C</i>	188,000	4,000	192,000	98%
Stellako	<i>R2C</i>	236,000	20,000	256,000	92%
Harrison ^b	<i>3-Ricker(Ei); 4-sibling</i>	48,000	128,000	176,000	27%
Raft	<i>Ricker (PDO)</i>	11,000	15,000	26,000	42%
Misc (N. Thomp. Tribs)	<i>R/S</i>	1,000	1,000	2,000	50%
Misc (N. Thomp River)	<i>R/S</i>	200	4,000	4,000	5%
Widgeon	<i>R/S</i>	1,000	3,000	4,000	25%
Late		31,000	80,000	111,000	28%
Cultus	<i>MRJ</i>	4,000	300	4,000	100%
Late Shuswap	<i>Larkin</i>	0	4,000	4,000	0%
Portage	<i>Larkin</i>	300	100	400	75%
Weaver	<i>4-MRS; 5-sibling</i>	5,000	3,000	8,000	63%
Birkenhead	<i>4-Ricker (Ei); 5-sibling</i>	16,000	52,000	68,000	24%
Misc. non-Shuswap	<i>R/S</i>	6,000	21,000	27,000	22%
Total		1,863,000	407,000	2,271,000	82%

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

5.2.1.2.2 In season

In season Decisions

Run Size Estimation and TAC calculations: In season run size estimates based on information from test fishing operations, catches during fishery openings and hydro-acoustic estimates of in-river abundance will be provided by the Pacific Salmon Commission staff to the Fraser River Panel for consideration.

The Fraser River Panel will meet regularly from early July to early September to review information as it becomes available over the course of the sockeye migration. Estimates of run size, timing, and pMAs/DBEs for sockeye will be regularly updated through the Fraser River Panel process and are used to set spawning escapement objectives, management adjustments, and calculate available TAC to determine opportunities for fishery openings. The availability of the TAC to harvesters will also be affected by other factors, including migration pathways and conservation requirements for co-migrating stocks or species.

Information on in season run size estimates and management actions, such as openings and closures, as well as other important information for commercial, recreational and First Nations fisheries are posted on the Internet regularly throughout the fishing season by the Department and the PSC at the following web sites:

Weekly PSC News Release: 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>

Planned Sockeye Test fisheries

The 2016 test fishing plan is being developed with the Fraser Panel and approved plans will be available in the final IFMP.

5.2.1.3 Decision Guidelines and Management Actions

Proportional Management Adjustments

The proportional management adjustment (pMA - % of escapement goal) assists in the achievement of escapement goals. Proportional management adjustment equivalents (management adjustments – number of fish) are added to the escapement goal when necessary to account for historic differences between Mission hydro-acoustic estimates of fish passage (plus catch upstream of the hydroacoustics site) and spawning ground escapement estimates (i.e., sometimes more fish are needed to be counted going upstream at Mission (in the lower Fraser River) than the escapement goal in order to achieve the escapement goal on the spawning grounds). Differences between estimates (DBEs) occur for many reasons, including

measurement errors at Mission, on the spawning grounds, and of catches along the way, en-route losses due to migration difficulties, and unaccounted for removals (e.g., predation).

The pMA for each management group is 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 counted at Mission and the spawning grounds (i.e., difference between estimates = DBE). The pMAs for all run timing groups will likely change in season with updated information on environmental conditions and migration timing. The pre-season pMA values for all management groups will continue to be reviewed and updated by the Fraser Panel prior to the start of the fishing season. The “MA” (management adjustment) values used in the tables are the escapement goals multiplied by the pMA and represent the number of fish in addition to the escapement goal and projected catch upstream of Mission that are required to pass Mission to improve the likelihood of reaching the escapement goal.

The proportional management adjustments (pMAs) shown in the escapement options are for illustrative purposes only. They are based on the median historical DBEs for all years in the dataset and include weighted values for Chilliwack, Pitt, Harrison, Birkenhead, and Birkenhead type stocks. The exception to this is the Late run (excluding Birkenhead), which uses the historical cycle line DBE. The Fraser Panel updates pMAs in season, based on information during the salmon migration.

2016 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 No-Fishing Point) and Upper Fishery Reference Points (vertical dashed line through Cut-Back Point) to describe the shape of the Total Allowable Mortality (TAM) rule for each management aggregate. 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.

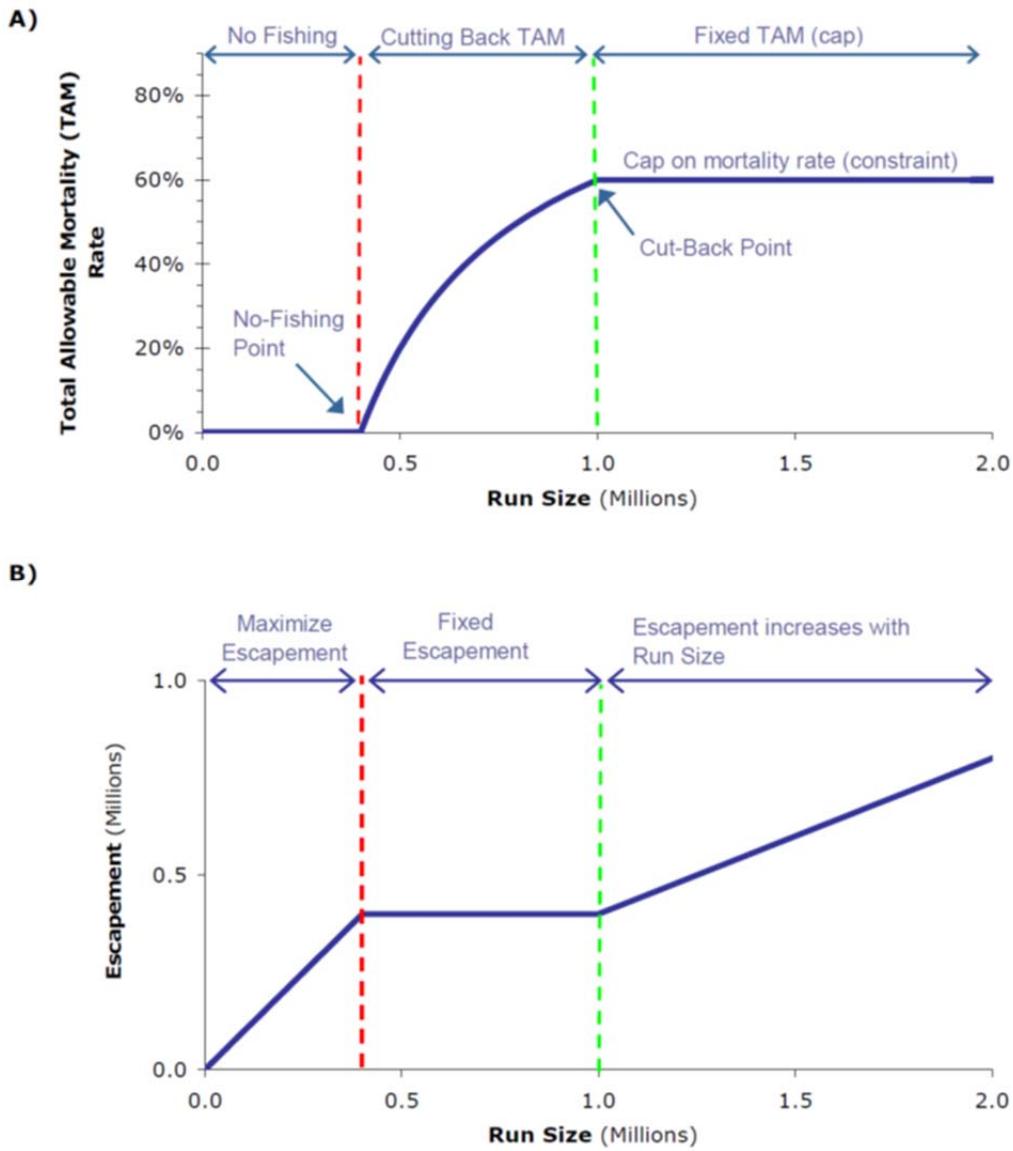


Figure 5-8: Shape of Total Allowable Mortality (TAM) rule. Note: the Low Abundance Exploitation Rate (LAER) is applied after the TAM rule and is not shown in the figure.

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 2015 the LAER for Early Stuart, Early Summer, and Summer Run timing groups was 10% and 20-30% for Late Run and Cultus Lake sockeye.

For 2016, the Department is seeking input on two escapement options and their components. In addition, the Department is seeking feedback on the values being used for the low abundance exploitation rate (LAER). For a number of years, the LAER has been set at 10% for Early Stuart, Early Summer and Summers. The Late Run LAER has been set at 20% for run sizes below p75 and 30% for run sizes at or above p75. The Department will consider all input provided during final escapement plan development. The final escapement plan may be different from the two options described here based on input received.

The two escapement options are described below. The differences between the two options are:

- Early Stuart – the same fisheries reference points (FRP) are proposed for both option 1 and 2.
- Early Summer Run
 - Option 1 – 100k lower FRP. This option is consistent with previous years on this cycle line, after accounting for the change to manage Raft and North Thompson stocks as part of the Summer Run beginning in 2012.
 - Option 2 – 150k lower FRP. This option is new for 2016 and responds to the lower projected escapements for Bowron, Fennell and Seymour at the range of pre-season run size forecasts and median pMA/DBE.
- Summer Run FRPs
 - Option 1 – 640k lower FRP. This option is consistent with previous years on this cycle line, after accounting for the inclusion of Raft, North Thompson, and Harrison as part of the Summer run beginning in 2012.
 - Option 2 – 800k lower FRP. This option provides for lower exploitation rates at returns less than the p50 forecast compared to Option 1 and results in modest rebuilding in projected escapements, particularly the Quesnel system (which had a brood year escapement of ~625 fish).
- Late Run LAER
 - Option 1 – 20% LAER for returns below p75 abundance, 30% LAER at p75 returns and above. This is consistent with the Late Run LAER approach since 2012 season.
 - Option 2 – fixed 20% LAER for all returns (i.e., does not change with abundance). Returns to all Late run systems in the brood year were poor, with the exception of Birkenhead. The Late run abundance falls below the lower FRP for the entire 80% range of the run size forecast. Based on pre-season information, it is anticipated that this group will be managed under an LAER scenario in 2016. Reducing the upper end of the LAER at higher abundances would allow for some rebuilding while still allowing for fisheries on more abundant co-migrating stocks and species.

Table 5-8a & 5-8b show the escapement plan options for 2016 for the four management groups. The fishery reference points shown are evaluated for the stocks that have a long term stock-recruit 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 5-5). Since 2014, Harrison and Widgeon have been accounted for as Summer run “miscellaneous” stocks with respect to scaling up the fishery reference points, due to the greater uncertainty associated with the Harrison forecast.

Table 5-9a & 5-9b shows at the management group level the range of expected outcomes (e.g., exploitation rates, available harvest, and expected numbers of spawners to the grounds) of the escapement plan for the range of the abundance forecast, fisheries reference points and pMAs shown in Table 5-8a & 5-8b. 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 5-7 provides an example of descriptions of the information presented in Table 5-9a & 5-9b.

Table 5-7: Description example of information shown in Table 5-9a & 5-9b.

From Escapement Options Table	Description
p10 forecast	run size forecast probability level being used for calculations in this column forecast associated with p-level (above) and this management group
TAM Rule (%)	18% total allowable mortality (TAM) at this run size forecast
Escapement Goal	108,000 escapement goal at this run size
MA	72,400 management adjustment (= pMA x escapement target)
Esc. Goal + MA	180,400 adds up previous two rows
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	13,200 harvest available for test fish, US & Canada (= allowable ER * run size)
2014 Performance	IF run size, MA, and ER are all as described as above, the projected outcomes:
Projected S (after MA)	71,000 total number of spawners to the grounds (NOT accounting for pre-spawn mortality (PSM))
BY Spawners	60,300 number of spawners four year previous (compare to line above)
Proj. S as % BY S	118% projected spawners as a percentage of brood year spawners
cycle avg S	36,500 average number of spawners to the grounds on this cycle line (NOT accounting for PSM)
Proj. S as % cycle S	195% projected spawners as a percentage of the cycle year average spawners

Note: example shown is the p10 for Early Stuart (which is the same in both Options)

Abbreviations:

TAM - total allowable mortality
MA - management adjustment
esc. goal - escapement goal
LAER - low abundance exploitation rate
ER - exploitation rate
S - spawners
BY - brood year
avg - average

Table 5-10a & 5-10b shows the projected escapement for each forecasted stock over the range of forecast probability levels (i.e. the “projected S (after MA)” from Table 5-9a & 5-9b is distributed to the component stocks. Note that this makes the additional assumption that the exploitation rate and the pMA/DBE will be distributed evenly within a management group). Table 5-11 compares where the different probability levels of the forecast fall in relation to the Fisheries Reference Points in escapement plan options 1 and 2.

Table 5-8a: Option 1: 2016 Fraser sockeye Escapement Plan with 2012 FRPs for Early Summer & Summer runs, and Late run LAER that increases with abundance.

Harvest Rule Parameters					
Management Unit	Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA
Early Stuart	10%	60%	108,000	270,000	0.69
Early Summer (w/o misc)	10%	60%	100,000	250,000	0.60
Summer (w/o misc)	10%	60%	640,000	1,600,000	0.12
Late (w/o misc)	20-30%	60%	300,000	750,000	4.68

Table 5-8b: Option 2: 2016 Fraser sockeye Escapement Plan with higher FRPs for Early Summer & Summer runs, and fixed Late run LAER.

Harvest Rule Parameters					
Management Unit	Low Abundance ER (LAER)	TAM Cap	Lower Fishery Reference Point	Upper Fishery Reference Point	Pre-season pMA
Early Stuart	10%	60%	108,000	270,000	0.69
Early Summer (w/o misc)	10%	60%	150,000	375,000	0.60
Summer (w/o misc)	10%	60%	800,000	2,000,000	0.12
Late (w/o misc)	20%	60%	300,000	750,000	4.68

Table 5-9a: Option 1: 2016 Escapement Plan for the Fraser River Sockeye management groups over a range of preseason forecasts. For description of the values in this table, refer to Table 5-7. The bolded columns represent the pre-season planning values that are an

Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Early Stuart	forecast	13,000	22,000	36,000	59,000	89,000
	TAM Rule (%)	0%	0%	0%	0%	0%
	Escapement Target	13,000	22,000	36,000	59,000	89,000
	MA	9,000	15,200	24,800	40,700	61,400
	Esc. Target + MA	22,000	37,200	60,800	99,700	150,400
	LAER	10%	10%	10%	10%	10%
	ER at Return	0%	0%	0%	0%	0%
	Allowable ER	10%	10%	10%	10%	10%
	available harvest	1,300	2,200	3,600	5,900	8,900
<u>2016 Performance</u>						
	Projected S (after MA)	7,000	12,000	19,000	31,000	47,000
	BY Spawners	26,233	26,233	26,233	26,233	26,233
	Proj. S as % BY S	27%	46%	72%	118%	179%
	cycle avg S	35,861	35,861	35,861	35,861	35,861
	Proj. S as % cycle S	20%	33%	53%	86%	131%
Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Early Summer	<i>lower ref. pt. (w misc)</i>	156,000	156,000	156,000	156,000	156,000
(w/o RNT)	<i>upper ref. pt. (w misc)</i>	391,000	391,000	391,000	391,000	391,000
	forecast (incl. misc)	120,000	217,000	447,000	1,003,000	2,703,000
	TAM Rule (%)	0%	28%	60%	60%	60%
	Escapement Target	120,000	156,000	178,800	401,200	1,081,200
	MA	72,000	93,600	107,300	240,700	648,700
	Esc. Target + MA	192,000	249,600	286,100	641,900	1,729,900
	LAER	10%	10%	10%	10%	10%
	ER at Return	0%	0%	36%	36%	36%
	Allowable ER	10%	10%	36%	36%	36%
	available harvest	12,000	21,700	160,900	361,100	973,100
<u>2016 Performance</u>						
	Projected S (after MA)	68,000	122,000	179,000	401,000	1,081,000
	BY Spawners	276,018	276,018	276,018	276,018	276,018
	Proj. S as % BY S	25%	44%	65%	145%	392%
	cycle avg S	132,183	132,183	132,183	132,183	132,183
	Proj. S as % cycle S	51%	92%	135%	303%	818%

Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Summer (w. RNT & Har)	lower ref. pt. (w misc)	730,000	730,000	730,000	730,000	730,000
	upper ref. pt. (w misc)	1,824,000	1,824,000	1,824,000	1,824,000	1,824,000
	forecast	647,000	1,004,000	1,695,000	2,984,000	5,031,000
TAM Rule (%)		0%	27%	57%	60%	60%
Escapement Target		647,000	730,000	730,000	1,193,600	2,012,400
MA		77,600	87,600	87,600	143,200	241,500
Esc. Target + MA		724,600	817,600	817,600	1,336,800	2,253,900
LAER		10%	10%	10%	10%	10%
ER at Return		0%	19%	52%	55%	55%
Allowable ER		10%	19%	52%	55%	55%
available harvest		64,700	186,400	877,400	1,647,200	2,777,100
<u>2016 Performance</u>						
Projected S (after MA)		520,000	730,000	730,000	1,194,000	2,012,000
BY Spawners		559,387	559,387	559,387	559,387	559,387
Proj. S as % BY S		93%	130%	130%	213%	360%
cycle avg S		656,591	656,591	656,591	656,591	656,591
Proj. S as % cycle S		79%	111%	111%	182%	306%
Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Late (w/o Har)	lower ref. pt. (w misc)	396,000	396,000	396,000	396,000	396,000
	upper ref. pt. (w misc)	991,000	991,000	991,000	991,000	991,000
	forecast	41,000	65,000	111,000	205,000	368,000
TAM Rule (%)		0%	0%	0%	0%	0%
Escapement Target		41,000	65,000	111,000	205,000	368,000
MA		191,900	304,200	519,500	959,400	1,722,200
Esc. Target + MA		232,900	369,200	630,500	1,164,400	2,090,200
LAER		20%	20%	20%	30%	30%
ER at Return		0%	0%	0%	0%	0%
Allowable ER		20%	20%	20%	30%	30%
available harvest		8,200	13,000	22,200	61,500	110,400
<u>2016 Performance</u>						
Projected S (after MA)		6,000	9,000	16,000	25,000	45,000
BY Spawners		61,209	61,209	61,209	61,209	61,209
Proj. S as % BY S		10%	15%	26%	41%	74%
cycle avg S		134,046	134,046	134,046	134,046	134,046
Proj. S as % cycle S		4%	7%	12%	19%	34%
Available Harvest (TF, US, CDN)		86,200	223,300	1,064,100	2,075,700	3,869,500
Total projected spawners		601,000	873,000	944,000	1,651,000	3,185,000

Table 5-9b. Option 2: 2016 Escapement Plan for the Fraser River Sockeye management groups over a range of preseason forecasts. For description of the values in this table, refer to Table 5-7. The bolded columns represent the pre-season planning values that are anticipated to be used to start the season in 2016.

Management		Pre-season Forecast Return				
Unit	forecast	p10	p25	p50	p75	p90
Early Stuart		13,000	22,000	36,000	59,000	89,000
TAM Rule (%)		0%	0%	0%	0%	0%
Escapement Target		13,000	22,000	36,000	59,000	89,000
MA		9,000	15,200	24,800	40,700	61,400
Esc. Target + MA		22,000	37,200	60,800	99,700	150,400
LAER		10%	10%	10%	10%	10%
ER at Return		0%	0%	0%	0%	0%
Allowable ER		10%	10%	10%	10%	10%
available harvest		1,300	2,200	3,600	5,900	8,900
<u>2016 Performance</u>						
Projected S (after MA)		7,000	12,000	19,000	31,000	47,000
BY Spawners		26,233	26,233	26,233	26,233	26,233
Proj. S as % BY S		27%	46%	72%	118%	179%
cycle avg S		35,861	35,861	35,861	35,861	35,861
Proj. S as % cycle S		20%	33%	53%	86%	131%
Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Early Summer	<i>lower ref. pt. (w misc)</i>	234,000	234,000	234,000	234,000	234,000
(w/o RNT)	<i>upper ref. pt. (w misc)</i>	586,000	586,000	586,000	586,000	586,000
	forecast (incl. misc)	120,000	217,000	447,000	1,003,000	2,703,000
TAM Rule (%)		0%	0%	48%	60%	60%
Escapement Target		120,000	217,000	234,000	401,200	1,081,200
MA		72,000	130,200	140,400	240,700	648,700
Esc. Target + MA		192,000	347,200	374,400	641,900	1,729,900
LAER		10%	10%	10%	10%	10%
ER at Return		0%	0%	16%	36%	36%
Allowable ER		10%	10%	16%	36%	36%
available harvest		12,000	21,700	72,600	361,100	973,100
<u>2016 Performance</u>						
Projected S (after MA)		68,000	122,000	234,000	401,000	1,081,000
BY Spawners		276,018	276,018	276,018	276,018	276,018
Proj. S as % BY S		25%	44%	85%	145%	392%
cycle avg S		132,183	132,183	132,183	132,183	132,183
Proj. S as % cycle S		51%	92%	177%	303%	818%

Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Summer (w. RNT & Har)	lower ref. pt. (w misc)	912,000	912,000	912,000	912,000	912,000
	upper ref. pt. (w misc)	2,280,000	2,280,000	2,280,000	2,280,000	2,280,000
	forecast	647,000	1,004,000	1,695,000	2,984,000	5,031,000
TAM Rule (%)		0%	9%	46%	60%	60%
Escapement Target		647,000	912,000	912,000	1,193,600	2,012,400
MA		77,600	109,400	109,400	143,200	241,500
Esc. Target + MA		724,600	1,021,400	1,021,400	1,336,800	2,253,900
LAER		10%	10%	10%	10%	10%
ER at Return		0%	0%	40%	55%	55%
Allowable ER		10%	10%	40%	55%	55%
available harvest		64,700	100,400	673,600	1,647,200	2,777,100
<u>2016 Performance</u>						
Projected S (after MA)		520,000	807,000	912,000	1,194,000	2,012,000
BY Spawners		559,387	559,387	559,387	559,387	559,387
Proj. S as % BY S		93%	144%	163%	213%	360%
cycle avg S		656,591	656,591	656,591	656,591	656,591
Proj. S as % cycle S		79%	123%	139%	182%	306%
Management		Pre-season Forecast Return				
Unit		p10	p25	p50	p75	p90
Late (w/o Har)	lower ref. pt. (w misc)	396,000	396,000	396,000	396,000	396,000
	upper ref. pt. (w misc)	991,000	991,000	991,000	991,000	991,000
	forecast	41,000	65,000	111,000	205,000	368,000
TAM Rule (%)		0%	0%	0%	0%	0%
Escapement Target		41,000	65,000	111,000	205,000	368,000
MA		191,900	304,200	519,500	959,400	1,722,200
Esc. Target + MA		232,900	369,200	630,500	1,164,400	2,090,200
LAER		20%	20%	20%	20%	20%
ER at Return		0%	0%	0%	0%	0%
Allowable ER		20%	20%	20%	20%	20%
available harvest		8,200	13,000	22,200	41,000	73,600
<u>2016 Performance</u>						
Projected S (after MA)		6,000	9,000	16,000	29,000	52,000
BY Spawners		61,209	61,209	61,209	61,209	61,209
Proj. S as % BY S		10%	15%	26%	47%	85%
cycle avg S		134,046	134,046	134,046	134,046	134,046
Proj. S as % cycle S		4%	7%	12%	22%	39%
Available Harvest (TF, US, CDN)		86,200	137,300	772,000	2,055,200	3,832,700
Total projected spawners		601,000	950,000	1,181,000	1,655,000	3,192,000

Table 5-10a: Option 1: Projected spawners by forecasted stock over the forecast range, applying TAM rules and pMAs shown in Table 5-8a. Color code shows comparison of p50 abundance forecast outcomes compared to cycle average and brood year escapement (green = greater than 125%, yellow = between 25% - 75%, red = less than 25%, no color = between 75%-125%).

Run timing group Stocks	Total Escapement		Projected esc. across range of run size forecasts at specified TAM + MA						comparisons @p50	
	cycle yr	brood year	10%	25%	50%	75%	90%	to cycle	to BY	
Early Stuart	35,861	26,233	7,000	12,000	19,000	31,000	47,000			53% 72%
Early Summer (total excluding miscellaneous)	97,883	145,016	68,000	122,000	179,000	401,000	1,081,000			
Bowron	7,265	59	600	1,100	1,600	3,200	5,200	22%	2712%	
Fennell (cycle avg since 1959)	8,565	1,967	3,400	5,100	5,600	9,200	15,600	65%	285%	
Gates	24,662	31,179	13,600	22,500	30,400	55,200	92,400	123%	98%	
Nadina	19,995	30,942	13,600	25,300	36,000	71,600	132,400	180%	116%	
Pitt	28,024	78,038	23,800	33,700	36,000	58,800	84,800	128%	46%	
Scotch (cycle avg since 1983)	2,096	2,007	200	1,100	4,800	35,600	279,200	229%	239%	
Seymour	7,276	824	0	100	200	400	1,200	3%	24%	
Summer (tl excl. NThmisc, incl. Har)	656,591	559,387	520,000	730,000	730,000	1,194,000	2,012,000			
Chilko	469,096	246,602	368,900	478,400	431,500	629,400	913,000	92%	175%	
Quesnel	11,619	624	4,800	6,500	6,500	10,000	16,000	56%	1042%	
Late Stuart	44,993	93,159	33,800	62,500	82,700	170,900	351,900	184%	89%	
Stellako	108,204	137,992	69,100	104,700	110,300	181,700	304,300	102%	80%	
Harrison	7,504	71,002	32,100	61,800	83,600	178,900	385,900	1114%	118%	
Raft	15,175	10,008	8,800	11,600	11,200	15,200	24,800	74%	112%	
Late (total excluding miscellaneous)	128,672	57,395	6,000	9,000	16,000	25,000	45,000			
Cultus (high hatchery contribution)	11,822	892	100	300	600	1,100	2,100	5%	67%	
Late Shuswap	5,733	12	0	0	600	3,000	9,300	10%	5000%	
Portage	1,382	25	0	0	100	100	200	7%	400%	
Weaver	29,941	924	300	600	1,200	2,100	3,800	4%	130%	
Birkenhead	79,794	55,542	4,400	6,300	9,800	12,800	19,300	12%	18%	

Table 5-10b. Option 2: Projected spawners by forecasted stock over the forecast range, applying TAM rules and pMAs shown in Table 5-8b. Color code shows comparison of p50 abundance forecast outcomes compared to cycle average and brood year escapement (green = greater than 125%, yellow = between 25% - 75%, red = less than 25%, no color = between 75%-125%).

Run timing group Stocks	Total Escapement		Projected esc. across range of run size forecasts at specified TAM + MA						comparisons @p50 to cycle to BY	
	cycle yr	brood year	10%	25%	50%	75%	90%			
Early Stuart	35,861	26,233	7,000	12,000	19,000	31,000	47,000		53%	72%
Early Summer (total excluding miscellaneous)	97,883	145,016	68,000	122,000	234,000	401,000	1,081,000			
Bowron	7,265	59	600	1,100	2,100	3,200	5,200	29%	3559%	
Fennell (cycle avg since 1959)	8,565	1,967	3,400	5,100	7,300	9,200	15,600	85%	371%	
Gates	24,662	31,179	13,600	22,500	39,800	55,200	92,400	161%	128%	
Nadina	19,995	30,942	13,600	25,300	47,100	71,600	132,400	236%	152%	
Pitt	28,024	78,038	23,800	33,700	47,100	58,800	84,800	168%	60%	
Scotch (cycle avg since 1983)	2,096	2,007	200	1,100	6,300	35,600	279,200	301%	314%	
Seymour	7,276	824	0	100	200	400	1,200	3%	24%	
Summer (tl excl. NThmisc, incl. Har)	656,591	559,387	520,000	807,000	912,000	1,194,000	2,012,000			
Chilko	469,096	246,602	368,900	528,900	539,100	629,400	913,000	115%	219%	
Quesnel	11,619	624	4,800	7,200	8,100	10,000	16,000	70%	1298%	
Late Stuart	44,993	93,159	33,800	69,100	103,300	170,900	351,900	230%	111%	
Stellako	108,204	137,992	69,100	115,700	137,700	181,700	304,300	127%	100%	
Harrison	7,504	71,002	32,100	68,300	104,400	178,900	385,900	1391%	147%	
Raft	15,175	10,008	8,800	12,900	14,000	15,200	24,800	92%	140%	
Late (total excluding miscellaneous)	128,672	57,395	6,000	9,000	16,000	29,000	52,000			
Cultus (high hatchery contribution)	11,822	892	100	300	600	1,300	2,400	5%	67%	
Late Shuswap	5,733	12	0	0	600	3,500	10,700	10%	5000%	
Portage	1,382	25	0	0	100	100	300	7%	400%	
Weaver	29,941	924	300	600	1,200	2,400	4,400	4%	130%	
Birkenhead	79,794	55,542	4,400	6,300	9,800	14,800	22,300	12%	18%	

Table 5-11: Comparison of escapement options: allowable ERs and projected spawner outcomes for a range of p-level forecasts relative to Fisheries Reference Points (color coded).

		p10	p25	p50	p75	p90
Early Stuart	forecast	13,000	22,000	36,000	59,000	89,000
Option 1	Allowable ER	10%	10%	10%	10%	10%
	Projected S (after MA)	7,000	12,000	19,000	31,000	47,000
	Proj. S as % BY S	27%	46%	72%	118%	179%
	Proj. S as % cycle S	20%	33%	53%	86%	131%
Option 2	<i>same as option 1</i>					
		p10	p25	p50	p75	p90
Early Summer	forecast (incl. misc)	120,000	217,000	447,000	1,003,000	2,703,000
Option 1	Allowable ER	10%	10%	36%	36%	36%
	Projected S (after MA)	68,000	122,000	179,000	401,000	1,081,000
	Proj. S as % BY S	25%	44%	65%	145%	392%
	Proj. S as % cycle S	51%	92%	135%	303%	818%
Option 2	Allowable ER	10%	10%	16%	36%	36%
	Projected S (after MA)	68,000	122,000	234,000	401,000	1,081,000
	Proj. S as % BY S	25%	44%	85%	145%	392%
	Proj. S as % cycle S	51%	92%	177%	303%	818%
		p10	p25	p50	p75	p90
Summer	forecast (incl. misc)	647,000	1,004,000	1,695,000	2,984,000	5,031,000
Option 1	Allowable ER	10%	19%	52%	55%	55%
	Projected S (after MA)	520,000	730,000	730,000	1,194,000	2,012,000
	Proj. S as % BY S	93%	130%	130%	213%	360%
	Proj. S as % cycle S	79%	111%	111%	182%	306%
Option 2	Allowable ER	10%	10%	40%	55%	55%
	Projected S (after MA)	520,000	807,000	912,000	1,194,000	2,012,000
	Proj. S as % BY S	93%	144%	163%	213%	360%
	Proj. S as % cycle S	79%	123%	139%	182%	306%
		p10	p25	p50	p75	p90
Lates	forecast (incl. misc)	41,000	65,000	111,000	205,000	368,000
Option 1	Allowable ER	20%	20%	20%	30%	30%
	Projected S (after MA)	6,000	9,000	16,000	25,000	45,000
	Proj. S as % BY S	10%	15%	26%	41%	74%
	Proj. S as % cycle S	4%	7%	12%	19%	34%
Option 2	Allowable ER	20%	20%	20%	20%	20%
	Projected S (after MA)	6,000	9,000	16,000	29,000	52,000
	Proj. S as % BY S	10%	15%	26%	47%	85%
	Proj. S as % cycle S	4%	7%	12%	22%	39%
	forecast p-level is below lower fisheries reference point					
	forecast p-level is between lower & upper fisheries reference point					
	forecast p-level is above upper fisheries reference point					

Fraser Sockeye Run Timing Groups: The four stock groups 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 2016 Fraser sockeye escapement plan reflects this continued re-alignment of stocks. The harvest rules have been adjusted since 2012 to account for this change.

Incidental Harvest: 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 70-90% of the return of that timing group while allowing for the harvest of co-migrating stocks and or species. Test fishing impacts are included as part of this incidental harvest calculation on the group. The intention of this provision is to allow for limited fisheries directed on co-migrating stocks or species but may also permit limited harvest in some cases. This provision is not intended to create directed harvest opportunities on the run timing groups with zero or very low total allowable mortality. These provisions will also take into account any harvest (directed or incidental) that may have occurred previously on the timing group and can also include delayed mortalities associated with fish released in fisheries targeting other species. In the escapement plan table, this concept is expressed as the low abundance exploitation rate (LAER).

Run Timing: Fishing plan options are evaluated for a range of possible run sizes and return timing. In season run-size and timing estimates form the basis for management once these estimates are available. The preliminary run timing estimates shown in the figure below are based on cycle line medians and may be updated for pre-season planning.

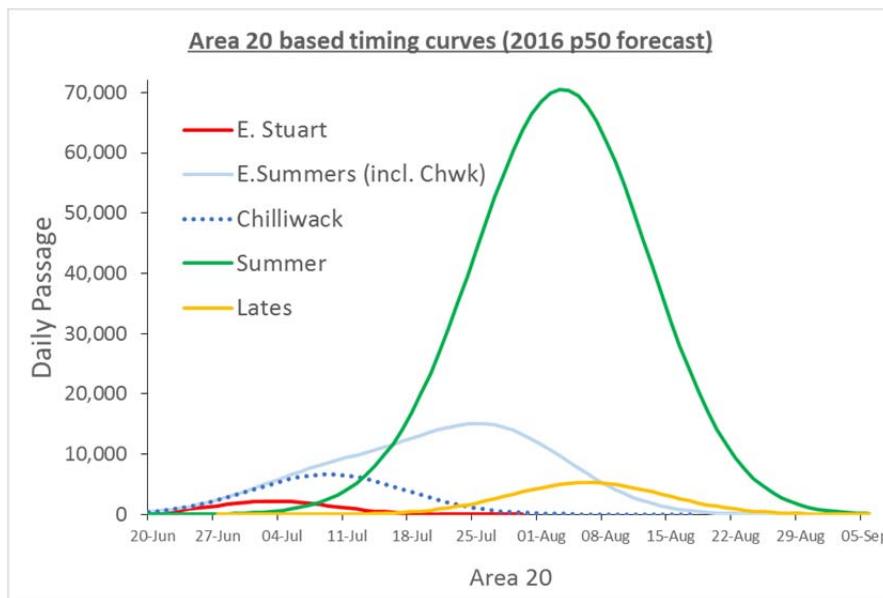


Figure 5-9: Pre-season Run Timing Curves for 2016 Fraser Sockeye and Pink Salmon

5.2.1.4 Incidental Harvest, By-catch and Constraints to Fraser Sockeye Fisheries

Though total allowable catch (TAC) is identified for various management groupings in most years, conservation and management constraints on co-migrating stocks, management groups, or other species can affect harvest opportunities.

Early Stuart Management

The 2016 Early Stuart return represents an off cycle year. The main contributor to the 2016 return is forecasted to be four year old fish from the 2012 brood year (approximately 97% 4 year olds). The 2011 brood year escapement of 200 effective female spawners (EFS) was the lowest escapement on record for this stock (since 1948) and is expected to contribute a very small return of five year olds in 2016. In contrast to 2011, the 2012 brood year effective female spawners for Early Stuart sockeye was 6,800.

The implications of the escapement strategy for Early Stuart fishing plans will be strongly 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 pre-season forecast and long term median management adjustments, Early Stuart sockeye remain in a low abundance exploitation rate (LAER) situation if actual returns fall below the p90 forecast level.

In recent years, window closures and other fishing restrictions have been required in commercial, recreational and First Nations fisheries to stay within LAER objectives identified in the escapement plan. These measures that could be required in 2016 will likely include a rolling window closure based on the run timing of the Early Stuart migration through various fishing

areas. Potential window closure dates in Table 5-12 are provided for planning purposes to protect Early Stuart sockeye. These dates may be revised based on in season information.

Unlike 2015, the window closure has *not* been extended by one week to provide protection to early-timed stocks (e.g. Bowron) of the Early Summer Run management group. The Department is seeking feedback on the value of extending the Early Stuart window closure in 2016.

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 and in-river gill net test fisheries.

Table 5-12: Potential Early Stuart Run Closure Dates.

Area	Date Start (date, time)	Date End (date, time)	Management Action
Area 127	Open 14-Jul, 7 days/week		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 14 (Sn, Gn, Tr)
Area 11	Open 14-Jul, 7 days/week		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 14 (Gn, Tr); July 25 (Sn) ¹
Area 12	Open 14-Jul, 7 days/week		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 14 (Gn, Tr); July 25 (Sn) ¹
Area 13	Open 14-Jul, 7 days/week		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 14 (Gn, Tr); July 25 (Sn) ¹
Area 20	Open 14-Jul, 7 days/week		Earliest potential opening to FN FSC fishing for Fraser sockeye = July 14 (Sn, Gn, Tr)
Areas 18 & 29	26-Jun 00:00	20-Jul Noon	Earliest potential opening to FNs FSC fishing for
Steveston-Mission Bridge	26-Jun 00:00	20-Jul Noon	
Mission Bridge-Sawmill Cr	27-Jun 00:00	22-Jul 00:00	
Sawmill Cr-Texas Cr	01-Jul 00:00	24-Jul 00:00	
Texas Cr-Kelly Cr	01-Jul 00:00	24-Jul 00:00	
Kelly Cr-Deadman	01-Jul 00:00	24-Jul 00:00	
Deadman-Chilcotin	08-Jul 00:00	29-Jul 00:00	
Chilcotin-Quesnel	08-Jul 00:00	29-Jul 00:00	
Quesnel-Hixon	08-Jul 00:00	29-Jul 00:00	
Hixon-Prince George	11-Jul 00:00	02-Aug 00:00	
Prince George-Stuart R	11-Jul 00:00	02-Aug 00:00	

¹ Gear restrictions remain in place to protect Sakinaw sockeye until July 25, 2016.

Early Summer Management

Forecast returns for stocks within this management group are variable with below average returns predicted for some earlier and later timed stocks within the aggregate (e.g. Bowron and Seymour). Unlike 2015, the Early Stuart sockeye window closure dates in Table 5-12 do not include additional time to provide protection to the early-timed stocks, as there are stocks of concern anticipated throughout the return timing of Early Summers, and some of the largest abundances come from the earlier timed stocks of Chilliwack and Pitt. However, as noted in the Early Stuart management section, the Department is seeking feedback on the value of extending the Early Stuart window closure in 2016.

Based on the pre-season forecast and long term median management adjustment values, directed harvest opportunities on Early Summers is anticipated to be minimal to moderate, depending on the abundance and escapement option. Harvest may be incidental to Summer Run sockeye fisheries, where the majority of the harvest is anticipated to occur.

Summer Run Management

The Summer Run sockeye make up approximately 74% of the total return at the median forecast. Some directed fisheries with harvest on Summer Run stocks are expected in 2016. It is expected that while fisheries may be directed on the Summer Run timing group, harvest may be limited by constraints on co-migrating groups (Early Summer and Late Run sockeye) and stocks of concern such as Cultus Lake sockeye.

Late Run and Cultus Lake Sockeye Management

Late Run sockeye

The Late Run return in 2016 is expected to be below the cycle line average at the midpoint of the forecast distribution. The Late Run sockeye make up approximately 5% 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. However, in 2012, 2013 and 2015 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 2016 will need to take into account assumptions about the amount of delay for this group.

Based on the pre-season forecast range, directed harvest opportunities on Late Run sockeye are not expected in 2016. Based on the escapement plan, Late Run sockeye are expected to remain in a LAER situation over the entire forecast range. Any Late Run sockeye harvest will be incidental in fisheries directed on Summer Run sockeye, and 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 of the IFMP under Fishery Management Objectives for Stocks of Concern.

Due to the low numbers of Cultus Lake sockeye compared to the 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 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. Preliminary pre-season assessments of the allowable exploitation rate for Cultus shown in Table 5-13 are sensitive to assumptions about en-route and pre-spawn mortality.

For planning purposes, Table 5-13 provides a range of maximum exploitation rates that would be consistent with minimum recovery objectives (refer to section 6 of the IFMP under Fishery Management Objectives for Stocks of Concern) for the Cultus population given assumptions of a pre-spawn mortality rate, abundance and late run management adjustment. For pre-season planning purposes, the average estimated pre-spawn mortality (PSM) since early upstream migration of Late Run began in 1996 (approximately 40%), Late Run pMA, and the p10 to p90 pre-season forecast abundance range was used. The values in the table are also limited to the maximum exploitation rate permissible for Late run sockeye based on the escapement plan, 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 5-13: A range of maximum exploitation rates for Cultus Sockeye that would be consistent with minimum recovery objectives described in Section 6.6 of the IFMP under based on the escapement plan, a range of pre-season run sizes and management adjustments to account for enroute losses. These exploitation rate calculations assume the average pre-spawn mortality rate since 1996 of approximately 40%.

Option 1:			
	p25	p50	p75
pMA	2,000	4,000	9,000
4.00	20%	20%	30%
4.68	20%	20%	30%
5.00	20%	20%	30%

Option 2:			
	p25	p50	p75
pMA	2,000	4,000	9,000
4.00	20%	20%	20%
4.68	20%	20%	20%
5.00	20%	20%	20%

5.2.1.5 Allocation and Fishing Plans

5.2.1.5.1 First Nation Fisheries

Food Social and Ceremonial

First Nations opportunities to harvest salmon for food, social and ceremonial purposes is provided through communal licences issued by DFO. These licences support the effective management and regulation of First Nations fisheries. These licences are typically issued to individual bands or tribal groupings, and describe the details of the FSC fishery including the dates, times, methods, and 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.

Actual opportunities and catches will be dependent on, among other factors; in season stock strength, management measures taken to ensure conservation of individual stocks, community needs of First Nations, and alternative sources of salmon if preferred species are not available locally due to low abundance.

Refer to section 10.2 for Communal Licence Harvest Target Amount Table in Southern BC / Fraser River First Nations Fisheries.

Specific Conservation Measures For First Nation Fisheries

Early Stuart Sockeye

Based on pre-season information, there is unlikely to be any opportunities for directed FSC harvest on Early Stuart sockeye; with the exception of limited harvest in terminal areas in 2016. Fishery implementation will depend upon the in season assessment of run size, in-river temperature and discharge conditions, the conservation and harvest plan (developed through pre-season consultations) and the available TAC for this stock group.

In past years when there has been no TAC identified either pre-season or in season, Early Stuart sockeye have been managed to avoid directed fisheries on 90% of the run using a closure window. During the closure window, directed fisheries for sockeye would not be permitted except for limited First Nation ceremonial licences for unplanned events and small FSC harvest opportunities in terminal areas. In this scenario all harvest impacts will be constrained by the Low Abundance Exploitation Rate (LAER) identified in the escapement plan.

Cultus Lake and Late Run Sockeye

Refer to 5.2.1.5 Incidental Harvest, By-catch and Constraints to Fraser Sockeye Fisheries for details.

Sakinaw Lake Sockeye

Harvest related measures to ensure protection of Sakinaw Lake sockeye will continue in 2016. 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 Nation, 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, & 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 Nation 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 Nation 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 Nation 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

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 downstream of Sawmill Creek

In the Lower Fraser, 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.

Fraser River and tributaries upstream of Sawmill Creek

For fisheries on the Fraser watershed above Sawmill Creek, catch monitoring programs are managed through Fisheries Agreements negotiated between the Department and the First Nations. Catch monitoring programs vary but typically range from basic census type to more enhanced programs that include collecting effort and catch rate information in creel sample programs.

Treaty Fisheries

Tsawwassen Fisheries (Domestic)

The domestic allocation for sockeye salmon under the Tsawwassen First Nations Final Agreement is as follows:

- a) 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;
- b) 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
- c) 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 salmon under the Tla’amin First Nation Final Agreement are as follows:

2. Fraser River Sockeye

- i. 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
- ii. 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 as follows:

An amount of Fraser River sockeye salmon equal to 0.13366% of the Fraser River Sockeye Salmon Canadian Total Allowable Catch;

5.2.1.5.2 Recreational Fisheries

Fraser River sockeye returns support sockeye directed recreational fishing opportunities for inside waters in the South Coast. Marine fisheries targeting Fraser Sockeye 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). Fishing opportunities are dependent on the identification of a recreational / commercial total allowable catch of Fraser Sockeye, and minimizing impacts on stocks of concern. 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 4₂ and Spring/Summer 5₂ Chinook) in areas where they are present.

Recreational fishing opportunities are provided in marine waters in conjunction with First Nations FSC and commercial fisheries.

Marine recreational sockeye fisheries typically take place in August, and updates are provided via Fishery Notice and published on the recreational fisheries website, www.bcsportfishingguide.ca. Normal daily limits are four per day. In non-tidal waters, sockeye non-retention is in effect year-round except where harvestable surpluses are identified and potential impacts on stocks of concern are within management constraints.

For 2016 in Southern BC tidal waters, it is anticipated that sockeye non-retention will be in effect in times and areas when stocks of concern are present. For inside waters (Johnstone Strait, Strait of Georgia, Strait of Juan de Fuca) sockeye retention is unlikely to be considered until late July or early August when more abundant stocks are migrating through the area.

Recreational Fishery Monitoring and Catch Reporting

Marine Waters

Catch monitoring programs including creel surveys, log books 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.

Lower Fraser (Region 2 and Tidal waters of the Fraser River)

Lower Fraser River Recreational creel survey conducted during periods when study area is open to fishing for salmon until the termination of regular creel survey program, usually on September 30th. In some years the program has been extended into October. Catch estimates are generated for all salmon species harvested (kept) and released.

Mid and Upper Fraser Watershed (Regions 3, 5A, 7 and 8)

Similar to recent years, a range of 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 by-catch, and any biological sampling requirements are taken into account when planning the catch monitoring program for these areas.

5.2.1.5.3 Commercial Fisheries

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 Area H troll Individual Transferable Quota 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.

5.2.1.5.3.1 Allocation

Table 5-14: Commercial Allocation Implementation Plan for the 2015 – 2019 period

Description	Areas	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
South - Fraser	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0.0% ^d	4.8%

Notes on sockeye allocation (south):

^da 1% share to occur in large Fraser River return years only. A 1% reduction will be proportionately applied across other fleets in those years.

5.2.1.5.3.2 *Fraser Commercial Sockeye Fisheries*

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 4₂ and Spring/Summer 5₂ Chinook) in areas where they are present. In 2016, Fraser River sockeye returns are anticipated to be variable with the Summer run management group expected to be the dominant component of this year's return.

For 2016, based on pre-season information, it is unlikely that any commercial TAC will be identified unless in season returns approach the p75 range of the forecast and/or the pMA decreases.

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 sockeye 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 (see details below in demonstration fisheries section). Area D gill nets will be managed as open, competitive (derby-style) fishery.

Strait of Georgia (Areas 16 and 18)

Area B (Seine)

Consideration may be given for Fraser River sockeye seine fisheries in portions of Areas 16 and 18 (Sabine Channel) 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)

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 Fraser River early timed sockeye stocks.

Late July to Mid-August - Area 20

- Fraser River sockeye fishing plans will be based on in season estimates of abundance.
- 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 of the Southern Coho Species plan.

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 4₂ and Spring/Summer 5₂ Chinook) in areas where they are present.

If an opportunity is available, 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).

West Coast Vancouver Island (Areas 11, 20, 111 121 to 127)

Area G (Troll)

Fishing opportunities on Fraser river sockeye are not planned in 2016 given Area G receives an allocation for Fraser sockeye only in years of large returns based on commercial allocation arrangements.

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.
- Vessel counts conducted to verify number of vessels (effort) in each Area E gill net opening.
- On-grounds DFO funded charter patrol coverage in portions of Areas 12 and 13.
- On-grounds charter patrol and DFO catch monitoring coverage in Fraser River during each Area E gill net opening.
- Roving on-water Observer coverage in each Area E gill net opening to conduct net haul observations and gather independent information on encounters of 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.
- It is anticipated that the Area D gill net fishery will have a 20% catch validation program in place. Details of this program are currently being worked on by the Department and members of the Area D AHC through the CSAB Catch Monitoring Working Group.
- It is anticipated that the Area E gill net fishery will have a 20% catch validation program in place. Details of this program are currently being worked on by the Department and members of the Area E AHC through the CSAB Catch Monitoring Working Group.
- Partial independent on-board/at-sea observer coverage for Area B seine and Area H troll fisheries.

South Fraser Sockeye Demonstration Fisheries

Area B Seine and Area H Troll Fraser River Sockeye Individual Transferable Quota (ITQ) Demonstration Fishery

This demonstration fishery will be similar to the quota based ITQ Fraser River sockeye fishery that was planned for 2009-2015. 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 and H 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 Area 12 and 13), portions of Area 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 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, by-catch 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% 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 will 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 demonstration ITQ 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.

Area E Gill Net Sockeye Pooled Demonstration Fishery

The objective of conducting this fishery is to test the feasibility and explore the potential benefits of changing the management of the fishery to a pooled quota style, thereby demonstrating the use of defined shares and the ability to access available TAC at levels insufficient for a full fleet fishery to access. In this situation, a limited participation (i.e. less than full fleet) pooled fishery would be conducted to provide an opportunity for small amounts of commercial TAC to be accessed by the Area E fleet. The implementation of this demonstration fishery directly controls the total harvest by limiting participation in the fishery.

REGION - Lower Fraser Area

PARTICIPANTS - Voluntary pool concept where all Area E licence holders with a valid salmon licence will be eligible to register for pools. Area E licence holders will have an opportunity to voluntarily organize into pools and identify a designated catcher vessel for each pool. Pools will be organized prior to any commercial fishing and will apply to all Area E pooled demonstration fisheries.

LOCATION OF FISHERY – Lower Fraser River, Area 29

GEAR TYPE - Gill net gear specifications for sockeye-targeted fisheries. Selective fishing measures are mandatory, as specified by licence conditions.

TIME FRAME – This fishery is planned to occur when insufficient Fraser River sockeye Canadian Commercial TAC is identified to conduct full fleet fisheries. It is anticipated that this fishery will take place within the traditional sockeye fishery season during the August to early September time frame.

ALLOCATION - The target species for this demo fishery is Fraser River sockeye. The amount available for harvest will be determined in season and based on available Fraser River sockeye Canadian Commercial TAC and shares will be assigned based on the number of vessels in a pool. The minimum pool size will be 5 vessels with no maximum number of vessels.

MONITORING PLAN - In addition to requirements outlined in the licence conditions there is a requirement for 100% dockside validation of the catch at designated off-loading locations.

5.2.1.5.3.3 Fraser First Nations Commercial Sockeye Harvest

Demonstration Fisheries

Discussions regarding demonstration fisheries that will provide commercial opportunities for First Nations and allow for experimentation and testing of inland fisheries are on-going. 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.

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 2016 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); Lheidli T'enneh First Nation (LTFN)

North Shuswap Tribal Council

Location: Quesnel River, Quesnel Lake, Chilcotin River and main stem 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 Nation

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

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.

MONITORING PLAN – All

Fishery will be monitored using designated landing sites, electronic log book system (ELOG) and validation of catch at either landing site or plant.

RWS RiverFresh Wild Salmon Ltd – In-River Sockeye, and Chinook Fisheries

RWS RiverFresh Wild Salmon Ltd (RiverFresh) is a Commercial Fishing Enterprise incorporated in September 2012 as a partnership between four Secwepemc communities of the Shuswap Nation Tribal Council. The Secwepemc Fisheries Commission (SFC) continues to function as the operational planning and business management team on behalf of RiverFresh. SFC has been coordinating demonstration fisheries and conducting business feasibility analyses since 2005.

The 2016 SFC demonstration fisheries expectations are similar to 2012 and 2013; preseason forecasts for Early Summer, Summer and Late run sockeye stocks in the Secwepemc fishing area are uncertain. Fishery expectations are to target South Thompson 4-1 chinook salmon with any available sockeye allocations to be taken as by-catch. If no sockeye allocations available, by catch may be identified and retained for food, social and ceremonial purposes subject to dual fishing guidelines.

SFC will build on previous year's experiences and expand their knowledge and abilities participating in larger scale fisheries.

PARTICIPANTS – SFC and other partners to be determined

LOCATION OF FISHERIES - Kamloops Lake

GEAR TYPE –

Chinook fishery – 8" mesh set gill net

Sockeye fishery – 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 (4₁); potential start date is August 22 ending Sept. 23.

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

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 id information if it is available.

Sockeye Fishery - sockeye allocation will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CCTAC) of Fraser sockeye in season.

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 along include electronic log book system (ELOG).

2016 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). Chum: To be determined but will be expressed as a percentage (%) share of the Fraser River Terminal Commercial Total Allowable Catch (FRTCTAC)

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 by-catch 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 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.

Harvest Agreements

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 Nation Harvest Agreement”. Fishing undertaken via the HA will be comparable to the requirements of the current Fraser River commercial fishery (First Nation 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 are to 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.

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 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. 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 have required monitors to be present during all fishing activity to record catch and release information on a set-by-set basis.

5.2.1.5.4 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. 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 uncertainties in in season information, the Department may permit only a portion of any estimated surplus to be harvested.

5.2.2 East Coast Vancouver Island and Mainland Sockeye

5.2.2.1 Snapshot Overview and Map of Management Unit

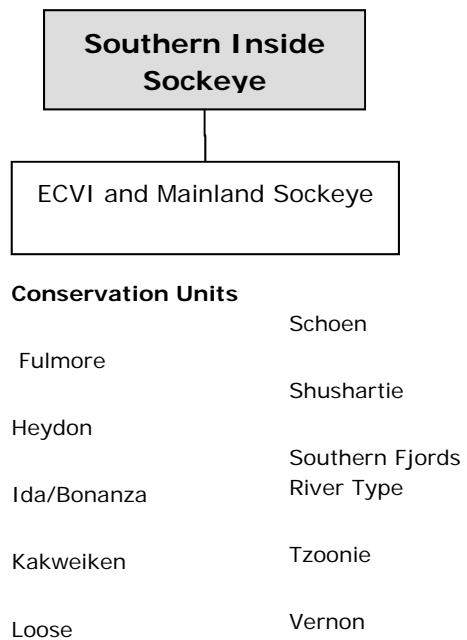


Figure 5-10: Overview of East Coast Vancouver Island and Mainland Sockeye

5.2.2.2 Stock Assessment Information

5.2.2.2.1 Pre-season

Table 5-15: ECVI and Mainland Sockeye 2016 Salmon Outlook

Outlook Unit	2016 Outlook
Areas 11-13	<p>Preliminary sockeye returns in 2015 to the Nimpkish River (Area 12) were above average but show a decline in survival relative to the strong 2010 and 2011 brood years. The assessment of the escapement data associated with the Quatse River (Area 12) has not yet been completed, but indications were for return abundance lower than previous years. Preliminary 2015 sockeye returns in Area 13, specifically the Phillips River, were average.</p> <p>The only indication of marine survival comes from decreased returns of local pink and coho salmon in 2015 (all from the same 2014 outmigration year as the sockeye juveniles). Consequently, the above average brood and potential for reduced marine survival conditions result in an outlook that is low to near target.</p>
Sakinaw	<p>691 adult and 26 jack sockeye were enumerated in 2015, coming from a smolt count of 253,000 in 2013. The marine survival of smolt to escaping adult is only 0.2% for hatchery origin and 0.8% for wild origin smolts indicating a continuation of poor marine survivals. This return is mostly comprised of progeny from captive brood, held at Rosewall and Ouilette hatcheries, and a small number of wild origin sockeye. The expectation for 2016 is for a lower number of adults (430) due to fewer smolts observed in 2014 (126,000).</p>

5.2.2.2.2 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 and Sakinaw.

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, 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 Nation 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. Preliminary results are promising and continued development of the program is planned for 2016.

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).

5.2.2.3 Decision Guidelines and Management Actions

Sakinaw Lake Sockeye

Harvest related measures to ensure protection of Sakinaw Lake sockeye will continue in 2016. 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 Nation, 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, & 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 Nation 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 Nation 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 Nation FSC harvest plan. If in season abundance permits, some First Nations FSC harvest may also occur in the Nimpkish River.

5.2.2.4 Incidental Harvest, By-catch 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 2016 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. 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 Nation, 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 Nation 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.

5.2.2.5 Allocation and Fishing Plans

5.2.2.5.1 First Nation Fisheries

Food Social and Ceremonial

The Department continues to work with the Namgis First Nation 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 Nation FSC harvest plan. If in season abundance permits, some First Nations FSC harvest may occur in the Nimpkish River.

Treaty Fisheries

Tla'amin (Domestic)

The Domestic allocations for salmon under the Tla'amin First Nation Final Agreement are as follows:

1. Terminal Sockeye

A number of sockeye equal to 25% of the Available Terminal Harvest for the sockeye salmon stocks that originate from a Terminal Harvest Area

Fishery Monitoring and Catch Reporting

Fishery monitoring will be conducted by DFO and the First Nation 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.

5.2.2.5.2 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. Updates will be provided in season based on fishery notices. In non-tidal waters, sockeye non-retention is in effect year-round except where harvestable surpluses are identified and potential impacts on stocks of concern are within management constraints.

Measures will likely be required in order to meet conservation objectives for stocks of concern such as the Fraser River Early Stuart, Cultus Lake, Sakinaw Lake and Nimpkish River sockeye stocks.

Fishery Monitoring and Catch Reporting

Catch monitoring programs including creel surveys, log books 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.

5.2.2.5.3 Commercial Fisheries

5.2.2.5.3.1 Allocation

There are no directed commercial fisheries for ECVI and Mainland sockeye populations. Commercial allocation arrangements are set for Fraser River sockeye fisheries.

Table 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
South - Fraser	11 to 20, 29, 121, 123 to 127	48.5%	21.6%	25.1%	0.0% ^d	4.8%

Notes on sockeye allocation (south):

^da 1% share to occur in large Fraser River return years only. A 1% reduction will be proportionately applied across other fleets in those years.

5.2.2.5.3.2 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.

5.2.2.5.3.3 East Coast Vancouver Island and Mainland First Nation Commercial Sockeye Harvests

There are no First Nations commercial harvests for ECVI and Mainland sockeye populations.

5.2.2.5.4 ESSR Fisheries

There are no ESSR fisheries for these populations.

5.3 Okanagan Sockeye

5.3.1 Snapshot Overview and Map of Management Unit

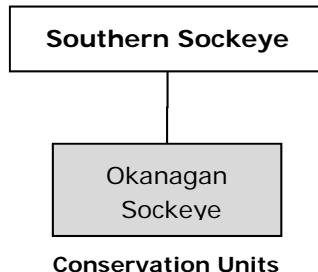


Figure 5-11: Overview of Okanagan Sockeye

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.

5.3.2 Stock Assessment Information

5.3.2.1 Pre-season

Returns of Okanagan sockeye adults to the Columbia and Okanagan rivers in 2016 will come from smolt cohorts that migrated seaward in spring 2013 (returning as 5-year-olds), 2014 (returning as 4-year-olds) and 2015 (returning as 3-year old jacks/jills). Although year-specific smolt-to-adult survival values for these specific cohorts are not available as yet, Okanagan sockeye exhibit marine survival variations 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.

Two of the three sea entry years (i.e. 2014 and 2015) entered the ocean during anomalously warm conditions. Consequently, a sub-average smolt-to-adult survival rate of approximately 3% has been applied to annual smolt production values derived from fall fry surveys such that expected production originating from the 2011, 2012 and 2013 brood years is estimated to be about 545,000 adults contributing to the 2014-2018 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 2016 on the order of 200,000 fish representing a steep decline to less than 50% of recent year returns.

5.3.2.2 *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.

5.3.3 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.

5.3.4 Incidental Harvest, By-catch and Constraints to Okanagan Sockeye Fisheries

Fisheries are managed to avoid incidental capture of Okanagan River chinook.

5.3.5 Allocation and Fishing Plans

Allocations are described above in the Decision Guidelines and Management Actions section.

5.3.5.1 First Nation 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.

5.3.5.2 Recreational Fisheries

Recreational fisheries will take place if the Wells Dam counts are sufficient to meet spawning escapement, FSC requirements, and experimental pilot initiatives into Okanagan Lake objectives for Okanagan sockeye. 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.

Fishery Monitoring and Catch Reporting

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 and the Province of BC.

5.3.5.3 Commercial Fisheries

Commercial harvesting will only be conducted if the Wells Dam counts are sufficient to meet spawning escapement, FSC requirements and experimental pilot initiatives into Okanagan Lake objectives for Okanagan sockeye. The allowable catch will be determined in season based on sockeye counts over Wells Dam and movement of fish into Osoyoos Lake.

5.3.5.3.1 Okanagan First Nation Commercial Sockeye Harvest

Okanagan Sockeye First Nation 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. A 2016 fishery will 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, Westbank First Nation, Penticton Indian Band, Osoyoos Indian Band, Upper Nicola Indian Band Lower and Upper Similkameen Indian bands.

LOCATION OF FISHERY – Osoyoos Lake, Okanagan River and potentially Skaha Lake depending on abundance.

GEAR TYPE – Purse seine(s), fish way trap, 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 there may be opportunity for commercial fisheries in 2016. Opportunities 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, and experimental pilot initiatives into Okanagan Lake objectives for Okanagan sockeye. 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 log book 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.

5.3.5.4 ESSR Fisheries

There are no ESSR fisheries for Okanagan sockeye.

APPENDIX 1 - LOGBOOK SAMPLES

SALMON TROLL Logbook I.D. # T **SAMPLE**

Report Catch to: 1-(888) 387-0007

Record all catch in pieces

Page #

Vessel Name: Pacific Blue					VRN (CFV#): 12346			Vessel Master Name: Dan Doe					1 FIN: #####				
Date		Mgmt. Area	Zone or Subarea	Hours fished	Catch frozen or iced?	Kept or Released	Sockeye	Coho	Pink	Chum	3 Legal Sized Chinook	3 Sublegal Sized Chinook	4 Grilse	Atlantic	5 Rockfish	6 Other Species	
Day	Mon																
15	Jul	4	9	3	(F)	Kept	25	0	12	0	0	X	X	3	0	0	
Trip ID #: FOS-12345					(F or I)	Rel.	0	0	0	0	3	3	5	0	8 Yellowtail, 3 Canary, 6 Silvergrey		4 L, 2 D
Comments: 8 Hake released, lots of seals around																	
15	Jul	4	5	8 $\frac{1}{2}$	(F)	Kept	42	0	8	0	0	X	X	0	0	0	0
Trip ID #: FOS-12345					(F or I)	Rel.	0	0	0	0	2	5	1	1	8 Yelloweye, 6 unknown rockfish		0
Comments:																	
16	Jul	5	1	10	F	Kept	12	0	0	0	0	X	X	0	0	0	0
Trip ID #: FOS-12345					(F or I)	Rel.	0	0	0	0	0	1	2	0	2 Chilepepper, 2 unknown rockfish		0
Comments:																	
18	Jul	5	1	6	F	Kept	0	0	0	0	8	X	X	0	0	0	0
Trip ID #: FOS-12398					(F or I)	Rel.	0	5	0	0	0	1	0	0	0		1L
Comments: 1 Coho dead, 5 released in good condition																	
18	Jul	5	3	5 $\frac{1}{2}$	F	Kept	0	0	0	0	12	X	X	0	0	0	0
Trip ID #: FOS-12398					(F or I)	Rel.	0	0	0	0	0	0	0	0	0		2D
Comments:																	
19	Jul	5	3	11	F	Kept	0	0	0	0	7	X	X	0	0	0	0
Trip ID #: FOS-12398					(F or I)	Rel.	0	1	0	0	0	1	3	0	3 Canary		0
Comments:																	

1. Enter the vessel master's Fisher Identification Number.

2. **Kept** are species retained on board; **Released** are species returned to the ocean.

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3. As defined in the applicable Fisheries Management Plan Southern BC

4. **Grilse** are juvenile salmon under 30 cm.

5. If possible, rockfish are to be identified by species (using names in accompanying guide); if unsure of species, record as Unknown Rockfish.

6. Other Species: L=Lingcod, H=Halibut, D=Dogfish, M=Mackerel, S=Steelhead, B=Bird.

7. **DCR Conf. #** is the confirmation number received upon completion of the Daily Catch Report.

2016

SALMON GILLNET		Logbook I.D. # G		SAMPLE		Report Catch to: 1-(888) 387-0007						Record all catch in pieces			Page #				
Vessel Name: <i>Pacific Blue</i>						VRN (CFV#): <i>12346</i>						Vessel Master Name: <i>Dan Doe</i>						FIN: #####	
Net Details		Type ¹ : <i>A</i>		# Strands ² : <i>6</i>		Length: <i>200</i> (fathoms)		Weedline Depth ³ : <i>30cm</i>		Hang Ratio: <i>3 : 1</i>		Mesh Size ³ : <i>4 7/8"</i>		# Meshes: <i>90</i>					
Date		Mgmt. Area	Sub-area(s)	Hours fished	# of sets	Kept or Released	Sockeye	Coho	Pink	Chum	Chinook	Steel-head	Atlantic	Dogfish	Sturgeon	5 Other Fish	6 Non-fish		
Day	Mon																		
4	Aug	12	12-4	5.5	5	Kept	4	0	23	127	0	0	0	0	X	0	Yes		
Trip ID #: <i>FOS-12480</i>						Rel.	0	9	0	0	0	0	0	0	0	0	0	No	
Comments: <i>2 birds killed in 10AM set, kept for research program. Probably surf scoters.</i>															DCR Confirmation #: ⁷ <i>FOS-12346</i>				
5	Aug	12	12-5	7	3	Kept	73	0	245	4	0	0	1	0	X	0	Yes		
Trip ID #: <i>FOS-12480</i>						Rel.	0	2	0	0	0	0	0	0	0	2M, 1 salmon shark	No		
Comments: <i>Offloaded at CANFISCO in Port Hardy on August 5 at 14:00.</i>															DCR Confirmation #: ⁷ <i>FOS-12367</i>				
5	Aug	12	12-4	2	3	Kept	88	0	116	7	0	0	2	0	X	0	Yes		
Trip ID #: <i>FOS-12480</i>						Rel.	0	0	0	0	0	0	0	0	0	11 M, 2 R	No		
Comments: <i>Steelhead released in good condition. 2 sea lions released alive around 11AM.</i>															DCR Confirmation #: ⁷ <i>FOS-12367</i>				
29	Aug	17	17-11	6	6	Kept	163	0	328	0	0	0	0	0	X	0	Yes		
Trip ID #: <i>FOS-12773</i>						Rel.	0	0	0	3	1	0	0	0	0	0	No		
Comments:															DCR Confirmation #: ⁷ <i>FOS-12521</i>				
29	Aug	29	29-2	4	6	Kept	205	0	493	0	0	0	0	0	X	0	Yes		
Trip ID #: <i>FOS-12773</i>						Rel.	0	2	0	0	1	1	0	0	0	0	No		
Comments: <i>Both coho put in rev. tank, one died, one released in good condition</i>															DCR Confirmation #: ⁷ <i>FOS-12523</i>				
						Kept											Yes		
Trip ID #:						Rel.											No		
Comments:															DCR Confirmation #: ⁷				

1. **Net Types:** enter 'A' for Alaska Tw ist, 'M' for Multi Strand or 'C' for Combination.

2. Enter number of strands if net is 'Alaska Tw ist' type mesh.

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4. Kept are species retained on board; Released are species returned to the ocean.

5. **Other Fish:** M= Mackerel, L= Lingcod, H= Halibut, R= Rockfish. Give full name for other species.

6. Circle Yes or No as appropriate if any **birds, marine mammals, or turtles** were encountered. Give time of capture and species details in comments.

7. **DCR Confirmation #** is the confirmation number received upon completion of the Daily Catch Report.

SALMON SEINE Logbook I.D. # S

SAMPLE

Report Catch to: 1-(888) 387-0007

Record daily catch in pieces

Page #

Vessel Name: <i>Pacific Blue</i>						VRN (CFV#): <i>12346</i>			Vessel Master Name: <i>Dan Doe</i>					¹ FIN: #####	
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Daily Catch Records

Date Day	Mgmt. Area Mon	Sub- area(s)	Hours fished	# of sets	² Kept or Released	Sockeye	Coho	Pink	Chum	Adult Chinook	³ Jack Chinook	Steel- head	Atlantic	⁴ Other Fish	⁵ Non- fish	
14	Aug	3	3-3, 3-2	8	5	Kept	42	0	431	0	0	0	0	6	0	Yes
Trip ID #:	<i>FOS-12281</i>					Rel.	0	3	0	12	2	0	0	0	0	No
Comments: <i>2 scoters released alive at 10 AM, 1 coho clipped, 2 coho dead, 1 alive at release</i>																
15	Aug	4	4-5	5 $\frac{1}{2}$	2	Kept	38	0	850	0	0	0	0	0	0	Yes
Trip ID #:	<i>FOS-12281</i>					Rel.	0	0	0	2	1	0	1	0	4 D, 1 L, 1 salmon shark	No
Comments: <i>1 harbour seal released, steelhead revived in tank, then released in good condition</i>																
19	Aug	4	4-5	9	4	Kept	53	0	560	0	0	0	0	0	0	Yes
Trip ID #:	<i>FOS-12403</i>					Rel.	0	2	0	17	4	12	0	0	0	No
Comments: <i>Both coho rel'd in good condition. 12 jack chinook squishers all dead.</i>																
DCR Confirmation #: ⁶ <i>FOS-12346</i>																

Offload Catch Records

Dates Fished				# Days fished	Date offloaded	Sockeye	Coho	Pink	Chum	Chinook	(Other)	Complete if catch pooled with that of another vessel:			
First date	Last date	Days fished	Day Month	Day Month		<input type="checkbox"/> Pcs	<input checked="" type="checkbox"/> Lbs	<input type="checkbox"/> Pcs	<input type="checkbox"/> Lbs	<input type="checkbox"/> Pcs	<input checked="" type="checkbox"/> Lbs	Received from:	Offloaded to:	Vessel	
14	Aug	15	Aug	2	15 Aug	471	0	3958	0	0	42			Name:	
Business and port offloaded to:				Fish slip #		OCR Confirmation #: ⁶ <i>FOS-12380</i>				VRN (CFV#):					
<i>Canfisco, Pr. Rupert</i>				79768											
19	Aug	19	Aug	1	20 Aug	310	0	1692	0	0	0			Name:	<i>Home Run II</i>
Business and port offloaded to:				Fish slip #				OCR Confirmation #: ⁶ <i>FOS-12482</i>				VRN (CFV#):			
				79801								<i>12347</i>			

- Enter the vessel master's Fisher Identification Number.
- Kept are species retained on board; Released are species returned to the ocean.
- Jack Chinook are all chinook smaller than 67 cm fork length. Note that 67cm is approximately 26 inches.
- Other Fish: M=Mackerel, L=Lingcod, H=Halibut, D= Dogfish, R=Rockfish. Give full name for other species.
- Circle Yes or No as appropriate if any **birds, marine mammals, or turtles** were encountered. Give time of capture and species details in comments.
- DCR Confirmation # is the confirmation number received upon completion of the Daily Catch Report. OCR Confirmation is the Offload Catch confirmation number.

2016

APPENDIX 2 - FISHING VESSEL SAFETY

1. 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 Transport Canada (TC); emergency response with the Canadian Coast Guard (CCG) and DFO has responsibility for management of the fisheries resources. In BC, WorkSafeBC also regulates health and safety issues in commercial fishing. This includes requirements to ensure the health and safety of the crew and safe operation of the vessel. DFO (Fisheries and Aquaculture Management (FAM) and CCG) and TC through an MOU have formalized cooperation to establish, maintain and promote a safety culture within the fishing industry.

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, vessel stability, 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
- Fish Safe – Stability Education Course
- Fish Safe – Safe on the Wheel Course
- Fish Safe – Safest Catch Program
- First Aid
- Radio Operators Course
- Fishing Masters Certificate
- Small Vessel Operators Certificate

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>)
- 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: www.tc.gc.ca/eng/marinesafety/menu.htm
www.fishsafebc.com
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 centre of gravity, the effect of liquid free surfaces on stability, loose water or fish on deck, loading and unloading operations 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. The instructions need to be based on a formal assessment of the vessel by a qualified naval architect and 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 *Small Fishing Vessel Inspection Regulations* currently require, with certain exceptions, a full stability assessment for vessels between 15 and 150 gross tons that do not exceed 24.4 metres in length and are used in the herring or capelin fisheries. Once the proposed new *Fishing Vessel Safety Regulations* take effect, more vessels will be required to have a stability booklet.

In 2006, Transport Canada Marine Safety (TC) issued [Ship Safety Bulletin \(SSB\) 04/2006](http://www.tc.gc.ca/eng/marinesafety/ship-safety-bulletin-ssb-04-2006.htm) (“Safety of Small Fishing Vessels: Information to Owners/Masters About

Stability Booklets”), which provides a standard interpretation of the discretionary power available under Section 48 and the interim requirements prior to the implementation of the proposed *Fishing Vessel Safety Regulations*. The bulletin calls for vessels more than 15 gross tons to have a stability booklet where risk factors that negatively affect stability are present. The bulletin also suggests vessels less than 15 gross tons assess their risk factors. Every fishing vessel above 15 GRT built or converted to herring or capelin after 06 July 1977 and engaged in fishing herring or capelin must have an approved stability book. Additionally, Transport Canada has published a Stability Questionnaire (SSB 04/2006) and Fishing Vessel Modifications Form which enable operators to identify the criteria which will trigger a stability assessment. A stability assessment is achieved by means of an inclining experiment which has to be conducted by a naval architect. Please contact the nearest Transport Canada office if you need to determine whether your vessel requires one.

In 2008, TC issued [SSB 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.

The TSB has investigated several fishing vessel accidents since 2002 and found that vessel modifications and loading of traps have been identified as contributing factors in vessels capsizing, such as: [M02W0102](#) - *Fritzi-Ann*, [M05W0110](#) - *Morning Sunrise*, [M07M0088](#) - *Big Sisters*, [M08W0189](#) - *Love and Anarchy*, [M09L0074](#) – *Le Marsouin I*, [M10M0014](#) - *Craig and Justin*, [M12W0054](#) – *Jessie G* and [M12W0062](#) - *Pacific Siren*.

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.

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: fishsafe@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.

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. BC waters are usually below 15 degrees. 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 WorkSafe Bulletin *Cold Water Immersion* (available from the WorkSafeBC website at www.worksafebc.com) where the need to don PFD's while working in or near the water during fishing operations is clearly emphasized.

2.4 Other Issues

2.4.1 Weather

Vessel owners and masters are reminded of the importance of paying close attention to current weather treads 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

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 20 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

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 Vancouver, Victoria, Prince Rupert, Comox and Tofino) or from the Coast Guard website: 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 metres or more in length,
- b) every ship engaged in towing or pushing any vessel or object, other than fishing gear,
- c) where the combined length of the ship and any vessel or object towed or pushed by the ship is forty five metres or more in length; or
- d) where the length of the vessel or object being towed or pushed by the ship is twenty metres or more in length.

Exceptions include:

- a) a ship towing or pushing inside a log booming ground,
- b) a pleasure yacht *less than* 30 metres in length, and
- c) a fishing vessel that is *less than* 24 metres in length and not *more than* 150 tons gross.

More detailed information on VTS can be obtained by calling (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 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

Commercial fishing is legislated by the requirements of the Workers Compensation Act (WCA) and for diving, fishing and other marine operations Part 24 of the Occupational Health and Safety Regulation (OHSR) applies. Many general hazard sections of the OHSR also apply to commercial fishing and other marine operations. For example, Part 8: Personal Protective Clothing and Equipment addresses issues related to safety headgear, safety foot wear and personal floatation devices. Part 15 addresses issues on rigging, Part 5 addresses issues of exposure to chemical and biological substances, and Part 3 addresses training of young and new workers, first aid, and accident investigations. Part 3 of the WCA also defines the roles and responsibilities of owners, employers, supervisors and workers. The OHSR and the WCA are available from the Provincial Crown Printers or by visiting the WorkSafeBC website: www.worksafebc.com

For further information, contact an Occupational Safety Officer:

Bruce Logan	Lower Mainland	(604) 244-6477
Mark Lunny	Courtenay	(250) 334-8732
Jessie Kunce	Victoria	(250) 881-3461

or the Manager of Interest for Marine and Fishing, Pat Olsen (250) 334-8777

For information on projects related to commercial fishing contact Lisa Houle (604) 214-6922 or Toll Free 1-888-621-6922 or by email: Lisa.Houle@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 fishermen in this goal. The Fish Safe Stability Education Course is available to all fishermen who want to improve their understanding of stability and find practical application to their vessel's operation. The Safe on the Wheel Course is designed to equip crewmen with the skills they need to safely navigate during their wheel watch. The Safest Catch Program along with fishermen trained Safety Advisors is designed to give fishermen the tools they need to create a vessel specific safety management system.

Fish Safe is managed by Ryan Ford, Program Coordinator John Krgovich, Project Manager Connor Radil, Program Assistant Stephanie Nguyen and fishermen 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). The advisory committee meets quarterly 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	Cell: 604-739-0540
Program Manager	Fax: 604-275-7140
Fish Safe	Email: fishsafe@fishsafebc.com
#100, 12051 Horseshoe Way	www.fishsafebc.com
Richmond, BC V7A 4V4	

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.

For more information about the TSB, visit the website at 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 a brief video about some of the issues on the TSB's recent safety Watchlist, visit: <http://www.tsb.gc.ca/eng/medias-media/photos/index.asp>

Reporting an Occurrence - 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

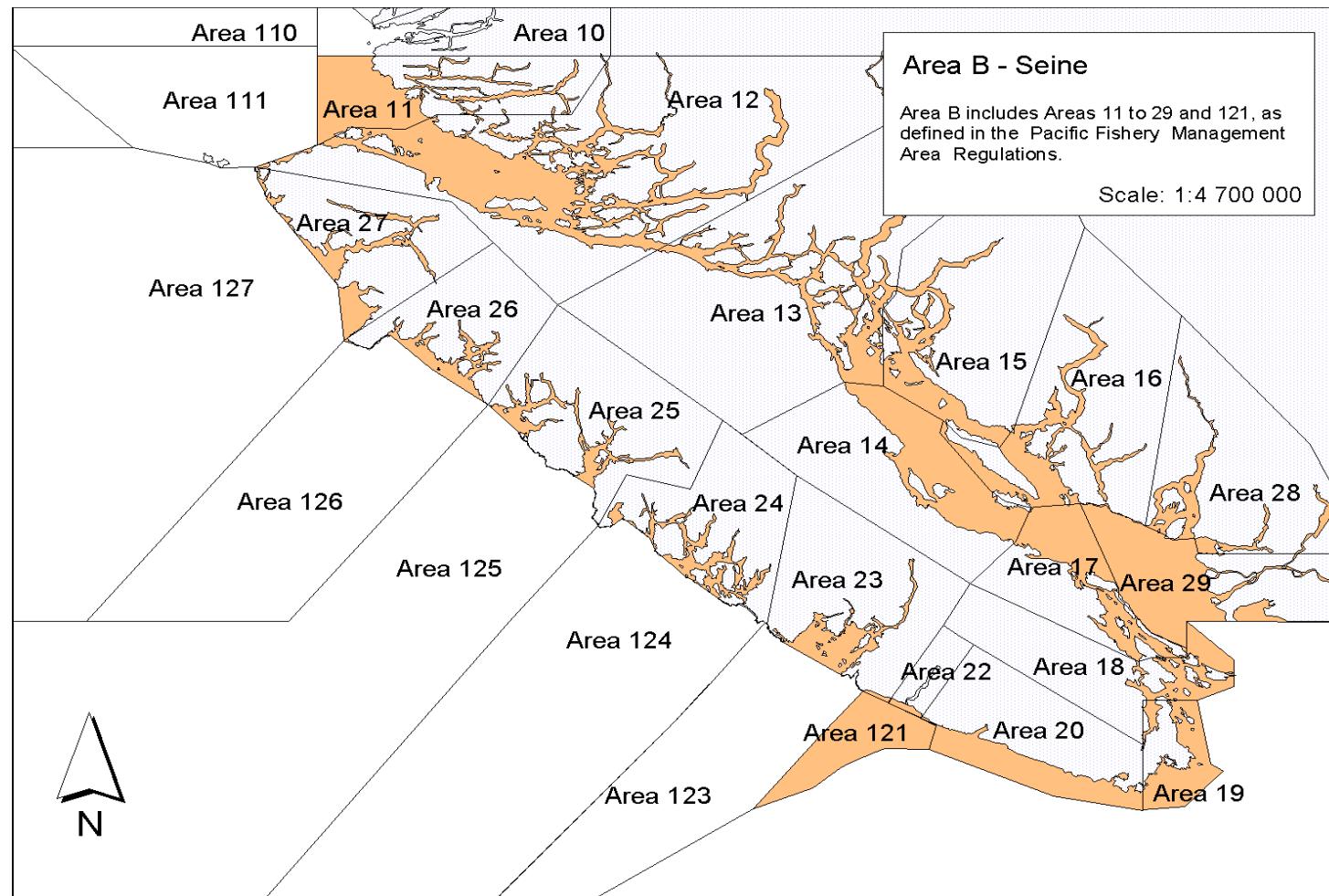
APPENDIX 3: COMMERCIAL SALMON LICENCE AREAS

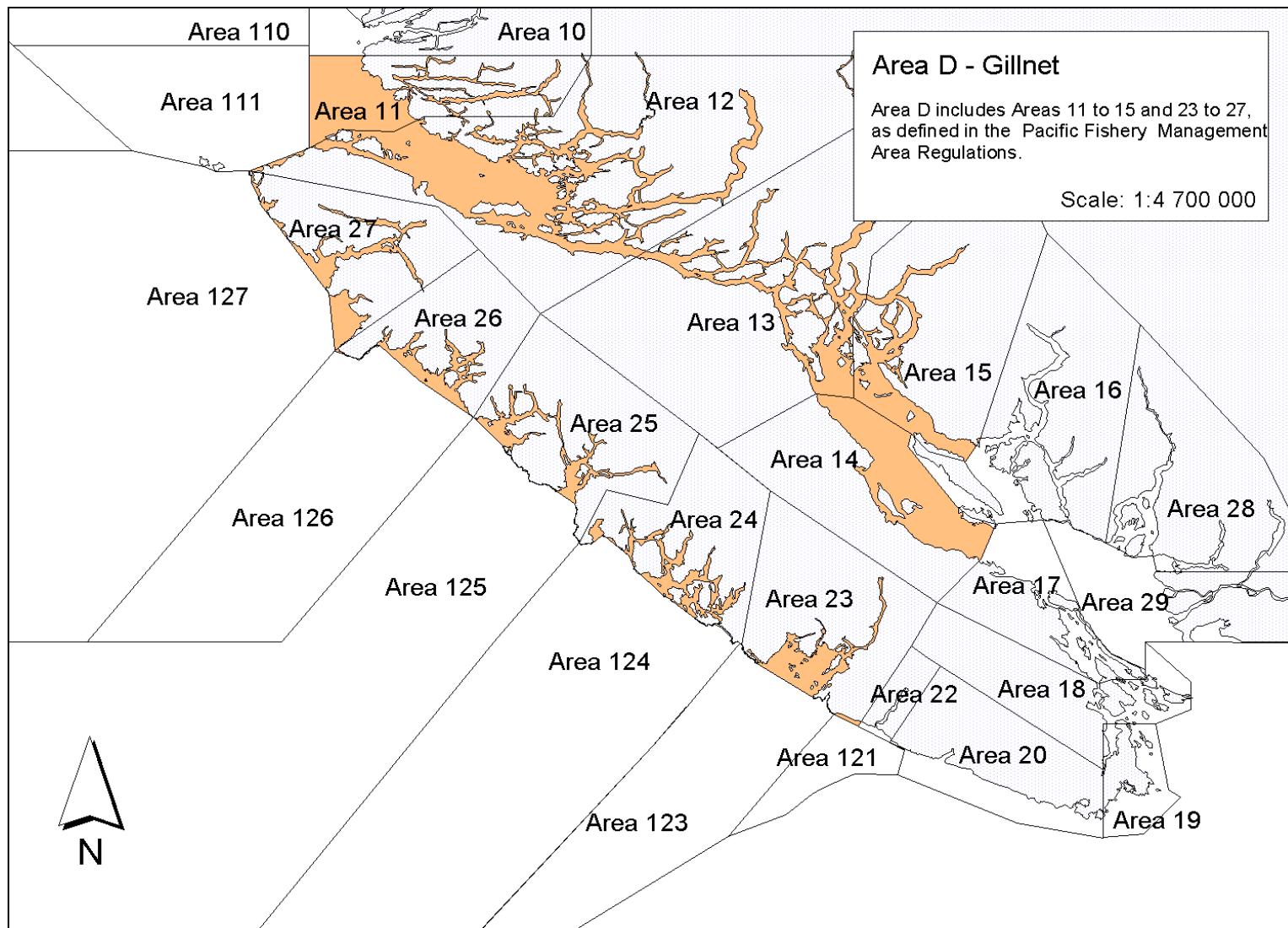
Pacific Salmon Fishing Area	Gear	Corresponding Pacific Fisheries Management Areas (PFMA)
Salmon Area A	Seine	Areas 1 to 10, Subarea 101-7
Salmon Area B	Seine	Areas 11 to 29 and 121
Salmon Area C	Gill net	Areas 1 to 10, Subarea 101-7
Salmon Area D	Gill net	Areas 11 to 15 and 23 – 27
Salmon Area E	Gill 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

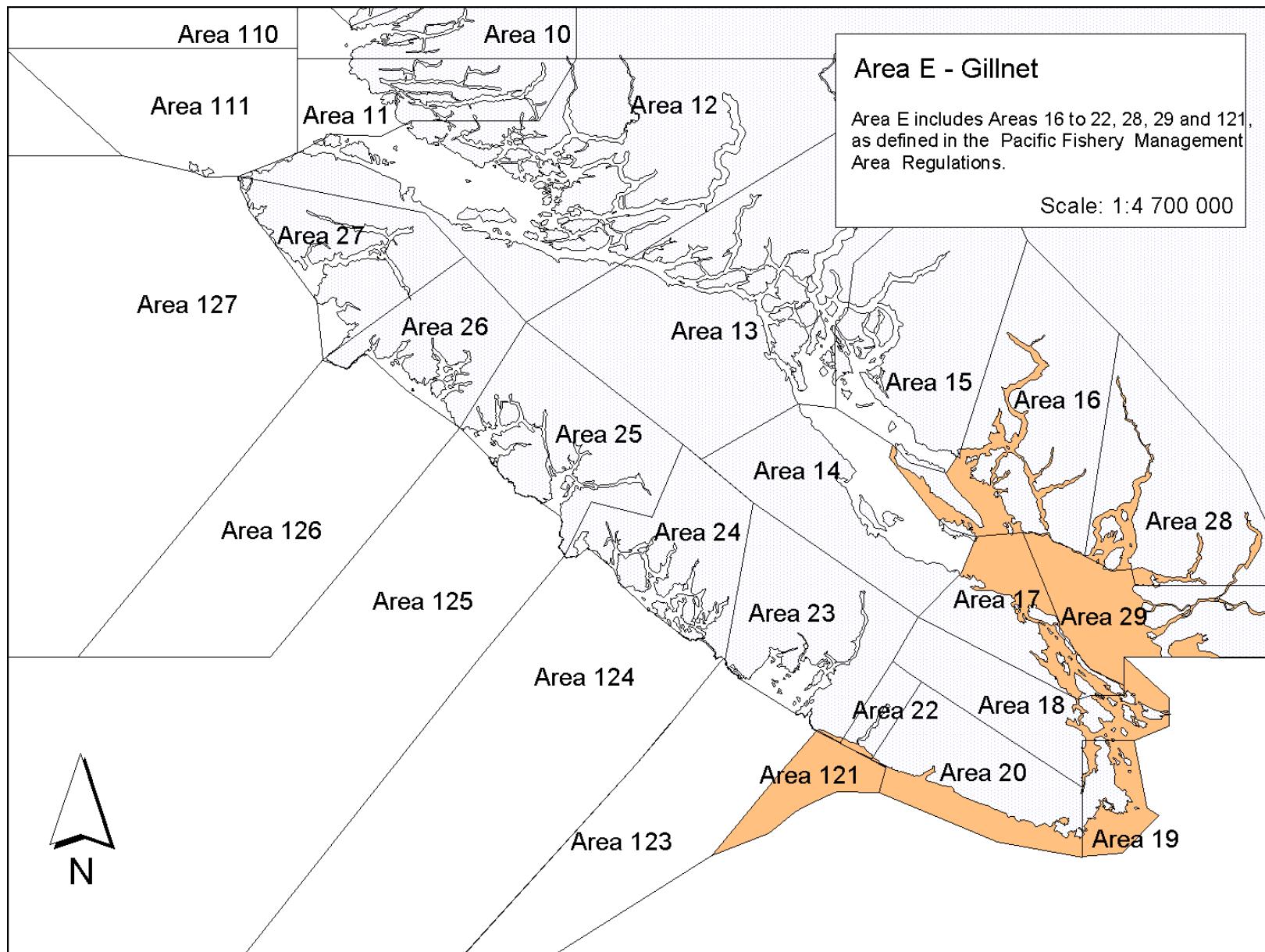
For South Coast PFMA's please see Figure 1-1 of this IFMP

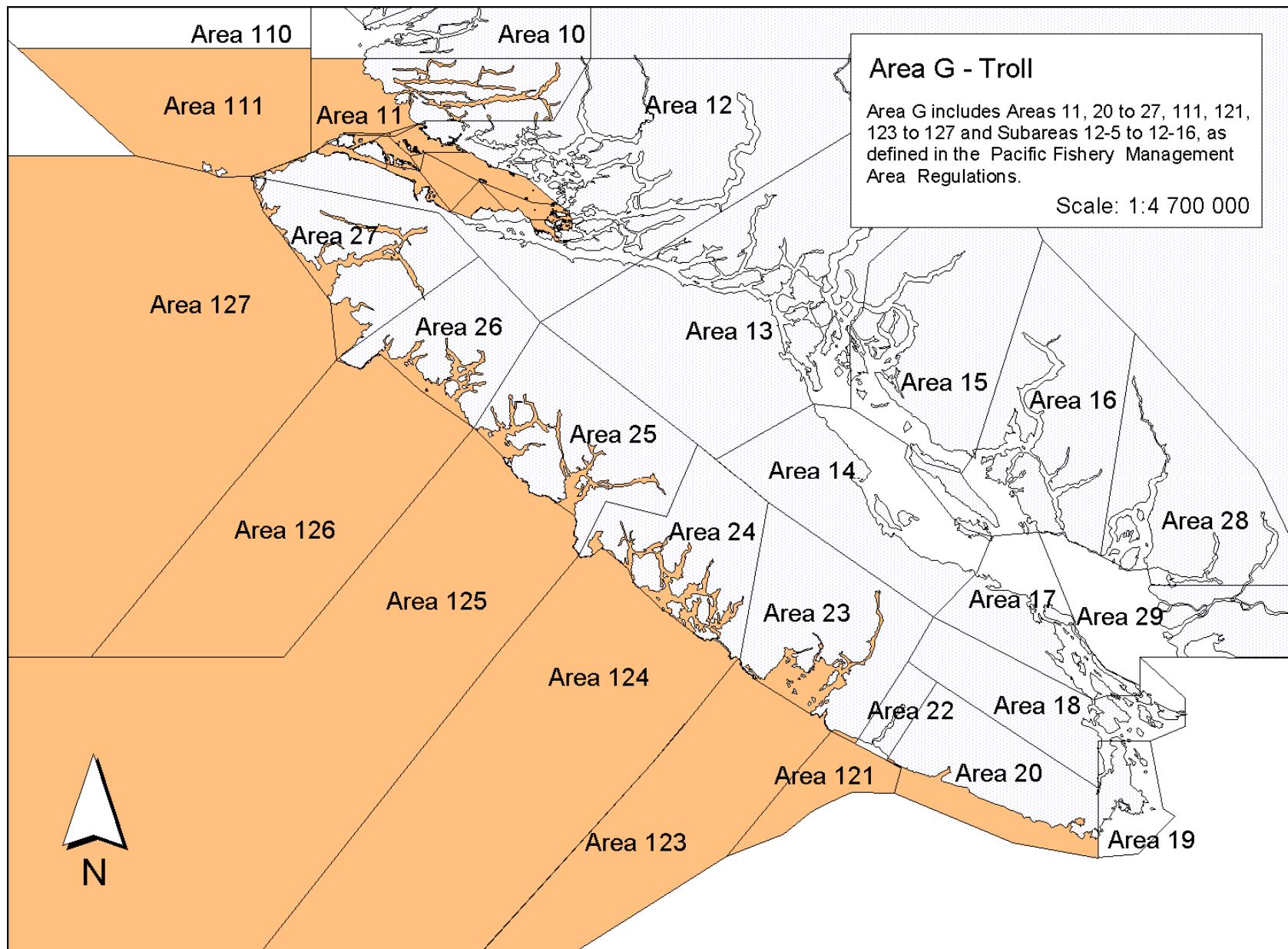
For maps of South Coast commercial licence areas, please see Appendix 4.

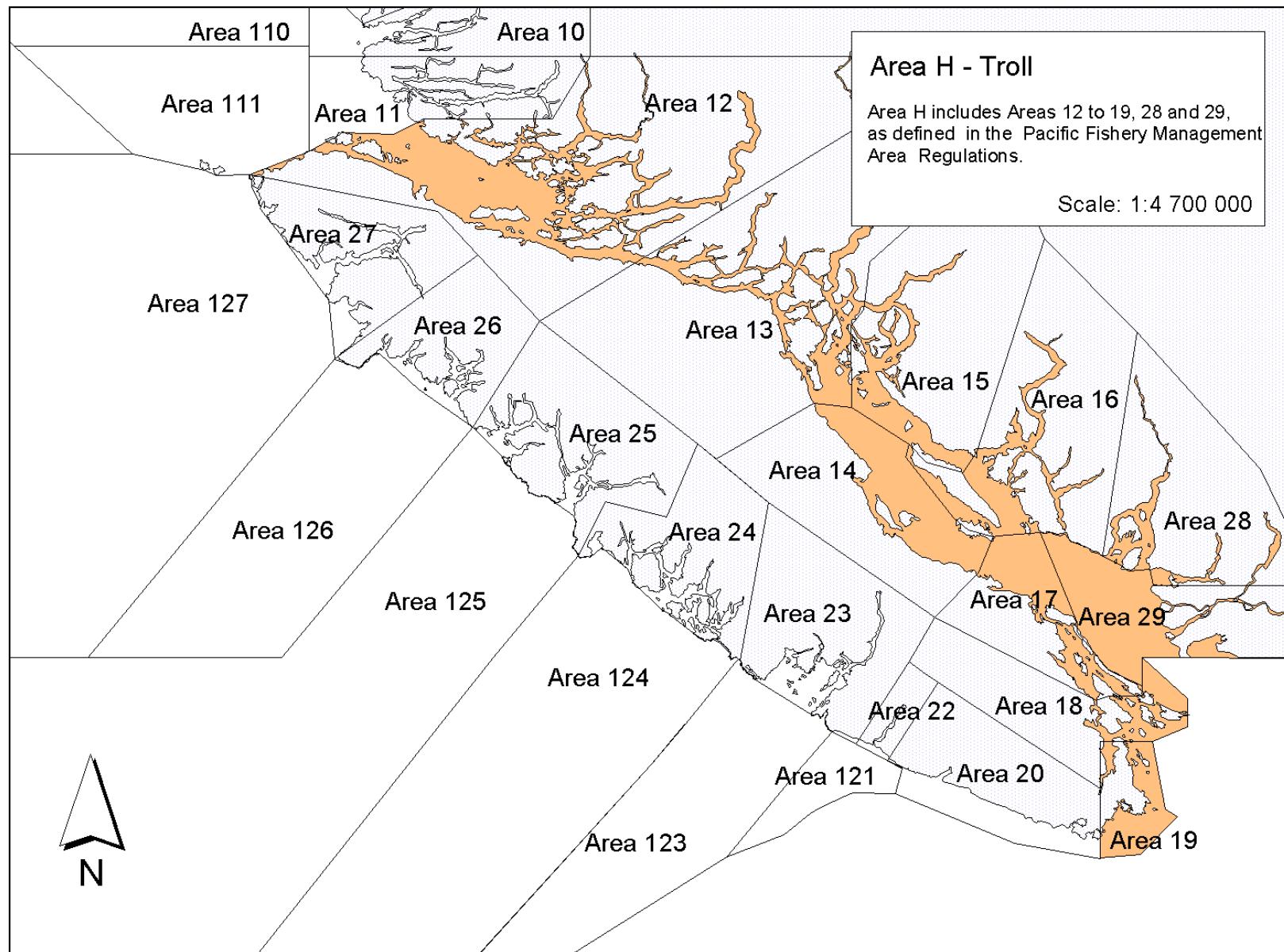
APPENDIX 4: Maps of South Coast Commercial Licence Areas











APPENDIX 5: ADVISORY BOARD MEMBERSHIPS

Meeting dates and records of consultation can be found at:

<http://www.pac.dfo-mpo.gc.ca/consultation/fisheries-peche/smon/ihpc-cpip/index-eng.htm>

The IHPC membership list can also be found on the DFO website at:

<http://www.pac.dfo-mpo.gc.ca/consultation/smon/ihpc-cpip/memb-eng.html>

Integrated Harvest Planning Committee - North Coast Subcommittee Members

Recreational (Three) Members	
Urs Thomas	info@goldenspruce.ca
Tom Protheroe	tjprotheroe@hotmail.com
John McCulloch	John.mcculloch@langara.com
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Gord Wolfe	
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Mabel Mazurek - Area C	nnfc@citytel.net
Ron Fowler – Area F	rwfowler@telus.net
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Harry Nyce - Nisga'a Lisims Government	harryn@nisgaa.net
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Province (ex-officio) (One)	
Vacant	Vacant

Integrated Harvest Planning Committee - South Coast Subcommittee Members

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Jeffery Young	jyoung@davidsuzuki.org
Aaron Hill	hillfish@telus.net
First Nations (Four) Members	
Vacant	
Vacant	
Vacant	
Vacant	
Province (ex-officio) (One) Member	
Vacant	

APPENDIX 6: UPDATES TO THE COMMERCIAL SALMON ALLOCATION FRAMEWORK

1. Introduction and Purpose

The purpose of this appendix is to highlight the recent developments concerning the Commercial Salmon Allocation Framework (CSAF) and seek views on:

1. Proposed demonstration fisheries received from the First Nations or First Nations groups with assistance from the Salmon Coordinating Committee (SCC) and the Commercial Salmon Commercial Allocation Board (CSAB) to test different configurations of gears, areas, management approaches or other elements related to exploring increased flexibility to harvest commercial salmon shares in 2016 (please refer to section 3.1. and 4 of this Appendix for details); and,
2. Proposed updates to the Interim Transfer Guidelines received representatives from the SCC and CSAB as a result of meetings involving representatives from the SCC, CSAB and DFO (please refer to section 3.2. and 5 of this Appendix for details).

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 interest on possible changes to the framework. The Department developed a Terms of Reference that provided the scope for the work.

Discussions with the SCC and CSAB were completed at the end of January 2015 and proposed updates were included in the draft 2015/16 IFMP and further feedback on these were sought in the fishery planning process. Updates approved by the Department in June, 2015 were included in the final Salmon 2015/2016 IFMP (see Commercial Salmon Allocation Plan in Appendix 7, section 7.4). A brief summary of key updates approved are included below. For a more detailed summary of recommendations received, considered and approved, please refer to Appendix 8 of the Final 2015/2016 Salmon IFMP. 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>.

2.1. What is the CSAF?

An Allocation Policy for Pacific Salmon (<http://www.dfo-mpo.gc.ca/Library/240366.pdf>) outlines how DFO prioritizes salmon for conservation requirements, First Nations requirements for food, social and ceremonial purposes, and recreational harvest, as well as, outlining how the salmon are shared among commercial salmon fisheries. The part of the policy that outlines how the commercial allowable harvest (after accounting for conservation,

First Nations FSC requirements and recreational sharing arrangements) is shared among commercial salmon fisheries is referred to as the ‘commercial salmon allocation framework’ (CSAF).

2.2. DFO role in process to update the CSAF

The Department’s broad interests are to support changes to the CSAF that can 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 (specified in the Terms of Reference), policies, and programs.

More specifically, the Department evaluated possible outcomes against several objectives. This included: improving compliance with conservation objectives; improving the stability of commercial salmon allocation arrangements; providing more flexibility to licence holders to adapt to uncertain business markets and fish abundance; assisting in catch reporting and monitoring; and promoting collaboration among licence holders, First Nations and the Department. In undertaking this work, the Department was directed by its policies, regulations and legal obligations and any outcomes from this initiative had to be consistent with this direction.

2.3. What changes to the CSAF were approved for the 2015/2016 Salmon IFMP?

Based on recommendations received from the SCC and CSAB following from discussions occurring from September 2013 through January, 2015, and feedback through the draft 2015/2016 IFMP process, the following key recommendations were approved by the Department:

- Defined shares for commercial fleets at the species, fleet and fishery production areas for a period of 5 years with provisions to review the allocations after year 4, starting in 2015;
- A set of principles and operational guidelines that would form the basis of incremental testing of flexibilities (alternatives fishing locations and methods) to harvest shares, with potential for testing starting in 2016 prior to wider implementation; and
- The development of a revised collaborative advisory process to coordinate the collective interests of First Nations economic fishery and A-H commercial fleet fisheries.

3. Summary of Progress on Implementing Approved Updates to the CSAF

As part of implementing changes to the CSAF, the Department indicated that it would adopt an incremental approach to providing increased flexibility to harvest salmon shares starting in 2016. This decision was subject to developing a common evaluation framework to review proposals submitted. In addition, the Department has received proposed updates to the existing Interim Transfer Guidelines.

3.1. Proposals for Flexible Harvest Arrangements

A Departmental Interim Evaluation Framework has been prepared to assess proposals for flexible harvest arrangements received from the SCC and CSAB for consideration in 2016. The Department's Interim Evaluation Framework for 2016 defines principles and operational guidelines to ensure appropriate implementation of proposed harvesting flexibilities. The Framework was developed by the Department with input from the SCC and CSAB and has been used to review proposals received for consideration for the 2016 fishery. Proposals received which did not result in substantial concerns, based on an initial assessment, have been included below in this appendix in section 4 to allow for further feedback prior to a final decision and possible implementation in the 2016 season. Any demonstration fisheries that proceed in 2016 will be reviewed as part of the post-season review process. Below is a table which outlines the section and related demonstration proposal title included within this appendix.

Commercial Salmon Advisory Board Proposals	First Nations Economic Fishery Proposals
Southern BC	Southern BC
4.1 Mainland/inlet pink and Chum (Area H)	4.4 Cowichan chum (Cowichan Tribes)
4.2 Fraser River sockeye, pink, chum – alternate gear (Area E)	
Central and Northern BC	Central and Northern BC
4.3 Central Coast chum (Area F)	4.5/4.6 Central Coast hatchery chum (Heiltsuk and Kitasoo First Nations)
	4.7 Skeena sockeye –Area 4 (Tsimshian/NCSFNSS)
	4.8/4.9 Nass River sockeye (2 proposals from Nisga'a Lisims Government and Gitanyow First Nations)

3.2. Proposed Updates to Department Interim Transfer Guidelines

Suggested updates to the Interim Transfer Guidelines received from the SCC and CSAB are included in section 5 of this appendix. While there is general agreement among the SCC and the CSAB on most of the changes, a few key differences remain and these are highlighted at the end of the proposed revised Interim Transfer Guidelines for clarity. Further discussion on outstanding issues will be required and changes in these areas are not expected for 2016 but may be considered in future IFMPs.

Finally, any updates to the Interim Transfer Guidelines will need to continue to respect conservation requirements, First Nations obligations as well as existing Department policies and programs. Interim Transfer Guidelines to guide the 2016 fishery will be finalized by the Department after consideration for any additional input received on the draft IFMP.

To provide feedback on proposed demonstration fisheries or proposed updates to the Interim Transfer Guidelines proposed by the SCC and CSAB, please email Cynthia Johnston at Cynthia.Johnston@dfo-mpo.gc.ca.

4. Proposals for Flexible Harvest Arrangements for 2016

The following proposals for fishery demonstrations have been reviewed as part of the CSAF process and are included below for further feedback and consideration prior to being approved. Allocations of shares related to proposed First Nations economic fishery proposals are being considered by the Department through an existing process and will be confirmed prior to any fishery being approved. Shares will be based on licences available within Department inventory to support First Nations commercial fishery access.

While there were discussions of a number of possible proposals as part of the process, the Department is seeking further feedback on the following proposals as part of small scale testing in 2016. Other proposals may be reconsidered in future years subject to further development and consideration of ways to address concerns identified by the evaluation framework.

4.1. South Coast/Mainland Inlet Pink & Chum Fishery (Area H)

I. Background

- Allocation: A limited opportunity fishery is proposed to assist in determining any harvestable surplus. Limited numbers of vessels, area and time will be used to control harvests. This fishery currently lacks sufficient information to calculate a TAC. Any harvestable surplus would be shared as per the new CSAF. Assuming a harvestable surplus is identified each Area Harvest Committee would be responsible for determining an appropriate fishery for their fleets. These fishery plans should be made preseason to not limit or delay any opportunity.

II. Proposal Overview

- This proposal is a change in harvest management. Given the absence of harvest information in recent years and the limited assessment estimates, catch data from a limited opportunity fishery along with Johnstone Straits seine test fishery results and any spawning area information would be used to identify relative magnitude of pink and chum returns and potential further commercial harvest opportunities (fixed harvest rate or effort based management). Fishery effort, areas and times would be limited. The concept is to use a limited number of vessels to assess potential locations for harvestable surpluses. It is currently understood that DFO relies primarily on a limited number of overflights to assess returns once the pinks

and chums are near or in their natal spawning streams. The Johnstone Straits seine testing program for Fraser sockeye and pinks provides some indication of relative pink salmon returns. Stock discrimination is limited to Fraser, US and Canadian south coast. The additional earlier information from a limited opportunity fishery will allow for a paced fishery each week, increased fish quality and relative abundance estimates to be made which would enable all groups to participate in the harvest depending on harvestable surplus. The limited opportunity fishery is with Area H troll gear that would occur in the Mainland Inlets and near major rivers on Vancouver Island of the Strait of Georgia and Johnstone Strait (Statistical Areas 12 to 19) and Howe Sound (Statistical Area 28). Working with DFO a limited number of vessels (2-3?) fishing 2-3 days/week would be designated to each of the specific areas with potential for a harvestable surplus based on brood year escapements and other available data. For 2016 these areas are expected to be Kingcome/Wakeman; Knights/Tribune; Loughborough; Quinsam/Puntledge; Bute; Toba; and Jervis. The DFO Outlook document indicates pink spawning escapements in the 2014 brood year were generally good in southern inside areas. Chum outlook is for level 3 with average brood year spawning escapements. Coho outlook is level 2/3 with high uncertainty.

III. Fishery Elements/Attributes

- The target species would be southern inside pink and chum salmon with non-retention of sockeye, chinook, coho and steelhead with the limited opportunity fishery focused on the northern half of this region in which production from the even-year pink salmon dominates. Enhancement programs in the Glendale Creek, Kakweiken River, Quinsam River, and Puntledge River have contributed to significant pink production which might enable fisheries as well. There would be the potential for coho retention in some areas and times if the harvest information indicates available surpluses and it does not impact on interior Fraser coho conservation and sharing arrangements.
- The assessment data provided by this fishery would be available to evaluate the viability and coordination of First Nations economic fisheries and other commercial fleets and recreational Mainland Inlet pink fisheries. The goal is to establish some assessment prior to all or a significant portion of the spawning objectives fish having already entered their natal rivers (as based currently on overflights). By-catch species data would be recorded as required. All by-catch would be released, given the troll release mortality rate at 10% there would be minimal impact to any other species. Assessments in the inlet areas would be expected to have minimal or no co-migrating pink encounters. Any assessments around the Quinsam/Puntledge areas may have a portion of co-migrating Fraser or US stocks. Fraser pinks are generally later timing and should be a small

percentage of any harvest. A local harvest committee (DFO, First Nations economic groups and Area B, D, E reps) should be struck to review the acquired data and decide on fishery opportunities for the broader fleets. An established local coordinating committee meeting on set weekly dates and releasing a DFO Fishery Notice should reduce the phone calls/enquiries from individual fishers to DFO Fishery Managers. Having harvest committee reps as part of the fishery management process would result in a better understood and managed fishery. Weekly meetings could be done by conference call. Limited opportunity fishing and any fuller commercial opportunities could be limited to week days to limit conflicts with recreational fisheries. Terminal First Nations FSC and recreational fisheries are understood to be small but coordination should occur with these groups. First Nations from the Campbell River and Alert Bay areas have been provided this proposal and not expressed any concerns.

- Areas of higher concentrations of non-target species could be identified during the limited opportunity fishery for possible closures if needed. Historical harvests, CPUE and resulting escapements could be provided by DFO for stock abundance reference and shared pre-season. This data along with experience of the local harvest committee could be used to set pre-season relative abundance levels for any commercial fishery opportunities.

IV. Harvest Guidelines and Management Decision Rules

- CPUE rates or combined average harvests of all vessels in each specific location along with other in-season data (Johnstone Straits SN test results and stream inspection data) would be used to assess relative abundance. Various potential options (variable harvest rate/variable allowable effort –days/week and numbers of vessels/ various weekly catch ceilings) for controlling harvest could be considered by the local harvest committee and established pre-season (low – moderate-abundant or more exact if agreed to by local harvest committee) and harvest opportunities set in-season based on these parameters. Each harvest committee/First Nation economic fishery should prepare pre-season appropriate fishery plans for each potential fishery level (e.g. pooled, lottery, ITQ, etc.). If possible Area H would prefer that its fishery be conducted as an Individual Transferable Quota (ITQ) Catch Share fishery in which the initial ITQ estimates would be determined on a precautionary basis.
- The available surplus/harvest opportunities would be estimated and adjusted based on the in-season assessment information and linked to pre-season plans. Sharing amongst fleets would be as per the updated CSAF.
- Proposed fishery management controls
 - Input control would be provided by limited opportunity fishery openings 2-3 days per week in each defined Statistical Subarea and the use of only

2-3 vessels per assessment area. Assessment period would be August and September. If commercial harvestable surpluses are identified it would be the responsibility of each group to set appropriate fishery controls as per its share (effort/gear/time/area) (pools, limited number vessels via lottery, ITQ) and fishery would be limited to set areas and times.

- Output control would be provided by the ITQ for the Area H fleet and would be fleet (effort) size via pool or lottery or ITQ and need to be determined for each fleet based on whether the fishery is effort based or a harvest rate as determined in consultations with DFO.

V. Monitoring and Compliance Plan

- A risk assessment under the CMF (reference to *The Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries*) is needed for this fishery. Appropriate monitoring programs will be set. Start, end, pause, cancel and daily catch reporting (as per conditions of licence) would be required of all vessel masters participating in the fishery.
- Catch validation – dockside at designated offload ports or at designated packers – would be a requirement of any ITQ fishery.
- There should be no requirement for at-sea observers, however this can be considered during pre-season planning meetings
- Given that this is not a mixed stock fishery, there is no requirement for biological sampling.
- In cooperation with the Resource Manager, the Area H Harvest Committee will organize and implement the monitoring plan
- Vessel masters would be required to complete a logbook or E-log entry for each day of fishing. Upon validation of the catch, the vessel master would be required to review and sign the validation form. The catch data would be entered into the database no later than 12 hours after the validation was completed.
- In cooperation with the Resource Manager, the Area H Harvest Committee would be responsible for coordinating pre-season, in-season, and post-season Area H fleet communications.

VI. Communication

- 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. Weekly conference call of the local harvest committee would review assessment data and other sources of data for possible fishery opportunities for all groups. Information on this proposal will be provided through the normal IFMP document for consideration by all harvesters. In addition local First Nations should be consulted on this proposal.

VII. Fishery Benefits

- The Area H troll limited opportunity fishery will assist DFO and others in determining potential commercial fishery opportunities in an area with limited stock assessment data at present;
- The proposed fishery will promote effective management arrangements and support open, transparent and collaborative decision making;
- It will increase flexibility of licence holders and producers to better adapt and optimize economic benefits in an uncertain business environment; and
- Will improve required standards for monitoring and catch reporting so that timely and accurate information is available to decision-makers to support prosperous, sustainable fisheries and achieve conservation objectives.

4.2 Area E Harvest Committee, Fraser River sockeye, pink and chum Alternate Gear (Area E Harvest Committee)

I. Background

- Area E Fraser sockeye and pink are a defined share of the updated CSAF. Chum salmon allocation is as IFMP implementation rules for terminal Fraser chum fisheries. No changes to sharing arrangements are proposed. The harvest in this proposal is the entire Area E TAC for Sockeye, Pink and Chum which has not previously been harvested in the traditional fisheries. For 2016 there are no Fraser pink salmon and a very low sockeye return is predicted so minimal opportunity exists in 2016 for these species but the concept is the same for all. The usual reason for incomplete harvest of Area E's allocation are limitations on by-catch such as Coho, Steelhead and Cultus sockeye.

II. Proposal Overview

- Concept being proposed: Alternate gear as a means to assist in harvesting the ongoing issue of Area E not being able to harvest all of its share after all usual harvest opportunities have been exhausted. This proposal would use shallow pocket seines and beach seines in the area now traditionally fished by Area E. The focus in 2016 is on chum salmon. This proposal does not contemplate Area E using seine gear above Mission Bridge in 2016, but that will be a consideration in future years if it is necessary for Area E to harvest its complete allocation of any species. There is no change to existing fishery management decision rules/ harvest guidelines.

III. Fishery Elements/Attributes

- The location of this proposal is the main stem Fraser River. Area E will limit the number of shallow seine nets and beach seines it uses to a number that is reasonable for the DFO to supervise with its present compliance and enforcement resources. In 2015 the DFO approved up to 15 shallow seines for Area E to harvest Pinks and that is a reasonable number for future pocket seine fisheries for Sockeye and Chum as well. In the past the DFO approved one beach seine for Area E for a Chum fishery, and that number should be increased to three. An important feature of both these seine fisheries is that the catch would be carefully sorted and the by-catch would be released immediately with minimal harm. This is the same goal as the beach seine and pocket seine fisheries already in place by the First Nations in the Fraser River. The numbers of shallow seines and the beach seines would be also limited by the uncaught Area E allocation. Plans would be developed for appropriate numbers of each gear type depending on the available TAC.
- Commercial fishing in the lower Fraser River requires a coordinated approach. First Nation FSC, Treaty and EO fisheries as well as Area B seines also use the same areas. Presently all groups coordinate their fisheries through the DFO Resource Manager and this approach is okay but there could also be a local harvest committee developed if other commercial fleets and First Nations economic fisheries thought this would be useful. Area E could coordinate these shallow seine and beach seine fisheries with the FN EO and Area B seine fisheries which may be occurring in the same areas at similar times if appropriate.
- Area E Harvest Committee would make the decision of when to implement these fisheries in coordination with DFO and other fisheries in the area.

IV. Harvest Guidelines and Management Decision Rules

- The decision to proceed with this fishery will require two conditions: firstly that the DFO determines that there is a TAC available for Area E and secondly that Area E has determined that it cannot harvest its TAC by its traditional gillnet fisheries.
- No changes to TAC calculations are proposed.
- Proposed fishery management controls
 - i. The input control is the number of pocket seine (max. 15) and beach seines (max. 3) permitted to fish, and the times and area they can fish. The participants would be determined by Area E on a voluntary participation basis, and if there were more participants than needed, they would be limited by voluntary pools or draws. No quota is contemplated at this time. As the total Area E allocation or the limit set for this method of harvest is nearing, the vessels could be restricted to

hailing after each set to ensure the target harvest is not exceeded. When the Area E total TAC is harvested, the fishery will end.

ii. Output controls: no further controls are expected.

V. Monitoring and Compliance Plan

- Dock side monitoring for the shallow seines and on grounds monitor for the beach seines. Monitoring standards will be the same as the Musqueam, Tsawwassen and Area B vessels fishing in the same areas.
- Landing sites: It is expected that 3 sites would be adequate. These sites would be some of the same sites as are now in place for the 25% monitoring requirement for FR sockeye. Likely choices would be Steveston, Ladner and Maple Ridge or Mission. For the beach seines the catch should be monitored at the site of the beach seine fishery.
- Level of coverage: see above.
- No biological sampling requirements are expected as all by-catch will be released immediately.
- Area E would retain, pay for and implement the monitoring plan. Certified service providers would be used for validation and observation.
- All landing would be monitored, but observer coverage would be similar to what the DFO has required in similar FN EO fisheries, the Area B seine fisheries and the 2015 Area E seine fishery which was about 25 % on a "roving" basis. Area E would provide data in the format required by DFO. This would include set logs, phone-in and written reports as required. The same format used in these other fisheries will be followed.
- Catch and effort would be reported at the close of each fishery.

VI. Communication

- 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.

VII. Fishery Benefits

- The Area E shallow seine and beach seine fishery will enable this fleet a better opportunity to harvest their commercial allocation of each species.
- The proposed fishery will allow the Area E Harvest Committee to initiate the use of alternate gears and determine the appropriate amount of fishing effort (vessel-days) needed to harvest their expected uncaught share of their allocations.
- The proposed fishery will allow the Area E Harvest Committee to initiate the use of alternate gears and develop the capacity to harvest the uncaught share of each

salmon species with gear designed with a lower release mortality thus benefiting co-migrating species of concern.

- This proposal encourages the cooperation and coordination and the development of capacity of the First Nations economic fisheries and Area B fishing similar gear in the same areas
- The proposed fishery will promote effective management arrangements and support open, transparent and collaborative decision making.
- It will increase flexibility of licence holders and producers to better adapt and optimize economic benefits in an uncertain business environment. and
- Will improve required standards for monitoring and catch reporting so that timely and accurate information is available to decision-makers to support prosperous, sustainable fisheries and achieve conservation objectives.

4.3. Central Coast Coho Fishery (Area F troll)

I. Background

- Allocation: an assessment fishery is proposed to determine relative in-season return abundance and be used to define any potential harvest opportunities. Any harvest opportunities (set harvest ceiling, fixed harvest rate or defined effort fishery) would be shared as per the updated CSAF. Assuming a harvestable surplus each fleet would be responsible for determining an appropriate fishery for their fleets (ITQ, lottery, pool, etc.). These fishery plans should be made preseason to not limit or delay any in-season opportunity.

II. Proposal Overview

- This proposal is a change in harvest management. There has been no troll coho opportunities for many years in the central coast. Recreational fisheries in these areas are at full quota of 4/day and 8 possession. This proposal is seeking to re-initiate directed commercial coho fisheries in a cautious systematic and well thought manner while respecting the First Nation FSC priority. Coho returns were quite weak in the late 1990's and into the 2000's but have improved to generally good returns in recent years. Prior to the late 1990's the central coast was an important fishery for trollers. The 2016 DFO Outlook document projects good coho returns to Areas 6-10 (level 3 /4). Working with DFO the concept is to use a limited number of vessels to assess returning coho in the central coast Areas 6-7-8 for harvestable surpluses. It is proposed that 4 troll vessels would fish each of Areas 6, 7 and 8. The main timing for coho assessment is mid-July to mid-September (with each month divided into 2 time periods. CPUE and total catch of coho in each time period and location would be used to determine relative abundance. The information from an assessment fishery could allow for potential

fishery opportunities for more vessels depending on catch results. The relative abundance estimates to be made which would enable all groups to participate in the harvest depending on harvestable surplus. This is an assessment fishery that should be made into an annual program. The coho results would assist in defining opportunities for other fleets which could potentially reduce discard mortalities.

- Chinook – In the future there may be opportunities for a chinook assessment fishery. There has been considerable discussion in recent years since the 2008 renewal of the Fishing Chapters of the PST that with the reduced AABM fisheries there should be increased opportunities in ISBM areas. At present we understand from DFO that overall North Coast chinook troll management is driven by concerns for the weak WCVI chinook stocks and also local stocks of concern (ISBM) in the Kilbella and Chuckwalla rivers. The Atnarko River is a local stock that has had good returns in recent years. DFO also advised that troll gear assessments in 2002 and more recently in recreational catches have found higher proportions of WCVI chinook in the central coast than further north. And lastly that as CWT rates have been decreased from Robertson Creek (WCVI indicator stock) that genetic and otolith sampling will also be required along with CWT monitoring for any new fisheries. Given the above it would be good for DFO managers and the central coast management group to consider when and where it may be appropriate to consider an assessment fishery which would be designed to focus on local (ISBM) stocks. A chinook assessment fishery is not being considered for 2016.

III. Fishery Elements/Attributes

- The target species would be coho salmon. All other species would be released unless agreed to by DFO for sampling or other reasons (other commercial fisheries are open in the same areas for another species). Vessels would be assigned to each of the three Management Areas with data recorded in 2 week time strata. Specific locations/management units for the assessment would be determined in meetings with DFO, First Nations FSC and economic fishery interests. Given the relatively low release mortality (10%) from trolling minimal impact to non-target encountered species is expected.
- The assessment data provided by this fishery would be available to evaluate the viability of First Nations Economic Fisheries and other commercial fleet's fisheries. The goal is to establish an annual assessment program in an area with good recent returns of coho. Pre-season planning at the IHPC level would inform all harvest groups. There is unlikely to be any conflicts with overlap of harvest areas with other users. Data from the assessment fishery would inform opportunities for others and could be defined preseason limiting the need for an in season harvest committee. Conference calls could be good to assist in developing

a good working relationship and ensure clear understandings by all parties. Pre-season Area F would define their fishery options for various harvest abundance opportunities (ITQ, limited fleet lottery, pooled, etc.)

- Areas of higher concentrations of non-target species could be identified for possible closures if needed. Historical harvests, CPUE and resulting escapements could be provided by DFO for stock abundance reference and shared pre-season to be used by the Central Coast management group to set relative abundances and potential fishery opportunities.

IV. Harvest Guidelines and Management Decision Rules

- Any fishery opportunities resulting from the assessment fishery would be decided pre-season by the Central Coast management group. Initially these could be a range of low, low-moderate, moderate, moderate-high and high. After a number of years of information more specific harvest rates, harvest ceilings or effort management may be possible. Fishery plan options corresponding to return abundance should be established pre-season by harvest groups (e.g. low – no increase in vessels above assessment levels; low to moderate – up to 10 vessels per Area or X coho; moderate - up to 20 vessels per Area or 2X coho; mod-high - up to 30 vessels or 3X coho and high –full fleet). A low level of harvest during the assessment fishery may result in vessels deciding to discontinue assessing in a given year or time period as the harvests are the only source of funds to cover costs. The pre-season management meeting would be tasked with setting relative levels of CUPE, catch per 2 week period or some other metric that would correspond to harvest opportunities. It is expected that after a few years of assessment data collection as well as comparisons to key indicator spawning estimates this could allow for annual plans to be established pre-season for yearly implementation such as occurs for many chinook and coho fisheries.
If there are any known data on timing and abundances of any coho stocks of concern (e.g. Thompson River coho) this would assist in defining closed areas or times.
- For 2016 it is expected that the assessment fishery only or a cautious limited larger opportunity will occur. In future years the assessment fishery will be better able to identify potential harvest opportunities for both the troll fleet and other harvesters. Sharing amongst fleets would be as per the updated CSAF.
- Proposed fishery management controls
 - Input control would be provided by limiting assessment fishery openings to 4 vessels to each of Areas 6, 7 and 8. Specific locations within each management area could be set at pre-season meetings. Assessment period would be defined by DFO and the harvest committee but is expected to be set as 2 week intervals during mid-July through mid-September.

Discussions are needed at the local harvest committee level to define how harvests and encounters will be analyzed with regards to any further fishing opportunities, impacts to FSC, and resulting spawning escapements. First Nations have indicated an interest in participating in stock assessment activities which would benefit all fisheries. If harvestable surpluses are identified it would be the responsibility of each group to set appropriate fishery controls as per its share. If a limited number of vessels were permitted then the Harvest Committee would need to define how its share of vessels would be determined e.g. lottery, pool, etc. First Nation economic fisheries would likewise need to define how their share would be harvested.

- Output control would be defined by each group preseason depending on harvestable surplus (ITQ, max. boat days, or pool quota).

V. Monitoring and Compliance Plan

- The risk assessment framework developed under the CMF (reference to *The Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries*) would need to be completed to assess this fishery. Start, end, pause, cancel and daily catch reporting (as per conditions of licence) would be required of all vessel masters participating in the fishery. Data from assessment fishery could be provided daily or weekly as appropriate to DFO, First Nation economic fishery rep and an Area F rep. Data from any fishery opening would be provided within 24 hours of offload.
- A limited number of catch validation/landing sites would need to be confirmed in the pre-season meetings.
- Level of monitoring would be 100% of vessels participating in the assessment fishery. Level of monitoring of any fishery above the assessment level to be defined based on CMF risk assessment and fishery opportunity by local harvest committee.
- Biological sampling could be taken based on discussions with DFO. In 2015, 9 CWT coho were identified in the Area 7 & 8 recreational catch of approximately 14,500. No data was available for Area 6. A discussion on the results from these CWT recoveries as well as any previous years would assist in setting appropriate sampling requirements and need for on-board monitors. DNA punches could be taken from released chinook to add to the general management of central coast chinook.
- Communication in-season would be via the local harvest committee reps established pre-season. DFO Resource Managers currently provide weekly information bulletins to all harvest groups. It is expected this would continue to be the basis for informing all parties.

- Vessel masters would be required to complete a logbook or E-log entry for each day of fishing. The catch data would be provided to DFO at intervals agreed between DFO and Central Coast harvest committee.
- Assessment monitoring results would be provided weekly to all Central Coast reps via email.

VI. Communication

- Communication protocols with other fisheries and participants and DFO would be coordinated with the Resource Manager and could be distributed as part of current weekly fishery notices. Pre-season meetings should include local First Nations FSC reps to ensure no impacts to their planned fisheries and establish a protocol for them to receive all data in a timely manner. This proposal would be identified in IHPC process and the IFMP for input from all groups.

4.4. Cowichan Terminal Chum Proposal (Cowichan Tribes)

I. Background

- Allocation: 13% of chum catch based on the respective gear shares in the Southern Inside Chum production area and the allocation associated with the 23 Area B, 14 Area D and 70 Area E licences in the DFO inventory. Final Allocation % will be modified based on actual licences converted to shares and acquired by Cowichan Tribes prior to the fishing season.

II. Proposal Overview

- Fishing opportunity for the Cowichan share will take place 2 - 4 days after the Area B and E fisheries prosecuted in the same area. In order to determine the target chum share for the Cowichan fishing opportunity the total chum catch from the previous B and E fishery would be multiplied by 13% (or other based on background I – c)

III. Fishery Elements/Attributes

- Location: A portion of Subarea 18-6 northwesterly of a line from Swartz Head on Vancouver Island, to the most southerly point of Pym Island, to Canoe Rock, to Beaver Point on Saltspring Island. A portion of Subarea 18-7 southeasterly of a line from Musgrave Point on Saltspring Island, to Separation Point on Vancouver Island to Cherry Point on Vancouver Island. A portion of Subarea 18-8 southeasterly of a line from Separation Point to the boundary sign at the Wilcuma Marina in Cowichan Bay. A 1/2 mile beach boundary is in effect from the boundary sign at the Wilcuma Marina to Hatch Point on Vancouver Island. – same boundary as those for Area B, D and E fisheries.

- Geary Type: Seine (brailing of fish required and a revival tank in operating order) and gillnet vessels similar to those used in Area B and E fisheries.
- Number of Vessels: to be determined based on the number of fish to be harvested. Anticipate being 1- 2 seines or 3-5 gillnet vessels for each fishing opportunity for 2016.
- Target species: Cowichan River chum
- Bycatch: small number of neighbouring river chum, Cowichan coho and Cowichan Chinook stragglers. Handling requirements would be the same as those for Area B and E fisheries.
- Outline any nearby/relevant fisheries – Marine and in-river First Nation food harvest fisheries and recreational fisheries in Area 18-6, -7 and -8. Preference is to avoid days when the other Area B and E fisheries are open to maximize product flow and quality but also provide space between the openings to allow fish passage. However, it may be possible to fish simultaneously with other commercial fisheries in the area.

IV. Harvest Guidelines and Management Decision Rules

- All fishing opportunities (Area B and E or Demonstration) will be based on abundance in the terminal area as determined by the harvest round table (representatives from Cowichan, DFO, commercial fleet and recreational).
- Proposed fishery management controls
 - Fishery Timing Controls: Typical timing is Late October to mid- November, with most fishing opportunities preferred prior to November 15th to maximize quality.
 - Times for each fishery opening (2 - 4 days after each scheduled fishery) would be identified in the pre-season plan (June) and modified in-season as required. The demonstration fishery would open at 6:00 am and would remain open till 6:00 pm or until the target is achieved.
 - Fishing Gear Control: The Cowichan Tribes Fisheries Program representative(s) would identify the vessels that may participate in a fishery at least 24 hours before each fishery opening.
 - Output Controls: it will be decided by the fishers in communication with the Cowichan Tribes Fisheries Manager to determine if the harvest target will be divided equally amongst the designated vessels or all vessels will fish as a pool.

V. Monitoring and Compliance Plan

- Type of program to monitor: combination of at-sea patrols and a single designated mandatory landing site.

- At-sea patrols: a member of the Cowichan Tribes Guardian program and/or DFO will monitor the fishery and record hauls after each set to confirm running tally of total fish captured relative to the target and relay this information to the fishers throughout the day. Also to confirm the number of fishing vessels participating and ensure compliance with the fishing times and area boundaries.
- Mandatory landing site: all of the catch would be enumerated by the Cowichan Tribes co-management representative (guardian, biologist or technician) and potentially sampled at the landing site (primary Cowichan Bay Government Wharf, secondary if needed Chemainus marina) and final tallies provided to DFO.
- Level of coverage: 100% dock side monitoring
- Biological sampling requirements: any sampling requirements will be discussed with DFO
- Monitoring plan: implemented by the Cowichan Tribes fisheries department and/or DFO.
- In-season reporting: numbers of each species caught, sold, kept, released by each participating vessel will be provided to DFO within 24 hours of the end of each opening. Data collection format to be discussed with DFO and any additional data requirements.
- Communication protocol: Cowichan Tribes will take responsibility to communicate with DFO and vessels during pre-season, in-season and

VI. Communication

- 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.
- Cowichan Tribes Fisheries Program representatives will participate in pre-season planning meetings (June), in-season weekly conference calls (chum working group and harvest round table) and any post-season review meetings related to the operation of the Cowichan Tribes Demonstration fishery.

4.5. Central Coast McLoughlin Bay Chum Proposal (Heiltsuk First Nations)

I. Background

- Participant: Heiltsuk Nation – (either Band or Development Corp.)
- Allocation: 15.9% of chum catch based on the respective gear shares in the Central Coast Chum production area and the allocation associated with the 88 Area C and 19 Area A and 14 Area F licences in the DFO Inventory.

- Final allocation % will be modified based on actual licenses converted to shares as identified by DFO and any other additional licences converted to shares and acquired by Heiltsuk prior to the fishing season.

II. Proposal Overview

- Fishing opportunity for the Heiltsuk share will take place 2 - 4 days after each scheduled A or C fisheries prosecuted in the same area. (A or C fisheries typically Monday). In order to determine the target chum share for the Heiltsuk fishing opportunity the total chum catch from the previous A or C fishery would be multiplied by 18.9% (or other percentage based on I-c).

III. Fishery Elements/Attributes

- Location – Portion of 7-17 in front of McLoughlin Bay. Same fishing boundaries as designated for the scheduled Area A or C fisheries.
- Gear type – gillnet and purse seine vessels similar to those used in Area C and A fisheries.
- Number of vessels – to be determined based on the number of fish to be harvested. Anticipated to be 1 – 2 seines or 3 - 8 gillnet vessels for each fishing opportunity for 2016.
- Target Species – McLoughlin Bay creek hatchery chum.
- Bycatch – small numbers of other salmon species. Handling requirements would be same for Area A or C fisheries in same area.
- Other nearby/relevant fisheries – marine FSC fisheries and recreational fisheries in Area 7 and 8. It is possible the Heiltsuk fishing opportunity could occur simultaneously with other all citizens commercial fisheries in the area (often scheduled for Thursday). Preference is to avoid days when other A or C fisheries are open nearby to maximize product flow, quality and employment at Heiltsuk processing plant.

IV. Harvest Guidelines and Management Decision Rules

- All Fishing opportunities (A and C or Demonstration) will be based on abundance in the terminal area as determined by a management team consisting of DFO and Heiltsuk Fisheries Program representatives.
- Proposed fishery management controls
 - Fishery Timing Controls – Typical timing is August 20 – September 20 with most fishing opportunities preferred prior to September 10 to maximize quality.
 - Times for each fishery opening (2 – 4 days after each regularly scheduled fishery) would be identified in the pre-season plan and modified in-season as

required. The demonstration fishery would open at 6:00 am and would remain open till 6:00 pm or until the target is achieved.

- Fishing Gear Control – The Heiltsuk Fisheries Program representative would identify the vessels that may participate in a fishery at least 24 hours before each fishery opening.
- Output Controls – it will be decided by the fishers in communication with the Heiltsuk Fisheries manager to determine if the harvest target will be divided equally amongst the designated vessels or all vessels will fish as a pool.

V. Monitoring and Compliance Plan

- Type of program to monitor – combination of at-sea patrols and a single designated mandatory landing site.
 - At-sea patrols – a member of the Heiltsuk Co-mgt program and/or DFO will monitor the fishery and record hauls after each set to confirm running tally of total fish captured relative to the target and relay this information to the fishers throughout the day. Also to confirm the number of fishing vessels participating and ensure compliance with fishing times and area boundaries.
 - Mandatory landing site – all of the catch would be enumerated by the Heiltsuk Co-mgt. representative and potentially sampled at the designated landing sites (Heiltsuk fish plant) and final tallies provided to DFO.
- Security Clearance for Patrolman/validator- DFO and Heiltsuk Fisheries Program would work cooperatively to train and provide designation and security clearance to the Heiltsuk patrolman/validator. Guidelines to be determined.
- Level of coverage – 100% dock side enumeration
- Biological sampling requirements – any sampling requirements will be discussed with DFO
- Monitoring plan – implemented by Heiltsuk Fisheries Program and/or DFO.
- In-season Reporting – numbers of each species caught, sold, kept and released by each participating FN will be provided to DFO within 24 hours of the end of each opening.
- Communication protocol – Heiltsuk Fisheries Program will be responsible for all pre-season, in-season and post-season communications with DFO and participating FNs.

VI. Communication

- A Heiltsuk Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the Heiltsuk fishery and will be the primary contact for all communication with DFO and fishers

- Heiltsuk Fisheries Program representatives will participate in pre-season planning meetings, in-season weekly conference calls and any post-season review meetings related to the operation of the Heiltsuk Demonstration fishery.

4.6. Central Coast Trout Bay Terminal Chum Proposal (Kitasoo Nation)

I. Background

- Participant: Kitasoo Nation – (either Band or Development Corp.)
- Allocation: 15.9% of chum catch based the respective gear shares in the Central Coast Chum production area and the allocation associated with the 88 Area C and 19 Area A and 14 Area F licences in the DFO Inventory.
- Final allocation % will be modified based on actual licenses converted to shares as identified by DFO and any other additional licences converted to shares and acquired by Kitasoo prior to the fishing season.

II. Proposal Overview

- Fishing opportunity for the Kitasoo share will take place 1 - 5 days after each scheduled A and/or C fisheries prosecuted in the same area. (Typically Monday/Tuesday).
- In order to determine the target chum share for the Kitasoo fishing opportunity the total chum catch from the previous A and/or C fishery would be multiplied by 18.9% (or other percentage based on I-c).

III. Fishery Elements/Attributes

- Location – Portion of 7-5 in front of Trout Bay – Klemtu village. Same fishing boundaries as designated for the previously scheduled Area A and/or C fisheries.
- Gear type – gillnet and purse seine vessels similar to those used in Area C and A fisheries.
- Number of vessels – to be determined based on the number of fish to be harvested. Anticipated to be 1 seine or 2- 6 gillnet vessels for each fishing opportunity for 2016.
- Target Species – Kitasoo creek hatchery chum
- Bycatch – small numbers of other salmon species. Handling requirements would be same for Area A and/or C fisheries in same area.
- Other nearby/relevant fisheries – marine FSC fisheries and recreational fisheries in Area 7 and 8. It is possible the Kitasoo fishing opportunity could occur simultaneously with other all citizens commercial fisheries in the area (often

scheduled for Thursday). Preference is to avoid days when other A and/ or C fisheries.

IV. Harvest Guidelines and Management Decision Rules

- All Fishing opportunities (A and C or Demonstration) will be based on abundance in the terminal area as determined by a management team consisting of DFO and Kitasoo Fisheries Program and Hatchery representatives.
- Proposed fishery management controls
 - Fishery Timing Controls – Typical timing is August 20 – September 20 with most fishing opportunities preferred prior to September 10 to maximize quality.
 - Times for each fishery opening (1 – 5 days after each regularly scheduled fishery) would be identified in the pre-season plan and modified in-season as required. The fishery would open at 6:00 am and would remain open till 6:00 pm or until the target is achieved.
 - Fishing Gear Control – The Kitasoo Fisheries Program representative would identify the vessels that may participate in a fishery at least 24 hours before each fishery opening.
 - Output Controls – it will be decided by the fishers in communication with the Kitasoo Fisheries manager to determine if the harvest target will be divided equally amongst the designated vessels or all vessels will fish as a pool.

V. Monitoring and Compliance Plan

- Type of program to monitor – combination of at-sea patrols and a single designated mandatory landing site.
 - At-sea patrols – a member of the Kitasoo Co-mgt program and/or DFO will monitor the fishery and record hauls after each set to confirm running tally of total fish captured relative to the target and relay this information to the fishers throughout the day. Also to confirm the number of fishing vessels participating and ensure compliance with fishing times and area boundaries.
 - Mandatory landing site – all of the catch would be enumerated by the Kitasoo Co-mgt. representative and potentially sampled at the designated landing sites (Trout Bay dock) and final tallies provided to DFO. If a single seine vessel is utilized the monitor would operate aboard the vessel and individually count fish into the fish holds after each set.
- Security Clearance for Patrolman/validator- DFO and Kitasoo Fisheries Program would work cooperatively to train and provide designation and security clearance to the Kitasoo patrolman/validator. Guidelines to be determined.

- Level of coverage – 100% dock side enumeration
- Biological sampling requirements – any sampling requirements will be discussed with DFO
- Monitoring plan – implemented by Kitasoo Fisheries Program and/or DFO.
- In-season Reporting – numbers of each species caught, sold, kept and released by each participating FN will be provided to DFO within 24 hours of the end of each opening.
- Communication protocol – Kitasoo Fisheries Program will be responsible for all pre-season, in-season and post-season communications with DFO and participating FNs.

VI. Communication

- A Kitasoo Fisheries demonstration fishery manager will be identified and will be responsible for the coordination of the Kitasoo fishery and will be the primary contact for all communication with DFO and fishers
- Kitasoo Fisheries Program representatives will participate in pre-season planning meetings, in-season weekly conference calls and any post-season review meetings related to the operation of the Kitasoo Demonstration fishery.

4.7. Skeena Sockeye Proposal (Tsimshian - NCSFNSS)

I. Background

- First Nation Group: North Coast Skeena First Nations Stewardship Society
- Allocation: 4.968% 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 a 1/3 share of the 14.9% of Skeena sockeye allocation associated with the 88 Area C and 19 Area A licences in the DFO Inventory.

II. Proposal Overview

- Weekly catch targets for the Tsimshian Area 4 Sockeye Fishery will be determined using the methods used by DFO for Skeena Sockeye Inland Demonstration Fisheries in recent years.
- In-season, the Tsimshian weekly catch target will be equal to 5.83% of the weekly commercial sockeye harvest in Area A and C fisheries in Area 4, such that the allowable Tsimshian catch is equal to 4.968% of the total weekly allowable commercial catch for Skeena Sockeye in all Area 4 commercial fisheries and inland Demonstration fisheries. The equation used to calculate the 5.83% value is $1/3 * 14.9\% / (1-14.9\%)$.

- The NCSFNSS will also calculate the weekly target harvest levels based on the in-season estimates of CTAC for Skeena sockeye and a proposed weekly distribution for the Tsimshian catch. These values will be compared with DFO weekly catch targets based on Area 4 commercial catches to assess the potential for using CTAC to implement First Nations commercial fisheries for Skeena sockeye in future years.
- The Tsimshian Area 4 commercial sockeye fishery will be conducted using gillnet and/or purse seine gear in Area 4-12 and 4-15 at times when Area C fisheries are closed for these areas.
- The Tsimshian harvest share would be distributed equally between the 6 Tsimshian First Nations.

III. Fishery Elements/Attributes

- Location – Area 4-12 and 4-15
- Gear type – gillnet and/or purse seine vessels similar to Area C and A fisheries.
- Number of vessels – to be determined based on the number of fish to be harvested and number of participating First Nations. Anticipated to be 1-3 vessels per Tsimshian First Nation for each fishing week in 2016.
- Target Species – Skeena sockeye
- Bycatch – likely less than 1% of the total catch will be other salmon species, handling requirements would be similar to those for Area C fisheries.
- Other nearby/relevant fisheries – marine FSC fisheries, all citizens commercial fisheries and recreational fisheries in Area 4. Fishing plans will be coordinated with local First Nations to ensure assess to Skeena sockeye for FSC purposes.
- Fisheries operations – Tsimshian First Nations may collaborate on harvesting their shares depending on the number of fish to be harvested. This could change in-season depending on the number of vessels available and the relative success of the individuals involved.

IV. Harvest Guidelines and Management Decision Rules

- Guidelines and management decision rules used to implement the Tsimshian fishery will be similar to those for other Area 4 commercial fisheries that target Skeena sockeye salmon.
- Proposed fishery management controls
 - Fishery Timing Controls - dates and times for each fishery opening would be identified in the pre-season plan and modified in-season as required, at least one week prior to each fishery opening.
 - Fishing Gear Control – each Tsimshian FN would identify the vessels that may participate in a fishery at least 2 days before each fishery opening.

- Output controls – each FN would be allocated an equal share of the target weekly catch and fishing by a specific FN would stop when their harvest share has been reached. Target catch amounts could be defined as group or individual vessel quota.
- Further discussions will occur in early 2016 to develop a fishing plan to detail how each community's FSC access requirements for salmon will be met and to coordinate fishery openings with existing fisheries to ensure that there will be adequate harvest opportunities for food, social and ceremonial purposes for each member Nation.

V. Monitoring and Compliance Plan

- Type of program to monitor – at-sea patrols and designated landing sites.
 - At-sea patrols - to confirm the number of fishing vessels participating, ensure compliance with fishing times and area boundaries and to assess the bycatch of non-target species by observing a sample of net sets.
 - Landing sites – all of the catch would be enumerated and potentially sampled at the designated landing sites.
- Landing, site(s)
- Level of coverage – 100% dock side validation.
- Biological sampling requirements – any sampling requirements will be discussed with DFO
- Monitoring plan – implemented by NCSFNSS
- In-season Reporting – numbers of each species caught, sold, kept and released by each participating FN will be provided to DFO within 48 hours of the end of each fishing period.
- Communication protocol – NCSFNSS will be responsible for all pre-season, in-season and post-season communications with DFO and participating FNs.

VI. Communication and Coordination

- NCSFNSS recommend that a Local Harvest Planning Committee (LHPC) be established to discuss and coordinate fishing plans. The LHPC should include representatives from DFO, CSAB, Tsimshian First Nations, and other Skeena First Nations.
- NCSFNSS representatives will participate in pre-season planning meetings, in-season weekly conference calls and any post-season review meetings related to the operation of the Tsimshian fishery. Representatives from participating Tsimshian FNs will be encouraged to participate in these meetings and calls.

VII. Fishery Benefits

- The Tsimshian Area 4 Commercial Sockeye Fishery will finally permit the Tsimshian First Nations an opportunity to harvest their portion on the catch represented by the 19 Area A and 88 Area C licences in the DFO inventory.
- The proposed fishery will allow the participating First Nations to determine the appropriate amount of fishing effort (vessel-days) needed to harvest their share of the weekly catch targets.
- The fishery will assist each of the participating First Nations with their goal of maintaining the fishing capacity needed to access salmon and other fish species for both commercial and domestic (FSC) purposes.

There could be future benefits associated with improved in-season estimates of sockeye returns resulting from timely data on daily catch rates from Tsimshian fisheries conducted at locations close to the mouth of the Skeena River with similar fishing effort each week (i.e. small fleet test fishery to augment the information from the Tyee Test Fishery).

4.8. Nass River sockeye proposal (Gitanyow Fisheries Authority (GFA))

I. Background

- Description of the existing Gitanyow inland demonstration fishery as approved and implemented by GFA and DFO in 2015. See attachment “Gitanyow Nass River Economic Demonstration Fishery 2015 Management Plan” for more details.
- 2015 Allocation / Catch: 38 Area C licences provided by DFO, 17 Area C licences leased privately. Total Gitanyow allocation in 2015 = 11,385 sockeye.
- Proposed Allocation for 2016: 10% of CTAC Nass sockeye based on all the allocation associated with the 88 Area C licences available in the DFO Inventory for Area 3.

II. Proposal Overview

- Weekly shares based on in-season estimates of CTAC for Nass sockeye to be harvested using dipnets and seine nets in Gitanyow Traditional Territory in the inland waters of the Nass and Meziadin Rivers.
- The Gitanyow harvest share would be distributed between the 8 traditional Gitanyow House groups who have capacity to implement a fishery. It is anticipated that most of the harvest in 2016 will take place on the Meziadin River (like in other years), but some small pilot mainstem middle Nass River fisheries may also take place. The management measures for these Gitanyow middle Nass mainstem fisheries were developed and approved in 2014 and 2015 by GFA and DFO (*See attached Appendix – Gitanyow Nass River Economic Demonstration*

Fishery 2015 Management Plan), but because of logistical reasons the sites have not been fished in the economic fishery as of yet.

- We are proposing that the previous adjustment to the Gitanyow allocation to account for the Nass sockeye stock composition not available in the fishery should not be applied to harvests at the Meziadin fishing site in 2016. This change is being proposed in order to promote and recognize the benefits of the terminal and selective nature of the Gitanyow Meziadin fishery. Currently, the Nass sockeye fishery is not managed in-season to a CTAC and the adjustment being proposed by the Gitanyow fishery will not have an overall effect on the escapement to the Meziadin system (e.g. Nisga'a in-river sockeye treaty fisheries not adjusted for stock composition). The proposed harvesting within the Meziadin system will promote the conservation of other Nass sockeye stocks of concern (e.g. Kwinageese sockeye) and help rebuild them quicker than if the Gitanyow allocation was harvested from the Nass sockeye aggregate. This proposal has the potential to extend benefits to all fishing sectors that target Nass sockeye because stock of concern can be rebuilt quicker and fishing restrictions related to these stocks (e.g. Kwinageese sockeye window closure) can be lifted sooner. Based on recent Gitanyow fishing allocations and the proposed 2016 share, this proposed change will not effect the overall management of Nass sockeye because the Gitanyow fishery is relatively small and the adjusted TAC is likely to only account for less than 2% of the overall Meziadin sockeye escapement (<5,000 sockeye annually). Meziadin sockeye are accurately counted annually and historical escapements trends show that escapement goals are almost always exceeded and could easily accommodate the added TAC. This provision will be reviewed annually and if escapement trends change overtime and escapement goals at Meziadin are not being met, the stock composition adjustment could be downgraded in the Gitanyow fishery to account for the shortfall in subsequent year's fisheries. This provision will only apply to the Meziadin fishing site and all other stock composition adjustments will remain in place for all mainstem Gitanyow middle Nass fishing sites in 2016.

III. Fishery Elements/Attributes

- Location – Mainstem middle Nass and the Meziadin River at existing traditional fishing sites.
- Gear type – Dipnets, and potentially the use of a fish wheel and / or beach seines in the mainstem of the Nass River.
- Number of Fishing / Landing sites – To be determined based on the number of fish to be harvested and number of participating Gitanyow house groups taking part in the fishery. We do not anticipate any more than four fishing sites, and 3

landing sites. Only one landing site will be open at any given time for the ease of management.

- Target Species – Nass and Meziadin sockeye.
- By-catch – At the Meziadin fishing site the water is very clear and fishing is conducted exclusively using dipnets. In the last 6 years there has been no by-catch in the economic fishery. If fishing takes place on the mainstem of the Nass, by-catch could include chinook, coho and steelhead. In these cases all by-catch would be released back into the river with the least possible harm. By-catch impacts are expected to be minimal due to the selective nature of the fishery.
- Other nearby/relevant fisheries – In-river Gitanyow FSC fisheries, Nisga'a Treaty fisheries (likely only at the Kinskuch site), Nass River recreational fisheries.
- Fisheries operations / coordination – The Gitanyow have operated inland demonstration commercial fisheries at Meziadin for the last 6 years and there have been no fishing ground conflicts. This is partly because the Gitanyow policy has always been to provide Gitanyow FSC fishers with priority access to the fishing sites over economic and it is expected that this policy will be followed again in 2016. Recreational fishing is not permitted by DFO on the Meziadin River and Nisga'a fishers have not fished the site for at least the last 20 years.
- If other Gitanyow fishing sites are used on the middle Nass River, we do not expect any fishing ground conflicts. The fisheries would take place at well-established Gitanyow traditional fishing sites where Gitanyow FSC fisheries have taken place annually for Centuries. Since the Nisga'a Treaty has been implemented (2000-2015), some Nisga'a fishers have used at least one of the Gitanyow traditional fishing sites, specifically the Kinskuch site, but it is only used on rare occasions. In these cases Gitanyow and Nisga'a fishers have fish the site on a first come first serve basis. If there are any potential conflicts in 2016 during the economic fisheries, GFA suggests that the economic openings at this site (and any other potential overlap fishing sites) be coordinated (e.g. staggered) between GFA and Nisga'a Fisheries.

IV. Harvest Guidelines and Management Decision Rules

- Description of guidelines and management decision rules and process for adjusting allocations – The Gitanyow are proposing that allocations of Nass sockeye be based on a share of the CTAC from Area 3. The share would be determined weekly in-season through the existing Nass management process, whereby Nass sockeye abundance is estimated using information collected from outside fisheries and the Nass fish wheels mark / recapture program. This system has been in place for many years (>15 years) and has been used since at least 1999 to allocate CTAC shares to the Nisga'a for Treaty entitlement. We propose that the Gitanyow share be calculated in-season using the same methods currently

employed to determine the Nisga'a Treaty shares of the Nass sockeye fishery. Gitanyow believes that by going to a CTAC system it would reduce DFO's workload in-season compared to the current system, whereby Gitanyow allocations are based on calculation multipliers applied to the Area C gillnet catch.

- Proposed fishery management controls
 - Meziadin Fishery Timing Controls – At the Meziadin fishing site the fishery would be opened once sockeye become available for harvest at the fishing site (usually by Mid-July). It would remain open until all the allocation has been caught for the season minus any other allocations designated for other fishing sites (mainstem Nass). The Gitanyow allocation (share) would be updated at least once a week or after every Nass stock assessment update (whichever is more frequent). Because of the terminal nature of the Meziadin fishery there are no mixed stock concerns, therefore there is no requirement to manage it on a weekly basis.
 - Other middle Nass Fishery Timing Controls – Dates, times and a piece count of the Gitanyow share would be identified in the pre-season plan and modified in-season as approved by GFA and DFO, at least one week prior to each fishery opening. Each fishing site would be allocated a share of the target weekly catch. Fishing would stop when their weekly harvest share has been harvested. Any uncaught allocation would move up to the Gitanyow Meziadin Fishing site once it passes the fishery area during any given week.
 - Fishing Gear Control – GFA, under management direction of the Gitanyow Chiefs, will determine in the pre-season, in consultation with DFO, the % allocation to be divided by fishing site to maintain an orderly fishery in 2016. Specific fishing site allocations may be increased or decreased in-season by GFA, in consultation with DFO, based on the performance and compliance of any given fishery. GFA would declare which fishing / landing sites would be open at least 48 hours prior to any fishery openings and only one fishing site would be opened at any given time.

V. Monitoring and Compliance Plan

- Monitoring Program – A combination of fishing site and landing site monitoring will take place in-season. GFA monitor(s) and DFO enforcement staff would conduct all monitoring of the Gitanyow fishery.
 - Fishing Sites – To ensure selective fishing provisions are being followed according to pre-season plans, by-catch is being released, catch is accurately accounted for and timing and area boundaries are followed.

- Landing sites – All of the catch would be enumerated and potentially sampled at the designated landing sites.
- Level of coverage – 100% of catch enumerated at landing sites and at enumerated again at the processing plant processing plant.
- Biological sampling requirements – Any sampling requirements will be discussed with DFO.
- In-season Reporting – Numbers of each species caught, sold, kept and released broken down by fishing site and week will be provided to DFO within 48 hours of the end of each fishing week.
- Communication protocol – GFA will be responsible for all pre-season, in-season and post-season communications with DFO and participating Gitanyow House Group fishers.

VI. Communication

- GFA representatives will participate in pre-season planning meetings, in-season weekly conference calls and any post-season review meetings related to the operation of the Gitanyow fishery. The Gitanyow Fisheries Authority would also communicate with DFO and Nisga'a fisheries in-season and provide all tag recovery information as timely as possible, so that the information could be used in the Nass fish wheel mark/recapture program to facilitate the in-season management of the Nass salmon fishery.

VII. Fishery Benefits

- This proposal will allow the Gitanyow Nation an opportunity to harvest a more equitable share of the CTAC of Nass sockeye and continue to develop their fishery in a sustainable manner. It will also provide well-needed employment opportunities for the remote community of Gitanyow where unemployment rates are some of the highest in the province and where salmon fishing is one of the only economic drivers.
- The Gitanyow proposed fishery will allow for more targeted selective and terminal fisheries in the Nass by moving additional CTAC to the largest and most productive Nass sockeye stock located in the Meziadin River. This will have conservation benefits for Nass sockeye as a whole, and provide particular benefits for stocks that are currently depressed such as Kwinageese sockeye.
- The proposal will help foster better cooperative fisheries management in the Nass Watershed between the Gitanyow, Nisga'a, DFO and the CSAB. It is hopeful that this can be achieved through the expansion of the current local harvest planning committees whereby all First Nations would have representation and a say on how fisheries will take place in DFO stat Area 3.

- By allocating all of the available DFO inventory licences in the Nass through this proposal, DFO will finally realize the full benefits of PICFI and ATP programs in the Nass. Programs that were originally established to support First Nations' increased participation in Pacific commercial fisheries

***Appendices referred to in this submission may be provided upon request. Please contact Cynthia.Johnston@dfo-mpo.gc.ca.**

4.9. Nass River sockeye proposal: Nisga'a Nation Area 3 Sockeye Allocation Proposal

I. Background

- Nisga'a Lisims Government (NLG) is proposing to receive licence/quota for commercial Nass sockeye salmon as part of Fisheries and Oceans Canada's new Commercial Salmon Allocation Framework process for allocation of harvest shares associated with licences in the DFO Inventory.
- The Nisga'a Treaty expressly provides that the Nisga'a Nation continues to have the right to participate in and benefit from programs and services offered by Canada and British Columbia. Specifically, neither the Nisga'a Treaty nor the Nisga'a Harvest Agreement prohibits the Nisga'a Nation from acquiring additional commercial access to salmon or other fisheries resources in accordance with the general criteria applicable to a federal program. Since 2013, the Nisga'a Nation has been participating in demonstration fisheries whereby a portion of unfished commercial licences have been transferred inland to the Nisga'a Nation. For the past 3 years, quota associated with these licences has been fished by NLG, on behalf of the Nisga'a Nation, at the Nisga'a Fish and Wildlife Department (NFWD) upper fish wheels. The Nisga'a Nation demonstration fisheries have been well managed and fully utilized each year and have provided additional harvest opportunities to the Nisga'a Nation. In fact, NLG has successfully conducted economic fisheries on the Nass River since the implementation of the Nisga'a Final Agreement ("Nisga'a Treaty") in 2000 and has had no catch disputes over the past 15 years of implementation. A copy of the Nisga'a Lisims Government Nass River In-land Demonstration Fishery (NIDF) Management Plan for the 2015 fishery is attached to this proposal (Appendix A).
- NLG is requesting 12.9% of the CTAC for Nass sockeye which is 100% of the potential re-allocation (hereafter referred to as sockeye shares) associated with the 88 Area C gillnet licences and 19 Area A seine licences currently available in the DFO Inventory with harvest shares for Nass sockeye (Appendix B). These sockeye shares would be for the benefit of all four Nisga'a Villages (Gingolx, Laxgalts'ap, Gitwinksihlkw, and Gitlaxt'aamiks) and four urban locals (Terrace, Prince Rupert, Port Edward, and Vancouver).

II. Proposal Overview

- The sockeye shares received by the Nisga'a Nation will be fished within the Nass Area by means of 1) fish wheels operated by NLG, 2) Individual Sale (IS) fisheries in marine portions of the Nass Area, and 3) IS fisheries within the lower Nass River. No changes will be required to the existing fishery management decision rules or harvest guidelines by virtue of a re-allocation of sockeye salmon Nisga'a Lisims Government shares to the Nisga'a Nation. NLG and DFO already have the necessary and proven fishery management protocols and procedures necessary for a well-managed fishery. Sockeye shares allocated to the Nisga'a Nation in accordance with this proposal will be fished in the same manner as for the Nisga'a Harvest Agreement shares and the NIDF. Sockeye catch will be delivered to either a marine packer (for the marine IS fishery) or the NLG Processing Plant in Gitlaxt'aamiks (for the in river IS fishery) using 100% validation of catch by NLG observers.
- In addition to economic benefits to the Nisga'a Nation, this proposal has the following benefits to other beneficiaries of Area 3 sockeye fisheries;
 - Nisga'a economic salmon fisheries have a very high probability of being successfully implemented and thus are good example of how First Nation economic fisheries can be conducted,
 - There are no additional management costs to Canada associated with this proposal, and
 - Any additional management costs to NLG are minor and will be fully absorbed by NLG.

III. Fishery Elements/Attributes

- For Nisga'a commercial sockeye fisheries the anticipated fleet size will be approximately 25 marine gillnet vessels and 296 in-river permit holders fishing with river gillnets and vessels, based on 2015 fisheries. Sockeye harvested communally by NLG will take place at 4 fish wheels located at Grease Harbour.
- As has occurred since the Nisga'a Treaty Effective Date in 2000, NLG (as represented by NFWD) and DFO will cooperatively plan Nisga'a fishery openings and general commercial fishery openings to ensure a smoothly run fishery. A pre-season fishing plan will be jointly developed to identify approximate weekly harvests, closures to protect Kwinageese sockeye and minimize bycatch of other non-target species like chum and steelhead, and fishery openings by day of the week. The fishing plan will be adjusted as the season progresses to account for run size, catch-to-date, and any other matters that might arise in-season.

- NFWD have very experienced fishery managers that have been directly involved in managing Nass Area salmon fisheries for over 20 years.
- Bycatch handling requirements will be similar to those for Area C fisheries and any bycatch kept will be accounted for as part of Nisga'a Treaty fisheries.
- Other nearby and relevant fisheries include marine and in-river Nisga'a Treaty domestic fisheries, other Areas 3 and 4 First Nation FSC fisheries, general commercial fisheries in Areas 3 and 4, and all citizen recreational fisheries in Areas 3 and 4.
- Fisheries operations will be as in previous post-treaty years. NLG will determine the maximum number of sockeye that can be harvested by each Nisga'a permit holder who is authorized to participate in Nisga'a commercial fisheries. The size of the individual share may vary during the season depending on the size of the total Nisga'a commercial TAC and fisher effort.

IV. Harvest Guidelines and Management Decision Rules

- As described above, a fishing plan will be developed jointly with DFO that will integrate the additional sockeye shares allocated to the Nisga'a Nation with existing economic fisheries already occurring under the Nisga'a Harvest Agreement. As such, no specific new decision rules or guidelines will be required.
- NFWD monitors the returns of Nass sockeye to the fish wheels at Gitwinksihlkw using a combination of rigorous catch monitoring of Nisga'a fisheries, catch data provided in-season by DFO for non-Nisga'a fisheries, and a mark-recapture program that has been in operation since 1992. The run tracking and data management of Nass salmon and steelhead stocks by NFWD is widely recognized as extremely reliable in achieving annual escapement goals while maximizing commercial salmon fisheries opportunities in Area 3. Commercial fisheries in Area 3 have occurred annually while major sockeye fisheries in other areas of BC have recently struggled and not opened on an annual basis.
- The sockeye shares provided to the Nisga'a Nation under this proposal will be integrated with existing Nisga'a Harvest Agreement shares and managed using well proven fishery controls on the Nisga'a IS fisheries including 100% catch validation within 12 hours of each fishery opening. This combined with daily run size estimation to Gitwinksihlkw enables DFO and NFWD managers to make adjustments to catch targets and fishery openings on a weekly basis.

V. Monitoring and Compliance Plan

- As mentioned above, all Nisga'a Nation salmon fisheries are closely monitored with all Nisga'a IS fisheries receiving 100% catch monitoring and validation at either a marine packer or the Nisga'a Processing Plant in Gitlakdamiks. All Nisga'a fisheries are also sampled for marks (those applied at the Nass River fish

wheels or otherwise). All non-target salmon caught (released and kept) are also accounted for in all Nisga'a salmon fisheries.

- The nature and form of data collected in Nisga'a domestic and IS fisheries are well established and accepted by DFO managers in Prince Rupert since the implementation of the Nisga'a Treaty in 2000. They include weekly updates of Nisga'a catch to date and total run size as well as significant additional data. An example of an in-season update from NFWD is attached as Appendix C to this proposal.

VI. Communication

- NFWD will continue as in previous years to provide frequent and timely information (e.g., Appendix C) to numerous recipients (DFO, BC FLNRO, NGOs, other First Nations) throughout the season. 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.

***Appendices referred to in this submission may be provided upon request. Please contact Cynthia.Johnston@dfo-mpo.gc.ca.**

5. Interim Transfer Guidelines

Below in section 5.1 are the Interim Transfer Guidelines which have been in place since 2012. The proposed revised Transfer Guidelines received from the Salmon Coordinating Committee and the Commercial Salmon Advisory Board follow in section 5.2.

5.1. Existing Interim Transfer Guidelines

Transfers of commercial salmon fleet allocations within the regular commercial fishing areas fleet (licence areas A through H) will continue to be guided by *An Allocation Policy for Pacific Salmon 1999* (Allocation Policy).

Operational guidelines and requirements specific to transfers of shares are included below. These are consistent with the Interim Guidelines for Temporary Commercial Salmon Share Transfers as described in the North and South coast Salmon IFMPs as of 2013.

The following types of commercial salmon share “transfers” are addressed by this guidance:

- Transfer of salmon shares between any of the following groups:
 - Marine Demonstration Fishery participants
 - In-river Demonstration Fishery participants

- First Nations with communal licences allowing sale; and/or
- First Nations with Harvest Agreements for salmon

When there is a formal arrangement (agreed to by DFO) between the original share-holders and the recipient. Requests have involved transfer from downstream to upstream locations, and vice versa. See section B below for more information on eligibility.

- Transfers of uncaught commercial Total Allowable Catch (TAC) allocations from regular commercial fleets to First Nations who have in-river Demonstration Fisheries, communal licences allowing sale that year, or a Harvest Agreement for salmon, or vice versa, where there is no arrangement between the original allocation holders and the recipient. In these cases, DFO would make a decision on whether to allow a requesting group to access some or all of the uncaught TAC.

DFO recognizes that approaches for utilization of uncaught commercial TAC are an area of significant discussion in the context of the Commercial Salmon Allocation Framework development process, and that there are differing views on how to address such requests.

Requests for temporary transfers of commercial salmon shares involving watershed areas upstream of regular commercial fishing areas 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 Involving In-river Areas:

- 1) Result in improvement of 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 by-catch 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) Consistent with *An Allocation Policy for Pacific Salmon (1999)* in areas where the allocation policy applies, including respecting recreational priorities as identified in the policy.
- 7) Respect the Common property nature of the fisheries resource: access to the resource does not imply ownership of the resource or any portion of the resource.

- 8) Support opportunities to utilize Canadian commercial total allowable catch while respecting conservation requirements.
- 9) Commercial fishery arrangements for First Nation and regular commercial fisheries will be managed under common and transparent rules. For example, commercial category “F” licences will be managed in accordance with the same rules as the regular commercial fishing fleet which they are part of.
- 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 In-River Transfers:

- 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.
- 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.
- Only First Nation entities who are signatories to arrangements providing a defined percentage commercial share of salmon TAC for the given year (i.e. Economic Opportunity agreement, Harvest Agreement and/or Demonstration Fishery access) and regular commercial licence holders with a defined percentage share of TAC (i.e. via a commercial marine Demonstration Fishery) can participate in a share transfer arrangement.
- In most cases, transfers will be based on a percentage share of the available commercial TAC. Alternate TAC-based approaches for calculating transfer shares may be considered as indicated in this management plan or with approval from the RDG.
- For share transfers between regular 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. Proposed transfers arrangements from commercial fisheries and/or shareholders (whether individual or fleet-wide) will take into account Area Harvest Committee involvement and support in their development.
- DFO will not be responsible for leading or facilitating the negotiation of transfer arrangements between parties.

- 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).
- If after spawning escapement objectives are met, and despite best efforts, it becomes apparent that an existing commercial shareholder is 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 in-river First Nations already holding a clearly defined percentage share of the Canadian commercial total allowable catch, on a case by case basis.
- Transfers of commercial salmon allocations must consider shares of all stocks that will be harvested in the recipient area.
 - 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 transferred to the Kamloops Lake inland demo fishery will be only for the proportion of Thompson chinook encountered in the marine commercial troll fishery).
 - 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 co-migrating stocks 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).
 - 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.
- 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.
- 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.

- Proposals for transfer arrangement must include contingencies for situations where shares are exceeded. Parties not complying with agreed-to arrangements could face enforcement actions.
- 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.
- 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.

5.2. Proposed Revised Commercial Salmon Transfer Guidelines

These guidelines are intended to apply to all commercial salmon fisheries. In contrast, the “Interim Guidelines for Temporary Commercial Salmon Share Transfers” included in the 2015/16 Salmon Integrated Fisheries Management Plans did not apply to all commercial salmon share transfers within the Area A-H fleets. The following guidelines are the product of reviews and discussions between the First Nations Salmon Coordinating Committee (SCC) and Commercial Salmon Advisory Board (CSAB) representatives over the past 2 years.

These guidelines address the transfer of commercial salmon shares between the following groups:

- a) Area A-H Fishery participants with a defined percentage share of the commercial TAC
- b) Area A-H fleets or portions of fleets or individual licences
- c) Marine Demonstration Fishery participants
- d) In-river Demonstration Fishery participants
- e) First Nations with a defined percentage share of the commercial TAC
- f) First Nations with one or more Area A-H licences
- g) First Nations with communal licences allowing sale; and/or
- h) First Nations with Harvest Agreements for salmon

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 must be made pre-season.

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 by-catch 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 Nation 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 Nation 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 transferred to the Kamloops Lake inland demo fishery will be only

for the proportion of Thompson chinook encountered in the marine commercial troll fishery). Where a transfer to a terminal location provides benefits for stocks of conservation concerns and/or will benefit other harvest groups, DFO will consider modifying the usual adjustment related to the stock composition in the more terminal harvest location to encourage these terminal fisheries to focus on stocks with no conservation concerns. DFO will document the rationale for its decision if it decides to modify the adjustment and provide the rationale to commercial fleets harvesting those same stocks/species.

- 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.

Issues yet to be resolved:

1. Where fisheries are not operated under individual vessel quota, the CSAB has proposed that the Area Harvest Committee for a specific fleet can determine whether an individual licence holder can make a pre-season transfer of the harvest share associated with their licence to another Area A-H licence or a First Nations commercial fishery.
2. Where an individual, portion of a fleet or fleet has attempted to arrange a transfer of their share as outlined in these Transfer Guidelines, the CSAB has proposed that consideration may be given for that individual, portion of fleet or fleet to access their uncaught share in a more terminal location.