

# **PACIFIC REGION**

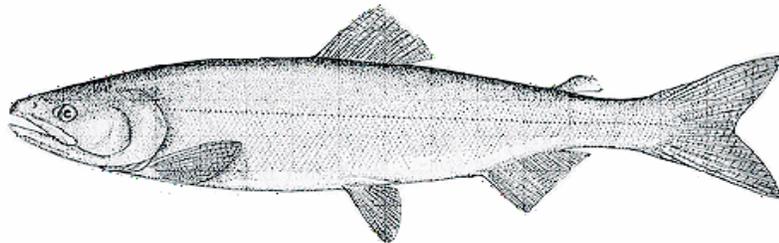
# **INTEGRATED FISHERIES**

# **MANAGEMENT PLAN**

# **SALMON**

# **SOUTHERN B.C.**

**JUNE 1, 2011 TO MAY 31, 2012**



*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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## DEPARTMENT CONTACTS

A more comprehensive list of contacts can be found online at:  
<http://www.pac.dfo-mpo.gc.ca/fm-gp/contacts-eng.htm>.

24 Hour Recorded Information (Commercial) Vancouver (604) 666-2828

Pacific Salmon Commission (PSC) Office (604) 684-8081  
PSC Test Fisheries (Recorded, In-Season Information) (604) 666-8200

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

### Regional Headquarters

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Regional Director, Conservation and Protection	Randy Nelson	(604) 666-0604
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Area Chief, Oceans, Habitat and Enhancement	Corino Salomi	(604) 666-0315
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Resource Management Technician	Karen Burnett	(604) 666-3478
Resource Management Biologist (Sockeye, Pink)	Ann-Marie Huang	(604) 666-6033
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A/Asst. Resource Manager – Williams Lake (AFS / Recreational)	Steve Ratko	(250) 305-3014
Senior Resource Management Biologist - Kamloops	Jamie Scroggie	(250) 851-4948
A/Resource Management Biologist - Kamloops	Lita Gomez	(250) 851-4961

## **South Coast Area**

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A/Area Chief, Resource Management	Greg Thomas	(250) 756-7103
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Area Chief, Salmon Stock Assessment	Wilf Luedke	(250) 756-7222
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A/Enhancement Operations Section Head	Gary Taccogna	(250) 287-9564
RM Program Co-ordinator - WCVI (Areas 21 to 26)	Bill Shaw	(250) 756-7152
A/Resource Manager - WCVI (Areas 21 to 24)	Mike Spence	(250) 720-4448
Resource Manager – WCVI (Areas 25 to 26)	Paul Preston	(250) 720-4452
A/RM Program Co-ordinator - SOG (Areas 14 to 20)	Brenda Spence	(250) 756-7329
Resource Manager - Strait of Georgia (Areas 14 to 16)	Terry Palfrey	(250) 756-7158
Resource Manager - SOG (Areas 17 to 20)/Area G	Alistair Thomson	(250) 756-7287
A/Resource Manager - AFS (Strait of Georgia)	Kevin Conely	(250) 756-7243
A/Recreational Co-ordinator	Brad Beath	(250) 756-7190
RM Program Co-ordinator – JS (Areas 11 to 13 and 27)	Beth Pechter	(250) 286-5880
A/Resource Manager - JS (Areas 12 to 13)	Rick Senger	(250) 286-5882
A/Resource Manager – JS (Areas 11, 12 and 27)	Greg Hornby	(250) 286-5886
Resource Manager – JS (Areas 11 to 13 and 27)	Matt Mortimer	(250) 286-5814
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Recorded Information - Port Alberni		(250) 723-0417
Recorded Information - Port Hardy		(250) 949-6422
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Nanaimo, B.C. V9R 5H7		

## INDEX OF WEB-BASED INFORMATION

### FISHERIES AND OCEANS CANADA - GENERAL INFORMATION

**Main Page** (<http://www.dfo-mpo.gc.ca> )

Our Vision, Latest News, Current Topics

**Acts, Orders, and Regulations** (<http://www.dfo-mpo.gc.ca/acts-loi-eng.htm>)

Canada Shipping Act, Coastal Fisheries Protection Act, Department of Fisheries and Oceans Act, Financial Administration Act, Fish Inspection Act, Fisheries Act, Fisheries Development Act, Fishing and Recreational Harbours Act, Freshwater Fish Marketing Act, Navigable Waters Protection Act, Oceans Act.

**Reports and Publications** (<http://www.dfo-mpo.gc.ca/reports-rapports-eng.htm>)

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

**Waves** (<http://inter01.dfo-mpo.gc.ca/waves2/index.html>)

Fisheries and Oceans Canada online library catalogue

**Pacific Salmon Treaty** ([www.psc.org](http://www.psc.org))

Background information; full text of the treaty.

### PACIFIC REGION - GENERAL

**Main Page** ([www.pac.dfo-mpo.gc.ca/](http://www.pac.dfo-mpo.gc.ca/))

General information, Area information, Latest news, Current topics.

**Policies, Reports and Programs**

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

Reports and Discussion Papers, New Directions Policy Series, Agreements.

**Oceans Program** ([http://www.pac.dfo-mpo.gc.ca/oceans/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/oceans/default_e.htm))

Integrated Coastal Management; Marine Protected Areas; Marine Environmental Quality; Oceans Outreach; Oceans Act.

### PACIFIC REGION - FISHERIES AND AQUACULTURE MANAGEMENT

**Main Page** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/index-eng.htm>)

Commercial Fisheries, New and Emerging Fisheries, Recreational Fisheries, Maps, Notices and Plans.

**Aboriginal Fisheries Strategy** (<http://www.pac.dfo-mpo.gc.ca/abor-autoc/index-eng.htm>)  
Aboriginal Fisheries Strategy (AFS) principles and objectives; AFS agreements; Programs; Treaty Negotiations.

**Recreational Fisheries** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.htm>)  
Fishery Regulations and Notices, Fishing Information, Recreational Fishery, Policy and Management, Contacts, Current B.C. Tidal Waters Sport Fishing Guide and Freshwater Supplement; Rockfish Conservation Areas, Shellfish Contamination Closures; On-line Licensing.

**Commercial Fisheries** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/commercial/index-eng.htm>)  
Links to Groundfish, Herring, Salmon, Shellfish and New and Emerging Fisheries homepages; Selective Fishing, Test Fishing Information, Fishing Areas, Canadian Tide Tables, Fishery Management Plans, Commercial Fishery Notices (openings and closures).

**Fisheries Notices** (<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?>)  
Want to receive fishery notices by e-mail? If you are a recreational sport licence vendor, processor, multiple boat owner or re-distribute fishery notices, register your name and/or company at the web-site address above. Openings and closures, updates, and other relevant information regarding your chosen fishery are sent directly to your registered email. It's quick, it's easy and it's free.

**Integrated Fishery Management Plans**  
(<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/MPLANS/MPlans.htm>)  
Current Management Plans for Groundfish, Pelagics, Shellfish (Invertebrates), Minor Finfish, Salmon; sample Licence Conditions; Archived Management Plans.

**Salmon Test Fishery - Pacific Region**  
(<http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/salmon/testfish/default.htm>)  
Definition, description, location and target stocks.

**Licensing** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.htm>)  
Contact information; Recreational Licensing Information, Commercial Licence Types, Commercial Licence Areas, Licence Listings, Vessel Information, Vessel Directory, Licence Statistics and Application Forms.

**Salmon** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/salmon-saumon/index-eng.htm>)  
Salmon Facts; Salmon Fisheries; Enhancement and Conservation; Research and Assessment; Consultations; Policies, Reports and Agreements; Glossary of Salmon Terms.

**Fraser River/B.C. Interior Area Resource Management and Stock Assessment**  
(<http://www.pac.dfo-mpo.gc.ca/fraserriver/default.htm>)  
Contact information; Test fishing and survey results (Albion, creel surveys, First Nations); Fraser River sockeye and pink escapement updates; Important notices; Recreational fishing information.

**North Coast Resource Management** (<http://www.pac.dfo-mpo.gc.ca/northcoast/default.htm>)

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

**Yukon/Transboundary Rivers Area Main Page**

([http://www.pac.dfo-mpo.gc.ca/yukon/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/yukon/default_e.htm))

Fisheries Management; Recreational fisheries; Habitat; Fisheries Management; Licensing; Contacts.

**PACIFIC REGION – OCEANS, HABITAT AND ENHANCEMENT**

**Main Page** ([http://www-heb.pac.dfo-mpo.gc.ca/default\\_e.htm](http://www-heb.pac.dfo-mpo.gc.ca/default_e.htm))

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

**PACIFIC REGION - POLICY AND COMMUNICATIONS**

**Main Page** (<http://www.dfo-mpo.gc.ca/media-eng.htm>)

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

**Consultation Secrétariat**

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

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

**Publications Catalogue**

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

Listing of information booklets and fact sheets available through Communications branch.

**Species at Risk Act (SARA)**

(<http://www.dfo-mpo.gc.ca/species-especes/index-eng.htm>)

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

**PACIFIC REGION - SCIENCE**

**Main Page** (<http://www.pac.dfo-mpo.gc.ca/science/index-eng.htm>)

Science divisions; Research facilities; PSARC; International Research Initiatives.

**Salmon and Freshwater Ecosystems (SAFE)**

(<http://dev-public.rhq.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/index-eng.htm>)

Research; Research Sites; Research Programs; Fraser River Environmental Watch Program; Publications and Reports; Photo Gallery; Pink Salmon/Sea Lice Monitoring Program.

## **FOREWORD**

The purpose of this Integrated Management Plan (IFMP) is to identify the main objectives and requirements for the Southern B.C. Pacific salmon fishery, as well as the management measures that will be used to achieve these objectives. This document also serves to communicate the basic information on the fishery and its management to Fisheries and Oceans Canada (DFO, the Department) staff, legislated co-management boards and other stakeholders. 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 which 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.

## **1. OVERVIEW**

### **1.1. Introduction**

This 2011/2012 Southern B.C. Salmon Integrated Fisheries Management Plan (IFMP) covers the period June 1, 2011 to May 31, 2012.

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 social, cultural, and economic performance of the fishery and its broader management issues. Section 5 describes the objectives to address the issues identified in Section 4. Sections 6 and 7 describe allocation and management procedures.

The Appendices provided in the IFMP provide information such as the post season review, and the fishing plans for First Nations and the recreational and commercial sectors.

### **1.2. History**

For thousands of years, the history, economy and culture of Canada's west coast have been inextricably linked to Pacific salmon.

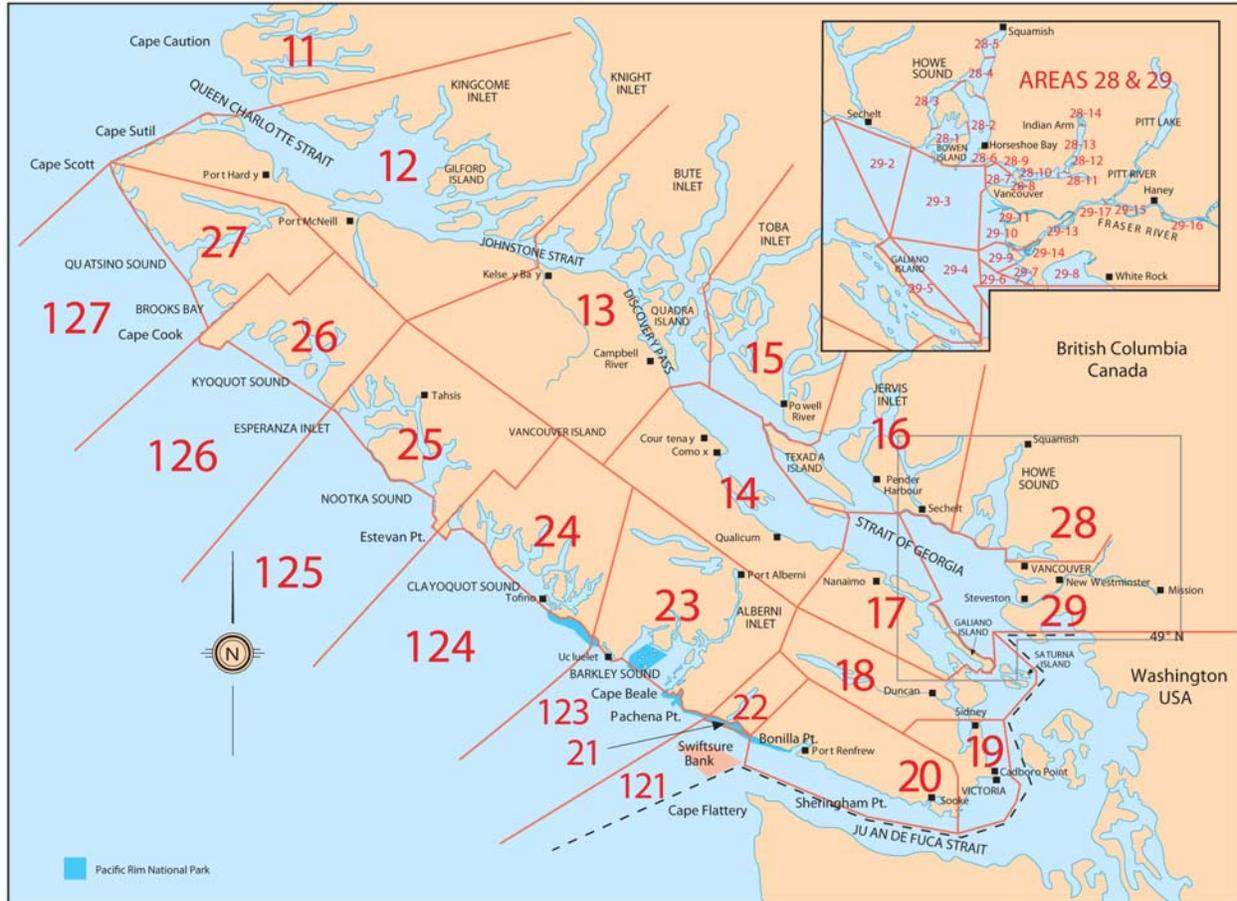
### **1.3. Type of Fishery and Participants**

This plan describes the management of First Nations, recreational and commercial fisheries for Pacific salmon in southern B.C. 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 BC/Washington border, including the Fraser River watershed.



## 1.5. Fishery Characteristics

Pacific salmon species covered in the plan include sockeye, coho, pink, chum and chinook salmon. Fisheries include those undertaken by First Nations as well as recreational and commercial fisheries.

In 1992 the Department initiated the Aboriginal Fisheries Strategy (AFS) in response to a Supreme Court ruling which affirmed the right of First Nations people to fish for food, social and ceremonial (FSC) purposes. Today, FSC fisheries have priority over all other fisheries. Harvest opportunities are developed through consultation with First Nation communities, and then authorized via a Communal Licence issued by the Department. The individual Band or Tribal Council in turn issues designations to individual members, designating them to fish for the group.

Many First Nations individuals also participate in the “regular” commercial fishery. Other fisheries with a commercial element in which First Nations participate include economic opportunity or demonstration fisheries and surplus stocks at some enhancement facilities that are not required for enhancement which are made available to First Nations.

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. Anglers

wishing to retain salmon taken from either tidal or non-tidal waters must also have a valid salmon conservation stamp affixed to their licence. Part of the proceeds from the sale of stamps is 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. By law, only barbless hooks may be used when fishing for salmon in marine waters. Barbless hooks are also required by regulation when fishing in most freshwater streams in the province.

Commercial salmon licences are issued for three gear types: seine, gillnet and troll. 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 aggregations 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 selectively on certain species and 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. Each of the policies were developed with considerable consultation from all those with an interest in salmon management. While the policies themselves are not subject to annual changes, implementation details are continually refined where there is general support.

### **Policy Framework for the Management of Pacific Salmon Fisheries**

Salmon management programs continue to be guided by: *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*, the *Integrated Harvest Planning Committee* and *Pacific Region Fishery Monitoring and Reporting Framework*.

*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 3.3.1 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 5.1 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, and 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 January 2010 by DFO, the Sport Fishing Advisory Board (SFAB) and the Province of B.C. Guided by this Vision, an action and implementation plan will be 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/fisheries-peche/smon/sfab-ccps/docs/rec-vision.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.

In 2002, the Department released the Pacific Region Fishery Monitoring and Reporting Framework setting out principles with which to review and improve fishery monitoring and catch reporting systems. This framework is used as the main reference tool to identify necessary improvements in fishery monitoring and catch reporting systems. Further, the Department has released a draft discussion paper, *Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries*, for consultation (see section 4.2.9)

## **1.7. Consultation**

This plan incorporates the results of consultations and input from the Integrated Harvest Planning Committee (IHPC), First Nations, and recreational and commercial advisors and the Marine Conservation Caucus (MCC), representing a coalition of "environmental" organizations.

Fisheries and Oceans Canada will continue to consult with First Nations, recreational, and commercial harvesters and the MCC 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>.

The Integrated Harvest Planning Committee (IHPC) for salmon is comprised of First Nations, recreational and commercial interests (as represented by the SFAB and the CSAB) and the MCC. This committee is recognized to be the primary source of stakeholder input into Salmon Integrated Fisheries Management Plans.

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 in Ottawa.

## **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 accounts for about 75% of the total salmon numbers.

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 1 week to 2 years. Most then go to sea for 1-5 years, undertaking a large ocean-feeding migration, although sockeye have also developed a land-locked form (kokanee). In the ocean, the sockeye, pink and chum feed primarily on plankton and crustaceans such as tiny shrimp. Chinook and coho eat smaller fish, making them vulnerable to commercial and sports fishermen using bait such as herring. At sea the species attain the following average adult weights: 1-3 kg, pink; 5-7 kg, chum; 3.5-7 kg, coho; 2-4 kg, sockeye; 6-18 kg, chinook (the largest recorded chinook was 56.8 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.

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 third or 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 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 freshwater. Chinook mature at age three to seven years. Jacks are common among Chinook, coho and sockeye.

Adult coho generally return from late summer and early fall. They 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 3 to 6 years. Sockeye that live exclusively in fresh water are called kokanee.

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 mature in the 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 B.C. 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 vast food webs in oceanic, estuarine, freshwater and terrestrial, ecosystems by providing nutrients every year during their migration to the rivers and lakes to spawn. Salmon are also a major part of First Nations, commercial, and recreational fishing in British Columbia.

DFO Science is shifting focus from single species towards an integrated ecosystem approach to science. Strategy 3 of the Wild Salmon Policy, 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.
- 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 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:

- Georgia Strait Ecosystem Initiative  
<http://www.pac.dfo-mpo.gc.ca/science/oceans/detroit-Georgia-strait/index-eng.htm>
- Fraser River Watershed Watch,
- monitoring of physical and chemical ocean conditions, and
- chlorophyll and phytoplankton timing and abundance.

- Annual State of the Oceans Report, reports on changes in atmospheric and oceanic conditions which have the potential to affect Pacific salmon populations and informs science-based decision-making and DFO's management of fisheries and marine resources in the Pacific Region.

### **2.3. Aboriginal Traditional Knowledge (ATK)/Traditional Ecological Knowledge (TEK)**

Traditional Ecological Knowledge (TEK) held by Aboriginal peoples and communities, and non-Aboriginal communities, including industry, academia, and public sectors, is cumulative knowledge gathered over generations and is regionally and locally specific. The growing awareness of the value of TEK is reflected in the increasing requirements for TEK to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and all coastal management decision-making processes. TEK is needed to inform and fill knowledge gaps related to the health of salmon stocks and to aid decision making related to development and resource use. Government, and the scientific community acknowledge the need to access and consider TEK in meaningful and respectful ways. However, challenges for resource managers are 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.

In 2008, the Department established the National Centre of Expertise—Traditional Ecological Knowledge (CETEK). It's mandate is to provide the Department with leadership and guidance on the use of TEK for integrated ocean and coastal management. CETEK defines TEK as the knowledge, practices and beliefs acquired through long term observations and experiences, and the wisdom to apply and adapt the observations and experiences to a dynamic environment. Objectives of CETEK include development of a National Strategy to guide the way the Department gathers and uses TEK and a guidebook on how to acquire TEK, integrate with scientific data, and make recommendations on how best to engage Aboriginal and community knowledge holders in the planning and implementation of ocean and coastal management. The Department is leading the development of an operational guidance document on ATK-SARA for SARA practitioners. This document includes input from Aboriginal peoples provided at various nationally coordinated regional workshops.

### **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 forecasts future status of stocks under different scenarios. 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. Programs are required to monitor ecosystem status, species interactions, variations in conditions in marine environments, and biodiversity.

In the Pacific Region, salmon stock assessment advice is provided by the Stock Assessment Section of the Salmon and Freshwater Ecosystem Division. The Stock Assessment Coordinating Committee (SACC) serves as the principal forum in the Region for regional planning and coordination of salmon stock assessment programs across the areas, while the operational programs are delivered by the area-based staff. Delivery of the region-wide salmon assessment program requires scientific and technical expertise to design and lead assessment projects, conduct related research and development, analyse data and report information, provide advice and communicate internally and externally.

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:

- 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 457 discrete Conservation Units.
- 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 CUs in the red zone (i.e. below the lower benchmark), shift to cautionary management in the amber zone (between the lower and upper benchmark), and emphasizes sustainable use in the green zone (i.e. above the upper benchmark).
- A key requirement of the WSP is ongoing monitoring and assessment of the status of 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. 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 Centre for Scientific Advice Pacific (CSAP) Salmon Subcommittee serves as the primary regional forum for peer review and evaluation of scientific research and literature, including TEK, on wild Pacific salmon. CSAP 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. CSAP also coordinates communication of the results of the scientific review and advisory processes. Reports on the status of salmon, environmental and ecosystem overviews, and research documents are available from CSAS web site. ([www.pac.dfo-mpo.gc.ca/sci/psarc/Default.htm](http://www.pac.dfo-mpo.gc.ca/sci/psarc/Default.htm))

## **2.5. Data Sources**

Existing reports on the status of salmon, and environmental and ecosystem overviews, are available from CSAS web site. ([www.pac.dfo-mpo.gc.ca/sci/psarc/Default.htm](http://www.pac.dfo-mpo.gc.ca/sci/psarc/Default.htm))

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-especies/salmon-saumon/index-eng.htm>

Formal salmon abundance forecasts are generally completed by April.

DFO is continuing to implement WSP Strategy 1.2, determination of benchmarks. This work is labour and data intensive. In 2010, benchmarks for Fraser Sockeye were reviewed by the CSAP salmon subcommittee. DFO has scheduled review of benchmarks for southern B.C. chinook in 2011 and Southern B.C. coho in 2012.

As a prelude to the establishment of WSP benchmarks, a Synoptic Assessment of salmon status based on productivity trends is planned for CSAP review in 2011.

## 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 Fraser sockeye CU's and work is underway on WSP pilots in Barkley Sound and the Skeena watershed. Benchmarks for Southern BC Chinook CU's are scheduled to be reviewed in the fall of 2011. 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 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.htm>

Current research projects on salmon and environmental and human induced factors affecting 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, <http://www.pac.dfo-mpo.gc.ca/science/oceans-eng.htm>
- Ongoing research related to improving forecasting ability for salmon stocks and CU's is being conducted by DFO Stock Assessment and the Fisheries & Oceanography Working Group. The annual State of the Pacific Ocean Report is published by the Canadian Science Advisory Secretariat (CSAS) and is available at: [http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2010/2010\\_034-eng.htm](http://www.dfo-mpo.gc.ca/csas-sccs/publications/sar-as/2010/2010_034-eng.htm)
- The Fraser River Environmental Watch program monitors freshwater habitat conditions <http://www.pac.dfo-mpo.gc.ca/science/habitat/frw-rfo/reports-rapports/2010/reports-rapports-10-eng.htm>
- Individual scientists and in collaboration with other organizations (North Pacific Anadromous Fisheries Commission (NPAFC), Pacific Salmon Commission(PSC) are studying salmon production, distribution and survival in North Pacific
- Annual juvenile salmon surveys monitor the distribution and survival of salmon in their early marine life history.
- Pink salmon action plan is investigating the potential impacts of finfish aquaculture on wild salmon. <http://www.pac.dfo-mpo.gc.ca/science/aquaculture/pinksalmon-saumonrose/index-eng.htm>
- Coded wire tag improvement program. A 5-year program began in 2009 to improve the quality and quantity of data used to monitor the survival, production, and fishing impacts on Chinook salmon stocks in Canada and U.S. as part of the 2008 Pacific Salmon Treaty Agreement.
- Sentinel stocks program. Spawning escapements for natural Chinook salmon stocks in northern BC, Fraser River, West Coast of Vancouver Island, Puget Sound, and coastal

Oregon are being closely monitored to provide critical information the assessment of the Chinook salmon resource as part of the 2008 Pacific Salmon Treaty Agreement.

### **3. SOCIAL, CULTURAL, AND ECONOMIC 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 Aboriginal communal commercial fishery, the recreational and commercial fishing sectors, the processing sector and the export market. Where possible this summary highlights information specific to the South Coast.

#### **3.1. Aboriginal Participation**

First Nations have a communally-held right to fish for food, social and ceremonial (FSC) purposes. In addition to this right, there is a strong interest in economic opportunities to fisheries. Appendix 5 provides background and details with regard to the Southern B.C./Fraser River First Nations Fishing Plan.

##### *Food, Social and Ceremonial:*

In the 1990 Supreme Court of Canada decision in *R. vs. Sparrow*, the Court held that after conservation and other valid legislative objectives, Aboriginal rights to fish for food, social and ceremonial purposes have priority over all other uses of the fishery. Three modern treaties (Nisga'a Final Agreement, Tsawwassen First Nation Final Agreement (TFA) and Maa-nulth First Nations Final Agreement (MNA) have been ratified in British Columbia. These agreements articulate the Aboriginal right to food, social and ceremonial harvest of fish and describe the role for First Nations in fisheries management.<sup>1</sup>

As part of the Aboriginal Fisheries Strategy (AFS), DFO negotiates FSC allocation agreements with aggregate groups of nations, or with individual First Nations. These agreements may cover a number of species and many also cover co-management of the fishery. Currently within the Pacific Region, there are FSC agreements with 78 First Nations that include salmon, 37 of which are in the South Coast and Lower Fraser Area. In addition to AFS, the Aboriginal Aquatic Resources and Oceans Management Program (AAROM) provides funding to qualifying Aboriginal groups to form aquatic resource and oceans management organizations capable of hiring or contracting skilled personnel to allow them to participate effectively in decision-making and advisory processes. For 2010-2011, there were 23 AAROM agreements in the Pacific Region, 15 of which are in the South Coast.

##### *Commercial:*

Aboriginal commercial harvest opportunities are managed on the same priority as the commercial fishery. The landings and value attributable to Aboriginal commercial harvest are

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<sup>1</sup> 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 and MNA agreements can be found on the B.C. Treaty Commission website at [www.bctreaty.net](http://www.bctreaty.net).

included in the values reported for the commercial sector below. Participation in the commercial salmon fishery provides socio-economic benefits to Aboriginal communities and individuals from fishery revenues and employment-generated income.

Two licence categories (N and F) identify communal aboriginal participation within the commercial salmon fishery. Both licence categories are held communally and allow Aboriginal communities to designate vessels and individual fishers 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 2010. Of the 119 F (Communal Commercial) licences in 2010, 70 are for the South Coast.

In addition, 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 9% of A licences in the South Coast were reduced fee licences.

Economic opportunities for salmon are provided to First Nations in the lower Fraser and Somass Rivers through the provision of Aboriginal communal commercial fishing licences based on licence eligibilities acquired through DFO programs. In addition, commercial fishing licence eligibilities acquired by the Department through a voluntary relinquishment process funded by DFO aboriginal programs have been used to support the First Nations Inland Demonstration Fisheries projects. Since 1994, DFO has acquired a total of 343 commercial salmon licence eligibilities under these programs (including the ATP and PICFI). In the 2010 season, 197 of these salmon licence eligibilities were used to support Inland Demonstration Fisheries projects, 126 were allocated to coastal First Nations under the ATP, and 20 were unallocated. **The Demonstration Fisheries proposed for 2011 are described in Appendix 5 (section 5.5).**

The Tsawwassen First Nations and Maa-nulth First Nations also have commercial fisheries covered by Harvest Agreements outside of the Treaty. The Tsawwassen agreement came into effect in April 1, 2009, while the Maa-nulth agreement will come into effect in April 1, 2011.

### **3.2. Recreational Sector**

**Non-commercial, or 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 economic activity. In 2005, all sport fishing and its associated activities contributed \$287.8 million to the GDP and 7,700 jobs to the economy of B.C. This was 43 percent of the GDP value of all fisheries in B.C., including aquaculture. Saltwater sport fishing accounted for 55% of this economic activity.<sup>2</sup>**

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<sup>2</sup> BCStats. 2007. British Columbia's Fisheries and Aquaculture Sector. [http://www.bestats.gov.bc.ca/data/bus\\_stat/busind/fish/BC-Fisheries-Aquaculture-Sector-2007.pdf](http://www.bestats.gov.bc.ca/data/bus_stat/busind/fish/BC-Fisheries-Aquaculture-Sector-2007.pdf)

The national Survey of Recreational Fishing in Canada<sup>3</sup>, conducted every five years, provides an estimate of individual expenditures and investment for recreational fishing. In 2005, the combined tidal and freshwater fisheries of B.C. were the second largest recreational fisheries in Canada in terms of direct and package expenditures, and third largest in terms of investments. Recreational fishing in B.C. accounted for about 32% of expenditures on fishing packages in Canada, and 21% of direct expenditures and investments (table below).

In the tidal recreational fishery, salmon represented about 60% of direct expenditures and investments and about 72% of package expenditures. Salmon fishing in the regions of Johnstone and Georgia Straits, Barkley Sound and Western Vancouver Island<sup>4</sup> represented approximately 80% of the direct expenditures and investments attributed to salmon tidal recreational fishing; these expenditures were associated primarily with chinook and coho fishing. In addition, salmon represented about 21% of the total expenditures in the B.C. freshwater recreational fishery.

**Recreational Fishing Direct and Package Expenditures and Investments and Amount  
Attributable to Salmon, 2005 (thousands of dollars)**

	<b>Direct</b>	<b>Package</b>	<b>Investments<sup>a</sup></b>	<b>Total</b>
Canada Total	1,947,000	487,000	2,585,000	5,019,000
B.C. Tidal Water				
Total	220,686	139,493	267,845	628,024
<i>Salmon</i>	136,051	99,748	169,861	405,660
B.C. Freshwater				
Total	189,890	14,818	275,187	479,895
<i>Salmon</i>				100,000 <sup>b</sup>

Source: DFO. National Recreational Fishing Survey in Canada 2005. <http://www.dfo-mpo.gc.ca/stats/rec/can/2005/index-eng.htm>

<sup>a</sup> Major purchases and investments wholly attributable to fishing.

<sup>b</sup> Source: GSGislason and Associates. 2009. Freshwater Sport Fishing in British Columbia. (Based on DFO 2005 national survey) <http://www.gofishbc.com/docs/freshwater%20sport%20fishing%20in%20bc.pdf>

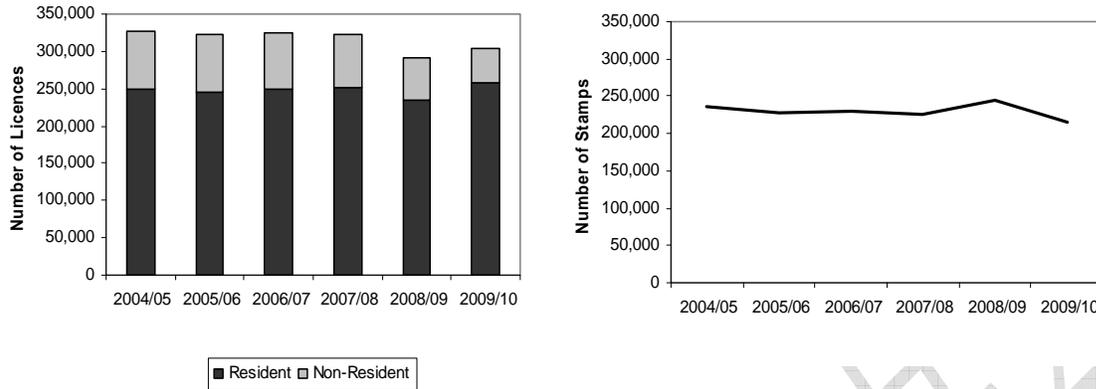
In order to fish for salmon an angler needs either a tidal or a freshwater licence; however, in order to keep salmon the licence must also have a Pacific Salmon Conservation Stamp. Since undertaking 2005 survey, there has been a decline in the total number of tidal water licences issued by DFO, largely driven by a substantial decline in non-resident licences (figure below). During the same time, the number of Pacific Salmon Conservation Stamps also declined slightly. The 2010 national survey has been completed, and the results are anticipated in late 2011.

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/fisheries-peche/smon/sfab-ccps/docs/rec-vision.pdf>).

<sup>3</sup> DFO. National Recreational Fishing Survey in Canada 2005. National and provincial summary information online at: <http://www.dfo-mpo.gc.ca/stats/rec/can/2005/index-eng.htm>

<sup>4</sup> These are the areas as defined in the National Recreational Survey.

## Tidal Water Recreational Fishing Licences and Pacific Salmon Conservation Stamps Sold, 2004/05 to 2009/10



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

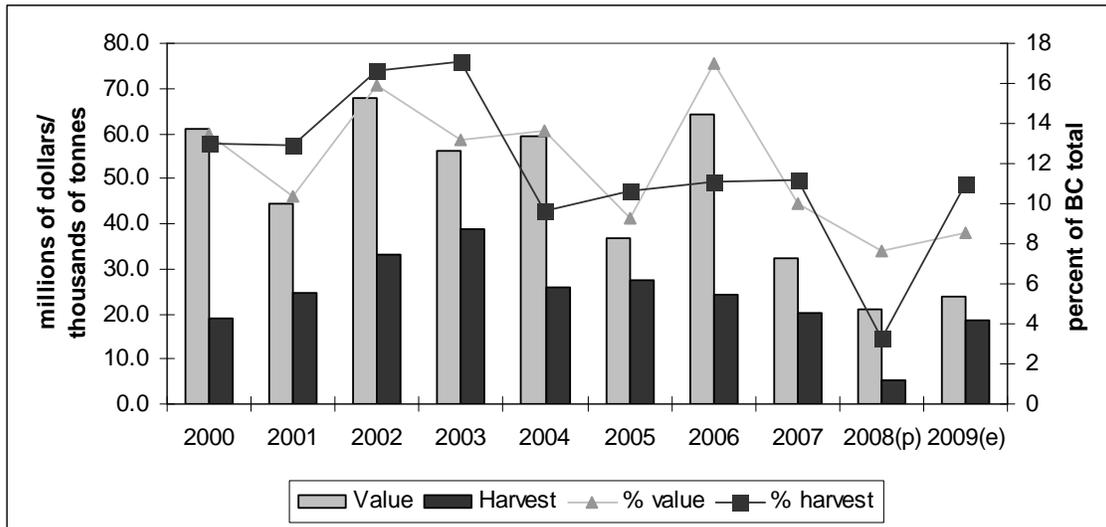
### 3.3. Commercial Sector

In B.C., the salmon fishery is a limited access, competitive fishery<sup>5</sup>; however, several parts of the fishery have operated under individual quotas during the past five years. Since 2005, four areas using seine and troll gear participated in demonstration fisheries with alternative implementations of individual quotas. In addition, there have been several commercial First Nations demonstration fisheries in inland B.C.

During the last decade, salmon contributed an average of 12% of the landed value and volume of B.C. wild caught seafood (figure below). In 2009 dollars, the value ranged from a high of \$68 million in 2002 to a low of almost \$21 million in 2008. On average, sockeye was the most important species in terms of landed value, followed by chinook.

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

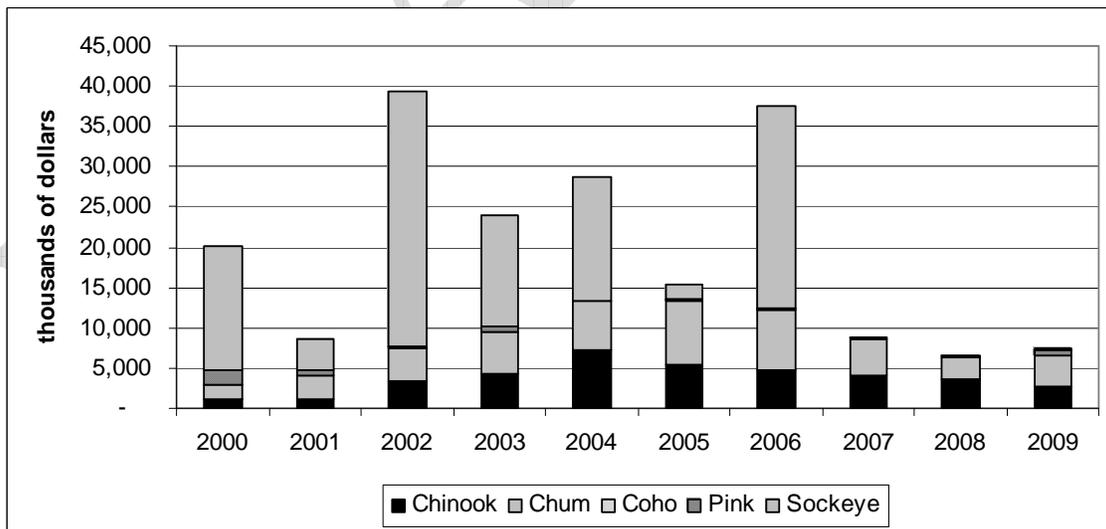
**Salmon landed value (2009 dollars) and harvest, and percent of value and landed weight as a share of total B.C. wild caught seafood**



Source: British Columbia Seafood Industry Year in Review. Various years. B.C. Ministry of Environment. (p) preliminary; (e) estimate. <http://www.env.gov.bc.ca/omfd/index.html>

During the past decade, the South Coast fishery was responsible for an average of 35% of the volume of salmon landings and 40% of the landed value. Like landings, the landed value of the South Coast salmon harvest has been variable and does not have an overall trend up or down (figure below). The most significant impact is due to the collapse of the Fraser sockeye harvest in 2007 to 2009.

**South Coast salmon value by species, 2000-09 (thousands of 2009 dollars)**



Source: DFO Pacific, Regional Data Unit.

Salmon licence values have declined steadily since 2005, reflecting poor returns to the fleet.<sup>6</sup> A 2007 snap shot of the financial performance of the fleet indicated negative overall returns for gillnet and seine fleets in the absence of diversification into other fisheries.<sup>7</sup> The results suggested a positive financial performance for the troll fleet, which was enhanced further by participation in other fisheries. Detailed tables for each fleet (gillnet, seine and troll) are available within the document (Nelson, 2009). **DFO is undertaking an update and expansion of the financial performance of the fleets using data for 2009 to look at financial performance by area.<sup>8</sup> Given the continued low harvest values in 2009, it is unlikely that the results will show an improvement in financial performance of the fleets.<sup>9</sup>**

### 3.4. Processing Sector

Since 2000, salmon accounted for an average of 25% of the total wholesale value from seafood processing in B.C.<sup>10</sup>. Processing wild caught salmon provided about 1,500 positions in 2005, or about 28% of the B.C. total<sup>11</sup>. Based on 2003-06 landings data, approximately 80% of this employment was to process domestic landings, with processing occurring primarily in the Greater Vancouver (47%) and the Skeena-Queen Charlotte (38%) regional districts.<sup>12</sup> 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.

### 3.5. Export Market

Over the five-year period, 2005 to 2009, B.C. exported wild salmon to 63 countries. On average over this period, the United States accounted for 26% of the export value (\$24.5 million in 2009 dollars), followed by the United Kingdom (23% and \$21.8 million) and Japan (10% and \$9.3 million).

Salmon export value declined by approximately 49% between 2005 and 2009 (figure below). While all species experienced a decline, it was not uniform. The values for coho and pink salmon have been least affected, with declines of 21% and 22% respectively. In contrast, the export values for sockeye, chinook and chum have declined by 47%, 61% and 67%, respectively.

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<sup>6</sup> Nelson, Stuart. 2010. West Coast Fishing Fleet: Analysis of Commercial Fishing Licence, Quota, and Vessel Values as of March 31, 2010. <http://www.dfo-mpo.gc.ca/Library/342459.pdf>

<sup>7</sup> Nelson, Stuart. 2009. Pacific Commercial Fishing Fleet: Financial Profiles for 2007. <http://www.dfo-mpo.gc.ca/Library/336686.pdf>

<sup>8</sup> The two year lag is a result of lags in data availability for various fleets.

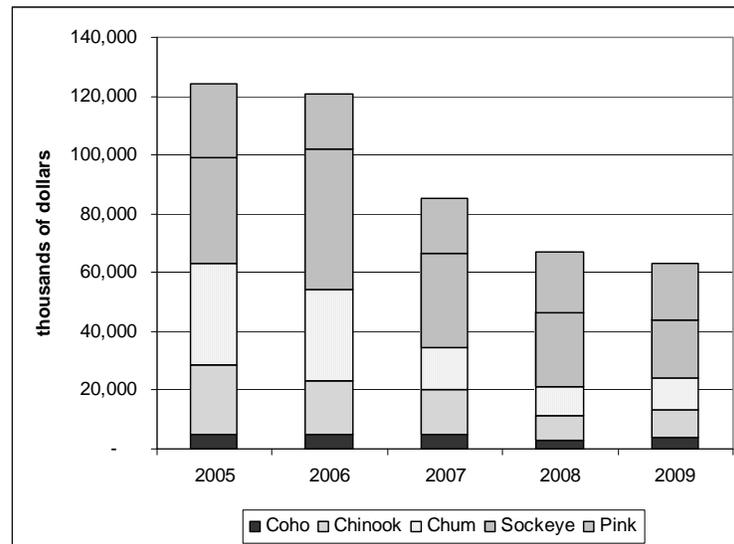
<sup>9</sup> The finalized report will be available through the DFO library (<http://waves-vagues.dfo-mpo.gc.ca/waves-vagues/>). GSGislasen and Associates Ltd. 2011. The British Columbia Salmon Fleet Financial Profile 2009.

<sup>10</sup> British Columbia Seafood Industry Year in Review. Various years. BC Ministry of Environment. <http://www.env.gov.bc.ca/omfd/index.html>

<sup>11</sup> BC Ministry of Environment. 2009. 2005 British Columbia Seafood Processing Employment Survey Results. <http://www.env.gov.bc.ca/omfd/fishstats/proc/employ-05.html>

<sup>12</sup> Fraser and Associates. 2008. Linkages Between the Primary Fish Production and Fish Processing Sectors in British Columbia.

## B.C. Salmon Export Value by Species, 2005-09 (2009 dollars)



Source: Statistics Canada. January 2011.

## 4. MANAGEMENT ISSUES

### 4.1. 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.

#### 4.1.1. Wild Salmon Policy

The WSP, which was approved in 2005, sets out a process for the protection, preservation and rebuilding of wild salmon and their marine and freshwater ecosystems for the benefit of all Canadians. The goal of Canada's Wild Salmon Policy (WSP) is to restore and maintain healthy and diverse salmon populations and their habitats for the benefit and enjoyment of the people of Canada in perpetuity. To achieve that goal, the WSP requires that biological status be assessed for all geographically, ecologically, and genetically distinct populations, or Conservation Units (CU's). Key elements of the policy include:

- Conservation is the highest priority for resource management;

- Ecosystem considerations will be incorporated in decision making;
- An inclusive planning process will be established to ensure objectives of the WSP are met and choices about salmon conservation reflect societal values; and
- Conservation goals will be clearly defined and progress in achieving them will be publicly evaluated.

Additional details regarding WSP and its implementation can be found at:

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

## **4.2. International Commitments**

### **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.

The Pacific Salmon Commission, 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 interception salmon fisheries. Under the terms of the Treaty, the responsibility for in-season management of all species rests with the Parties to the agreement. One exception is the in-season management of Fraser River sockeye and pink salmon which is specifically delegated to the Fraser River Panel with assistance from the Pacific Salmon Commission.

To properly account for the full impact of fishing on chinook and coho stocks, the Pacific Salmon Treaty specifies that all parties develop programs to monitor all sources of fishing related mortality on chinook and coho. Catch monitoring programs are being modified to include estimates of encounters of all legal and sub-legal chinook and coho, as well as other salmon species, in all fisheries.

Coded-wire tag 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. An expert panel review concluded the coded-wire tag system is the only technology currently capable of providing the data required for Pacific Salmon Treaty management regimes for chinook and coho salmon, thus confirming the approach being employed.

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. These new chapters came into effect on January 1, 2009. Chapter 4, which

covers Fraser River Sockeye and Pink salmon, was set to expire on December 31, 2010. Chapter 4 was recently renewed and ratified on December 21, 2010 and came into force on January 1, 2011.

All management regimes under Annex IV continue to be implemented by Fisheries and Oceans Canada and US agencies for the 2011 season. 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 fishery and 30% below the 1999 catch ceiling in the Canadian West Coast Vancouver Island 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 aggregate abundance based management fisheries, as well as the individual stock-based management 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 in Canada; (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 renewed chapter remains the same as the 1999 agreement and will remain in place for the 2011 and 2012 fishing seasons. Commissioner Guidance accompanies Chapter 4 and includes supplementary guidance to inform the sections of the chapter that deal with Canada's Aboriginal Fisheries Exemption, the number of stock groups used for the purpose of computing aggregate total allowable catch, concentration of the US fishing effort on the most abundant management groups and acknowledgment that a small rate of incidental harvest may occur when there is little or no total allowable catch. It should be noted that the small rate of incidental harvest is not new, but affords more transparency by including it in the written guidance.

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 framework established in 1999.

Chapter 6 (Chum Salmon, Southern BC and Washington State): The current Chum chapter includes a 20% fixed harvest rate in Johnstone Strait, linking the U.S. catch ceiling to the abundance of Fraser River chum (i.e. in the case of a terminal run size below 900,000 chum salmon, the U.S. would restrict its fisheries in Area 7 and 7A to 20,000 chum), and the

establishment of a "critical level" for southern-bound chum salmon of one million. There is also a defined annual start date of October 10, for U.S. fisheries in Areas 7 and 7A.

### **4.3. Oceans and Habitat Considerations**

#### **4.3.1. Oceans Act**

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

For more information on the *Oceans Act*, please visit:  
[http://www.pac.dfo-mpo.gc.ca/oceans/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/oceans/default_e.htm)

#### **4.3.2. Pacific North Coast Integrated Management**

As part of Canada's Oceans Strategy, DFO has initiated an integrated management planning process for the Pacific North Coast Integrated Management Area (PNCIMA). The PNCIMA is bounded by the BC-Alaska border, the base of the shelf slope and the mainland, stretching south as far as Campbell River and the Brooks Peninsula. The PNCIMA initiative marks a shift toward a broader ecosystem approach to ocean management. This is consistent with the Government of Canada's overall direction and with Fisheries and Oceans Canada's new Wild Salmon Policy. The PNCIMA initiative is bringing the area's stakeholders together to develop an integrated management plan for the region that achieves conservation, sustainable resource use, and economic development goals for oceans and coastal areas. The PNCIMA initiative will also function as an umbrella for various ocean management processes, complementing and linking existing processes and tools, including IFMPs.

#### **4.3.3. 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 Bowie Seamount, designated in 2008, is 180 km west of Queen Charlotte Islands (Haida Gwaii) rising from a depth of over 3,000 m to within 25 m of the sea surface. Work is ongoing to consider MPA designations for other areas along the Pacific Coast, including the Race Rocks area off Rocky Point south of Victoria (currently designated as a Provincial Ecological Reserve) and the Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs.

#### **4.3.4. National Marine Conservation Areas**

The Canada *National Marine Conservation Areas Act* provides for the establishment of National Marine Conservation Areas (NMCAs). The Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site (Gwaii Haanas Marine Area) was established in June 2010. As part of the establishment process Parks Canada, Fisheries and Oceans Canada and the Council of the Haida Nation have developed an Interim Management Plan for the Gwaii Haanas Marine Area in consultation with stakeholders which will be implemented in 2011. The Interim Management Plan includes an Interim Zoning Plan which identifies six Fully Protected Areas. Commercial and recreational fishing is not permitted in these areas. Development of a long term management plan for the Gwaii Haanas Marine Area will take place over a five year period following establishment in consultation with the commercial and recreational fishing sectors through the Department's established integrated fishery planning and advisory processes.

DFO is also working with other federal and provincial agencies to coordinate efforts towards establishing a national system of Marine Protected Areas to fulfil 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: [www.pac.dfo-mpo.gc.ca/oceans/index-eng.htm](http://www.pac.dfo-mpo.gc.ca/oceans/index-eng.htm)

#### **4.3.5. Sustainable Fisheries Framework**

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, and inclusive manner, and provides the foundation for new conservation policies to implement the ecosystem and precautionary approaches to fisheries management. These new policies include;

- Managing the Impacts of Fishing on Sensitive Benthic Areas;
- New Fisheries for Forage Species; and,
- A Fishery Decision-Making Framework Incorporating the Precautionary Approach.

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>

#### **4.3.6. 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 1990 Supreme Court of Canada Sparrow decision;

- greater involvement of First Nations in the management of fisheries; and
- increased participation in commercial fisheries (Allocation Transfer Program or 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.

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

As part of the reform of Pacific fisheries and implementation of the Pacific Integrated Commercial Fisheries Initiative (PICFI), announced in 2007, DFO is looking for opportunities to increase First Nations participation in economic 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 in-river “demonstration fisheries” have been initiated where some of these facets of potential future fisheries have been explored. The Department is also working with First Nations and others with an interest in the salmon fishery to have better collaboration of fishery planning and to improve fisheries monitoring and catch reporting for all fish harvesters.

Through the Co-Management and Enhanced Accountability elements of PICFI, DFO is also continuing to work toward improved engagement and collaboration with First Nations and other interests in fisheries management, as well as the need for enhanced fisheries monitoring, catch reporting, enforcement and steps towards a new traceability program for salmon.

#### **4.3.7. 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 and First Nations’ aspirations to be more involved are supported. The Government of Canada has committed \$175 million over five years to implement the initiative. PICFI builds on fisheries reform work begun in response to the 2004 reports of the First Nations Panel on Fisheries and the Joint Task Group on Post-treaty Fisheries, as well as subsequent discussions in a wide variety of forums that have confirmed the need for PICFI.

#### **4.3.8. Fishery Monitoring and Catch Reporting**

A complete, accurate and verifiable fishery monitoring and catch reporting program is required to successfully balance conservation with the objectives of optimal harvest levels. Across all fisheries, strategies are being developed to improve catch monitoring programs by clearly identifying information requirements and their supporting rationale for each specific fishery and evaluating the current monitoring programs to identify gaps. Managers and harvesters will work together to address those gaps over time and to clarify the associated roles and responsibilities of the Department and harvesters. The Department is currently consulting on the “Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries – A Discussion Paper”. The paper proposes a consistent approach to determining the level of monitoring required. For additional information see the DFO Consultation website:

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

#### **4.3.9. Committee on the Status of Endangered Wildlife Species Assessments**

COSEWIC was formed in 1977 to provide Canadians with a single, scientifically sound classification of wildlife species at risk of extinction. COSEWIC began its assessments in 1978 and has met each year since then to assess wildlife species.

With the implementation of SARA, COSEWIC has been established as an independent body of experts responsible for identifying and assessing wildlife species considered to be at risk. This is the first step towards protecting wildlife species at risk. Subsequent steps include COSEWIC reporting its results to the Canadian government and the public, and the Minister of the Environment’s official response to the assessment results. Wildlife species that have been designated by COSEWIC may then qualify for legal protection and recovery under SARA.

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

[http://www.cosewic.gc.ca/rpts/Detailed\\_Species\\_Assessments\\_e.html](http://www.cosewic.gc.ca/rpts/Detailed_Species_Assessments_e.html)

#### **4.3.10. 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 [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca).

In addition to the existing prohibitions under the *Fisheries Act*, 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. Species listed as special concern are not included in these prohibitions.

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-especies/listing-eng.htm>.

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

1. Basking Shark - Endangered
2. Blue whale – Endangered
3. Fin whale – Threatened
4. Green sturgeon – Special Concern
5. Grey whale – Special Concern
6. Harbour porpoise – Special Concern
7. Humpback whale – Threatened
8. Killer whale northern resident population – Threatened
9. Killer whale southern resident population – Endangered
10. Killer whale offshore population – Threatened
11. Killer whale transient population – Threatened
12. Leatherback turtle – Endangered
13. Longspine Thornyhead – Special Concern
14. North Pacific right whale – Endangered
15. Northern Abalone – Endangered
16. Olympia oyster – Special Concern
17. Rougheye Rockfishes Types I & II – Special Concern
18. Sea otter – Special Concern
19. Sei whale – Endangered
20. Sixgill Shark – Special Concern
21. Soupfin Shark (Tope) – Special Concern
22. Steller sea lion – Special Concern

Some marine or anadromous species of fish designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) that are currently under consideration for listing under SARA include:

Bocaccio Rockfish – Threatened  
Canary Rockfish – Threatened  
Yelloweye Rockfish – Special Concern  
Darkblotched Rockfish – Special Concern  
Quillback Rockfish – Threatened  
Yellowmouth Rockfish – Threatened

COSEWIC has scheduled an assessment for Eulachon for April 2011.

### **White Sturgeon**

In August of 2006, four populations of white sturgeon (Upper Fraser, Upper Columbia, Nechako, and Kootenay River) were listed as Endangered under SARA, while two populations (Lower Fraser and Mid Fraser) were not. Only those populations listed under SARA are subject to the general prohibitions.

A SARA recovery strategy is currently being developed for the four listed populations, which will set a recovery goal and supporting objectives, and will also incorporate management activities for the two non-listed populations.

### **Humpback Whales**

In 2003, the North Pacific Humpback Whale population was assessed by COSEWIC, and was subsequently listed as Threatened under SARA in January 2005.

A SARA recovery strategy has been prepared and will be posted for a 60 day comment period on the SARA Registry in the spring of 2011 [http://www.sararegistry.gc.ca/species/speciesDetails\\_e.cfm?sid=148](http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=148). Threats identified in the strategy include entanglement, vessel strike, acoustic disturbance and prey reduction.

### **Salmon**

Three populations of salmon (Cultus Lake sockeye, Sakinaw Lake sockeye, and Interior Fraser coho) have been designated as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and one has been designated as Threatened (Okanagan Chinook). Following extensive public and stakeholder consultation processes for each population, the Minister of Environment, in consultation with the Minister of Fisheries and Oceans, did not include these populations on Schedule I of SARA. However, recovery efforts are continuing for each population.

DFO, in cooperation with the Interior Fraser Coho Recovery Team, have 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 [http://www.pac.dfo-mpo.gc.ca/species/salmon/InteriorFraserCohoCS/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/species/salmon/InteriorFraserCohoCS/default_e.htm).

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

[http://www.pac.dfo-mpo.gc.ca/species/salmon/cultus\\_sockeye\\_cs/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/species/salmon/cultus_sockeye_cs/default_e.htm) and [http://www.pac.dfo-mpo.gc.ca/species/salmon/sakinaw\\_sockeye\\_cs/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/species/salmon/sakinaw_sockeye_cs/default_e.htm).

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

### **Whale, Turtle and Basking Shark Sightings**

The Department welcomes assistance in the reporting of any whale, turtle, or Basking Shark sightings or entanglement. Sightings for 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 the recovery planning under SARA.

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

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

Fax: (604) 659-3599

Email: [sightings@vanaqua.org](mailto: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](mailto: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: 1-866-50-SHARK

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

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

#### **4.3.11. Northern and Southern Resident Killer Whales**

Northern resident killer whales are listed as Threatened and southern resident killer whales are listed as Endangered under SARA. There are approximately 87 southern residents and approximately 250 northern residents. The final Recovery Strategy for Northern and Southern Resident Killer Whales in Canada was finalized in March 2008, and can be viewed at [http://www.sararegistry.gc.ca/document/default\\_e.cfm?documentID=1341](http://www.sararegistry.gc.ca/document/default_e.cfm?documentID=1341). Critical habitat areas and attributes were delineated and four key anthropogenic threats were identified: quality and abundance of prey, contaminants, physical disturbance, and acoustic disturbance.

##### *Prey:*

Ongoing diet research continues to indicate that resident killer whales feed primarily on chinook salmon during the summer and fall. The summer and fall spatial and temporal distribution of resident killer whales in coastal waters appears to be associated with the timing and abundance of chinook salmon. Winter and spring feeding and distribution of killer whales are less well understood. Research indicates that chinook salmon represents about 90% of the resident killer whales diet in their SARA designated critical habitat during the months of July and August based on genetic sampling of scales and tissue recovered from feeding events. Chinook are available year round and have a high fat content and caloric value. Research indicates that there is a

significant correlation between chinook salmon abundance and killer whales birth rates and survival. Consistent with the Wild Salmon Policy, ecosystems requirements will be incorporated into the South Coast Chinook Management Framework currently being developed. Future research and monitoring will inform whether additional management actions are required to support the recovery of resident killer whales.

The IFMP reflects the renewed Pacific Salmon Treaty signed in January 2009. The Pacific Salmon Treaty is intended to ensure successful chinook conservation and fishery management measures are implemented under the Treaty to recover, maintain and protect salmon stocks in Canada and the U.S. A comprehensive, scientific, abundance-based framework is used to manage all chinook fisheries subject to the Treaty which sets a numerical limit for catch based on abundance of chinook. The measures in the renewed Treaty have further reduced the West Coast of Vancouver Island Canadian total allowable chinook catch by 30% and the South East Alaska total allowable chinook catch by 15%. These measures will reduce the chinook harvest in these areas by approximately 100,000 chinook on average based on pre-renewal arrangements. In addition, the status of chinook populations is monitored and a range of additional harvest reductions are outlined under the Treaty if specific chinook stocks or stock groups decline below specified levels to protect and conserve biological diversity and production under a range of conditions. The IFMP also includes domestic conservation measures including harvest reductions in a range of First Nation, recreational and commercial fisheries to protect specific stocks of concern including West Coast of Vancouver Island, Lower Georgia Strait, and Fraser River chinook populations. All of these chinook measures are intended to protect and conserve a productive chinook resource in support of sustainable harvests and a healthy ecosystem that benefits resident killer whales and other species.

#### *Contaminants:*

There are numerous chemical and biological pollutants that may directly or indirectly impact resident killer whale, ranging from persistent organic pollutants to antibiotic resistant bacteria and exotic species. Recent studies indicate resident killer whales have high levels of some contaminants with males having the highest levels.

#### *Disturbance:*

All cetaceans, including resident killer whales, are being subjected to increasing amounts of disturbance from vessels, aircraft and anthropogenic noise. Industrial activities such as dredging, pile driving, construction, seismic testing, military sonar and other vessel use of low and mid-frequency sonars impact the acoustic environment. The means by which physical and/or acoustic disturbance can affect resident killer whales at both the individual and population level is not well understood, but may depend on whether the disturbance is chronic or acute.

The Marine Mammals Regulations under the *Fisheries Act* and prohibitions under *SARA* specifically prohibit the disturbance and harm of killer whales. Guidelines for marine mammal viewing have also been developed. To avoid disturbing killer whales and other marine mammals, fish harvesters are advised to follow the *Be Whale Wise (BWW); Marine Wildlife*

*Guidelines for Boaters, Paddlers and Viewers*, which are available from local Fishery Offices or on-line at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/mammals-mammiferes/index-eng.htm>

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 attributes. 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.

#### **4.3.12. Marine Mammal Management Plans**

DFO has developed SARA Management Plans for four marine mammals listed as Special Concern: offshore killer whale, harbour porpoise, grey whale, and Steller sea lion. These plans are posted on the SARA Registry and describe species biology, distribution, and threats, as well as recommending potential actions to protect these species, and mitigate impacts from key threats. Several key threats to these species include oil spills, chemical pollution, acute noise stress, reduced prey availability, habitat degradation and fishing gear entanglement. These plans can be viewed on the SARA registry at: [http://www.sararegistry.gc.ca/default\\_e.cfm](http://www.sararegistry.gc.ca/default_e.cfm)

*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.

If you experience depredation by whales, please report the incident by email [MarineMammals@pac.dfo-mpo.gc.ca](mailto:MarineMammals@pac.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 [www.vanaqua.org](http://www.vanaqua.org). You may also participate in a formalized logbook program by calling or contacting the Network.

More information on COSEWIC, SARA, and the listing process can be found at:

[www.cosewic.gc.ca/](http://www.cosewic.gc.ca/)

[www.dfo-mpo.gc.ca/species-especies/home\\_e.asp](http://www.dfo-mpo.gc.ca/species-especies/home_e.asp)

[www.sararegistry.gc.ca/](http://www.sararegistry.gc.ca/)

Contacts for marine mammal inquiries:

Fisheries and Oceans Canada Contacts:

[MarineMammals@pac.dfo-mpo.gc.ca](mailto:MarineMammals@pac.dfo-mpo.gc.ca)

Paul Cottrell (604) 666-9965

John Ford (250) 729-8375

#### **4.3.13. Environment Canada Assessing the Impact of Salmon Gill Net Fishing on local Seabird Populations**

Environment Canada is looking for your assistance in assessing the impact of salmon gill net fishing on local seabird populations

A number of seabird species around the world have experienced significant population declines in recent years; fisheries by-catch is a contributing factor.

Seabird by-catch has been reported in all types of fisheries in BC as well as in fisheries of neighboring Alaska and Washington State. However, the extent of entanglement in today's BC salmon gill net fishery, and its impact on local seabird populations, is not well documented.

Environment Canada (EC) is responsible for ensuring fishing activities do not compromise bird conservation. With this in mind, EC is drafting Best Management Practices under the *Migratory Birds Convention Act* to minimize the incidental take of birds during the operation of legitimate activities such as fishing, forestry, mining and agriculture. Consequently, EC is committed to determining how, when and where gill net fishing may impact local seabirds and to identify potential ways to mitigate impacts.

EC, in collaboration with DFO, First Nations, non-government organizations, and other coastal communities, has initiated a multi-faceted program to answer this question.

To assist us with our efforts, we would appreciate obtaining any dead birds found or reported in gill nets and/or found floating dead on fishing grounds. Please report all incidents to our 24h reporting line: 1-866-431-BIRD (2473).

For additional information, please contact: Laurie Wilson, Wildlife Toxicologist, EC – Canadian Wildlife Service, Delta, BC. Tel: (604) 940-4679 or email: laurie.wilson@ec.gc.ca.

#### **4.3.14. Salmon Enhancement Program**

The Salmonid Enhancement Program (SEP) in British Columbia, Canada is comprised of nearly 300 projects across BC 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 (per aquarium).

Appendix 13 details proposed enhancement targets for hatcheries and managed spawning channels operated by DFO or contracted to community and First Nation groups.

For the 2011 brood year, targets are included for: major DFO OPS facilities, contracted Community Economic Development Program hatcheries (CEDP), projects funded by DFOs Aboriginal Fisheries Strategy (AFS) and larger or more complex Public Involvement Projects (Designated Public Involvement or DPI) operated by volunteers.

Not detailed here 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; however, targets are not included as management of these species is under the authority of the Province of British Columbia. SEP also works with First Nations, industry, community groups and other government agencies to enhance and restore salmon habitats.

DFO is aware of potential interaction of enhanced fish with wild stocks. This can take the form of greater than target exploitation rates on wild stocks due to abundant hatchery stocks; predation

or competition for available food sources; or negative genetic effects. Hatchery programs are designed to avoid or minimize the risk of negative interactions with wild stocks.

#### **4.3.15. Fishing Vessel Safety**

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

## **5. OBJECTIVES**

### **5.1. Fishery Management Objectives for Stocks of Concern**

#### **5.1.1. Lower Strait of Georgia Chinook**

**The objective for Lower Strait of Georgia (LGS) chinook is to reduce fishery exploitation in known areas of significant impact.**

Chinook escapements to many Lower Strait of Georgia (LGS) systems generally continue to be at low levels, due in large part to poor marine survival. The Cowichan River is the primary indicator of marine survival and exploitation for the LGS fall chinook. In past years, natural spawning chinook have been well below the goal of 6,500 spawners for the Cowichan River since 1998 and well below goal since 2002. However, in 2010 there was an improvement in the escapement to the Cowichan River, with 2500 adults, 1700 jacks and 376 adults collected for broodstock.

LGS chinook are impacted by terminal First Nations fisheries, and mixed stock chinook harvest in 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 and in the Strait of Georgia. Restrictions introduced in recent years (including PST reductions to the WCVI allowable harvest are reducing WCVI commercial troll TAC; restrictions and closures in the terminal and approach areas for recreational harvesters and First Nations) will continue.

Over the next year, the Department will also be consulting on a longer term, comprehensive management framework for all southern BC chinook populations that considers the effects of fishery related impacts, enhancement activities, and habitat and ecosystem status on these populations. Revisions to management actions may be considered based on development of the southern BC Chinook management framework.

### 5.1.2. 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%. The objective for North Coast chinook is to manage in accordance with the allocation policy, and to manage the northern troll fishery to a WCVI chinook exploitation rate of 3.2%.**

For the past several years WCVI chinook have experienced poor marine survival rates and low spawner levels, and are a stock of concern.

Management actions will continue to be required in 2011 consistent with the exploitation rate objective. For purposes of calculating the WCVI allowance for north coast chinook fisheries, all WCVI chinook caught and kept in Canadian fisheries are assumed to be returning in the present year. Fisheries that this limit applies to are the northern troll, Queen Charlotte Islands sport, WCVI troll and WCVI sport. The exploitation rate is measured by Coded Wire Tag (CWT) data gathered from these fisheries. The exploitation rate limit includes chinook caught and kept, as well as an estimate of fishing related mortalities.

As in the past, commercial troll fisheries in the North Coast will be monitored in-season using DNA analysis to minimize impacts on these stocks. While DNA analysis will guide in season management actions, the official measure of success will be made using post-season CWT cohort analysis. **The allowance for mortalities of WCVI chinook in the Area F troll fishery is calculated based on 3.2% of the total WCVI return to Canada as an inseason proxy for exploitation rate and DNA is used inseason to assess this objective.**

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

**The objective for Fraser Spring 4<sub>2</sub> chinook is 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 4<sub>2</sub> chinook until July 15<sup>th</sup>. Fisheries beginning July 15<sup>th</sup> will be managed consistent with the management zone identified for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Fraser Chinook (see section 5.5.4) given timing overlaps between these populations for much of the adult migration period.**

In the 2011 Salmon Outlook, Spring 4<sub>2</sub> chinook has been classified as *stock of concern* given poor survival rates and very poor spawning escapements in recent years.

Fraser Spring 4<sub>2</sub> chinook is one of five management units for Fraser chinook used in the Pacific Salmon Treaty process. This group contains two conservation units spawning in the interior Fraser areas including three populations previously referred to as Early-timed chinook (see Table 7-5). Spring 4<sub>2</sub> chinook return to spawn from early March through late July and migration peaks in June in the lower Fraser River. These populations primarily mature as adults at age-4 (90%) with lower numbers maturing at age-5 (7%) and occasionally at age-3 (3%).

Coded wire tagged (CWT) Nicola River chinook released from the Spius Creek hatchery are the PST exploitation rate indicator stock used to assess survival and exploitation rates of Spring 4<sub>2</sub> in

Canadian and US fisheries. Based on CWT recoveries from fisheries, Fraser Spring 4<sub>2</sub> chinook have historically been encountered in Fraser River First Nation 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. The total Canadian exploitation rates in 2006-07 averaged 43% with marine fisheries accounting for 6.4% of the total. Exploitation rates in US fisheries are low and occur mainly in southern areas and average less than 2%.

There is a high potential for very low abundances of Spring 4<sub>2</sub> chinook in 2011 and subsequent years if poor survival rates persist, given very low spawner abundances in the parental generations. Returns of Spring 4<sub>2</sub> chinook in 2011 will come primarily from a parent generation of approximately 2,500 spawners in 2007. Additional consultations will occur in 2011 if changes are contemplated on fishery plans for First Nations, recreational and commercial harvesters for the Spring of 2012.

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

**The objective for Spring and Summer (age 5<sub>2</sub>) Fraser chinook is to continue rebuilding these populations consistent with the management zones outlined below.**

In the 2011 Salmon Outlook, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook stocks have been classified as *stock of concern* given poor survival rates and declines in spawning escapements compared to the parental generation in recent years.

The Fraser Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook are two of five PST management units for Fraser chinook. This group contains 11 conservation units and includes four populations previously referred to as Early-timed chinook. Spring 5<sub>2</sub> chinook return to the Fraser River to spawn from early March through late July and migration peaks in late June in the lower Fraser. Summer 5<sub>2</sub> chinook has 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.

The Department proposes to use the relationship between the cumulative Catch Per Unit Effort (CPUE) of chinook caught in the Albion chinook test fishery for the period beginning May 1 to the estimated terminal return of Fraser chinook as the basis for a 3 zone management approach described below. Given uncertainty about returns and a lack of pre-season forecast, the Department plans to proceed with management actions consistent with zone 1 (below) unless the test fishery indicates returns are larger.

The management actions for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook below will be in place after July 15 to the end of July. These management zones will also guide fishery management actions for Spring 4<sub>2</sub> chinook in the Fraser River (see section 5.3.3) given that the adult migration timing overlaps for much of the migration period and management actions will affect all three of these management units.

#### **Table 5-1: Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Fraser Chinook Management Zone Approach**

**Management Zones:**

Zone	Predicted Return to the Fraser River	Rationale and Actions
3	Greater than 60,000	<p>Rationale: Populations rebuilding towards maximum sustained yield (MSY) levels.</p> <p>First Nations directed fisheries.</p> <p>Directed recreational and commercial fisheries consistent with Allocation policy.</p>
2	Below or equal to 60,000	<p>Rationale: Caution required to avoid population declines. Populations well below MSY levels.</p> <p>Limited directed fisheries.</p> <p>First Nations directed fisheries subject to abundance.</p> <p>By-catch retention/ limited directed Fraser recreational fisheries may be initiated.</p> <p>Management actions to reduce by-catch or incidental harvest in commercial fisheries.</p>
1	Below or equal to 30,000	<p>Rationale: Significant conservation concerns. Very high risk of extremely low spawning populations.</p> <p>Directed fisheries minimized.</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>

While PST escapement targets and exploitation rate targets have not been formally identified, a number of considerations were used to establish management zones:

- Zone 3: 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 5<sub>2</sub> and ~57,000 Summer 5<sub>2</sub>). In 15 of the past 35 years spawner abundances greater than 60,000 were observed; the highest spawner abundance recorded for these populations was 92,000 in 2003.

- Zone 2: 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. Since a harvest rate of up to 10% may occur in limited directed fisheries, a terminal run of 60,000 was used as a reference point. In 15 of the past 35 years, spawner abundances have been between 30,000 and 60,000.
- Zone 1: The average escapement of Spring and Summer (age 5<sub>2</sub>) Fraser 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; only 5 of the past 35 years had spawner abundances less than 30,000.
- Additional analysis, consultations and discussions on the management zones, escapement targets, and fishery management approaches are planned to further refine the management approach for future seasons. Work is also planned to develop WSP benchmarks for Fraser chinook conservation units. While there is no single formula for selecting lower benchmarks, 40%  $S_{MSY}$  has been suggested as one metric. For Fraser Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook, the stream by stream sum of the estimates of  $S_{MSY}$  is about 138,000, and the estimate of 40% of  $S_{MSY}$  is about 55,000. Further analysis may indicate that a greater total return is required to maintain most conservation units above their lower benchmarks and provide adequate geographic distribution of spawners among conservation units.

The prediction of the return to the Fraser River based on the Albion test fishery catches will be made on June 15. If the predicted return is within 17% of the current management zone, the Department may decide to continue to manage based on the current management zone. A 17% buffer reflects the uncertainty in the regression equation that relates the cumulative Albion catches to date to the estimated terminal run of Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook to the Fraser River, thus minimizing the chance of moving to a lower or higher zone inappropriately.

Currently, there is not a PST indicator stock for these management units, however, information from past CWT recoveries from these populations indicates that Spring 5<sub>2</sub> chinook have been encountered in areas similar to Spring 4<sub>2</sub> chinook. Summer 5<sub>2</sub> chinook are also encountered in the same areas, but relative impacts between fisheries may differ given the later migration timing of these Summer 5<sub>2</sub> stocks.

#### **5.1.5. Interior Fraser River coho, Lower Fraser coho and Strait of Georgia coho**

**The objective for Interior Fraser River coho (including Thompson River coho) is to limit the Canadian exploitation rate to 3% (not including terminal harvest on systems experiencing strong escapements).**

Conservation measures with the objective of reducing harvest related impacts to Interior Fraser coho were first implemented in 1998. Since then, the conservation objective has been clarified to limit the exploitation rate to 3% or less.

Returns in 2011 will be produced from the 2008 brood year escapement of 16,000 fish. Poor marine survivals continue to be an ongoing concern, as do freshwater habitat impacts, both of which will likely continue to limit recovery and further the requirement to continue with actions to limit exploitation.

During May through September, when Interior Fraser coho, Lower Fraser coho and Strait of Georgia coho are encountered in southern BC waters, management actions will range from non-retention to time and area closures. The following areas and fisheries are affected:

- West Coast Vancouver Island (WCVI) troll 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, and
- Commercial, recreational and First Nations fisheries in the Fraser River from early September until mid-October.

#### **5.1.6. Cultus Lake and Late Run 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 exploitation rate floor identified for Late Run Sockeye (currently set at 20%), or b) the exploitation rate that is consistent with recovery objectives 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. For Late run sockeye, abundance based Total Allowable Mortality rate options have been developed (see Section 7.5.4.4).**

Cultus Lake sockeye is a component of the Late Run Fraser River sockeye aggregate which is typically harvested in southern B.C. waters in August and September. Concerns for the entire Late Run aggregate have been acute since 1996 due to a trend of abnormal early migration and associated high levels of pre-spawn and en-route mortality.

The returns of sockeye salmon to Cultus Lake have been particularly low relative to historic averages. To work toward rebuilding this population, late run fishery management actions have been implemented to ensure low to moderate fishery exploitation levels on this stock. Enhancement measures have included fry and smolt releases as well as a captive brood program. Freshwater measures in the past have included: predator control (removal of approximately 16,000 adult northern pikeminnow in 2007), removal of Eurasian watermilfoil and contaminant studies. Studies conducted in 2007 and 2008 were designed to estimate the abundance and behaviour of the pikeminnow population as well as the efficacy of the predator control program. An overview on the recovery activities and the current status of Cultus Sockeye can be found in

the *Status of Cultus Lake Sockeye Salmon* (Bradford et al., 2010), available on-line at: [http://www.dfo-mpo.gc.ca/CSAS/Csas/publications/resdocs-docrech/2010/2010\\_123\\_e.pdf](http://www.dfo-mpo.gc.ca/CSAS/Csas/publications/resdocs-docrech/2010/2010_123_e.pdf)

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

**Objective 1** - Ensure the genetic integrity of the population by exceeding a four-year arithmetic mean of 1,000 successful adult spawners with no fewer than 500 successful adult spawners on any one cycle. This objective secures genetic variability.

**Objective 2** - Ensure growth of the successful adult spawner population for each generation (that is, across four years relative to the previous four years), and on each cycle (relative to its brood year) for not less than three out of four consecutive years. This objective ensures the population is growing.

**Objective 3** - Rebuild the population to the level of abundance at which it can be delisted (designated Not at Risk) by COSEWIC.

**Objective 4** - Rebuild the population to a level of abundance (beyond that of Objective 3) that will support ecosystem function and sustainable use. This long term objective proposes candidate benchmarks for Cultus sockeye that correspond to our current understanding of the dynamics of Cultus sockeye.

The conservation strategy 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. This 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 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 promote rebuilding of the Cultus Lake population. Smolt assessment including, the application of special tags to track both smolt and adult migration patterns, will be undertaken. Predator control measures will be continued and studies to increase the

understanding of threats to freshwater habitats will be done. In 2011, The Department will no longer be collecting eggs for the captive brood program (where a small segment of the population is held until maturity); however, progeny from previous generations will continue to be released. In addition, enhancement activities to supplement juvenile production will continue. Release targets for the enhancement program are 50,000 smolts into Sweltzer Creek, 150,000 fed fry released in the spring and 550,000 fed fry released in the fall, into Cultus Lake itself.

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 Section 7.5.3 Fraser River sockeye decision guidelines.

#### **5.1.7. Sakinaw Lake Sockeye**

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

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 achieve this objective quickly, 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 near Sechelt, BC. Migration timing data on Sakinaw Lake sockeye are extremely limited. Some 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 historical timing pattern, Sakinaw Lake sockeye are most vulnerable to harvest directed at Fraser River sockeye stocks in July extending into mid August.

As with Cultus Lake sockeye harvest related measures to ensure protection for this stock are to continue.

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 prior to the last week of July.
- Recreational fisheries in Queen Charlotte Strait, Johnstone Strait, and upper Strait of Georgia will be closed to sockeye retention prior to the last week of July. 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 early to mid

August 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 prior to the last week of July, and upper Strait of Georgia (including Sabine Channel) until early to mid August.

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 returned to the lake. The captive brood program will continue as a form of insurance to reduce the possibility of extirpation. There were no returns of sockeye spawners in 2007 and 2008, only one spawner enumerated in 2009, and 29 spawners in 2010. The 2008 smolt production which should have been the main component of the 2010 return was 12,000 smolts. The 2009 smolt production which should be the main component of the 2011 return was 62,000 smolts.

#### **5.1.8. Nimpkish Sockeye**

**The objective is to minimize the impact of Canadian fisheries.**

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 are implemented until late July in marine areas above Lewis Point.

#### **5.1.9. Interior Fraser Steelhead**

**The objective for Interior Fraser River steelhead is to minimize the impact of Canadian fisheries and to increase spawner abundance.**

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. The escapement of steelhead in 2009 for Thompson and Chilcotin combined was an estimated 980 fish, which is less than the LRP of 1250. Monitoring of stock abundance will continue.

There are ongoing discussions between DFO, the Province, First Nations and other harvesters about potential fisheries for harvesting Fraser River chum consistent with the Interior Fraser steelhead management objective. Selective commercial fisheries will be considered consistent with *Policy for Selective Fishing in Canada's Pacific Fisheries*. 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.

For Fraser River commercial gill net fisheries, the strategy is to protect 80% of the Interior Fraser River steelhead run with a 90% certainty. The Department is currently reviewing this strategy with the Province.

### 5.1.10. Inshore Rockfish

**The management objective for inshore rockfish is to continue conservation strategies that will ensure stock rebuilding over time. A fishing mortality rate of less than 2.0 percent (all Pacific Region fisheries) will be required to achieve this objective.**

Rockfish Conservation Areas (RCAs) are no fishing zones for fishing gear that impact on rockfish. There are currently 164 RCAs along the coast of British Columbia. The RCAs 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. 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; estimated at 2%; and
- d) Improve the ability to assess the status of inshore rockfish populations and to monitor changes in abundance.

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/recfish/Restricted\\_Areas/rca\\_e.htm](http://www.pac.dfo-mpo.gc.ca/recfish/Restricted_Areas/rca_e.htm)

## 6. 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*.

### 6.1. 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*.**

Feedback from consultation sessions is relied on to measure the performance of providing first priority to First Nations for opportunities to catch fish for FSC purposes and any treaty obligations.

The Department will be working with First Nations to develop specific performance measures for incorporation in the future.

## 6.2. 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 policies.

## 6.3. 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.

## 6.4. Domestic Allocation Objectives

**The objective is to manage fisheries in a manner that is consistent with the *Allocation Policy for Pacific Salmon* and the 2010 Pacific Salmon Allocation Implementation Plan.**

An Allocation Policy for Pacific Salmon can be found on-line at:  
<http://www.dfo-mpo.gc.ca/Library/240366.htm>

The Allocation Policy for Pacific Salmon also identifies the priority for commercial allocation of salmon harvest and sets sharing arrangements for each of the three commercial fishing gear groups. The target coast-wide commercial gear shares are 40% seine, 38% gill net and 22% troll. An explanation of some of the features of Allocation planning is set out in Section 6.5.

## 6.5. Allocation Guidelines

Allocation decisions are made in accordance with the *Allocation Policy for Pacific Salmon*.

Table 6-1 describes a generalized framework by which fishing opportunities are allocated to different fishing sectors at different abundance levels.

**Table 6-1. Allocation guidelines**

	Low Abundance		High Abundance		
<b>First Nations FSC</b>	Non-retention / closed	By-catch Retention	Directed	Directed	Directed
<b>Recreational</b>	Non-retention / closed	Non-retention	By-catch Retention	Directed	Directed
<b>Commercial</b>	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 the *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.

### **6.6. First Nations - Food, Social and Ceremonial (FSC)**

The *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 harvests that will occur further along the migration route over a reasonable range of potential run sizes.

### **6.7. First Nations- Economic Opportunities**

DFO will be undertaking a series of discussions with First Nations regarding fishing for economic purposes to experiment with mechanisms to integrate management of fisheries following the negotiations of treaties.

These fisheries are undertaken with two principles:

- These fisheries are of the same priority as the commercial fishery; and
- The share of fish harvested by First Nation economic opportunity fisheries must be fully mitigated over time by the retirement of commercial salmon licences from the commercial fishery.

As part of the reform of Pacific fisheries and the recently announced PICFI initiative in 2007, DFO is looking for opportunities to increase First Nations participation in new economic fisheries.

## **6.8. Recreational Fisheries**

Under the Department's *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 average of 5% of the combined recreational and commercial harvest of each species on a coast-wide basis over time.

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 while First Nations FSC fisheries directed on stocks of concern are closed, provided the recreational fishery is not directed on the stock of concern, nor is the impact on the stock 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.

## **6.9. Commercial Fisheries**

The *Allocation Policy for Pacific Salmon* provides for at least 95% of the combined commercial and recreational sockeye, pink and chum harvest to be allocated to the commercial sector. Commercial harvest of chinook and coho salmon will occur when abundance permits and First Nations and recreational priorities are considered to have been addressed.

Specific sector target allocations are: seine 40%, gill net 38%, and troll 22% expressed on a sockeye equivalent basis. The ability to achieve these targets is often limited by conservation constraints and other factors.

Low impact fisheries (limited number of vessels) generally 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.

Commercial allocation targets by area and by species are included in Appendix 9.

## **6.10. 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, inaccurate 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.

## **7. DECISION GUIDELINES AND SPECIFIC MANAGEMENT MEASURES**

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

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

Specific fishing plans are described in Appendices 5 to 9.

## **7.1. General Decision Guidelines**

### **7.1.1. Pre-season Planning**

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

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

### **7.1.2. In-season Decisions**

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

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

### **7.1.3. Selective Fisheries**

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

All sectors have responded positively to the growing conservation consciousness. First Nations have embraced the principles of selective fishing by adopting more selective fishing gear, as often these types of gear reflect a traditional way of fishing. The Canadian commercial fishing sector has developed its own Canadian Code of Conduct for Responsible Fishing Operations.

Over 80% of Canada's fishing organizations have signed on and ratified the Code that is overseen by a Responsible Fishing Board. Similarly, the recreational fishery in the Pacific Region developed a Code of Conduct. In addition, DFO has worked with the Sport Fishing Institute (SFI) on a Tidal Angling Guide certification program. The program curriculum is complete and the SFI conducted two pilot programs in the fall of 2009 and 6 additional training sessions in 2010. The SFI will be conducting certification programs throughout the Province as the program is rolled out.

#### **7.1.4. Post-Release Mortality Rates**

The salmon conservation and fisheries management measures in this IFMP are based on many considerations, including estimates of the mortality rates of salmon that are released from the various types of fishing gear that are used in commercial, recreational and First Nations fisheries. Post-release mortality rates can vary substantially and depend on many factors, including the location of the fishery, the unique characteristics of each type of fishing gear and method, and the species of salmon that is captured and released. In April 2001 DFO announced revisions to the post-release mortality rates that had been used by DFO in previous years. The mortality rates applied by DFO to each gear type and fishery prior to 2001, and the revised rates announced by DFO in 2001 with some more recent revisions are summarized in Table 7-1. The revised rates reflected the results of additional research on post-release mortality rates that were available at that time. DFO has generally continued to use these post-release mortality rates each year in the development of annual fishing plans including this salmon IFMP.

DFO will review the post-release mortality rates currently used for salmon fisheries in Canadian waters and update table 7-1 as new information becomes available. Since 2001 additional research has been conducted on post-release mortality rates of salmon, and additional fishing methods and gear types have been implemented (e.g. beach seining, recreational catch and release study for Fraser sockeye salmon) in some salmon fisheries. The 2001 post-release mortality rates currently applied by DFO for salmon fisheries, in some cases, are not the same as the rates that are currently applied by the bi-lateral Chinook Technical Committee under the Pacific Salmon Treaty. The results from the DFO review of mortality rates will be used to inform any additional revisions to the post-release mortality rates that are required to address these issues in the development of salmon IFMPs in future years.

#### **Table 7-1: Post-Release Mortality Rates**

<b>Fishery</b>	<b>Pre 2001 Post-Release Rates</b>	<b>2001 Post-Release Rates</b>
First Nations Fisheries	Various - Depending on gear used and fishery.  Note: When using the same gear and methods noted below the same mortality rates were applied.	Various – depending on gear used and fishery.  Beach seine – 5% for sockeye in-river Fraser
Recreational troll gear – sockeye, coho, pink and chum	10%	10% except 3% for sockeye in-river Fraser
Recreational troll gear – chinook	15%	15%
Recreational mooching gear – coho and chinook	10% for coho; 15% for chinook	20% for coho in Areas 1&2; 16% for coho in Areas 3 to 10; 10% for coho in other areas; 15% for chinook in all areas.
Commercial Gillnet	60% to 70%	60% with provision for rates as low as 40% where selective techniques warrant.
Commercial Seine – North Coast (Areas 1 to 10)	10% to 25%; 5% in Area 4 special seine fishery.	15% all areas, except 10% in the Area 4 special seine fishery.
Commercial Seine – South Coast (Areas 11 to 29)	15% to 25%	25 % Johnstone Strait; 70% Area 20 - coho, 25% all areas for sockeye
Commercial Troll – All Areas	26%	10% sockeye, 15% coho and chinook

## **7.2. AABM Chinook**

### **7.2.1. Background**

Chinook fisheries in BC are managed under the umbrella of the PST, with domestic considerations for stocks of concern, allocation between sectors of the fishery, and application of selective fishing practices.

The basis for managing fisheries impacting Chinook 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, revised for implementation in 2009, maintains the abundance based management framework established under the 1999 Agreement.

Further explanation and the text of the Chinook agreement can be found on the PSC website at: [www.psc.org/Index.htm](http://www.psc.org/Index.htm).

Two types of fisheries are identified in this agreement; that is, Aggregate Abundance Based Management (AABM) and Individual Stock Based Management (ISBM). In southern BC, the AABM applies to the following waters on the WCVI:

- Offshore waters including Areas 121 to 127; and
- Inside waters including Areas 21, 23, and 24 from Oct 16 to July 31; and Areas 25, 26, and 27 from Oct 16 to June 30.

### 7.2.1 Constraints

The mixed-stock aggregate fisheries of Southeast Alaska, northern B.C., and WCVI are managed on the forecast abundance of the aggregate of stocks (called Aggregate Abundance Based Management or AABM fisheries). Fisheries are managed based on a Chinook fishery year which extends from October 1 in one calendar year to September 30 in the next calendar year.

### 7.2.2 Decision Guidelines

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, the WSP, the *Allocation Policy for Pacific Salmon*, and the *Policy for Selective Fishing in Canada's Pacific Fisheries*. Domestic conservation concerns may reduce the TAC to levels less than identified under the PST Chinook AABM fisheries.

When there is a TAC identified for the AABM management area, targeted Chinook fisheries are planned for First Nations, recreational, and commercial sectors. Table 7-2 describes management measures that will be taken to minimize impacts on stocks of concern in AABM Chinook fisheries.

**Table 7-2: Stock management actions anticipated in AABM Chinook fisheries to limit impacts on stocks of concern.**

Stock of Concern (constraint)	First Nation (FN) Fishery	Recreational Fishery	Commercial Fishery
<b>WCVI Chinook</b>	- Harvest levels outlined in communal licences	- Ongoing terminal area restrictions for wild stocks of concern.  - Maximum size limit inside the management corridor.	- Area G -Time and area closures on WCVI (i.e. avoid inshore fisheries during the time period July to September). Area F - measures in the North Coast troll fishery
<b>South Coast</b>	- Harvest levels	- coho retention	- Non retention of wild coho.

Stock of Concern (constraint)	First Nation (FN) Fishery	Recreational Fishery	Commercial Fishery
<b>Coho (including Interior Fraser River)</b>	outlined in communal licences	limited to selective hatchery mark fishery (SHMF).	- Potential for limited SHM coho retention in September.
<b>Fraser River Spring Chinook 4<sub>2</sub></b>	- No impacts on WCVI First Nations fisheries anticipated.	- No impacts on WCVI recreational fisheries anticipated.	- Time and area closures and effort limits.
<b>Fraser River Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook</b>	- No impacts on WCVI First Nations fisheries anticipated.	- No impacts on WCVI recreational fisheries anticipated.	- Time and area closures and effort limits.
<b>Lower Strait of Georgia Chinook</b>	- Harvest levels outlined in communal licences.	- Time and area closures  - Catch limits  - Measures will vary by area.	- AABM harvest rate reduction should reduce impact on LGS Chinook - Time and area closures (Areas south of Estevan Point closed in March and April) - reduced harvest levels in period March to June.

### 7.2.3 Issues

**Table 7-3: Assessment of risk of impact on stocks of concern during Chinook fisheries in the AABM management area of the WCVI.**

Fishery Period	Risk of impact on stocks of concern
Oct. – Feb.	<b>Low risk.</b> Fisheries in October are outside the migration period and area for several stocks of concern, including Interior Fraser coho, WCVI Chinook, Fraser River Spring 4 <sub>2</sub> , Spring 5 <sub>2</sub> and Summer 5 <sub>2</sub> 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.

Fishery Period	Risk of impact on stocks of concern
Mar. – May	<b>Moderate - High risk.</b> Specific concerns for Fraser River Spring 4 <sub>2</sub> Chinook. Increased incidence of lower Strait of Georgia Chinook especially in May.
June - mid-Sept.	<b>Moderate - High risk.</b> Potential concern for impacts on Fraser River Spring 5 <sub>2</sub> and Summer 5 <sub>2</sub> Chinook in June and July. Monitoring of coho encounters in early to mid-June is required. Risk increases as coho recruit to fishery. Stocks of concern, including Interior Fraser coho are prevalent. Selective fishing methods may reduce risk by avoiding coho. Concerns for impacts on returning local WCVI stocks. Offshore fishing may reduce risk by avoiding WCVI Chinook. Concerns for impacts on lower Strait of Georgia Chinook.
Mid Sept.	<b>Low risk.</b> coho impacts reduced because nearing end of migration out of WCVI area. WCVI Chinook may be avoided by area restrictions. Concerns for impacts on lower Strait of Georgia Chinook.

#### 7.2.4 Prospects

The Chinook Technical Committee (CTC) has completed a final calibration of the Chinook Model for the upcoming 2011 fishing season. The completed calibration provides the Abundance Indices (AI) that are required for determining the preseason estimated allowable catches for the three Aggregate Abundance Based Management (AABM) fisheries: Southeast Alaska all gear (SEAK), Northern British Columbia troll and Queen Charlotte Island sport (NBC), and West Coast Vancouver Island troll and outside sport (WCVI). The AIs and the associated allowable catches are shown in Table 7-4a. Effective January 1, 2009 the renegotiated Pacific Salmon Treaty terms were put into effect including, the implementation of a 15% reduction in Southeast Alaska (SEAK) and a 30% reduction in the Total Allowable Catch (TAC) for the WCVI AABM. The allowable catches in Table 7-4a reflect this change.

**Table 7-4a.** Abundance indices and associated allowable catches for the 2011 AABM Fisheries.

	SEAK	NBC	WCVI
Abundance Index	1.69	1.38	1.15
Allowable Catch	294,800	182,400	196,800

**Table 7-4b:** Stock outlook anticipated in AABM Chinook fisheries.

Stock of Concern (constraint)	Stock Outlook for 2011

<b>WCVI Chinook</b>	<ul style="list-style-type: none"> <li>- Forecast is a low return of somass chinook, similar to 2010. Predominately age 4 fish.</li> <li>- Concerns persist for wild stocks.</li> </ul>
<b>South Coast Coho (including Interior Fraser River)</b>	<ul style="list-style-type: none"> <li>- Status is low.</li> <li>- Low returns expected because of continued poor marine survivals.</li> </ul>
<b>Fraser River Spring 4<sub>2</sub> Chinook</b>	<ul style="list-style-type: none"> <li>- Returns for 2011 are expected to continue to be well below long term average and target levels.</li> </ul>
<b>Fraser River Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook</b>	<ul style="list-style-type: none"> <li>- Returns for 2011 are expected to continue to be well below long term average and target levels.</li> <li>- Abundance reforecast in-season based on Albion test fishery CPUE.</li> </ul>
<b>Lower Strait of Georgia Chinook</b>	<ul style="list-style-type: none"> <li>- Lower Strait of Georgia Chinook remains stock of concern. Continued poor returns anticipated in 2011.</li> </ul>

### 7.3 ISBM Chinook

#### 7.3.1 Background

Chinook fisheries in BC are managed under the umbrella of the Pacific Salmon Treaty, with domestic considerations for stocks of concern, allocation between sectors of the fishery, and application of selective fishing practices.

Under the Pacific Salmon Treaty, 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. 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 are mostly represented by Strait of Georgia troll, Strait of Georgia sport, WCVI net, Juan de Fuca net, Johnstone Strait net, and Fraser net.

For management purposes in 2011, Fraser Chinook stocks will be managed using the Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, Summer 5<sub>2</sub>, Summer 4<sub>1</sub> and Fraser Fall 4<sub>1</sub> (Harrison) management units employed under the Pacific Salmon Treaty (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, Wild Salmon Policy conservation units (CUs) and spawning locations is shown in Table 7-5.

New management objectives have been identified for Spring 4<sub>2</sub> Chinook (Section 5.3.3) and for the combined management units of Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook (Section 5.3.4). Fishery guidelines for the Summer 4<sub>1</sub> and Fraser Fall management units are outlined below.

**Table 7-5.** Relationship between current Pacific Salmon Treaty escapement reporting units, Wild Salmon Policy (WSP) conservation units (CUs) and spawning locations.

<b>PST Unit</b>	<b>C U #</b>	<b>CU Name</b>	<b>Spawning Locations</b>
Spring 4 <sub>2</sub> 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 <sub>2</sub> 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> ; <i>Chilcotin River-lower</i> ; <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 Creek; Willow River
	18	NTHOM spring	Blue River; Finn Creek; Raft River
Summer 5 <sub>2</sub> 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

<b>PST Unit</b>	<b>C U #</b>	<b>CU Name</b>	<b>Spawning Locations</b>
	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	Eagle River; Salmon River;
	19	NTHOM summer age	Barriere River; Clearwater River; Mahood River; North Thompson River
Summer Chinook	4 <sub>1</sub> 7	Maria Slough	Maria Slough
	13	STh summer age	Adams River; Little River; South Thompson River; Lower Thompson River;
	15	Shuswap River summer age	Shuswap River-lower; Shuswap River-middle
Fraser Late	3	LFR fall white	Harrison River

Table 7-5 Notes:

- 1) Seven early-timed Chinook stocks shown in italics.
- 2) Chilcotin River upper not part of PST spring 5<sub>2</sub> aggregate due to short time series.
- 3) Salmon River (Salmon Arm), Eagle, Bridge River and Endako River currently included with PST spring 5<sub>2</sub> aggregate. STh summer age CU could be changed to STh spring age CU. Bridge and Endako suggest for MFR Spring CU.
- 4) Raft River may belong with North Thompson Summers based on timing. Currently included with PST summer 5<sub>2</sub> aggregate.

### 7.3.2 Constraints

In the ISBM management area inside of Vancouver Island, fisheries are constrained in order to meet PST obligations to reduce Chinook harvest rates and adult equivalent mortality levels. To meet this requirement in mixed-stock fisheries, there are periods and areas with non-retention of Chinook in commercial fisheries (though by-catch retention may be allowed in some troll and gill net fisheries), recreational Chinook fisheries have daily and annual limits, and First Nations are provided opportunities for FSC purposes only. In particular, management action will continue to minimize impacts on Strait of Georgia origin Chinook in 2011. Further fishery opportunities may be provided in-season in terminal locations with an identified surplus. Table 7-6 summarizes management actions taken in ISBM management areas to reduce impacts on stocks of concern.

**Table 7-6:** Management actions anticipated in ISBM Chinook fisheries to limit impacts on stocks of concern.

<b>Stock of Concern (constraint)</b>	<b>First Nation (FN) Fishery</b>	<b>Recreational Fishery</b>	<b>Commercial Fishery</b>
<b>WCVI Chinook</b>	<ul style="list-style-type: none"> <li>- Communal license harvest targets</li> <li>- Conservation measures under discussion.</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- Size limit inside the WCVI management corridor and other areas shoreward of the management corridor</li> <li>-Some areas will be 2 Chinook but only 1 &gt;77cm or 2 &lt; 77cm</li> <li>- Catch limits</li> <li>- Measures will vary by area.</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures during the July to September period.</li> </ul>
<b>South Coast Coho (including Interior Fraser River)</b>	<ul style="list-style-type: none"> <li>- Time and area restrictions</li> <li>-Gear restrictions</li> <li>- Communal license harvest targets.</li> <li>-Measures will vary by area</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- SHMF for coho</li> <li>- Catch limits</li> <li>- Measures will vary by area.</li> </ul>	<ul style="list-style-type: none"> <li>- Generally non-retention of coho except for by-catch retention in terminal fisheries in Nootka and Barkley.</li> </ul>
<b>Fraser Chinook - Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub></b>	<ul style="list-style-type: none"> <li>- Time and area restrictions</li> <li>- Gear restrictions</li> <li>- Communal license harvest targets</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- Catch limits</li> <li>- Measures will vary by area.</li> <li>- Additional measures for portions of Areas 19, 20 and in the Fraser River</li> </ul>	<ul style="list-style-type: none"> <li>- No directed commercial Chinook salmon fisheries anticipated in ISBM waters on the east side of Vancouver Island.</li> </ul>

<b>Stock of Concern (constraint)</b>	<b>First Nation (FN) Fishery</b>	<b>Recreational Fishery</b>	<b>Commercial Fishery</b>
	- Measures will vary by area		
<b>Strait of Georgia Chinook</b>	- Time and area restrictions - Gear restrictions - Communal license harvest targets. - Measures will vary by area	- Time and area closures - Catch limits  - Measures will vary by area.	- No directed commercial Chinook salmon fisheries anticipated in ISBM waters on the east side of Vancouver Island.
<b>North Vancouver Island / Johnstone Strait Chinook</b>	- No impacts on FN directed Chinook fisheries anticipated.	- Time and area Chinook non-retention - Catch limits - Gear restriction (i.e. barbless hooks)	- No directed commercial Chinook salmon fisheries anticipated in ISBM waters on the east side of Vancouver Island.

### 7.3.3 Decision Guidelines

For these fisheries, the Agreement 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 4<sub>2</sub> Chinook**

Fishery restrictions for this management unit are planned consistent with the management objective (Section 5.3.3). For fisheries in the Fraser River, Spring 4<sub>2</sub> management actions will be the driver for management actions until July 15<sup>th</sup> when greater than 70% of this run is expected to have passed by Albion in the lower Fraser River. After July 15<sup>th</sup> and until the end of July management actions will be guided by the management zones identified for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook outlined in Section 5.3.4.

Specific management actions will be identified separately for First Nations (Appendix 5 section 5.2.8), recreational (Appendix 6 section 6.2.3 and Appendices 7 and 8) and commercial fisheries (section 9.15.5).

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

Fishery restrictions will depend on the in season abundance of Chinook at the Albion test fishery and management zones for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> outlined in Section 5.3.3.

For fisheries in the Fraser River, management actions will be in place after July 15<sup>th</sup> until the end of July in the lower Fraser River when greater than 70% of this run is expected to have passed Albion.

Specific management actions will be identified separately for First Nations (Appendix section 5.2.8), recreational (Appendix 6 section 6.2.3 and Appendices 7 and 8) and commercial fisheries (section 9.15.5)

### **Fraser Summer 4<sub>1</sub> Chinook**

The management objective for the Fraser Summer 4<sub>1</sub> 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 this group, however to date, the time series of data is too short 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 escapement estimates of escapements to the Lower Shuswap indicator were close to or slightly above the estimated  $S_{MSY}$  in 2007 and 2008, and exceeded the  $S_{MSY}$  value in 2006 (~58,000) and 2009 (~24,000).

The Fraser Summer 4<sub>1</sub> Chinook stock group 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, the Lower Shuswap River is the CWT indicator stock 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, however, the Fraser Summer 4<sub>1</sub> management unit is expected to approach spawner abundances associated with MSY levels in 2011.

Directed fishing opportunities may occur on this stock group, provided that fisheries can be designed to limit impacts on co-migrating possible stocks of concern including: Spring 4<sub>2</sub> Chinook, Spring/Summer 5<sub>2</sub> Chinook, Fraser Fall Chinook, Fraser River Sockeye, and Interior Fraser coho. Recent reductions to SE Alaska fisheries as a result of changes to the PST Chinook Annex may provide some limited additional flexibility in planning fisheries directed on Summer 4<sub>1</sub> Chinook. While formal projections of terminal abundance for this aggregate are not produced, the number of additional Chinook returning to the Fraser River as a result of SE Alaska reductions may be between 3,000 and 10,000 Chinook based on fishing patterns observed from 2004 to 2008.

### Fraser Fall 4<sub>1</sub> (Harrison) Chinook

The PST approved escapement goal for the Fraser Fall 4<sub>1</sub> (Harrison) Chinook is a range of 75,100 to 98,500 spawners.

Fraser Fall 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. This is the only Fraser River Chinook population for which a formal forecast is produced. The 2011 forecast of the terminal spawner abundance (i.e. after all ocean fisheries removals) for Harrison Chinook is 40,082 age 3, 241,640 age 4, and 2,882 age 5 fish.

Additional fishery management actions are not planned for this season.

#### 7.3.4 Issues

Issues regarding ISBM Chinook stocks are covered in the previous subsections.

#### 7.3.5 Prospects

In the 2011 Salmon Outlook, Fraser River Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, Summer 5<sub>2</sub> Chinook have been classified as *stocks of concern*. For Summer 4<sub>1</sub> Chinook, the outlook for most of the component populations is *near target* to *abundant*. For Fraser Fall 4<sub>1</sub> (Harrison) Chinook the outlook is *low/near target*, indicating that returns are expected to be near or below the escapement goal range.

**Table 7-7:** Stock outlook anticipated in ISBM Chinook fisheries.

Stock of Concern (constraint)	Stock Outlook for 2011
WCVI Chinook	<ul style="list-style-type: none"><li>- Forecast will be available in March 2011.</li><li>- Concerns persist for wild stocks.</li></ul>
South Coast Coho (including Interior Fraser River)	<ul style="list-style-type: none"><li>- Status is low.</li><li>- Low returns expected because of continued poor marine survivals.</li></ul>
Fraser Chinook - Spring 4 <sub>2</sub> , Spring 5 <sub>2</sub> and Summer 5 <sub>2</sub>	<ul style="list-style-type: none"><li>- Returns are expected to continue to be well below long term average and target levels.</li></ul>

<b>Strait of Georgia Chinook</b>	- Lower Strait of Georgia Chinook remains stock of concern. Continued poor returns anticipated.
<b>North Vancouver Island / Johnstone Strait Chinook</b>	- Returns expected to be well below average.

#### **7.4. ABM Coho**

##### **7.7.1. Background**

Coho fisheries in southern B.C. are managed under the umbrella of the PST, with domestic considerations for stocks of concern, allocation between sectors of the fishery, and application of selective fishing practices. Note that the coho provisions negotiated in 2002 have been incorporated in the new PST.

##### **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 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. Other Canadian management units of domestic importance include the WCVI, Johnstone Strait - Mainland Inlets, and the Central Coast. In the United States, the management units relevant to the agreement include the Skagit River, the Stilliguamish, the Snohomish, Hood Canal, tributaries to the Strait of Juan de Fuca, the Quillayute, the Hoh, Queets, and Grays Harbour. For each of these management units, annual limits of fishing mortality will be established based on the level of abundance and the health of the wild stocks. The text of the agreement and formulae for sharing between the two countries can be found on the PSC website at: [www.psc.org/Index.htm](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.

##### **7.4.1. Constraints**

Within the PST coho management framework, Canadian domestic policy will further define fishing opportunities. Domestic conservation concerns may limit total fishing mortality to a level less than stipulated in the PST coho ABM. For example, if abundance is "critically" low, such as the case with Interior Fraser coho in recent years, domestic fisheries may be limited below the lowest allowable exploitation identified by the coho ABM agreement. Allowable catch is determined according to the priorities set out in the *Allocation Policy for Pacific Salmon*. Selective fishing practices are also taken into account when developing fishing opportunities.

#### 7.4.2. Decision Guidelines

Management of salmon fisheries in southern BC will be shaped to accommodate the status level of coho within management units defined by the PST. Table 11(a) summarizes the general fishery management approaches by fishery sector associated with each status level (critically low, low, moderate, and abundant).

**Table 11(a): Southern B.C. coho mixed-stock fishery guidelines**

<b>Coho Abundance / Status Level</b>				
(3 levels within PSC Coho ABM and 4 levels in domestic Canadian management)				
<b>PSC STATUS</b>	<b>LOW</b>		<b>MODERATE</b>	<b>ABUNDANT</b>
<b>DOMESTIC</b>	<b>Critically Low</b>	<b>Low</b>	<b>Moderate</b>	<b>Abundant</b>
	Objective: No directed fisheries and avoidance.	Objective: Fisheries uncertain and likely small.	Objective: Normal fisheries are probable.	Objective: Extensive fisheries are likely.
<b>First Nations FSC Fisheries</b>	Non-directed fisheries and avoidance, very limited by-catches permitted.	Opportunities will range from limited directed fisheries to regular FSC fisheries.	Regular FSC fisheries.	Regular FSC fisheries.
<b>Recreational Fisheries</b>	Severe restrictions in approach areas, non-retention and avoidance through time and area closures. SHMF may be considered.	A combination of SHMF and limited retention fisheries are possible, depending upon time and area under consideration.	Up to normal limits, marked and un-marked.	Normal limits.

<b>Coho Abundance / Status Level</b>				
(3 levels within PSC Coho ABM and 4 levels in domestic Canadian management)				
<b>PSC STATUS</b>	<b>LOW</b>		<b>MODERATE</b>	<b>ABUNDANT</b>
<b>DOMESTIC</b>	<b>Critically Low</b>	<b>Low</b>	<b>Moderate</b>	<b>Abundant</b>
<b>Commercial - Net Fisheries</b>	Severe restrictions including time and area closures, non-retention and avoidance. Selective fishing practices are required.	Generally non-retention and selective fishing practices. Potential for limited by-catch retention for gill nets.	Generally non-retention and selective fishing practices. Potential for limited by-catch retention for gill nets.	Some non-retention and increased potential for by-catch retention for gill nets and seines.
<b>Commercial - Troll Fisheries</b>	Severe restrictions including time and area closures, non-retention and avoidance. Selective fishing practices are required.	Generally non-retention and selective fishing practices. Potential for limited by-catch retention.	Limited by-catch retention possible. Potential for small target catch fisheries.	Targeted fisheries are likely.

Under "low" status, the United States is limited to 10% exploitation on coho originating from the Interior Fraser management unit. Canadian fisheries will be managed to limit total fishing mortality to a maximum of 3% for the Interior Fraser management unit, a level which recognizes the continued low status of this stock aggregate. The 3% limit on exploitation will result in management actions that limit encounters of wild coho in southern BC fisheries where Interior Fraser coho are prevalent, that is, in waters south of Cape Caution. Non-retention of wild coho will generally be in effect except First Nations FSC fisheries, where retention as a by-catch during fisheries for other species may be permitted, depending on the time and area of the fishery. First Nations FSC opportunities will also be considered in specific terminal systems where escapement levels as determined by counting fences are an accurate reflection of total abundance. Selective fishing practices will be required in all commercial and recreational fisheries. There may be wild coho retention in terminal locations with identified surpluses. The level of compliance to selective fishing standards will be monitored. Poor selective fishing practices during periods of high prevalence of Interior Fraser coho stocks may result in reduced fishing opportunities. In addition, avoidance of coho will be required during periods of high prevalence of Interior Fraser coho.

Coho fishing mortality will be determined pre-season from estimated encounters, fishing effort levels, best estimate of the proportion of Interior Fraser River stocks within the total encounters, and an average release mortality rate. A post-season review will be conducted to confirm the estimated Interior Fraser impact.

### 7.4.3. Issues

Directed coho fisheries will be constrained when there is evidence of co-migrating stocks of concern. Table 11b summarizes management actions that will be taken to limit impacts on salmon stocks of concern encountered in coho fisheries.

**Table 11(b): Management actions in coho fisheries to limit impacts on stocks of concern**

<b>Stock of Concern (constraint)</b>	<b>Stock Outlook for 2011</b>	<b>First Nation (FN) Fishery</b>	<b>Recreational Fishery</b>	<b>Commercial Fishery</b>
<b>Strait of Georgia Coho (including lower Fraser)</b>	<ul style="list-style-type: none"> <li>- Critically low</li> <li>- Stock of concern status.</li> <li>- Returns are expected to be similar to last year well below desired levels.</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- Harvest levels outlined in communal licences</li> <li>- Measures will vary by area and associated impacts on individual stocks.</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- Gear restrictions (i.e. barbless hooks)</li> <li>- Catch limits</li> <li>- Measures will vary by area and associated impacts on individual stocks. See Appendix 6 section 6.3.</li> </ul>	<ul style="list-style-type: none"> <li>- No directed commercial coho fisheries (or coho retention) in areas where Strait of Georgia coho are found.</li> <li>- Significant restrictions on commercial fisheries directed at other salmon stocks in areas where Georgia St coho are found.</li> </ul>
<b>Interior Fraser River coho</b>	<ul style="list-style-type: none"> <li>- Critically low</li> <li>- Stock of concern status.</li> <li>-Returns are expected to be well below desired levels.</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- Harvest levels outlined in communal licences</li> <li>- Measures will vary by area and associated impacts on individual stocks.</li> </ul>	<ul style="list-style-type: none"> <li>- Time and area closures</li> <li>- Gear restrictions (i.e. barbless hooks)</li> <li>- Constraints on coho by-catch</li> <li>- Measures will vary by area and associated impacts on individual stocks. See Appendix 6 section 6.3.</li> </ul>	<ul style="list-style-type: none"> <li>- No directed commercial coho fisheries (or coho retention) in areas where Interior Fraser coho are found.</li> <li>- Significant restrictions on commercial fisheries directed at other salmon stocks in areas where Interior Fraser coho are found.</li> </ul>

The ABM approach will be to substantially reduce coho exploitation below historic levels, and may result in some terminal surpluses. Terminal selective fishery opportunities and by-catch retention may be considered in-season in locations in which coho surpluses are identified.

#### **7.4.4. Prospects**

For 2011, the status of southern BC stocks ranges from stock of concern to near target. For WCVI stocks the 2010 returns into the Stamp River were well below average. Coho jack returns were near average in 2010 suggesting near average return of adults in 2011. Stocks in Johnstone Strait and Interior Fraser are stock of concern to near target status; and, forecast models indicate a slight improvement for 2010. Expectations are for returns similar to the last 3 years but are highly uncertain. In Strait of Georgia the marine survival rates for 2010 returns are not available. The 2011 expectation is for continuing low returns similar to last year. Lower Fraser stocks remain at low status and forecast models indicate no change. Forecasts for southern BC coho will be available in March 2011.

### **7.5 Fraser River Sockeye Decision Guidelines**

#### **7.5.1 Background**

Fraser River sockeye are managed on the basis of the four management groups (Early Stuart, Early Summer, Summer, and Late Run). Spawning escapement targets and harvest rules are developed annually for each stock timing aggregate.

The Fraser River Sockeye Spawning Initiative/WSP process was initiated in 2006 and has been continued for the identification escapement strategy options. (Refer to DFO's consultation website for details).

#### **7.5.2 Constraints**

Though TAC is identified on various stock groupings in most years, conservation and management constraints can affect harvesting opportunities. These constraints are described below.

#### **7.5.3 Decision Guidelines**

##### **7.5.3.1 Pre-season Planning**

Prior to each fishing season, decisions are made about spawning escapement targets, harvest rates, management priorities and identification of conservation constraints. These decisions are made based on pre-season forecasts of run size, timing, stock composition, other technical information and input from various consultative processes. Potential fishing opportunities are identified based on these pre-season guidelines.

#### **Run Size Forecast:**

Pre-season forecasts of run size at various probability levels are developed for major sockeye stocks within the four management groups (Early Stuart, Early Summer, Summer and Late).

Fraser sockeye forecasts for 2011 are especially uncertain given the systematic declines in productivity exhibited by most stocks (with the exception of Raft, Weaver, Late Shuswap that have exhibited stable productivity and Harrison that has exhibited increasing productivity). In the last two years productivity has been extremely variable, with the low returns in 2009 attributed to amongst the lowest productivity on record for most stocks and extremely high returns in 2010 attributed to well above average productivities for Late Shuswap and Seymour stocks (most other stocks in 2010, however, exhibited average productivity relative to the long-term time series).

Based on the forecast approach that assumes recent trends in stock productivity (e.g. declines for Early Stuart, increases for Harrison, stable for Late Shuswap, Raft & Weaver) will persist through to 2011 returns, there is a one in four chance that the return of Fraser River Sockeye Salmon will be at or below 1.7 million (i.e. lower quarter of the forecast range) and a three in four chance that it will be at or below 6.9 million (i.e. lower three quarters of forecast range) (Table 12). The mid-point of the forecast is 3.2 million (there is a one in two chance the return will be above or below this specified run size assuming recent productivity observed on the time series). Given uncertainty regarding stock productivity through to 2011, an additional forecast was produced that assumes long-term average productivity will persist through to 2011 (Table 12b).

Note that in 2010, the presentation of different probabilities that convey forecast uncertainty has changed. Historically, probabilities were described as “the probability of exceeding the specified forecast” with the lowest probability levels (e.g. 10p & 25p) associated with the highest forecasts. Since 2010, probabilities were described as “the probability of returning at or below the specified forecast”. In this arrangement, the lowest probability levels (e.g. p10 & p25) are now associated with the lowest forecast returns. Hence the “old” 75p forecast is equivalent to the “new” p25 forecast (note the placement of the “p” to differentiate from previous years’ notation). This new format is more appropriate from a conservation perspective. Also note that the forecast is the entire probability distribution, and run sizes at different probability levels are slices through this distribution. The median (50% probability level forecast) is the mid-point of this probability distribution where there is a one in two chance the actual return will come in above or below this value given assumptions about productivity (either recent or long-term average on the time series).

**Table 12. Pre-season sockeye return forecasts using recent productivity assumptions. (CSAS SAR in prep)**

A		B		C	D	E	F	H	I	J	K	L	M	N	O
Run timing group	Forecast Model <sup>b</sup>	BY (07)	BY (06)	Prod.	Prod.	Ret	Mean Run Size		Probability that Return will be at/or Below Specified Run Size <sup>a</sup>						
Stocks		(EFS)	(EFS)	(-8yr)	(-4yr)	2011	all cycles <sup>c</sup>	2011 cycle <sup>d</sup>	10%	25%	50%	75%	90%		
Early Stuart	RS4yr	2,400	15,900	2.5	2.4			311,000	172,000	6,000	11,000	17,000	27,000	42,000	
Early Summer								510,000	497,000	153,000	257,000	453,000	894,000	1,558,000	
<i>(total excluding miscellaneous)</i>								510,000	497,000	107,000	181,000	332,000	648,000	1,232,000	
Bowron	RS4yr	1,000	600	2.4	2.1			39,000	79,000	2,000	2,000	5,000	12,000	22,000	
Fennell	Power	6,800	8,000	4.0	4.3			25,000	33,000	14,000	21,000	35,000	60,000	93,000	
Gates	KF	1,100	1,500	5.3	4.9			53,000	24,000	2,000	4,000	8,000	16,000	30,000	
Nadina	Ricker-FrD (mean)	1,000	4,500	3.0	4.6			80,000	87,000	4,000	7,000	12,000	21,000	37,000	
Pitt	Ricker	19,900	21,300	0.4	0.1			72,000	71,000	32,000	51,000	82,000	140,000	236,000	
Raft	Ricker-PDO	8,100	3,400	3.7	2.9			32,000	21,000	29,000	44,000	68,000	108,000	171,000	
Scotch	KF	4,800	72,700	6.3	5.3			78,000	19,000	14,000	32,000	80,000	201,000	465,000	
Seymour	RS4yr	5,900	57,300	5.2	3.8			131,000	163,000	10,000	20,000	42,000	90,000	178,000	
Misc <sup>e</sup>	RS (Sc/Se)	4,000	20,000					--	--	11,000	23,000	40,000	54,000	77,000	
Misc <sup>f</sup>	RS (Ra/Fe)	1,000	3,000					--	--	3,000	5,000	7,000	17,000	23,000	
Misc <sup>g</sup>	RS (Ra/Fe)	10,000	12,000					--	--	27,000	40,000	57,000	138,000	180,000	
Misc <sup>h</sup>	RS (Esum)	1,000	1,000					--	--	2,000	3,000	6,000	13,000	16,000	
Misc <sup>i</sup>	RS (Esum)	2,000	1,000					--	--	3,000	5,000	11,000	24,000	30,000	
Summer								3,730,000	2,389,000	590,000	903,000	1,500,000	2,657,000	4,835,000	
Chilko <sup>j</sup>	RJ4yr (smolt)	27.5M	71M	0.03	0.03			1,350,000	1,556,000	513,000	749,000	1,141,000	1,740,000	2,548,000	
Late Stuart	RS8yr	4,100	14,300	2.7	2.9			560,000	86,000	5,000	14,000	41,000	123,000	331,000	
Quesnel	RAC	33,800	90,400	1.8	0.8			1,358,000	153,000	50,000	99,000	239,000	639,000	1,673,000	
Stellako	RS4yr	19,600	79,800	2.5	1.9			462,000	594,000	22,000	41,000	79,000	155,000	283,000	
Late								3,020,000	2,196,000	257,000	516,000	1,207,000	3,288,000	5,648,000	
<i>(total excluding miscellaneous)</i>								3,020,000	2,196,000	254,000	502,000	1,188,000	3,261,000	5,612,000	
Cultus <sup>j&amp;k</sup>	Smolt-Jack	341,000	389,200	0.02	0.02			39,000	86,000	4,000	6,000	9,000	13,000	17,000	
Harrison <sup>l</sup>	RS	57,400	4,400	16.1	19.7			60,000	71,000	37,000	96,000	372,000	1,656,000	2,630,000	
Late Shuswap	Ricker-Pi	32,300	1.2M	4.1	1.4			2,152,000	1,427,000	60,000	152,000	355,000	780,000	1,555,000	
Portage	KF	800	11,000	5.3	5.1			40,000	27,000	4,000	9,000	21,000	47,000	98,000	
Weaver	Ricker-FrD (peak)	15,800	13,600	11.8	6.9			363,000	209,000	90,000	143,000	253,000	444,000	761,000	
Birkenhead	KF	54,300	137,400	1.5	1.2			366,000	376,000	59,000	96,000	178,000	321,000	551,000	
Misc. non-Shuswap <sup>m</sup>	RS (Birkenhead)	3,000	11,000					--	--	3,000	14,000	19,000	27,000	36,000	
<b>TOTAL</b>								-	-	1,006,000	1,687,000	3,177,000	6,866,000	12,083,000	
<i>(TOTAL excluding miscellaneous)</i>								(7,571,000)	(5,254,000)	(957,000)	(1,597,000)	(3,037,000)	(6,593,000)	(11,721,000)	

- Probability that return will be at, or below, specified projection.
- See Table 5 for model descriptions
- Sockeye: 1953-2009 (depending on start of time series)
- Sockeye: 1955-2007 (depending on start of time series)
- Unforecasted miscellaneous Early Summer Stocks (Early Shuswap stocks: S.Thompson; used Scotch/Seymour R/EFS)
- Unforecasted miscellaneous Early Summer stocks (N. Thomson tributaries; used Raft/Fennell R/EFS).
- North Thompson River (used Raft/Fennell R/EFS)
- Chilliwack Lake and Dolly Varden Creek (used Early Summer R/EFS)
- Nahatlach River & Lake (used Early Summer R/EFS)
- Brood year smolts in columns C & D (not effective females)
- For Cultus, this 'Recent Productivity' smolt-jack forecast uses a truncated (brood years 1997-2004) marine survival time series.
- Harrison are age-4 (column C) and age-3 (column D).
- Unforecasted miscellaneous Late Run stocks (Harrison Lake down stream migrants including Big Silver, Cogburn, etc.); used Birkenhead R/E & Weaver age proportion

**Definitions:** BY: Brood year; BY07: brood year 2007; BY06: brood year 2006; EFS: effective female spawners; Prod. (-8yr), Prod. (-4yr): Productivity in recruits per

**Table 12b. Pre-season sockeye return forecasts using long term productivity assumptions. (for reference only. Pre-season planning will be based on forecasts shown in Table 12. CSAS SAR in prep)**

A		B		C	D	E	F	G	H	I	J	K	L	M	N
Run timing group	Forecast Model <sup>b</sup>	BY (07)	BY (06)	Prod.	Prod.	Ret			Mean Run Size		Probability that Return will be at/or Below Specified Run Size <sup>a</sup>				
Stocks		(EFS)	(EFS)	(-8yr)	(-4yr)	2011			all cycles <sup>c</sup>	2011 cycle <sup>d</sup>	10%	25%	50%	75%	90%
Early Stuart	Ricker-Pi	2,400	15,900	2.5	2.4				311,000	172,000	21,000	30,000	47,000	71,000	100,000
Early Summer (total excluding miscellaneous)									510,000	497,000	164,000	284,000	518,000	958,000	1,785,000
Bowron	Ricker-PDU	1,100	600	2.4	2.1				39,000	79,000	5,000	7,000	12,000	20,000	33,000
Fennell	TSA	6,800	8,000	4.0	4.3				25,000	33,000	7,000	13,000	25,000	47,000	84,000
Gates	Power	1,100	1,500	5.3	4.9				53,000	24,000	7,000	10,000	17,000	28,000	47,000
Nadina	Power(juv)-Ei	1,000	4,500	3.0	4.6				80,000	87,000	6,000	9,000	15,000	25,000	42,000
Pitt	Ricker-Pi	19,900	21,300	0.4	0.1				72,000	71,000	41,000	67,000	118,000	197,000	372,000
Raft	Power	8,100	3,400	3.7	2.9				32,000	21,000	19,000	28,000	44,000	69,000	104,000
Scotch	Ricker-PDO	4,800	72,700	6.3	5.3				78,000	19,000	13,000	26,000	57,000	128,000	274,000
Seymour	Power	5,900	57,300	5.2	3.8				131,000	163,000	17,000	34,000	66,000	136,000	245,000
Misc <sup>e</sup>	RS (Sc/Se)	4,000	20,000						--	--	11,000	19,000	41,000	64,000	93,000
Misc <sup>f</sup>	RS (Ra/Fe)	1,000	3,000						--	--	4,000	6,000	11,000	23,000	46,000
Misc <sup>g</sup>	RS (Ra/Fe)	10,000	12,000						--	--	28,000	51,000	87,000	178,000	362,000
Misc <sup>h</sup>	RS (Esum)	1,000	1,000						--	--	2,000	5,000	9,000	15,000	29,000
Misc <sup>i</sup>	RS (Esum)	2,000	1,000						--	--	4,000	9,000	16,000	28,000	54,000
Summer									3,730,000	2,389,000	1,067,000	1,598,000	2,464,000	4,138,000	6,579,000
Chilko <sup>j</sup>	Power(juv)	27.5M	71M	0.03	0.03				1,350,000	1,556,000	809,000	1,170,000	1,733,000	2,854,000	4,296,000
Late Stuart	Power	4,100	14,300	2.7	2.9				560,000	86,000	24,000	46,000	82,000	161,000	312,000
Quesnel	Ricker-cyc	33,800	90,400	1.8	0.8				1,358,000	153,000	121,000	182,000	299,000	562,000	980,000
Stellako	Ricker-PDO	19,600	79,800	2.5	1.9				462,000	594,000	113,000	200,000	350,000	571,000	991,000
Late (total excluding miscellaneous)									3,020,000	2,196,000	448,000	781,000	1,598,000	3,907,000	6,622,000
Cultus <sup>l&amp;k</sup>	Power(juv)-FrD-peak	341,000	369,200	0.02	0.02				39,000	86,000	5,000	8,000	15,000	31,000	60,000
Harrison <sup>l</sup>	RS	57,400	4,400	16.1	19.7				60,000	71,000	37,000	99,000	380,000	1,660,000	2,637,000
Late Shuswap	Larkin	32,300	1.2M	4.1	1.4				2,152,000	1,427,000	43,000	109,000	251,000	587,000	1,192,000
Portage	Power	800	11,000	5.3	5.1				40,000	27,000	4,000	9,000	19,000	37,000	68,000
Weaver	Power(juv)-PDO	15,800	13,600	11.8	6.9				363,000	209,000	185,000	281,000	440,000	717,000	1,142,000
Birkenhead	Ricker-PDO	54,300	137,400	1.5	1.2				366,000	376,000	163,000	254,000	456,000	810,000	1,410,000
Misc. non-Shuswap <sup>m</sup>	RS (Birkenhead)	3,000	11,000						--	--	11,000	21,000	37,000	65,000	113,000
<b>TOTAL SOCKEYE SALMON</b> (TOTAL excluding miscellaneous)									(7,571,000)	(5,254,000)	(1,640,000)	(2,582,000)	(4,426,000)	(8,701,000)	(14,389,000)
<b>PINK SALMON</b>	Power-SSS	2009 Brood Year Fry							11,800,000	11,800,000	9,156,000	12,648,000	17,495,000	25,125,000	37,496,000
		1 billion													

- Probability that return will be at, or below, specified projection.
- See Table 5 for model descriptions
- Sockeye: 1953-2009 (depending on start of time series)
- Sockeye: 1955-2007 (depending on start of time series)
- Unforecasted miscellaneous Early Summer Stocks (Early Shuswap stocks: S.Thompson; used Scotch/Seymour R/EFS)
- Unforecasted miscellaneous Early Summer stocks (N. Thomson tributaries; used Raft/Fennell R/EFS).
- North Thompson River (used Raft/Fennell R/EFS)
- Chilliwack Lake and Dolly Varden Creek (used Early Summer R/EFS)
- Nahatlach River & Lake (used Early Summer R/EFS)
- Brood year smolts in columns C & D (not effective females)
- For Cultus, this 'Recent Productivity' smolt-jack forecast uses a truncated (brood years 1997-2004) marine survival time series.
- Harrison are age-4 (column C) and age-3 (column D).
- Unforecasted miscellaneous Late Run stocks (Harrison Lake down stream migrants including Big Silver, Cogburn, etc.); used Birkenhead R/ & Weaver age propitons

## Fraser Sockeye Escapement Plan

**2011 Escapement Strategy and Harvest Rate Calculations:** The Fraser River Sockeye Spawning Initiative (FRSSI) was undertaken to develop escapement strategies for Fraser River sockeye. Consultations are on-going with Regional, First Nations, and sector advisory processes for feedback on 2011 Fraser Sockeye escapement objectives. Preliminary escapement options for 2011 are based on the 2010 options and are shown in Figures 7-5a – 7-5d.

The FRSSI escapement goal setting process uses a simulation model to evaluate different management objectives and assumptions about stock dynamics in a consistent framework. The FRSSI model was developed to improve our understanding of the complex interaction between the population dynamics of individual stocks and escapement strategies that, due to practical constraints on in-season management, are applied to groups of stocks. The model currently includes 19 stocks (i.e. production units delineated based on spawning site and timing), grouped into 4 timing aggregates for management purposes. Each model scenario applies a specified escapement strategy to a timing aggregate 48 years into the future, starting with recent years, and tracks the performance of each individual stock within the aggregate.

The stocks within each timing group are modelled individually, based on the historical relationship between spawning escapement (i.e. number of adults in the brood year) and recruitment (i.e. the number of adults returning four and five years later).

For details of the simulation model results, refer to the 2010 escapement memo available at: <http://www.pac.dfo-mpo.gc.ca/consultation/fisheries-peche/smon/docs/2010-strat-sal-sau.pdf> Figure 7-5e shows the results of simulations for Late Run including Birkenhead, which were not included in the 2010 escapement memo.

For more information about the FRSSI model refer to report number 2855 by Pestal et al. (2008) at: <http://www.dfo-mpo.gc.ca/libraries-bibliotheques/manu-eng.htm>

Figures 7-5a – 7-5d are shown with historical median management adjustments, and an exploitation rate floor meant to protect 90% of the run while allowing for fisheries on more abundant co-migrating run timing groups with the exception of Late Run where a 20% exploitation rate floor is shown, consistent with recent years' practice. Management adjustments will change with updated information on environmental conditions and migration timing, and feedback is sought on the exploitation rate floors. In the past, the exploitation rate floors have ranged from 2% (for test fishing only), to 10%, to 20% (for Late run).

The FRSSI process will be undertaking a review of a number of items beginning in 2011 and continuing into the future. The possibility of including any of these items into escapement plans in future years will be based on feedback received. Priority items under review include:

- moving stocks to other run timing groups (e.g. Harrison into Summer run)
- projecting recent stock-specific productivities into the future (e.g. declining for Early Stuart, increase for Harrison, no change for Late Shuswap)

Additional items under review include:

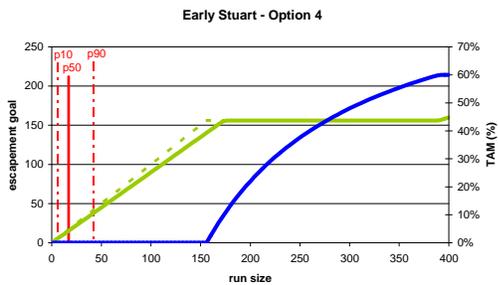
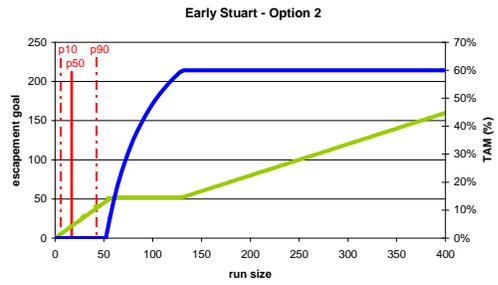
- alternative TAM rule shapes, which include:
  - caps higher than 60%
  - increasing escapement goals for run sizes in the mid-range
- modeling the effects management actions have on different components of an aggregate (e.g. earlier component vs. later component)

**Figure 7-5a – 2011 Escapement options for Early Stuart Sockeye over a range of pre-season forecasts (recent productivity).**

**2011 Early Stuart**  
 pMA 0.63  
 ER floor 10%  
 ER cap 60%

	p10	p25	p50	p75	p90
<b>run size</b>	6,000	11,000	17,000	27,000	42,000
<b>Option 1</b>	<i>no fishing point/fixed escapement target:</i>				
cut back point:	4,000				
TAM rule	33%	60%	60%	60%	60%
Esc. goal	4,000	4,400	6,800	10,800	16,800
MA	2,500	2,800	4,300	6,800	10,600
goal + MA	6,500	7,200	11,100	17,600	27,400
ER after MA	0%	35%	35%	35%	35%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	35%	35%	35%	35%
allowable catch	1,000	4,000	6,000	9,000	15,000
<b>Option 2</b>	<i>no fishing point/fixed escapement target:</i>				
cut back point:	52,000				
TAM rule	0%	0%	0%	0%	0%
Esc. goal	6,000	11,000	17,000	27,000	42,000
MA	3,800	6,900	10,700	17,000	26,500
goal + MA	9,800	17,900	27,700	44,000	68,500
ER after MA	0%	0%	0%	0%	0%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	10%	10%	10%
allowable catch	1,000	1,000	2,000	3,000	4,000
<b>Option 3</b>	<i>no fishing point/fixed escapement target:</i>				
cut back point:	108,000				
TAM rule	0%	0%	0%	0%	0%
Esc. goal	6,000	11,000	17,000	27,000	42,000
MA	3,800	6,900	10,700	17,000	26,500
goal + MA	9,800	17,900	27,700	44,000	68,500
ER after MA	0%	0%	0%	0%	0%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	10%	10%	10%
allowable catch	1,000	1,000	2,000	3,000	4,000
<b>Option 4</b>	<i>no fishing point/fixed escapement target:</i>				
cut back point:	156,000				
TAM rule	0%	0%	0%	0%	0%
Esc. goal	6,000	11,000	17,000	27,000	42,000
MA	3,800	6,900	10,700	17,000	26,500
goal + MA	9,800	17,900	27,700	44,000	68,500
ER after MA	0%	0%	0%	0%	0%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	10%	10%	10%
allowable catch	1,000	1,000	2,000	3,000	4,000

Options used in past cycle:  
 2007 Option 3  
 2008 Option 3  
 2009 Option 4  
 2010 Option 4



--- escapement goal    --- esc goal w ER floor    — TAM

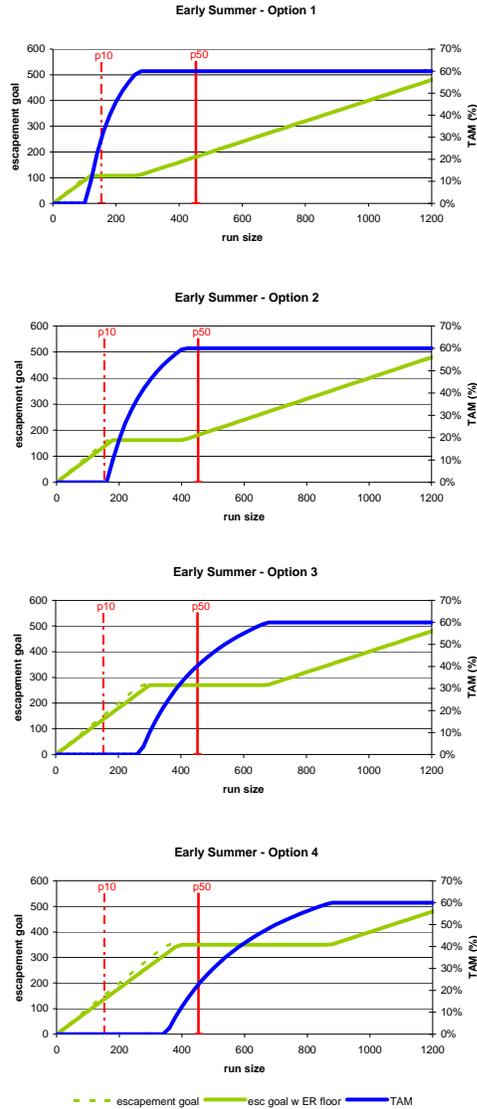
**Figure 7-5b – 2011 Escapement options for Early Summer Sockeye over a range of pre-season forecasts (recent productivity).**

**2011 Early Summer**

pMA	0.51
ER floor	10%
ER cap	60%

	p10	p25	p50	p75	p90
<b>run size (w misc)</b>	153,000	257,000	453,000	894,000	1,558,000
<b>Option 1</b>	<i>no fishing point/ fixed escapement target (w/o misc):</i>				
cut back point (w/o misc):				80,000	
no fishing (w misc)	114,400	113,600	109,200	110,400	101,200
cut back (w misc)	286,000	284,000	272,900	275,900	252,900
TAM rule	25%	56%	60%	60%	60%
Esc. goal	114,400	113,600	181,200	357,600	623,200
MA	58,300	57,900	92,400	182,400	317,800
goal + MA	172,700	171,500	273,600	540,000	941,000
ER after MA	0%	33%	40%	40%	40%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	33%	40%	40%	40%
allowable catch	15,000	86,000	179,000	354,000	617,000
<b>Option 2</b>	<i>no fishing point/ fixed escapement target (w/o misc):</i>				
cut back point (w/o misc):				120,000	
no fishing (w misc)	171,600	170,400	163,700	165,600	151,800
cut back (w misc)	429,000	426,000	409,300	413,900	379,400
TAM rule	0%	34%	60%	60%	60%
Esc. goal	153,000	170,400	181,200	357,600	623,200
MA	78,000	86,900	92,400	182,400	317,800
goal + MA	231,000	257,300	273,600	540,000	941,000
ER after MA	0%	0%	40%	40%	40%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	40%	40%	40%
allowable catch	15,000	26,000	179,000	354,000	617,000
<b>Option 3</b>	<i>no fishing point/ fixed escapement target (w/o misc):</i>				
cut back point (w/o misc):				200,000	
no fishing (w misc)	286,000	284,000	272,900	275,900	252,900
cut back (w misc)	715,000	709,900	682,200	689,800	632,300
TAM rule	0%	0%	40%	60%	60%
Esc. goal	153,000	257,000	272,900	357,600	623,200
MA	78,000	131,100	139,200	182,400	317,800
goal + MA	231,000	388,100	412,100	540,000	941,000
ER after MA	0%	0%	9%	40%	40%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	10%	40%	40%
allowable catch	15,000	26,000	45,000	354,000	617,000
<b>Option 4</b>	<i>no fishing point/ fixed escapement target (w/o misc):</i>				
cut back point (w/o misc):				260,000	
no fishing (w misc)	371,800	369,200	354,800	358,700	328,800
cut back (w misc)	929,400	922,900	886,900	896,800	822,000
TAM rule	0%	0%	22%	60%	60%
Esc. goal	153,000	257,000	354,800	358,700	623,200
MA	78,000	131,100	180,900	182,900	317,800
goal + MA	231,000	388,100	535,700	541,600	941,000
ER after MA	0%	0%	0%	39%	40%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	10%	39%	40%
allowable catch	15,000	26,000	45,000	352,000	617,000

Options used in past cycle:  
 2007 Option 2  
 2008 Option 2  
 2009 Option 2  
 2010 Option 3



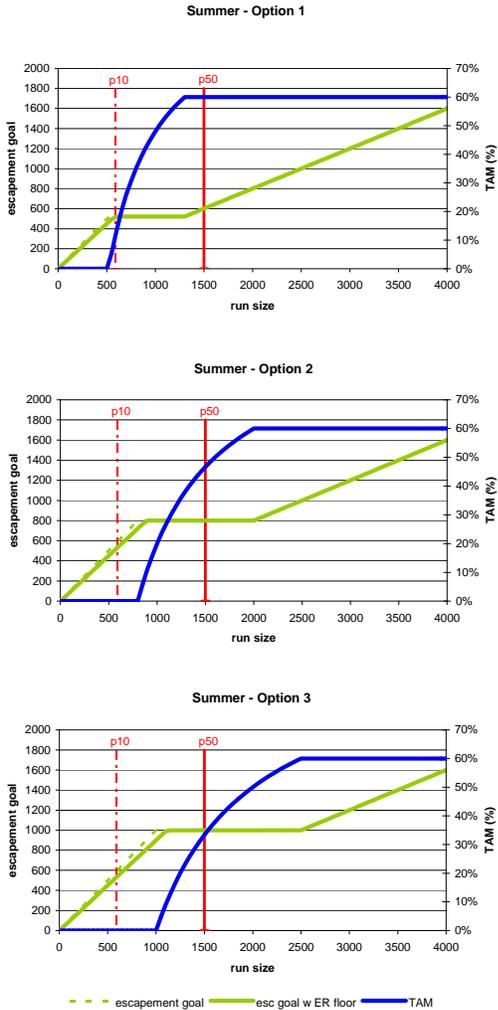
\*\*Note: Graphs display escapements goals and TAM scaled to the miscellaneous component at the p50 forecast. Actual escapement goals and TAMs at different run sizes will be slightly different than depicted

**Figure 7-5c – 2011 Escapement options for Summer Run Sockeye over a range of pre-season forecasts (recent productivity).**

**2011 Summer**  
 pMA 0.07  
 ER floor 10%  
 ER cap 60%

	p10	p25	p50	p75	p90
<b>run size</b>	590,000	903,000	1,500,000	2,657,000	4,835,000
<b>Option 1</b>	<i>no fishing point/fixed escapement target:</i>				
	520,000				
<i>cut back point:</i>	1,300,000				
TAM rule	12%	42%	60%	60%	60%
Esc. goal	520,000	520,000	600,000	1,062,800	1,934,000
MA	36,400	36,400	42,000	74,400	135,400
goal + MA	556,400	556,400	642,000	1,137,200	2,069,400
ER after MA	6%	38%	57%	57%	57%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	38%	57%	57%	57%
allowable catch	59,000	347,000	858,000	1,520,000	2,766,000
<b>Option 2</b>	<i>no fishing point/fixed escapement target:</i>				
	800,000				
<i>cut back point:</i>	2,000,000				
TAM rule	0%	11%	47%	60%	60%
Esc. goal	590,000	800,000	800,000	1,062,800	1,934,000
MA	41,300	56,000	56,000	74,400	135,400
goal + MA	631,300	856,000	856,000	1,137,200	2,069,400
ER after MA	0%	5%	43%	57%	57%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	43%	57%	57%
allowable catch	59,000	90,000	644,000	1,520,000	2,766,000
<b>Option 3</b>	<i>no fishing point/fixed escapement target:</i>				
	1,000,000				
<i>cut back point:</i>	2,500,000				
TAM rule	0%	0%	33%	60%	60%
Esc. goal	590,000	903,000	1,000,000	1,062,800	1,934,000
MA	41,300	63,200	70,000	74,400	135,400
goal + MA	631,300	966,200	1,070,000	1,137,200	2,069,400
ER after MA	0%	0%	29%	57%	57%
ER floor	10%	10%	10%	10%	10%
allowable ER	10%	10%	29%	57%	57%
allowable catch	59,000	90,000	430,000	1,520,000	2,766,000

Options used in past cycle:  
 2007 Alt Option Break points: 600k, 1500k  
 2008 Option 1  
 2009 Option 1  
 2010 Option 3

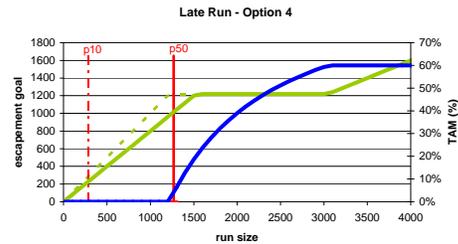
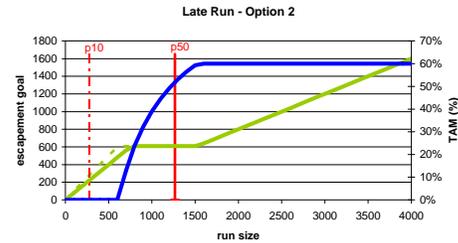


**Figure 7-5d – 2011 Escapement options for Late Run Sockeye over a range of pre-season forecasts (recent productivity).**

**2011 Late Run**  
 pMA 0.69  
 ER floor 20%  
 ER cap 60%

	p10	p25	p50	p75	p90
<b>run size (w misc)</b>	282,000	532,000	1,267,000	3,351,000	5,738,000
<b>Option 1</b>					
no fishing point/fixed escapement target (w/o misc):	400,000				
cut back point (w/o misc):	1,000,000				
no fishing (w misc)	444,100	423,900	426,600	411,000	409,000
cut back (w misc)	1,110,200	1,059,800	1,066,500	1,027,600	1,022,500
TAM rule	0%	20%	60%	60%	60%
Esc. goal	282,000	423,900	506,800	1,340,400	2,295,200
MA	194,600	292,500	349,700	924,900	1,583,700
goal + MA	476,600	716,400	856,500	2,265,300	3,878,900
ER after MA	0%	0%	32%	32%	32%
ER floor	20%	20%	20%	20%	20%
allowable ER	20%	20%	32%	32%	32%
allowable catch	56,000	106,000	411,000	1,086,000	1,859,000
<b>Option 2</b>					
no fishing point/fixed escapement target (w/o misc):	600,000				
cut back point (w/o misc):	1,500,000				
no fishing (w misc)	666,100	635,900	639,900	616,600	613,500
cut back (w misc)	1,665,400	1,589,600	1,599,700	1,541,400	1,533,700
TAM rule	0%	0%	49%	60%	60%
Esc. goal	282,000	532,000	639,900	1,340,400	2,295,200
MA	194,600	367,100	441,500	924,900	1,583,700
goal + MA	476,600	899,100	1,081,400	2,265,300	3,878,900
ER after MA	0%	0%	15%	32%	32%
ER floor	20%	20%	20%	20%	20%
allowable ER	20%	20%	20%	32%	32%
allowable catch	56,000	106,000	253,000	1,086,000	1,859,000
<b>Option 3</b>					
no fishing point/fixed escapement target (w/o misc):	800,000				
cut back point (w/o misc):	2,000,000				
no fishing (w misc)	888,200	847,800	853,200	822,100	818,000
cut back (w misc)	2,220,500	2,119,500	2,133,000	2,055,200	2,044,900
TAM rule	0%	0%	33%	60%	60%
Esc. goal	282,000	532,000	853,200	1,340,400	2,295,200
MA	194,600	367,100	588,700	924,900	1,583,700
goal + MA	476,600	899,100	1,441,900	2,265,300	3,878,900
ER after MA	0%	0%	0%	32%	32%
ER floor	20%	20%	20%	20%	20%
allowable ER	20%	20%	20%	32%	32%
allowable catch	56,000	106,000	253,000	1,086,000	1,859,000
<b>Option 4</b>					
no fishing point/fixed escapement target (w/o misc):	1,200,000				
cut back point (w/o misc):	3,000,000				
no fishing (w misc)	1,332,300	1,271,700	1,279,800	1,233,100	1,226,900
cut back (w misc)	3,330,700	3,179,300	3,199,500	3,082,800	3,067,400
TAM rule	0%	0%	0%	60%	60%
Esc. goal	282,000	532,000	1,267,000	1,340,400	2,295,200
MA	194,600	367,100	874,200	924,900	1,583,700
goal + MA	476,600	899,100	2,141,200	2,265,300	3,878,900
ER after MA	0%	0%	0%	32%	32%
ER floor	20%	20%	20%	20%	20%
allowable ER	20%	20%	20%	32%	32%
allowable catch	56,000	106,000	253,000	1,086,000	1,859,000

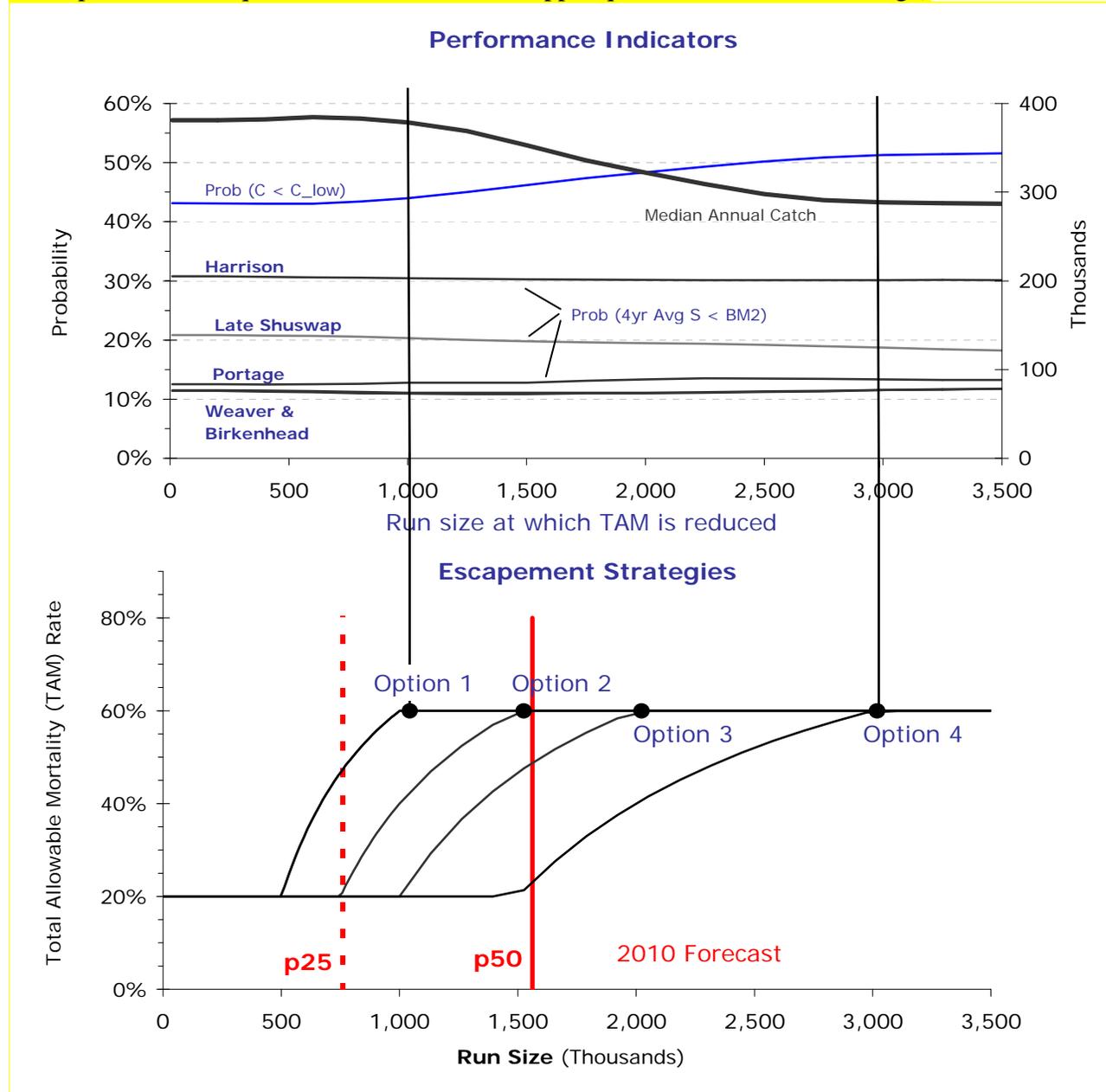
Options used in past cycle:  
 2007 ER Floor 20% (for Cultus)  
 2008 Option 1 20%  
 2009 Option 1 20%  
 2010 Option 4 10%



--- escapement goal    — esc goal w ER floor    — TAM

\*\*Note: Graphs display escapements goals and TAM scaled to the miscellaneous component at the p50 forecast. Actual escapement goals and TAMs at different run sizes will be slightly different than depicted

Figure 7-5e - Sample simulation results and options for Lates (using a 20% ER floor) (Forecast lines span the lower quarter, best estimate, and upper quarter of the forecasts range)



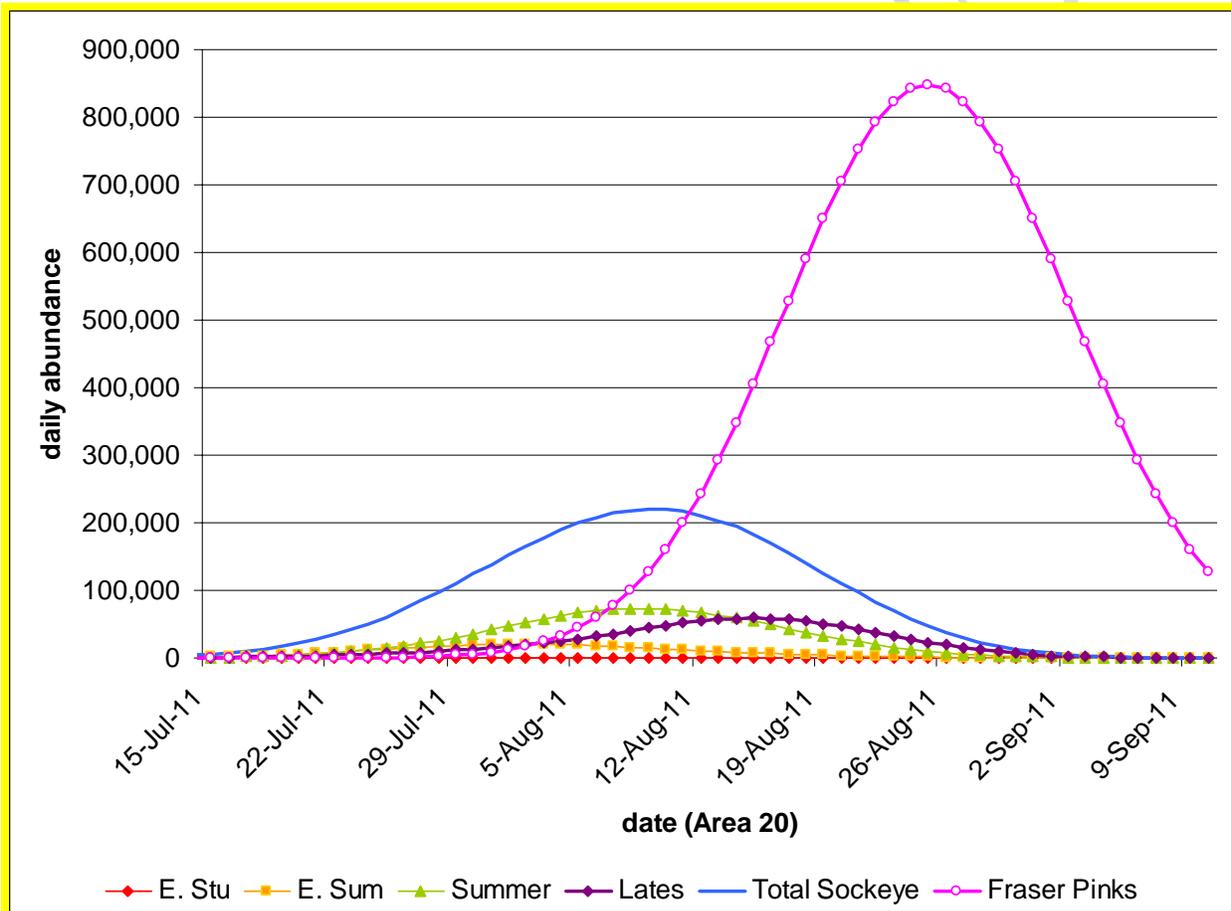
**Incidental Harvest:**

In cases when the total allowable mortality minus any management adjustment results in a zero or very low total allowable mortality for a timing aggregate, the Department may consider measures to protect 80-90% of the return of that timing aggregate while allowing for the harvest of co-migrating stocks and or species. Test fishing impacts are included as part of the harvest on the aggregate. The intention of this provision is to allow for limited fisheries directed on more abundant co-migrating stocks or species. 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 aggregate.

**Run Timing:** Fishing plan options are evaluated for a range of possible run sizes and return timing. Pre-season fishing plans will be developed at both the p50 and p25 probability levels. In-season run-size estimates form the basis for management once these estimates are available.

**Figure 7-5f: The preliminary run timing for the 2011 cycle and forecast abundance (based on the 50% probability level) for the four Fraser River sockeye aggregates based on a normal distribution of forecast returns.**



**Management Adjustments:** Management adjustments are added to the escapement goal when necessary to account for discrepancies between Mission hydro-acoustic measurements plus in-river catch and spawning escapement estimates in the form of en-route mortalities (i.e. more fish are needed to pass by Mission than spawning ground requirements in order to account for measurement errors and en-route losses). Setting appropriate management adjustments is a major component of pre-season and in-season decision-making by the FRP. Management adjustment models consider observed biases, as well as, potential relationships with in-river discharge, water temperature and timing of river entry to assist in this determination. Regardless of the causes, management adjustments to all management groups may be made in-season to

increase the probability that spawning targets will be met. For further information see: [www-sci.pac.dfo-mpo.gc.ca/fwh/](http://www-sci.pac.dfo-mpo.gc.ca/fwh/).

### 7.5.3.2 In-season Decisions

**Run Size Estimation and TAC calculations:** Pre-season forecasts of run size at various probability levels different than the 50% probability level may be used to guide development of pre-season harvest plans. In-season run size estimates based on information from test fishing operations, catches during commercial fishery openings and assessment fisheries, and hydro-acoustic estimates of abundance at the PSC hydro-acoustic facility at Mission, BC will be provided by the PSC staff to the FRP for consideration. The primary Mission acoustic estimate is derived from a combination of a shore based split beam system and a split beam system located on a boat that transects the river slightly downstream from the shore based system.

The FRP will meet regularly from late June to late September to review information as it becomes available over the course of the sockeye migration. Run size estimates will be regularly updated through the FRP process. In-season run size estimates are then used to set spawning escapement objectives, management adjustments, gross escapement objectives, calculate available TAC, and determine opportunities for fishery openings. The availability of the TAC to harvesters will also be affected by the ability of harvesters to access this TAC and other factors, including in-river migration conditions and conservation requirements for other 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: [www.psc.org/news\\_frpnews.htm](http://www.psc.org/news_frpnews.htm) (PSC) and at DFO, fishery specific notices can be found at:

**Aboriginal:** [http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search\\_options&lang=en&id=aboriginal](http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search_options&lang=en&id=aboriginal)

**Commercial:** [http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search\\_options&lang=en&id=commercial](http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search_options&lang=en&id=commercial)

**Recreational:** [http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search\\_options&lang=en&id=recreational](http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/fns/index.cfm?pg=search_options&lang=en&id=recreational)

## 7.5.4 Issues

### 7.5.4.1 Early Stuart Management

Early Stuart sockeye have experienced poor returns in most recent years, partly due to high en-route mortality as they migrate up the Fraser River. The escapement strategy, adopted in 2007 the main brood year, was intended to reduce total allowable mortality at run sizes below 270,000, with minimal allowable mortality at run sizes below 108,000. The implications of the escapement strategy for 2011 fishing plans will be strongly influenced by in-season run size

estimates across the forecast range as well as management adjustments to account for environmental conditions during the return migration.

Due to the low pre-season forecast for Early Stuart sockeye, it is likely that the marine test fisheries will be delayed to minimize the catch of Early Stuart sockeye. However, this will limit the ability for the FRP to assess the run size of Early Stuart sockeye in-season.

In recent years, window closures and other fishing restrictions have been necessary in commercial, recreational and First Nations fisheries to achieve the low exploitation rates indicated by the escapement plan. These measures are expected to be required again in 2011 which would include a rolling three week window closure based on run timing of the Early Stuart sockeye migration through various fisheries. Directed fisheries targeting Early Stuart sockeye in 2011 are highly unlikely.

**Table 7.5.4.1:** The Department will be consulting with First Nations and stakeholders to develop anticipated window closure dates. The following dates are proposed for discussion purposes.

Area	Actual Dates Start (date, time)	End (date, time)	Management Action
Area 127	open July 23, 7 days/week		Open to fishing for Fraser sockeye as of July 23 (sn., gn., tr.)
Area 11	open July 23, 7 days/week		Open to fishing for Fraser sockeye as of July 23 (sn., gn., tr.)
Area 12	open July 23, 7 days/week		Open to fishing for Fraser sockeye as of July 23 (sn., gn., tr.) Closed to sockeye above Lewis Pt until late July (Nimpkish sockeye)
Area 13	open July 23, 7 days/week		Open to fishing for Fraser sockeye as of July 23 (sn., gn., tr.)
Area 20	open July 23, 7 days/week		Open to fishing for Fraser sockeye as of July 23 (sn., gn., tr.)
Area 29	27-Jun	29-Jul noon	Open to fishing for Fraser sockeye as of noon July 29 (sn., gn., tr.)
Steveston-Port Mann Br	27-Jun	29-Jul noon	Open to selective fishing for Chinook with a sockeye encounter limit.
Port Mann Br-Sawmill Cr	27-Jun	29-Jul 6pm	Open to selective fishing for Chinook with a sockeye encounter limit.
Sawmill Cr-Texas Cr	3-Jul	31-Jul 6pm	Open to selective fishing for Chinook (dipnet, rod and reel only)
Texas Cr-Kelly Cr	3-Jul	31-Jul 6pm	Open to selective fishing for Chinook (dipnet, rod and reel only)
Kelly Cr-Deadman	3-Jul	31-Jul 6pm	Open to selective fishing for Chinook (dipnet, rod and reel only)
Deadman-Chilcotin	10-Jul	7-Aug 6pm	Open to selective fishing for Chinook (dip net only)
Chilcotin-Quesnel	10-Jul	7-Aug 6pm	Open to selective fishing for Chinook (dip net only)
Quesnel-Hixon	10-Jul	7-Aug 6pm	Open to selective fishing for Chinook (dip net only)
Hixon-Prince George	15-Jul	10-Aug 6pm	Open to selective fishing for Chinook (dip net only)
Prince George-Stuart R	15-Jul	10-Aug 6pm	Some allowable harvest in terminal area

### 7.5.4.2 Early Summer Management

In 2010, a one week extension of the Early Stuart window was implemented for the protection of weaker populations migrating in the earlier timed component of the Early Summer aggregate

stock group to ensure exploitation rates did not exceed 25%. Feedback is requested on this approach for 2011.

Significant consultation on the 2011 escapement plan and management strategy will be required in order to finalize the decision rules for Early Summer sockeye.

#### **7.5.4.3 Summer Run Management**

The Summer run makes up the majority of the 2011 run size forecast. It is expected that while fisheries will be directed on the Summer run timing group, harvest may be limited by constraints on co-migrating stocks of concern.

#### **7.5.4.4 Late Run and Cultus Lake Sockeye Management:**

##### **Late Run**

2011 is the sub-dominant Late run year. Historically, the ocean migration timing of Late Run Sockeye was similar to Summer Run Sockeye but Late Run Sockeye delayed entering the Fraser River by 4-6 weeks. Since the mid-1990s, Late Run Sockeye have entered the Fraser River much earlier than historically, and they have experienced very high levels of en-route and/or pre-spawn mortality. In the last two years, the Late run delay off the river mouth has increased to approximately 2 weeks. While a range of studies have been, and continue to be, undertaken to understand the cause and impact of this phenomenon, no causal factors have been identified. Planning for 2011 will consider the risk of early entry occurring in 2011 and the associated potential for mortalities will be incorporated into the plan. The Cultus Lake stock will continue to limit Late run exploitation rates in planning fisheries for 2011.

##### **Cultus Lake sockeye**

Management of Cultus Lake sockeye will be based on the Cultus Lake sockeye management objective and an assessment of in season information for the Late run sockeye stock aggregate. For more information, refer to section 5.3.6.

Due to the low number of Cultus fish compared to the co-migrating stocks, the exploitation rate for Cultus sockeye cannot be calculated directly. Instead, the Cultus exploitation rate is assumed to be the same as the exploitation rate from the similarly timed Late run stocks (excluding Harrison and Birkenhead) caught seaward of the confluence of the Fraser and the Vedder Rivers. Exploitation rates are based on DNA analysis of fish sampled either directly from fisheries or indirectly, from nearby test fisheries.

#### **7.5.5 Prospects**

It is likely that most fisheries in 2011 will be directed on Summer run sockeye. The extent and magnitude of these fisheries will be dependent on a number of factors, including the actual return of fish in-season, escapement goals, management adjustments and the amount of overlap between run timing groups. Fisheries will be managed in-season.

## 7.6 Barkley Sound Sockeye

### 7.6.1 Background

- The Barkley Sound stock group is composed of sockeye returning to the Somass River (Sproat and Great Central Lake) and Henderson Lake.
- The stock group returns from May to October; the main fishing period typically occurs from mid-June to early August.
- This group of stocks is fished by First Nations, the recreational sector and the commercial sector (gill net, seine and troll).
- Somass **target** escapement is estimated to be 350,000 (200,000 Great Central Lake and 150,000 Sproat Lake) and 50,000 for Henderson Lake, while the minimum escapement is set at 200,000 (Great Central and Sproat Lake combined). Under the Somass Sockeye Harvest Strategy, escapement goals increase with run size reaching 600,000 for a run of 1.8 million. A review of the minimum escapement requirement for both lake systems will begin in 2011.
- The harvest plan is based on variable exploitation rates set out in the Somass Management Framework.
- The Barkley Sound sockeye fishery is terminal, with no directed fisheries outside Barkley Sound.
- A round table advisory body assists in the development of harvest plans and in-season management for the various fisheries.
- The basis for developing annual harvest plans on these stocks is to provide for:
  - Food, social and ceremonial harvest opportunities of a number of Nuu-chah-nulth Tribal Council First Nations;
  - stable and predictable access for the recreational fishery; and
  - meeting commercial catch allocations by licence category for “B”, “D” and “G” and economic opportunities for two Nuu-chah-nulth First Nations.

### 7.6.2 Constraints

- Lack of precision of in-season run size estimates in the early portion of the season limits the exploitation rate.
- Environmental conditions may impact the timing of entry into the river, and may contribute to high mortality.
- **Non-target by-catch of species or stocks of concern.**
- Henderson sockeye is generally the weakest of the three sockeye stocks and frequently requires management measures to prevent overexploitation.
- **Gear interaction is monitored throughout the season.**

### 7.6.3 Decision Guidelines

- A pre-season forecast is used to determine fishery opening dates.
- Access issues are dealt with by the CSAB process for commercial fisheries, the SFAB for recreational fisheries, and bilateral discussions with First Nations. The Tseshaht and Hupacasath First Nations annually negotiate FSC sockeye requirements with the

Department. Consultation will occur regarding the sequence and timing of these fisheries. Harvests of Barkley Sound sockeye may also occur in FSC fisheries by other Nuu-chah-nulth First Nations.

- In years of below average abundance, catch targets for all participants must be set not to exceed a fixed overall harvest rate for the month of June. This precautionary approach is required to minimize the risk of over harvesting prior to commencement of in-season run-size re-forecasts.

**In-season Decisions**

- In order to provide protection for Henderson sockeye, inseason boundary adjustments may be made. In past years gill net fisheries were moved inside of Pocahontas Point after mid-July depending on the level of concern for Henderson sockeye. With continuing low escapements to Henderson Lake, gill net fisheries will move inside of Pocahontas Point in early July.
- The framework in Table 7-8 was developed in consultation with Tseshaht and Hupacasath First Nations, commercial and recreational harvesters. The fishing plan for 2011 will be finalized through continuing negotiations.

**Table 7-8: Key Decision Points for Barkley Sound Sockeye**

<b>Run Size</b>	<b>First Nations (FSC) Fisheries</b>	<b>Recreational Fisheries</b>	<b>Commercial Fisheries</b>
Less than 200,000	No harvest	No harvest	No harvest
200-210,000	Harvest initiated	No harvest	No harvest
210-240,000	Harvest	No harvest	No harvest
240-400,000	Harvest	Harvest initiated	No harvest
Greater than 400,000	Harvest	Harvest	Harvest initiated

Weekly in-season run size estimates are derived from commercial, recreational and First Nations fishery catches, escapement estimates from electronic counters on Sproat and Stamp Rivers, and estimates of terminal abundance from seine test fisheries and river surveys. The Barkley Sound Working Group meets weekly beginning in the last week of June to review the information and determine in-season run size estimates.

In-season harvest plan decisions are based on a weekly forecast of in season abundance and the status of catches relative to allocations. A multi party advisory board, the Area 23 Harvest Committee meets weekly in-season to review the weekly run size re-forecast, catch and escapement for the purpose of developing weekly fishing plans. Commercial boundary adjustments to protect Henderson Lake sockeye in the first week of July may be required.

**7.6.4 Issues**

- Determining recreational daily limits at low run sizes.

- DNA sampling to verify impacts is an ongoing component of fishery management in the Barkley fishery. The level to which DNA analyses will be conducted is dependent on available funding and other priorities with Barkley Sound sockeye
- Lack of agreement about escapement goals at higher run sizes.
- Sharing arrangements and timing of access for seine and gill net.
- Maa-nulth member group participation will be required in the advisory process.
- Uncertainty associated in negotiating economic opportunities for Tseshaht and Hupacasath First Nations.

### **7.6.5 Prospects**

For 2011, the sockeye return to the Somass River range from 280,000 to 2.6M adult sockeye across the six forecast methods. The recommended management forecast for total adult sockeye return to Barkley sound in 2011 is 600,000 which would support fishing opportunities for all sectors in Area 23.

As in past years, the pre-season forecast provides information to guide fisheries planning in the months leading up to the start of the return. The pre-season forecast is revised in-season based on information provided through test fishing and escapement enumeration, with in-season forecast revisions anticipated to begin in July 01, 2011.

## **7.7 Okanagan Sockeye**

### **7.7.1 Background**

Okanagan sockeye is the last remaining viable sockeye salmon stock returning to Canada through the Columbia River. Run timing into the Okanagan depends on water temperature. Peak spawning usually occurs from mid to late October. Of all Okanagan River sockeye enumerated at Wells Dam on the Columbia River, on average about 50% of those adults are enumerated on the spawning grounds.

### **7.7.2 Decision Guidelines**

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:

- If projected escapement past Wells Dam on the Columbia River is less than 10,000 sockeye, extremely limited Okanagan First Nations fishing for FSC purposes is recommended.
- If projected escapement past Wells Dam is between 10,000 and 60,000 fish, a Canadian First Nations allowable catch of 5% of the run that has migrated past the dam by July 15 is permitted.
- If projected escapement past Wells Dam exceeds 60,000 fish, a Canadian First Nations allowable catch of 10% of the run that has migrated past the dam by July 15 is permitted.

- Should the projected escapement past Wells Dam exceed 80,000 fish recreational and First Nations Economic fisheries may be considered.

### **7.7.3 Prospects**

The preliminary forecast return for Okanagan River sockeye in 2011 is 70,000 fish with approximately 95% of the return comprised of 4 year old fish. Returns are expected to exceed the long term average for the Year 2011 cycle based on brood year returns and smolt surveys. Spawning escapement in the 2007 brood year was 13,168 (AUC count) and the average spawning escapement on the 2011 cycle is 17,254 (AUC count). However, a high degree of uncertainty exists with respect to marine survival conditions. Harvest opportunities for First Nations FSC purposes in Canada is anticipated and limited directed fishing opportunities on these stocks by other harvest groups may occur.

## **7.8 Johnstone Strait Chum**

### **7.8.1 Background**

The Johnstone Strait chum fishery targets fall run chum stocks that migrate through Johnstone Strait. Most of these fish spawn in Johnstone Strait, Strait of Georgia, and Fraser River areas, 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 range 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).

Due to the variation in chum returns over the years, a new strategy for chum management was initiated in Johnstone Strait starting in 2002. In order to ensure sufficient escapement levels, while providing more stable fishing opportunities, a fixed harvest rate strategy was implemented. The exploitation rate is set at 20% across all harvesters, unless abundance is below a critical threshold of 1 million chum established for conservation purposes. Of the overall 20% exploitation rate, a 16% exploitation rate is allocated to the commercial sector, and the remaining 4% is set aside to satisfy FSC and recreational harvest requirements and to provide a buffer to the commercial exploitation. Past tagging studies conducted in 2000, 2001 and 2002 helped in the development of this strategy in assessing the exploitation rate and migration timing of chum stocks in the Johnstone Strait.

Under the fixed harvest rate model, commercial fleets are expected to have more consistent and predictable fishing opportunities than with the previous clockwork model. This was one of the main objectives for the new approach. This goal has been met with regular fisheries planned each year well in advance of the actual return. A chum working group meeting will be scheduled in the May to July time period to begin planning discussions for the 2011 fishery.

It is anticipated that there will be two competitive seine openings; however, a potential chum demonstration fishery in 2011 is under discussion with the Area B Harvest Committee.

Since 2008, an Area H troll full fleet share-based demonstration troll fishery has been in place involving transferable boat days. The initial allocation of boat days was based on Area H's share of the allowable troll exploitation rate. The fishery was divided into two fishing periods with a short break in between. Boat days were transferable within each fishing period but not between periods. A maximum of one third of the total number of boat days held could be carried over from fishing period one to fishing period two provided that that the day(s) was not fished.

### **7.8.2 Constraints**

- 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.
- When run sizes are expected to be below the critical threshold, commercial fisheries will be suspended and there will be only assessment fisheries and non-commercial fisheries.
- No commercial opportunities will occur prior to late September due to coho conservation requirements.
- First Nations harvest opportunities are provided to meet FSC requirements.
- Recreational fishing opportunities are provided at normal daily limits of four chum per day.

### **7.8.3 Decision Guidelines**

For run sizes above the 1 million chum critical threshold, fisheries will be conducted using a fixed 20% harvest rate approach in Johnstone Straits.

The fixed harvest rate fishing schedule is implemented based upon effort, time and area. Fishing schedules are initially developed based on the assumption of 'normal fleet participation' (i.e. recent year's maximum fleet participation in the chum fishery or trend in effort).

Fishing schedules and exact fishing dates will be confirmed pre-season following consultation with industry and other stakeholders. Considerations are given to avoid weekend commercial fisheries in lower Area 13, in order to minimize any conflicts with the recreational fishery.

The following fishing plan has been developed in recent years:

#### **Seines - First Fishery**

- First fishery will provide for a one day, 12 hour fishery, at the end of September or first week of October. No opportunities for extended fishing time for the first fishery.

#### **Seines - Second Fishery**

- Second fishery will provide for a one day, 10 hour fishery, in 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.
- An option for a demonstration fishery in 2011 is under discussion with the Area B Harvest Committee and is to be confirmed.

#### **Gill net**

- Gill net fisheries are scheduled to commence at the end of September or first week of October.
- Fishing times are scheduled separate from the seine fishery when and where possible.
- Duration of the fishing period is generally 41 hours and will be confirmed in-season based on effort.
- Fishing opportunities on the weekend are generally not planned in order to minimize any potential gear conflicts with the recreational fishery in lower Area 13 and also to minimize any processing issues on weekends.

### **Troll**

- Fisheries are scheduled to commence at the end of September or the first week of October.
- Fishing opportunities on the weekend and Statutory Holidays in lower Area 13 are generally not planned in order to minimize any potential gear conflicts with the recreational fishery.
- In 2011, Area H is again planning an effort share-based demonstration fishery. Refer to Appendix 9, Section 9.17 for further details.

### **In-season Decisions**

Licence area advisors are consulted on harvesting opportunities through in-season licence area advisory bodies. These consultations are done regularly through weekly conference calls starting late September.

The following considerations will guide fisheries management decisions in-season:

- Amount of effort in each fishery and fishing time period; and
- Weather conditions during the fishery.

#### **7.8.4 Issues**

- When run size is expected to be below the critical threshold of 1.0 million fish commercial fisheries will be suspended and there will be only assessment fisheries and non-commercial fisheries.
- 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 2011.
- A troll demonstration fishery is planned again for 2011 which will be an effort share-based management approach similar to previous years.
- A plan to minimize gear conflicts between the commercial and recreational sectors was implemented starting in 2007. Subarea 13-7 (Deepwater Bay) was closed during weekends and Thanksgiving Monday to the commercial sector. During weekdays, Subareas 13-6 and 13-7 were open to commercial gear. This plan is expected to continue in 2011.

#### **7.8.5 Prospects**

The 2011 chum return through Johnstone Strait is projected to be low to near target, based on the below average parental brood abundance in 2007; however, there are indications of improved marine survivability of stocks out-migrating in 2008. Overall, there is high variability in chum returns, and ocean survival rates will be a key factor in the strength of 2011 returns.

## 7.9 Fraser River Chum

### 7.9.1 Background

The Fraser River chum run size estimate is derived from a run size estimation model based on the Albion test fishery. The escapement goal for the Fraser River is 800,000 chum.

### 7.9.2 Constraints

- By-catch of other species will be minimized as required (e.g. coho and steelhead). Conservation of Interior Fraser coho will result in fishing restrictions from early September to mid-late October in the main stem of the river from the mouth to Mission.
- Conservation of Interior Fraser steelhead will result in fishing opportunities delayed until after mid-October in order to meet conservation requirements for Interior Fraser steelhead. In addition, fishing plans will be designed to protect 80% of the run with a 90% certainty in Fraser River fisheries.
- Development of a Fraser River commercial chum salmon management plan will require involvement from the Province of British Columbia.
- Commercial fisheries for Lower Fraser River First Nations for chum salmon will be considered. If Fisheries Agreements are negotiated they will be managed based on the same priority as Area E commercial fisheries.

### 7.9.3 Decision Guidelines

Management of the chum fisheries will be based upon in-season information. 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 will be announced in mid-October.

Table 7-9 provides a summary of key decisions for the management of the Fraser River chum fishery. Further changes may be made to Table 7-9, dependent on results of further analysis.

**Table 7-9. Key decision points for Fraser River chum**

Run Size	Harvest Plan	First Nations	Commercial	Recreational
<800,000 in Fraser	<10%	Limited (Reduced hours and days/week fishing).	Closed	Mainstem Fraser River closed, restricted openings on tributaries
800,000-916,000 in Fraser	Catch not to exceed 81,000 (72,000 First Nations and 9,000 test fishing)	Normal (72,000)	Closed	Mainstem Fraser River open, restricted openings on tributaries

916,000-1,050,000 in Fraser	Commercial catch not to exceed 10% for chum.	Normal (72,000)	Open (35,000-105,000)	Open
>1,050,000 in Fraser	Commercial catch not to exceed 15% for chum.	Normal (72,000)	Open	Open

The following decision guidelines apply to the management of the recreational chum fisheries:

- At run sizes below 800K the recreational fishery on the mainstem Fraser is proposed to be closed and openings on tributaries would be limited to those where a surplus was likely to occur.
  - surpluses may be identified on hatchery enhanced systems
- At run sizes from 800 to 916K there is opportunity for the small impact recreational fishery to remain open on the mainstem Fraser. Openings on tributaries would be limited to those where a surplus was likely to occur.

The following decision guidelines apply to the management of the commercial chum fisheries the Fraser River:

- Mandatory non-retention of all incidentally caught steelhead and coho.
- A minimum commercial TAC of 35,000 chum has been identified as a requirement to support a one day commercial fishery.
- The standard fishing areas for directed chum harvesting are primarily inside the river (portions of Subareas 29-9 and 29-11 through 29-17).
- Whenever practical, 24 hours notice will be provided for openings.
- Advisors will be updated on current in-season status through conference calls.
- In-river commercial gear is restricted to gill nets with a minimum mesh size of 158 mm (approximately 6.25”).
- Revival tanks are mandatory, as identified in the 2011 Area E Gill Net Conditions of Licence.

#### 7.9.4 Issues

Selective fishing methods to avoid/reduce steelhead encounters and minimize steelhead mortality will continue to be required. Methods including shorter nets and reduced soak times have been practiced since 2002 and will continue to be implemented in 2011.

#### 7.9.5 Prospects

Although formal quantitative forecasts are not prepared for Fraser River chum, a stock status of “low” suggests directed fisheries are uncertain, likely to be small if permitted and dependent on in-season information. Steelhead prospects are poor; the stock continues to show a downward decline and the abundance is well below carrying capacity. As such, Fraser River commercial fisheries will continue to be restricted.

### 7.10 Area 14 Chum Decision Guidelines

### **7.10.1 Background**

This fishery is directed at the enhanced stocks of three systems: Puntledge, Qualicum and Little Qualicum Rivers. The Qualicum River is often referred to as the 'big' Qualicum River, to better distinguish it from the Little Qualicum River. Chum returning to this area have been enhanced since the late 1960s and terminal fisheries have occurred in October and November since the 1970s. A pre-season forecast of chum returning to Area 14 chum is based on brood escapement, average survival and age composition. In-season run strength is assessed from any early catches, visual observations at river estuaries, and by escapement counts to the three river systems. The escapement goals for the three river systems are 60,000 for Puntledge River, 130,000 for Little Qualicum River, and 100,000 for Qualicum River, adding up to an overall escapement goal of 290,000 chum not including enhancement facility requirements of about 10,000 chum bringing the total escapement goal to 300,000.

Strait of Georgia chum are managed as a component of "mixed-stock harvest strategy" chum for Johnstone Strait and the northern Strait of Georgia. Fishing opportunities are guided by commercial allocation targets for chum salmon in the south coast. Management is guided by advice from the South Coast Chum Advisory Committee which has been in operation since 2004. This committee represents interests for mid-Vancouver Island, Johnstone Strait and WCVI fisheries.

First Nations FSC fisheries are conducted in Area 14 and at the hatcheries prior to consideration of ESSR fisheries. Tidal recreational fisheries are subject to the normal daily and possession limits (daily limit four per day/possession eight) and are open throughout the area. Once escapements have been confirmed, non-tidal recreational fisheries for chum, chinook and coho in the Puntledge and Big Qualicum Rivers will be considered. These fishing opportunities may occur as early as the second to fourth week of October based upon in-season and past return timing of chum, chinook and coho. The management objectives for Area 14 are:

- Achieve Area 14 chum escapement requirements of 300,000.
- Ensure adequate chinook and coho escapements to Area 14 enhancement facilities.
- Provide access to First Nations for FSC purposes.
- Maximize economic return.
- Work towards south coast chum allocation targets for gill net, seine and troll.
- Minimize the harvest of passing stocks.
- Attempt to manage initial fisheries in Area 14 to avoid large surpluses (i.e. greater than 100,000).

### **7.10.2 Constraints**

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. 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. By-catch concerns for coho are minimal after November 10. Outside boundaries are designed to

minimize impacts on passing stocks. The gill net fishery may be restricted to daylight hours only if there are significant levels of non-target species catch (e.g. coho).

### **7.10.3 Decision Guidelines**

This fishery has a specific harvest strategy, implemented since 1981. The strategy consists of limited early harvest prior to escapement occurring. The allowable early chum harvest is calculated from 65% of the predicted surplus (terminal return run size minus escapement (300,000) and buffer 100,000. The buffer safeguards against errors in forecast stock abundance. The surplus within the 100,000 buffer and remaining 35% of the surplus may be harvested provided that escapement targets have been achieved. Fisheries may be considered in 2011 if escapement goals are achieved.

A limited early harvest of chum is planned prior to escapement occurring based on the formula described above. Escapement information becomes increasingly important when considering further opportunities.

Opportunities for gill net, seine and troll fishery openings starting in the second or third week of October are based on pre-season forecasts and, in-season catch per unit effort (CPUE) information from commercial chum fisheries in Johnstone Strait.

The recommended approach regarding Area 14 is made at the first meeting of the Chum Advisory Committee. This meeting is tentatively scheduled for the first week of October. If poor catches in the commercial chum fisheries in Johnstone Strait indicate low chum abundance, the decision may be deferred until the following week. Seine opportunities are normally considered from late October to late November although there may be consideration of controlled (limited effort) fishing earlier. Based on feedback from the Area D Harvest Committee, the open times for gill net fisheries in Area 14 in the latter part of 2007 were changed to start at 9 am and finish at 9 am, based on a 48 hour opening, rather than 4 pm to 4 pm. This approach was also taken in 2008, opening times varied in 2009; there were no fisheries in 2010.

#### **In-season Decisions**

Additional opportunities using in-season data are evaluated at weekly meetings of the Chum Advisory Committee which usually occur from mid-October to late November. Each week, the following considerations will guide the length of net and troll openings:

- If gear counts indicate a modest fleet size of 50 vessels or less, gill net and troll openings may be expanded beyond one to two days per week subject to stock expectations.
- Escapement information is factored into the amount of fishing time that is provided. For example, there is a possibility for reducing or eliminating beach and creek mouth boundaries when the overall escapement goal has been reached, individual surpluses have been identified and by-catch of non-target species is not an issue. Escapements are monitored by DFO Stock Assessment and local hatchery staff.
- Additional fishing days are considered if time is lost due to poor weather conditions.

- A limited effort seine fishery with a catch target will be considered from late October to late November, based on chum escapement, abundance in the approach areas and allocation guidelines. Full fleet opportunities may also be available. Further fishing opportunities for gill net and troll may be considered following the seine fisheries.

#### **7.10.4 Issues**

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.

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 consideration of fishing strategies to selectively target the Puntledge River return.

#### **7.10.5 Prospects**

Brood year (2007) escapements were below average. Survival rates appear average to low. Preliminary 2010 returns appear to have been lower than the pre-season forecast for all southern Strait of Georgia stocks. For 2011 a below average return is expected, however, chum forecasts remain highly uncertain.

### **7.11 Area 16 Chum Decision Guidelines**

#### **7.11.1 Background**

This fishery targets wild chum stocks returning to river systems in the Jervis Inlet area. The main systems are Tzoonie, Deserted and Skwawka Rivers. The overall escapement goal for Jervis Inlet streams is 110,000. These terminal fisheries occur when the individual or combined escapement goals have been assured.

Management is guided by advice from the South Coast Chum Advisory Committee which has been in operation since 2004. This committee represents interests for mid-Vancouver Island, Johnstone Strait and WCVI fisheries. Fishing opportunities do not occur on a regular basis. There were no fisheries in Area 16 in 2009 or 2010. Area 16 chum fishing opportunities are guided by coast-wide allocations of chum salmon. Assessment in the area is conducted by Fisheries and Oceans Canada Charter Patrol vessels, DFO Stock Assessment, and Sechelt Indian Band staff.

#### **7.11.2 Constraints**

There is mandatory non-retention of coho. Fishing is limited to terminal areas to minimize impacts on passing stocks.

#### **7.11.3 Decision Guidelines**

Commercial fishing opportunities are evaluated at weekly meetings of the Chum Advisory Committee, usually starting in the first week of October. In-season data is reviewed on a weekly basis until the end of the season, which usually occurs around the end of November. Area 16 chum fisheries are not planned based on pre-season forecasts alone. The potential implementation of a limited fleet-size (e.g. three to five vessels) weekly assessment fishery in the lower Jervis Inlet area may be discussed with the Area E and H Harvest Committees. A weekly assessment fishery in the last two weeks of October and the first week of November may, over time, provide an earlier indication of overall abundance returning to this area. Fishing opportunities will be provided in an area when the escapement goal has been achieved. Achievement of the escapement goal includes the numbers of fish in-river plus the amount of fish inside a designated sanctuary area. The earliest potential fishing opportunity is anticipated near the end of October.

#### **7.11.4 Prospects**

A below average return is expected to Area 16 streams based on trends in recent years. Fishing opportunities are unlikely.

### **7.12 Area 17 Chum Decision Guidelines**

#### **7.12.1 Background**

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. Escapements fluctuate annually and fishery openings are planned in-season based on escapement estimates. Management is also guided by advice from the Chum Advisory Committee as discussed for Areas 14 and 16. Area 17 chums are managed as a component of Study Area chums and fishing opportunities are guided by coast-wide allocations of chum salmon. The overall escapement goal for the Nanaimo River is 60,000.

#### **7.12.2 Constraints**

- Subarea boundaries protect migrating Fraser River chum and confine the fishery to the Nanaimo River stock.
- Coho and chinook conservation measures in effect until November 10 include non-retention and barbless hooks for troll.
- 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 MVI Chum Subcommittee.

#### **7.12.3 Decision Guidelines**

Pre-season forecasts are helpful in defining possible opportunities, but decisions to open fisheries are not based on pre-season information. Opportunities are evaluated during the weekly in-season review of Nanaimo escapement estimates within the MVI Chum Subcommittee process.

Escapement estimates are derived from a combination of helicopter over-flights, combined DFO/Snuneymuxw in-river assessment, on-grounds charter patrol surveys of approach and terminal areas and fishery officer patrols of the river.

Opportunities for gill net, troll and seine fisheries are discussed once fish have started to enter the Nanaimo River and are present in terminal areas. Final decisions are made at the weekly Subcommittee meeting. If commercial opportunities are identified, management will be guided by the following considerations:

- Gill nets open for one or two days. Fishing days and duration subject to escapement levels.
- Troll open seven days per week because of demonstrated low catch rates.
- After initial opening, continued fishing opportunities depend upon information derived from CPUE in the commercial fisheries, and on-going approach area and in-river assessments.
- If catches remain good and escapement goal is reached, commercial fisheries can continue.
- Additional fishing days will be considered if time is lost due to poor weather conditions.

#### **7.12.4 Issues**

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.

#### **7.12.5 Other Fisheries**

First Nations FSC fisheries as well as tidal/non-tidal recreational fisheries are conducted on these stocks. Local FSC opportunities are undertaken by Nanaimo First Nations in consultation with the Department. Tidal recreational fisheries are subject to the normal daily and possession limits and there are no closed areas. There are no opportunities for non-tidal recreational fisheries in the Nanaimo River.

#### **7.12.6 Prospects**

Brood year (2007) escapements were below average. Survival rates appear average to low. Preliminary 2010 returns appear to have been lower than the pre-season forecast in the Nanaimo River. For 2011 a below average return is expected; however, chum forecasts remain highly uncertain.

### **7.13 Area 18 Chum Decision Guidelines**

#### **7.13.1 Background**

This fishery is directed primarily at Cowichan River stocks; Goldstream chum are also harvested to some extent. Fishery openings in mid to late November are limited to Satellite Channel to minimize impact on the earlier timed Goldstream stocks. Chemainus River stocks are also impacted but likely to a lesser extent.

Fishery openings are planned in-season based on escapement estimates. Management is also guided by advice from the Cowichan Fisheries Roundtable (the Roundtable) and the Chum Advisory Committee.

### **7.13.2 Constraints**

- Subarea boundaries protect coho holding off Cherry Point.
- Beach boundaries are in effect to protect coho and chinook.
- Other coho conservation measures in effect include non-retention, barbless hooks for troll, and mandatory brailing for seines.
- 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 MVI Chum Subcommittee.

### **7.13.3 Decision Guidelines**

Pre-season forecasts are helpful in defining possible opportunities, but decisions to open fisheries are not based on pre-season information. Opportunities are evaluated during the weekly in-season review of Cowichan escapement estimates within the Roundtable and the Chum Advisory Committee process.

It is the Cowichan Harvest Roundtable's goal to identify potential commercial fisheries earlier in the run timing, to harvest the identified surplus throughout the run-curve instead of cropping the surplus for the end of the run, and to be able to make decisions quickly so that fisheries can be initiated in a quick and timely manner.

A revised escapement target of 140,000 has been accepted by the Roundtable. The revised chum target is based on habitat area and chum spawning densities in the Cowichan River. The previous Cowichan chum escapement target of 110,000 was largely based on historical escapement estimates (visual inspection). Since the 2006 installation of the DIDSON Counter, sonar has been used to estimate the number of fish swimming past a lower river site. The sonar was instituted to assess these chum stocks because the visual counting method had deteriorated due to poor visibility through the water column (silt) and often high water from fall storms.

Regardless of in-river escapement estimates, the assessment of marine abundance through the test fishery and/or over-flights will decide if there is an opening on Cowichan chum stocks. The following guidelines are used for in-season management:

- 25,000 chum enumerated in the Cowichan River triggers the start of the Area 18 seine test fishery.
- Over-flight and Area 18 seine test fishery information will be used in conjunction with upper river spot indicators to determine whether the remainder of the escapement goal is expected to be achieved.

- Small gill net and troll fisheries will be initiated on short notice if in-stream migration numbers and marine approach area abundance warrants an opening. These fisheries are subject to commercial licence area allocation status.
- Recreational fisheries in the river open when abundance is deemed sufficient.
- Troll fisheries may open seven days per week because of demonstrated low catch rates (depending on allocation).
- Subject to fishery review and continued escapements, commercial fisheries may continue and opening types will be adjusted to meet overall guidelines.
- Specific dates and boundaries will be determined in-season by the roundtable process. Timing of migration is also important in terms of the health of the run and in relation to mixed stocks of Goldstream chum in the Area 18 fishing area.

#### **7.13.4 Issues**

- Discussions are on-going to discuss First Nations economic opportunities.

#### **7.13.5 Other Fisheries**

First Nations FSC fisheries and tidal/non-tidal recreational fisheries are conducted on these stocks. Tidal recreational fisheries are subject to the normal daily and possession limits. Non-tidal recreational fisheries will also be considered if escapement and FSC needs are met.

#### **7.13.6 Prospects**

Brood year (2007) escapements were below average. Survival rates appear average to low. Preliminary 2010 returns appear to have been below the pre-season forecast for the Cowichan River. For 2011 a below average return is expected; however, chum forecasts remain highly uncertain.

### **7.14 Area 19 Chum Decision Guidelines**

#### **7.14.1 Background**

This fishery is directed primarily at Goldstream River stocks although some Cowichan River chum are also harvested. Fishery openings set for mid to late November are limited to portions of Saanich Inlet which are outside or to the north of Squally Reach. This area restriction is implemented to minimize impact on Goldstream chinook and coho.

Fisheries are planned in-season based on escapement estimates. Management is also guided by advice from the MVI Chum Subcommittee. Area 19 falls under the same management regime as Area 18, and fishing opportunities are guided by coast-wide allocations of chum salmon. The overall escapement goal for the Goldstream River is 15,000.

If a surplus is identified, an economic opportunity fishery to Saanich Tribes may be conducted separately from food, social and ceremonial fisheries under the same priority and similar rules as

the commercial fishery and fish harvested will be off-set with licences retired from the commercial fishery.

#### **7.14.2 Constraints**

- Subarea boundaries to protect chinook and coho holding in Squally Reach.
- Gill nets may be restricted to daylight hours if coho encounters are high.
- Additional conservation measures are in effect, such as: non-retention of coho and chinook, barbless hooks for troll, mandatory brailing for seines. Maximum soak times for gill nets and on-board observers could be implemented if high by-catch occurred.

#### **7.14.3 Decision Guidelines**

Chum fisheries in Area 19 are managed on the basis of in-season escapement estimates. Goldstream escapement estimates are derived from stream walks as this is a relatively small system with good viewing conditions.

If commercial opportunities are identified, management will be guided by the following considerations:

- Seines and gill nets will alternate fishing days subject to escapement estimates and the entire MVI Chum Subcommittee review process and status in the coast wide gear type allocation.
- After the initial opening, continued fishing opportunities depend upon information derived from CPUE in the commercial fisheries, and on-going approach area and in-river assessments, as well as encounters of chinook and coho.
- If catches remain good and escapement is reached, commercial fisheries can continue.

#### **7.14.4 Issues**

Further discussions on harvest planning arrangements are required for potential commercial and Saanich Tribes economic opportunity fisheries. The goal will be to attempt to finalize plans well in advance of the fishing season.

#### **7.14.5 Prospects**

Brood year (2007) escapements were below average. Survival rates appear average to low. Preliminary 2010 returns appear to have been below the pre-season forecast for the Goldstream River. For 2011 a below average return is expected, however, chum forecasts remain highly uncertain.

### **7.15 Nitinat Chum Decision Guidelines**

#### **7.15.1 Background**

The minimum gross escapement goal is 225,000 chum; 175,000 into the rivers, 10,000 for FSC fisheries, and a minimum 40,000 into the hatchery. The maximum escapement target is 325,000.

These additional 100,000 chum salmon are partly utilized as hatchery broodstock. It is also thought that additional chum might increase the distribution of spawners in the Nitinat River and to other Nitinat Lake tributaries.

- Commercial fisheries occur on a regular basis for seine and gill net; trolling is also permitted, but there has been little interest in previous years.
- The fishing period is generally October 1 to November 15.
- A gill net test fishery occurs in Nitinat Lake and provides weekly escapement estimates for the lake, beginning in the last week of September.
- Escapement estimates for the Nitinat River and Nitinat Lake tributaries are based on river swims and aerial surveys.

### **7.15.2 Constraints**

- Typically no commercial fishery takes place prior to the first week in October due to Fraser River steelhead by-catch concerns, unless consultations with the Provincial fisheries biologist allows for a late September opening.
- Fisheries from October 01 to October 15 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 in order to minimize steelhead mortalities.
- After October 15, fisheries are permitted within a two mile boundary of the shore line between Bonilla Point and Pachena Point.
- Non-retention of steelhead, coho and chinook during periods of low abundance.
- No commercial fishery inside Nitinat Lake.
- Boundaries at Cheewhat and Klanawa Rivers 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 coho encounters.

### **7.15.3 Decision Guidelines**

- Annual pre-season forecasts for the Nitinat system (predominantly enhanced) are based on escapement, hatchery fry output and estimated survival rates.
- The fishing plan is developed in advance of the fishery by August.
- 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 target is 30% gill net and 70% seine.
- If the forecast surplus is low, a gill net test fish program outside Nitinat Lake may be implemented to provide additional abundance information.
- If no surplus is forecast, the commercial fishery is contingent on in-season assessment.

### **In-season Decision Guidelines**

- The commencement/continuation of fisheries after the first week of October is contingent on achieving established escapement milestones:

### **Table 7-10. 2011 Nitinat Chum Fishing Plan**

DATE	GUIDELINES	ACTION
Week 9/3 (Sep 11-17)		No fisheries due to Fraser steelhead concerns. No gill net test or commercial fishery anticipated.
Week 9/4 (Sep18-Sep 24)		No fisheries due to Fraser steelhead concerns. No gill net test or commercial fishery anticipated
Week 10/1 (Sep 25- Oct 1)	No fishery until October 01. Fishery opportunity based on preseason forecast. Escapement in lake by Oct. 5-8 = 75,000 *	Gill net and seine fishery anticipated. Fishery inside a line one mile south of Pachena Point to one mile south of Dare Point. Continue assessment with test fishing and escapement monitoring to lake.
Week 10/2 (Oct 2-8)	Escapement in lake by Oct 9-11 = 125,000.*	Fisheries in this week dependent on escapement to date. Early season allocation is 75:25 gill net: seine. Maximum gill net catches of 200,000 chum before seine fishery.
Week 10/3 (Oct 9-15)	Escapement in lake by Oct 16-18 = 175,000.*	Seine and/or gill net opportunities depending on escapement to date, escapement rate and effort.
Week 10/4 (Oct16-22)	Escapement in lake by Oct 23 = 225,000.	Seine and/or gill net opportunities depending on escapement to date, escapement rate and effort.

With sufficient stock outside. Min weekly influx = 50,000.

- Gill net and limited fleet seine fisheries may occur in the first week of October if an adequate surplus is forecast, or if assessment information is required.
- A gill net and seine advisory group will be convened, as required, to assist the DFO fishery manager in developing weekly in-season fishing plans.
- In the early portion of the fishery (Oct 01-15), seine fisheries will be assigned a weekly catch target.
- If the forecast surplus is low, weekly escapement milestones must be achieved before openings are scheduled.
- A full fleet seine fishery may proceed when assessments in Nitinat Lake and in the adjacent marine area indicate there is a fishable surplus. During this phase of the fishery, both gill net and seines will fish at the same time in the same areas, except that gill nets may be provided an exclusive fishing area between Bonilla Point and Logan Creek.

#### 7.15.4 Issues

- Area B area harvest committee intends to work towards share-based fishery arrangements in the Nitinat fishery.
- Fish in the lake are not available to the commercial fishery.
- Accuracy of pre-season forecasts has been very poor.

- An outside gill net test fishery in early October may occur in those years where a below average return is forecast.
- Uncertainty regarding the use of test fisheries to assist with in-season management of the fishery.

### **7.15.5 Other Fisheries**

- First Nations FSC: no constraints on FSC fisheries at normal run sizes. Ditidaht First Nation works closely with Nitinat Hatchery and participates in research projects which normally require a modest allocation of chum.
- Recreational/Tidal: normal limits; finfish closure at mouth of the Nitinat River to prevent foul hooking. Non-tidal: fishery contingent on escapement and concern for impacts on spawning fish.
- ESSR fishery in Nitinat Lake by Ditidaht First Nations when surplus occurs.
- 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.

### **7.15.6 Prospects**

Brood year escapements were average to below average. 2008, 2009 and 2010 returns were lower than expected. The 2011 forecast return of chum is not available at this time.

## **7.16 Nootka Chum Decision Guidelines**

### **7.16.1 Background**

- There are approximately 30 unenhanced wild chum river systems in Nootka Sound. Conuma Hatchery enhances **four** systems in Tlupana Inlet that have different run timings.
- Seines have fished in years of high chum abundance.
- Outer Nootka boundaries are designed to target fish migrating through the approach area and to avoid harvest of fish holding off the stream mouths.
- A terminal harvest in Tlupana Inlet occurs if a surplus is identified through in-season abundance indicators.
- There is potential for an ESSR fishery 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 the ability of the fishing industry to conduct controlled fisheries on identifiable surpluses.

### **7.16.2 Constraints**

- Daylight only fisheries to reduce by-catch. The goal is to optimize Nootka chum harvest and limit by-catch of chinook and dogfish
- Stream mouth boundary at Marvinas Bay to protect local stocks adjacent to fishing area.
- Hisnit Inlet closed during Tlupana Inlet fisheries to protect Deserted River chums.
- A mid- to late-September start date is normal.
- There are separate approach area and terminal fisheries to facilitate bio-sampling for age and hatchery contribution.

- Concern for wild chinook stocks in mid-September in outer Nootka Sound.

### **7.16.3 Decision Guidelines**

- The general fishery management approach is to achieve an approximately 20% exploitation rate in the approach waters (outer Nootka Sound). This is believed to be achieved by fishing one day per week during daylight hours with a “moderate” fleet of approximately 50 gill net vessels. A review of the harvest-rate approach is in progress which will include discussion with First Nations and other interested parties, and which may lead to the development of harvest decision rules.
- The first gill net fishing date typically occurs after September 20th.
- A fishery will not occur if the pre-season forecast was extremely poor.

### **In-season Decisions**

- If fleet size is modest (maximum 50 vessels), openings are one day per week in approach waters.
- If fleet size is less than 25 vessels, openings may be two days per week in approach waters.
- A terminal fishery on hatchery stocks in Tlupana Inlet is carried out if there is an identified surplus based on escapement, test-fishery or early season gill-net fishery information.
- Seine opportunities will be considered in-season, if chum abundance is adequate.
- Coho (and chinook) retention in net fisheries when abundance permits.
- In 2010 DFO stock assessment staff designed a pilot project for four-vessel surveys in Nootka Sound and two-vessel surveys in Esperanza Inlet; information collected during fishing events was utilized to assess run-sizes and fishery potential prior to escapement. A revised approach incorporating larger fleet fisheries in Nootka Sound is being considered for 2011. Information gathered from the early fisheries will be used to assess chum abundance and if abundance is adequate could trigger Tlupana Inlet fisheries on hatchery stocks.

### **7.16.4 Issues**

- Minimum forecast to trigger commercial fishery will be developed.
- Conuma Enhancement Facility frequently has had difficulty in achieving egg targets on four Tlupana Inlet enhanced systems (Sucwoa, Tlupana, Conuma and Canton).
- Conuma hatchery chum production targets may be reduced, or enhancement of later runs may be curtailed in 2011.
- Deserted River chum stocks are no longer enhanced. These late-run stocks will require additional protection during later Tlupana Inlet openings.
- Chinook by-catch in mid-September needs to be considered.
- With the introduction of the limited fleet fishery in Esperanza Inlet, the overall Area 25 chum harvest rate is under review.

### **7.16.5 Prospects**

2010 returns were generally lower than expected. The forecast return for 2011 is unavailable at this time.

## **7.17 Nimpkish Chum Decision Guidelines**

### **7.17.1 Background**

Nimpkish chum have later timing than other Johnstone Strait chum stocks and are harvested in the terminal area. The spawning escapement goal for the river is set at 110,000 chum with additional fish required for brood-stock (approximately 3,000 females) for the hatchery. The local Namgis First Nation participates in the management of this stock.

Returning chum are assessed by scheduled over-flights of the river and in-river assessment activities (swim surveys). Other assessment alternatives are currently being considered, such as small fleet gill net assessment fisheries in years when surpluses are expected.

Should a commercial fishing opportunity be identified, Area B and D fisheries would be based on the current status of chum allocation goals, fleet participation and expected catch levels. Once all commercial and recreational opportunities are exhausted and if a surplus remains, an ESSR opportunity may be provided to the Namgis First Nation.

### **7.17.2 Constraints**

- Area of fishing is confined to a portion of Subareas 12-18 and 12-19 to direct harvest on returning Nimpkish River chum and minimize impact on other salmon species.
- Collection of assessment information and river enumeration is often hampered by poor weather conditions and high water levels, affecting the accuracy of in-season run size estimation and fishing opportunities.

### **7.17.3 Decision Guidelines**

- Confirm in-season assessment programs for 2011.

### **In-season Decisions**

- Commercial Area B and D harvest opportunities will be subject to abundance levels and harvest sharing arrangements by all parties.

### **7.17.4 Issues**

- Ability to accurately determine run strength due to poor weather and high water conditions.
- The late timing of this stock can result in market availability issues.

### **7.17.5 Prospects**

Although there were poor brood year returns in 2007, marine survivals for the 2008 out migration year appear to be high based on subsequent returns of coho, pink, and sockeye. Therefore, a low to near target return is expected on Nimpkish chum.

## **7.18 Limited Effort Terminal Chum (WCVI) Decision Guidelines**

### **7.18.1 Background**

- Starting in 2004 the Area D Gill net Association proposed limited, small fleet fishing opportunities for chum salmon in terminal areas.
- The intent of this program is to determine if small scale limited effort gill net fisheries could be economically viable while limiting exploitation rates to 10 to 20% of returning stocks and also providing stock assessment information.
- In previous years these fisheries occurred in:
  - Barkley Sound where 8 vessels fished a maximum of 2 days per week;
  - Clayoquot Sound, where 4 vessels started 2 weeks later than Barkley Sound to avoid chinook by-catch;
  - Esperanza Inlet, where 8 vessels fished concurrently with the Nootka Sound (**full fleet opportunity**) gill net openings to a maximum of 2 days per week;
  - Quatsino Sound (Neroutsos Inlet), where 2 vessels fished 1 day per week for a total of 3 fishing days and
  - Bute Inlet, where 5 vessels fished for a total of 3 fishing days.

### **7.18.2 Constraints**

- Low chum abundance in recent years has limited the scope of these fisheries.
- The 10-20% Harvest Rate target has been consistently exceeded in Esperanza Inlet.

### **7.18.3 Decision Guidelines**

- Decision guidelines have been developed for each of these fisheries: contact the local resource manager for details.
- An assessment review has been conducted for limited effort chum fisheries in Areas 23 to 25. Fishery planning in 2011 will be guided by the pre-season forecast and the limited effort chum fishery assessment review document; fishing plans are developed including observer coverage and data collection for each area.

### **7.18.4 Issues**

- Chum spawner enumeration effort reduced in recent years.

### **7.18.5 Prospects**

- Area D has proposed options for expanding the Nootka Sound fishery in 2011 to include early season full-fleet fishing to assess abundance.
- Fishing opportunities for 2 vessels in Kyuquot Sound are being considered.

## 7.19 Fraser River Pink

### 7.19.1 Background

Fraser Pinks return to the Fraser system on a two year cycle, with returns almost entirely in odd calendar years only. Minimal numbers of Fraser River pink salmon return in even years and no directed harvest occurs in these years.

### 7.19.2 Constraints

It is expected that conservation constraints for co-migrating stocks of concern such as Late run and Cultus sockeye, Interior Fraser coho and Interior Fraser steelhead will likely constrain the ability to harvest any available Fraser River Pink TAC.

### 7.19.3 Decision Guidelines

The forecast return for Fraser River pink salmon at the various probability levels is shown below.

	Forecast Model	Mean Run Size	Probability Level				
			0.1	0.25	0.5	0.75	0.9
Pink	Fry-salinity	11.8M	9.2M	12.6M	17.5M	25.1M	37.5M

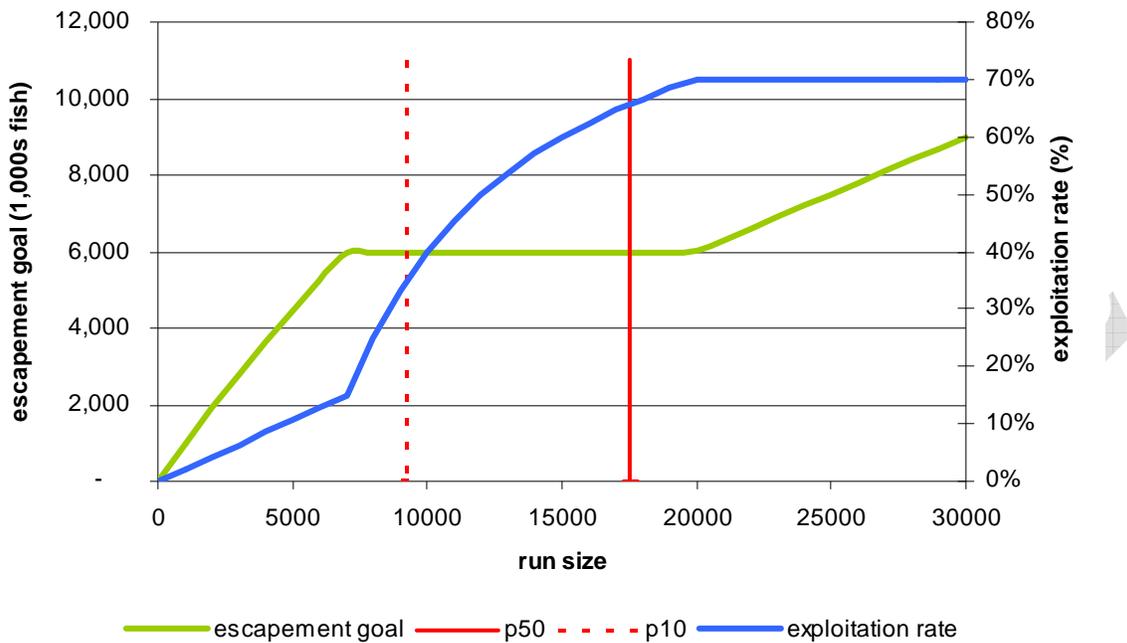
The escapement strategy for Fraser pink salmon continues to be based on an interim escapement goal of 6 million Fraser River pink salmon (plus an additional 30% of the run at run sizes above 20 million) with an exploitation rate cap of 70%. Escapement targets and exploitation rates are outlined in the escapement plan in Table 7-11.

**Table 7-11. Fraser River Pink Salmon Escapement Plan for 2011.** Run size forecasts showing 50 percent probability levels. Numbers are in thousands of fish.

Stock Group	Run Size Estimate of forecasted stocks	Run Size Reference Points		Total Mortality Rate Guidelines	Total Allowable Mortality at Run Size	Escapement Target at Run Size
Fraser Pink		-	7,059	0% - 15%		
		7,059	17,143	15% - 65%		
	17,495	17,143	65% - 70%	66%	6,000	

**Figure 7-1. Fraser River Pink Salmon Escapement Plan at different run sizes for 2011.**

## Fraser Pinks



Preseason fishing plans are developed based on the 50 percent probability level forecast. In-season run size estimates form the basis for management once these estimates are available.

### 7.19.4 Issues

- Due to conservation concerns for some co-migrating species, it is anticipated that, similar to previous years, alternative fishing gear may be employed to access Fraser Pink TAC. Alternative gears used in the past have included beach seines & shallow seines in the Fraser River.
- The Department will be establishing management rules for allowable sockeye impacts and/or for stocks of concern during directed fisheries on Fraser Pinks.
- The Department is working with the area B, area D and area H harvest committees to develop a demonstration individual transferable quota (ITQ) fishery for Fraser Pink salmon.

### 7.19.5 Prospects

At each of the forecast run sizes there will likely be TAC available for fisheries to be directed on Fraser pink salmon. However, it is expected that conservation constraints for co-migrating stocks of concern such as Late run and Cultus sockeye, Interior Fraser coho and Interior Fraser steelhead will likely constrain the ability to harvest all of any identified TAC.

## 7.20 Mainland Inlet Pink

### **7.20.1 Background**

Mainland Inlet pink are comprised of two main stocks, the Kakweiken River in Thompson Sound and the Glendale system in Knight Inlet. Other significant Mainland Inlet stocks are found in the Phillips River. These stocks are mainly harvested in terminal areas and provide opportunities for all three commercial gear types, although seines catch the majority of fish. 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 both stocks) and then separately as they enter the terminal areas. Limited participation fisheries in the terminal areas can be used as a tool for in-season assessment in years when good returns are expected. Fleet size during these fisheries is highly variable and depends on other fisheries occurring during the same time period (e.g. Fraser River sockeye fisheries) as well as market prices. Over-flights are also used to assist in estimating abundance in the terminal areas, as well as to provide in-season river escapement estimates.

Normal recreational fishery opportunities are available. First Nations FSC fishing opportunities on these stocks are also provided.

### **7.20.2 Constraints**

- Directed Mainland Inlet pink fisheries are restricted to terminal areas.
- Daylight fishing only.
- Fishing boundaries are established to minimize encounters of chinook, coho, sockeye and chum, and to ensure escapement targets are reached.
- Upper Knight Inlet boundary is implemented to conserve weaker stocks of pink.
- Kakweiken, Glendale and Phillips pink stocks are managed separately in terminal areas.
- In 2011 a cautious approach to managing these stocks will continue due to continued uncertainties on return rates.
- Directed limited fleet commercial fisheries may occur in 2011 and will be confirmed in-season based on in-season assessment.

### **7.20.3 Decision Guidelines**

- Develop assessment plans for in-season monitoring.

#### **In-season Decisions**

Commercial representatives are consulted through in-season licence area advisory bodies. Weekly assessments to determine abundance and potential fishing opportunities are based on over-flights, on-grounds surveys of the terminal areas and in some years, limited effort seine, gill net, and troll test fisheries.

The following considerations will guide 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.

#### **7.20.4 Issues**

- The commercial industry may have marketing and quality concerns during a protracted fishery in years when a significant surplus is available.
- 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.
- Develop plans for a continuation of Broughton Archipelago pink salmon action plan and studies.

#### **7.20.5 Prospects**

Although these systems are dominant in even-cycle years, odd-year cycle returns have shown an improving trend. Returns to the spawning ground in 2009 were very strong; however, significant rain events in November of 2009 had a large negative impact on the deposited eggs. The outlook for 2011 is low to near target abundance; however, in-season monitoring beginning in July will confirm run strength.

In addition to the Mainland Inlets, there may be a potential surplus of pink salmon to the Campbell/Quinsam Rivers in Area 13 based on the 2009 brood year escapement, 2010 fry out migration estimates, and ocean survival rates (observed in the 2010 adult return which produced a significant surplus).

In-season monitoring of the Campbell/Quinsam system will be done to assess run strength and any potential harvestable commercial surplus of pink salmon to this system. First Nations FSC harvest opportunities will be available. Commercial harvest opportunities in the terminal area will need to consider by-catch concerns for returning Campbell River chinook and also passing Fraser River sockeye which could limit potential commercial pink salmon harvest in the terminal area off the river mouth. In-river ESSR opportunities will also be considered if a surplus is identified. Campbell/Quinsam in-river recreational pink opportunities are currently planned for 4/day from Aug 15 to Sept 15 and will be reviewed in-season.

## **8 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.<sup>13</sup> In the context of fisheries management, stewardship is often considered in terms of "shared stewardship", whereby First

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<sup>13</sup> As defined in the Atlantic Fisheries Policy Review (AFPR): [http://www.dfo-mpo.gc.ca/afpr-rppa/home\\_e.htm](http://www.dfo-mpo.gc.ca/afpr-rppa/home_e.htm)

Nations, fishery participants and other interests are effectively involved in fisheries management decision-making processes at appropriate levels, contributing specialized knowledge and experience, and sharing in accountability for outcomes.

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

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) brings together First Nations, commercial and recreational harvesters, and environmental interests to review and provide input on the draft IFMP, as well as coordinate 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.

Consultation and engagement with First Nations is central to DFO’s approach to fisheries management (including the development of IFMP) and fulfilling the Department’s mandate. 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 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 food, social and ceremonial (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. 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 officially consults with the Marine Conservation Caucus, an umbrella group representing eight core environment groups.

## **9 COMPLIANCE PLAN**

### **9.1. 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; and
- 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. More information can be found on both of these documents at the following intranet site:

[http://intra.dfo-mpo.gc.ca/hq/fishmgmt/Directorates/CP/CRM/index\\_e.htm](http://intra.dfo-mpo.gc.ca/hq/fishmgmt/Directorates/CP/CRM/index_e.htm)

#### **Regional Compliance Program Delivery**

For the Pacific salmon fisheries in the southern management area, C&P will be utilizing a broad scope and blend 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.
- Work towards the goal of increased accountability, traceability and compliance within all salmon fisheries. Illegal sales of salmon will continue to be a regional priority.
- Prioritize enforcement efforts on those measures directed towards conservation objectives.
- Fish Habitat protection will continue to be a key focus of fishery officer efforts.
- Utilize 'Integrated Risk Management' to ensure fishery officer efforts are focused and directed at problems of highest risk.
- Maintain 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. Implement traceability initiatives within the salmon fishery towards increased accountability (PICFI).
- Continue to monitor Dual Fishing pilot fisheries to ensure accurate catch monitoring, reporting and traceability.
- Monitor and verify catches and offloads of salmon to ensure accurate catch reporting and accounting.
- Audit and monitor catch reporting data to ensure timely and accurate catch and effort reporting.
- Maintain or increase fishery officer efforts to protect Fraser River salmon stocks with priority to those stocks of concern.
- Increase fishery officer efforts to protect Fraser River, WCVI and Cowichan chinook stocks.
- Continue to utilize covert surveillance (unmarked vessels/ vehicles and plain clothes fishery officers) to detect violations and gather evidence in problem fisheries.
- Employ targeted compliance monitoring with the use of enhanced surveillance techniques, video cameras/long distance spotting scopes, trail cameras and vessel mounted digital video.
- Continue to implement a modernized compliance program which includes strengthened Major Case management approaches to focus C&P attention on high risk illegal activities that pose the greatest threat to the achievement of our conservation objectives. Intelligence-led investigations may specifically target repeat and more serious offenders for increased effectiveness of enforcement effort.
- Increase patrol effort during open timed fisheries to increase intelligence gathering, build relationships with stake holders and ensure compliance to licence conditions.
- Inspect fish storage and retail outlets for compliant product.
- Maintain a violation reporting 24-hour hotline to ease reporting of violations.
- Continue to promote 'restorative justice' principles in all fisheries.

## **Consultation**

Conservation and Protection works closely within the Fisheries and Aquaculture Management sector and Habitat and Enhancement Branch to ensure that fishery and habitat management plans

are enforceable and implemented in a controlled, fair manner. C&P has a multi-faceted role as educator, referee, mediator and law enforcer.

Conservation and Protection participates on a regular basis with consultations within 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 from Regional Integrated Harvest Planning Committee through to individual fishery sectoral committees. 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.

### **Compliance Strategy**

In 2011, specific objectives for the salmon fishery will be to focus compliance management efforts on:

- Maintaining enhanced coverage both on the Fraser River and in marine approach waters (Johnstone Straits and San Juan) by undertaking vessel, vehicle, and air patrols (contingent of continued Williams funding).
- Work to curtail illegal sales through a program designed to improve traceability of catch (improved catch monitoring and plant / storage verification).
- Working with Resource Management and stakeholders on the concept of dual fishing for salmon (e.g. fishing for FSC and commercial purposes on the same commercial trip), ensuring that should this be approved, all necessary controls are in place to protect an orderly and controlled fishery.
- Continued improvements in fishery monitoring and catch reporting requirements.
- Blitz patrols for illegal retention of prohibited species.
- Close time patrols balanced with random open time patrols.
- Work with stakeholders to improve regulatory compliance.
- Recreational - daily limits, non-retention and closed area enforcement.
- Maintain or increase fishery officer efforts to protect Fraser River salmon stocks with priority to those stocks of concern.

- Somass Sockeye conservation, catch monitoring and unauthorized sales. Continue as in past years the 'Somass Strategic Approach' area specific project management enforcement plans.
- Increase fishery officer efforts to protect Fraser River, WCVI and Cowichan chinook stocks of concern through implementation of area specific project management enforcement plans.
- Monitor and verify catches and offloads of salmon to ensure accurate catch reporting and accounting.
- Conduct frequent and timely inspections of fish storage and processing facilities through a coordinated program of catch accountability and traceability. Communication and transfer of intelligence between areas and provincial authorities will be strengthened.
- Audit and monitor catch reporting data to ensure timely and accurate catch and effort reporting.

The management of Pacific salmon remains a high priority for C&P for 2011. There are, however, other priorities and sustaining agenda activities which must be delivered by C&P for other mandated program areas such as habitat management, the Canadian Shellfish Sanitation Program, maritime security, and the protection of species at risk.

In order to balance multiple program demands, C&P utilizes a comprehensive risk-based integrated work planning process to address the highest risks to sustainability and establish annual operational priorities. This process ensures that resources are allocated in alignment with identified priorities to achieve broad departmental objectives in a way that best serves the interests of Canadians.

## **10. PERFORMANCE/EVALUATION CRITERIA**

This section is intended to outline measurable indicators to determine whether or not those management issues outlined in IFMP Section 4 are being addressed and those objectives outlined in IFMP Section 5 are being achieved. 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; Wild Salmon Policy 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. 2010 season) are provided in appendix 4.

**APPENDICES**

DRAFT #2

## 1. APPENDIX 1: 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>

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### Alternate

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vacant

vacant

## 2. APPENDIX 2: 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 B.C., 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 leaving on a voyage the owner, master or operator must ensure that the fishing vessel is capable of safely making the passage. Critical factors for a safe voyage include the seaworthiness of the vessel, vessel stability, having the required safety 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

First Aid

Radio Operators Course

Fishing Masters Certificates

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 [www.tc.gc.ca/MarineSafety/TP/TP10038/tp10038e.htm](http://www.tc.gc.ca/MarineSafety/TP/TP10038/tp10038e.htm)),
- Gearing Up for Safety – WorkSafeBC
- Safe At Sea DVD Series – Fish Safe
- Stability Handbook – Fish Safe and Measuring Stability –DVD

For further information see: <http://www.tc.gc.ca/marine/menu.htm>

### **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.

#### **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.

#### **Emergency Drill Requirements**

The master must establish procedures and assign responsibilities to each crew member for emergencies such as crew member overboard, fire, flooding, abandoning ship and calling for help.

The Crewing Regulation under the Canada Shipping Act (CSA) states that as of July 30th 2002 all seafarers, including fish harvesters, must have a Basic Safety Certificate (MED A1 or A3 depending upon vessel and operating waters) within 6 months of becoming a crewmember, regardless of time at sea. The MED A1 is a three day course, and must be taken by all crew regardless of duty station.

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.

#### **Cold Water Immersion**

Drowning is the number one cause of death in B.C.'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. 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 WorkSafe BC website).

## **Other Issues**

### *Weather*

Vessel owners and masters are reminded of the importance of paying close attention to current weather trends and forecasts during the voyage. Marine weather information and forecasts can be obtained on VHF channels 21B, Wx1, Wx2, Wx3, or Wx4. Weather information is also available from Environment Canada website at:

[http://www.weatheroffice.gc.ca/marine/index\\_e.html](http://www.weatheroffice.gc.ca/marine/index_e.html)

### *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 Industry Canada site at: [http://www.ic.gc.ca/eic/site/ic1.nsf/eng/h\\_00014.html](http://www.ic.gc.ca/eic/site/ic1.nsf/eng/h_00014.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.pacific.ccg-gcc.gc.ca](http://www.pacific.ccg-gcc.gc.ca)

### *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 (604) 775-8862 or from Coast Guard website:

<http://www.ccg-gcc.gc.ca/e0003901>

### *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.

### **WorkSafe BC**

Commercial fishing is legislated by the requirements for diving, fishing and other marine operations found in Part 24 of the Occupational Health and Safety Regulation (OHSR). Many general hazard sections of the OHSR also apply. 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 investigation issues. Part 3 of the Workers Compensation Act (WCA) 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](http://www.worksafebc.com)

For further information, contact an Occupational Safety Officer:(Shane Neifer, Terrace, (250) 615-6640), Bruce Logan (604)244-6477 (Lower Mainland), Wayne Tracey, Lower Mainland, (604) 232-1960, David Clarabut (250) 881-3469 (Victoria), Pat Olsen (250)334-8777 and Mark Lunny, (250) 334-8732 (Courtenay) or the Manager of Interest for Fishing, Mark Peebles, (604) 279-7563.

For information on projects related to commercial fishing contact Ellen Hanson (604) 233-4008 or Toll Free 1-888 621-7233 ext. 4008 or by email: [Ellen.Hanson@worksafebc.com](mailto:Ellen.Hanson@worksafebc.com).

### **Fish Safe**

Fish Safe is coordinated by Gina Johansen and 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.

Vessel masters and crew are encouraged to become more knowledgeable regarding vessel stability. FishSafe BC developed the Fish Safe Stability Education Course, which is available to all fish harvesters who want to improve their understanding of stability and find practical application to their vessel's operation.

Fish Safe also works closely with WorkSafeBC to improve the fishing claims process. For further information:

Gina Johansen, Safety Coordinator

Fish Safe

2-11771 Horseshoe Way  
Richmond, BC V7A 4V4

Phone: 604-261-9700

Email : [fishsafe@telus.net](mailto:fishsafe@telus.net)

Website: [www.fishsafebc.com](http://www.fishsafebc.com)

### 3. APPENDIX 3: ROCKFISH CONSERVATION AREAS

A total of 164 Rockfish Conservation Areas (RCAs) have been implemented coastwide. With the onset of the Rockfish Conservation Strategy, the Department announced that it would create closed areas that encompassed up to 50% of the rockfish habitat within the Strait of Georgia and up to 20% on the West Coast of Vancouver Island, Central Coast, North Coast and the Queen Charlotte Islands.

Beginning in September 2005, Fisheries and Oceans Canada carried out further consultation to identify potential rockfish conservation areas within the Strait of Georgia. Additional RCAs have now been established within the Strait of Georgia. Upon completion of the closed area component of the strategy, 20% of outside rockfish habitat will have been described as RCA's. The goal for the Strait of Georgia is 30%.

Descriptions including maps of the RCAs can be found online at:

[http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/fisheriesmgmt/rockfish/default\\_e.htm](http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/fisheriesmgmt/rockfish/default_e.htm)

or check with your local Fisheries and Oceans Canada office for more information.

#### Permitted Fishing Activity in Rockfish Conservation Areas

The following fishing activities **will be permitted** in RCAs:

RECREATIONAL	COMMERCIAL
Invertebrates by hand picking or dive	Invertebrates by hand picking or dive
Crab by trap	Crab by trap
Prawn by trap	Prawn by trap
Smelt by gillnet	Scallops by trawl
	Salmon by seine or gillnet
	Herring by gillnet, seine and spawn-on-kelp
	Sardine by gillnet, seine and trap
	Smelt by gillnet
	Euphausid (krill) by mid-water trawl
	Opal Squid by seine
	Groundfish by mid-water trawl

Recreational and commercial fishing activities are not listed in the tables above are not permitted.

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.

## 4. APPENDIX 4: POST-SEASON REVIEW 2010

### 4.1. Conservation / Sustainability Objectives

The objectives shown in bold below are the wording from the 2010/11 Integrated Fisheries Management Plan.

#### 4.1.1. Lower Strait of Georgia Chinook

**The objective for Lower Strait of Georgia (LGS) chinook in 2010 is to reduce fishery exploitation in known areas of significant impact.**

Chinook returns to many LGS systems have been declining since the late 1990's and continue to be at low levels. For the Cowichan River, the PSC indicator for LGS wild fall chinook, the 2010 return has increased from the recent extremely low levels. The total adult return to freshwater was 3062 chinook, including 2419 natural adult spawners, 301 caught in terminal FSC fisheries and 342 retained for hatchery broodstock. The total jack return was 1874, including 1786 natural spawners, 54 retained in FSC fisheries and 34 retained for broodstock. The escapement goal for the Cowichan River is 6,500 natural adult spawners. **2010 exploitation rate information is not yet available.**

#### 4.1.2. Interior Fraser River, Lower Fraser and Strait of Georgia coho

**The objective for Interior Fraser River coho (including Thompson River coho) is to limit the Canadian exploitation rate to 3% (not including terminal harvest on systems experiencing strong escapements).**

The best available estimate for the total exploitation of southern BC fisheries on Interior Fraser coho for 2010 is 3.1%. The total abundance of coho salmon originating from the Interior Fraser River Watershed, upstream of Hell's Gate, and including the Thompson River watershed, in 2010 was approximately 36,669. The total abundance of coho salmon originating from the Thompson River portion of the watershed was 30,111. The abundance of coho from the Interior Fraser in 2010 was higher than the abundance observed in 2009 (24,443), but approximately 55% of the brood year abundance of 65,652.

The geometric mean of spawning escapement over the last three years is approximately 22,000. This value is below the lower threshold escapement of 25,000 average spawners suggested in the IFR Coho Recovery Strategy to ensure that genetic integrity and demographic concerns are maintained in the entire Management Unit.

#### 4.1.3. Cultus Lake and Late Run Sockeye

**The 2010 objective for Cultus Lake sockeye is to limit the exploitation rate to a maximum of 20% to 30%, depending on in-season information. Management at the start of the season will be based on a maximum 20% exploitation rate limit for Cultus Lake sockeye. The exploitation rate limit may increase to a maximum of 30% if in-season information on**

the Late run sockeye stock aggregate, which includes Cultus Lake sockeye, indicates a strong return and sufficient numbers will reach the spawning grounds. If in-season information indicates a poor return of Late run sockeye or that low numbers may reach the spawning grounds, then the actual exploitation rate for Cultus Lake sockeye could be lower than 20%, and will depend on the exploitation rate implemented for the Late run sockeye management aggregate.

In 2010, all run-timing groups returned above forecast, allowing significant harvest opportunities for all sectors. Based in in-season information, the Cultus ER limit was increased from 20% to 30%. However, a decision was made in-season to increase the exploitation rate above 30%, based on the larger than p50 forecast return of all components of the Fraser sockeye run and the expectation of meeting or exceeding Cultus rebuilding objectives. The preliminary post-season exploitation rate estimate for Cultus of ~43% is likely to change with additional post-season information, when the Late run run size is updated. However, the escapement to Sweltzer fence of over 10,000 Cultus sockeye is the highest counts at the fence since 1999 and approximately double the next highest counts during that time period. The pre-spawn mortality of 82% assessed on the spawning grounds was much higher than average (10 year average 27%). However, due to difficulties with assessing pre-spawn mortality in the Cultus system, the spawning ground estimate has been adjusted (downwards) in the past based on other sources of information (e.g., smolt out migration).

#### **4.1.4. Sakinaw Lake Sockeye**

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

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.

There were no returns of sockeye spawners in 2007 and 2008 and only one spawner enumerated in 2009. In 2010 the escapement of 29 was well beyond the forecast of 5 adults. The 2008 smolt enumeration which should have been the main component of the 2010 return was 12,000 smolts. The 2009 smolt enumeration which should be the main component of the 2011 return was 63,000 smolts. Using the average smolt to escapement survival rate, the expected escapement in 2011 may be 43 adults.

#### **4.1.5. WCVI Wild Chinook**

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

Management actions for continued in 2010 for WCVI chinook. Exploitation rates are determined post-season based on 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.

As in past years, the North Coast troll fishery was monitored for in-season, DNA-derived estimates of stock composition, and closed when the composition of WCVI origin chinook in their catch was estimated to be at a maximum harvest rate of 3.2%.

The preliminary exploitation rate estimate for the QCI sport fishery (Area 1 and 2W) is included as part of the North Coast sport fishery exploitation rate. The North Coast sport fishery estimate also includes exploitation in Central Coast sport fisheries.

The WCVI troll fishery was closed in July and a portion of August, and a partial closure of near shore areas of Areas 123 to 127 was implemented in September and October to allow a migration corridor for returning natural WCVI chinook. The time and area management actions for the WCVI troll fishery were designed to maintain negligible impact on these stocks. A limited Area G troll plug fishery occurred in early August. The fishery was designed to avoid WCVI origin chinook by restricting fishing to offshore areas, and limiting the overall TAC.

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.

2010 salmon escapement estimates from extensively surveyed WCVI streams are preliminary. Observations indicate escapement to NWVI systems were about recent year averages whereas SWVI systems were well below average. In particular, escapements to Clayoquot Sound (Area 24) remain very low. In two un-enhanced systems in Clayoquot Sound (Megin and Bedwell-Ursus) less than 100 spawners were observed. There was some improvement to the Nahmint River (Area 23); probably resulting from enhancement efforts in the 2006 brood year.

The post-season exploitation rate estimates for the Canadian ocean fisheries in 2010 are not yet available. Since 2000, the exploitation rate has varied from 3.0 to 19.1 averaging 11.4%.

#### **4.1.6. Interior Fraser River Steelhead**

**The objective for Interior Fraser River steelhead is to minimize the impact of Canadian fisheries and to increase spawner abundance.**

Due to lower than expected Fraser chum returns in 2010, there were no commercial fisheries in the Fraser River. Thus, there was no Area E chum fishery after the coho closure window which

ended on October 11<sup>th</sup> (below Hope). There were no First Nations commercial chum fisheries for the same reasons.

Coast-wide low chum return numbers resulted in the closure of the Johnstone Strait mixed stock chum fishery. This combined with the absence of both an Area E chum opening and First Nations commercial fishery was expected to result in lower impacts of interior steelhead. However, the increase in commercial Fraser River sockeye-targeted fisheries in 2010 was expected to likely increase impacts on interior steelhead. Simulation results from the Province of BC suggest that the fishing mortality from the sockeye fisheries had a slightly greater fishing mortality effect on the steelhead run than the effect of the reduced chum fishing. The net outcome is that fishing mortality in 2010 was approximately the same of what it was in 2009 (i.e., a median rate of 9% in 2010 as opposed to a median of 11% in 2009). Note that this statement considers all fisheries and includes the effect of the sport fishery, which had areas and times open in 2009 that were closed in 2010.

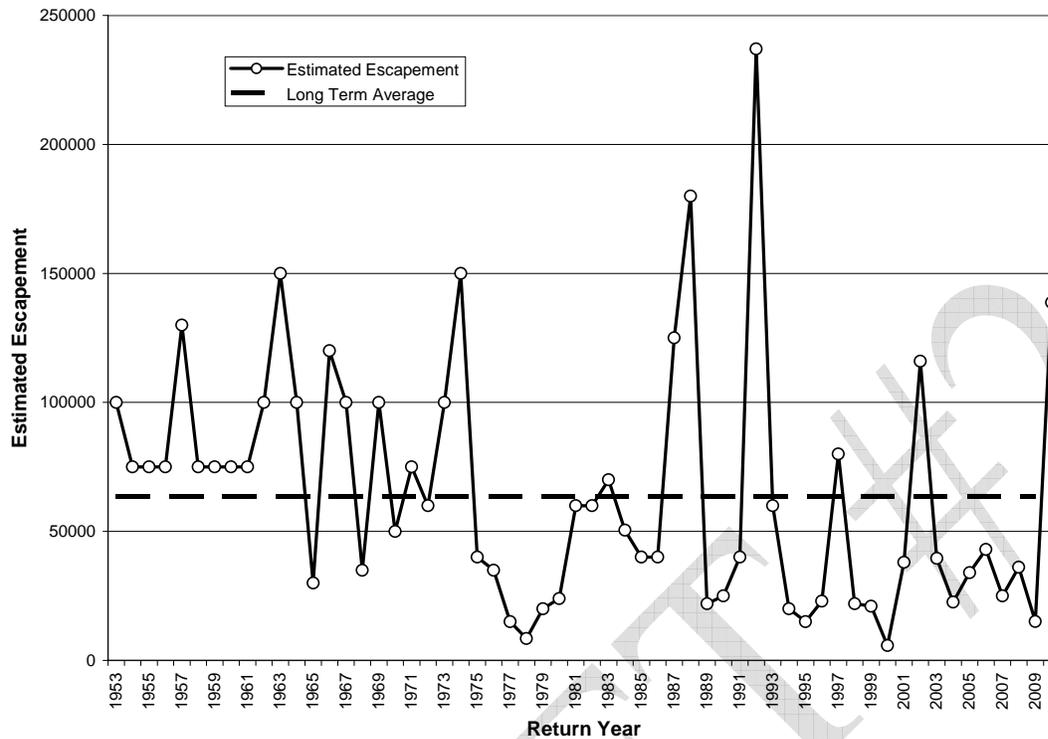
Because steelhead typically spawn in the spring following the fishing season, it is unknown at this time what the actual interior steelhead escapement is for the 2010/2011 return. An inseason forecast of spawner abundance indicates there is a 25% chance that the target escapement to the Thompson and Chilcotin River steelhead groups of more than 1,250 fish was met. A final update will be provided in the summer of 2011 to report on spawning population estimates and fishing mortality rate trends for this seasons' return.

#### **4.1.7. Nimpkish Sockeye**

**The objective is to minimize the impact of Canadian fisheries.**

In 2010, there were both directed Fraser River sockeye commercial and recreational fisheries in Johnstone Strait. Commercial effort was restricted to below Lewis Point to protect returning Nimpkish sockeye. In 2010, the Nimpkish sockeye return (Figure 4-1) demonstrated a significant improvement in survival similar to what was observed for the Fraser sockeye run the same year. The estimated escapement was the 2<sup>nd</sup> largest in the last 20 years for the Nimpkish system and well above the long term average. The return in 2010 was a stark contrast of what was observed in 2009 the second lowest in the last decade.

**Figure 4-1. Historic trend of Nimpkish River sockeye escapement**



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

The objective for Fraser Spring 4<sub>2</sub> chinook in 2010 is 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 4<sub>2</sub> chinook until July 15th. Fisheries beginning July 15th will be managed consistent with the management zone identified for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Fraser Chinook given timing overlaps between these populations for much of the adult migration period.

In 2008 and 2009 management actions were implemented to protect the early arriving Early timed spring chinook. In 2010 management of Fraser River chinook was managed based on the 5 Fraser Chinook management units used in the Pacific Salmon Treaty process (Table 7-5). In 2010 specific management actions were implemented to protect the Spring 4<sub>2</sub> Chinook management unit. Exploitation rate analysis will be provided by fishery for CTC indicator stocks, based on coded-wire tag (CWT) recoveries. The Nicola CWT indicator stock is the indicator for the Spring 4<sub>2</sub> management unit. Evaluation of the effectiveness of the 2010 management actions on Spring 4<sub>2</sub> Chinook will be based on an assessment of preliminary exploitation rate analysis; 2010 exploitation rates are not yet available.

Spawner abundances to the Fraser Spring 4<sub>2</sub> aggregate were also mixed, with most populations failing to achieve parental escapements, while Nicola slightly exceeded brood-year returns. The spawner abundance for the aggregate (excluding Bonaparte) was 6,587 chinook compared with 6,605 in the brood year (2006).

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

**The objective for Spring and Summer (age 5<sub>2</sub>) Fraser chinook is to continue rebuilding these populations consistent with the management zones.**

The prediction of the return to the Fraser River based on the Albion test fishery catches was made on June 15, 2010; the estimated terminal return for the Spring and Summer 5<sub>2</sub> aggregates was 67,185 chinook (95% PI: 44,234 and 102,044). However, due to the uncertainty in the regression equation the Department chose to be precautionary and moved from the pre-season Zone 1 to the Zone 2 management approach. The preliminary 2010 spawning escapement, as enumerated using various stock assessment techniques, was approximately 36,000 Chinook; a decrease from the 2005 brood year spawning escapement of 41,000. Post-season terminal run estimates are still being calculated for the Spring and Summer aggregate, but preliminary estimates suggest that the total terminal run was within Zone 2 (less than 60,000 fish). Exploitation rates are not available for these populations as there are no CWT indicators for these management units.

#### **4.1.10. Inshore Rockfish**

**The management objective for inshore rockfish is to introduce conservation strategies that will ensure stock rebuilding over time. A fishing mortality rate of less than 2.0 percent (all Pacific Region fisheries) will be required to achieve this objective.**

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.

#### **4.2. *First Nation 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 allocations in accordance with the *Allocation Policy for Pacific Salmon*.**

Opportunities for First Nations FSC fisheries in the South Coast and Fraser River in 2010 were available for most salmon stocks. The Fraser River sockeye returns exceeded the 90% projections for most run timing groups allowing for extensive FSC harvest opportunities. As in recent years restrictions were implemented to protect 90% of the Early Stuart component of the Fraser River sockeye return through a series of window closures. Concerns for the early part of the Early Summer returns required the window closures for Early Stuart to be extended an additional week.

Restrictions were also in place to protect Spring and Summer run Fraser chinook, Interior Fraser coho, Sakinaw Lake and Nimpkish River sockeye, Interior Fraser steelhead and to minimize

impacts upon WCVI chinook, Lower Strait of Georgia chinook and Early-Timed Fraser chinook. Closures to protect Interior Fraser coho also benefited lower Fraser coho which were also a stock of concern.

In total, First Nations food, social, and ceremonial fisheries harvested approximately 570,088 sockeye in the Fraser River watershed and 306,000 Fraser River sockeye in marine waters (Johnstone Strait, Strait of Georgia and Area 20).

In addition to sockeye, First Nations had opportunities to harvest chinook and coho as well as chum salmon (utilizing both gill nets and selective gear in the Fraser River). In the Fraser River watershed there were approximately 13,630 chinook, 13,440 chum and 434 coho harvested for FSC purposes. In marine waters there were approximately 8,199 chinook, 11,042 chum, 9,128 pink and 8,491 coho harvested.

#### **4.3. *Recreational and Commercial Objectives***

**The objective is 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, in particular for Fraser River sockeye in 2010.

#### **4.4. *International Objectives***

**The objective is 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 of the PST, and these results 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>

#### **4.5. *Domestic Allocation Objectives***

**The objective is to manage fisheries in a manner that is consistent with the *Allocation Policy for Pacific Salmon* and the 2010 Pacific Salmon Commercial Allocation Implementation Plan.**

**This section will be updated in the final IFMP.**

#### **4.6. *Compliance Management Objectives***

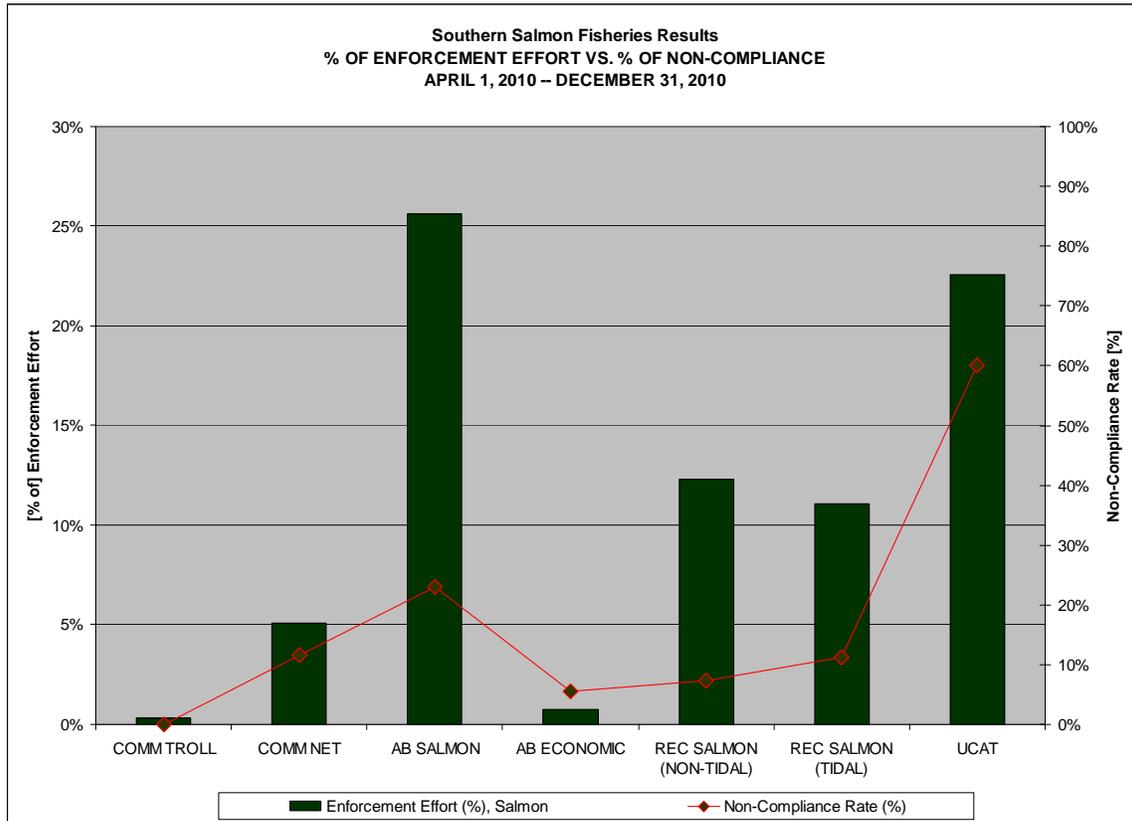
At the end of each season, statistics are compiled on the numbers of checks conducted from various platforms (vessel, vehicle and foot), and the number of charges resulting from these checks and others. Using this information, staff can evaluate whether compliance management objectives were met and whether the activities undertaken were effective. Overall compliance rates for each area and fishery are calculated to help identify priority areas for enforcement in subsequent seasons. In addition, valuable narrative data is collected to ensure problem areas are identified and addressed.

Reports generated from C & P's Fisheries Enforcement Activity Tracking System (FEATS) are tracked and analyzed against business plan projections to see if patrol effort is taking place in areas where increased compliance is needed.

**Table 4-1:** A summary of the compliance management program statistics for the Pacific salmon fisheries in the south coast management area

SOUTHERN SALMON FISHERIES -- APRIL 1, 2010 TO DECEMBER 31, 2010 (includes South Coast, Lower Fraser and BC Interior combined data)						
FISHERY CATEGORY	TOTAL ENFORCEMENT EFFORT HRS.	% OF ENFORCEMENT EFFORT	PATROL EFFORT HOURS	CHECKS*	VIOLATIONS	NON-COMPLIANCE RATE % **
COMM SALMON (TROLL)	121.50	0%	33.50	29	0	0%
COMM SALMON (NET)	1906.00	5%	703.25	840	97	12%
ABORIG SALMON	9593.50	26%	1652.50	1305	300	23%
AB SALMON (ECONOMIC)	270.50	1%	86.50	72	4	6%
REC SALMON (NON-TIDAL)	4606.25	12%	2424.25	6038	439	7%
REC SALMON (TIDAL)	4148.25	11%	2062.25	4261	476	11%
UCAT***	8460.50	23%	4211.25	1289	774	60%
NOTES: * Checks = number of persons checked						
** Non-Compliance Rate (number of violations/person checked X 100); UA means Unable to Assess						
*** UCAT = Unlicensed/Closed Area/Time						

**Figure 4-2: Compliance information (by sector), correlated to proportional effort by DFO fishery officers with respect to Pacific salmon in the south coast management area.**



#### 4.7. Enhancement Objectives

The Salmonid Enhancement Program undertakes salmon enhancement to support vulnerable populations, provide harvest opportunities and enable watershed stewardship activities. Operations of major DFO facilities and contract hatcheries (Community Economic Development Program, or CEDP) are detailed below. Beginning in 2008, larger or more complex Public Involvement Projects (Designated Public Involvement, or DPI), operated by volunteers, have been included. SEP also works with First Nations, industry, community groups and other government agencies to enhance and restore salmon habitats.

Not detailed here are smaller Public Involvement Projects (PIPs) that are focussed towards stewardship, stock rebuilding, or educational activities, and do not release large numbers of fish. Facilities may also enhance steelhead and cutthroat, however targets and actual numbers are not included as management of these species is under the authority of the Province of British Columbia. The tables no longer contain the egg targets and egg attained numbers, as the egg attained numbers are not consistently available at the time of publication.

##### 4.7.1. Chinook salmon

Chinook in the South Coast are largely enhanced to support important recreational fishery

opportunities in marine and freshwater areas.

**Table 4-2a) Production of chinook salmon at DFO Enhancement facilities**

Project	Run	Stock	Release Site	Release Stage	2009 Brood	
					Release Target	Actual Release
Big Qualicum R	Fall	Big Qualicum R	Big Qualicum R	Smolt 0+	3,500,000	3,776,231
Capilano R	Fall	Capilano R	Sandy Cove	Seapen 0+	100,000	101,017
			Capilano R	Smolt 0+	460,000	431,104
Chehalis R	Summer	Chehalis R	Chehalis R	Smolt 0+	390,000	549,441
	Fall	Harrison R	Chehalis R	Smolt 0+	300,000	269,015
Chilliwack R	Spring	Chilliwack R	Chilliwack R	Smolt 0+	50,000	0
	Summer	Chilliwack R	Chilliwack R	Smolt 0+	410,000	492,486
	Fall	Chilliwack R	Chilliwack R	Smolt 0+	1,000,000	1,001,944
Conuma R	Fall	Conuma R	Conuma Est	Seapen0+	2,700,000	2,696,373
	Fall	Burman R	Burman Est	Seapen0+	300,000	390,662
	Fall	Gold R	Muchalat Lk	Seapen0+	40,000	38,376
	Fall	Sucwoa R	Sucwoa Est	Seapen0+	40,000	14,912
	Fall	Tlupana R	Tlupana Estuary	Seapen0+	40,000	38,797
Inch Cr	Summer	Maria Sl	Hope Sl	Smolt 0+	100,000	98,027
L Qualicum R	Fall	L Qualicum R	L Qualicum R	Smolt 0+	1,875,000	2,499,191
Nitinat R	Fall	Nitinat R	Sooke Hb	Seapen0+	50,000	61,638
			Nitinat Lk	Seapen0+	3,000,000	2,975,866
	Fall	Sarita R	Poett Nook	Seapen0+	300,000	229,475
			Sarita R	Smolt 0+	100,000	107,468
				Seapen1+ <sup>1</sup>	0	50,000
Puntledge R	Summer	Puntledge R	Puntledge R	Seapen1+ <sup>1</sup>	200,000	466,073
				Smolt 0+	1,600,000	926,661
	Fall	Puntledge R	Puntledge R	Smolt 0+	1,200,000	1,434,312
Quinsam R	Fall	Quinsam R	Quinsam R	Smolt 0+	1,900,000	1,939,739
			Discovery Pass	Seapen0+	1,000,000	1,083,088
			Campbell R	Egg Plant		55,305
				Smolt 0+	960,000	373,976
Robertson Cr	Fall	Nahmint R	Nahmint R	Smolt 0+	165,000	1,966
				Seapen0+	60,000	0
				Seapen 1+ <sup>1</sup>	0	1,500
	Fall	Robertson Cr	Robertson Cr	Smolt 0+	6,000,000	6,272,082

Shuswap R	Summer	Shuswap Middle R	Shuswap Middle R	Smolt 0+	150,000	155,400
		Shuswap R Low	Shuswap Low R	Smolt 0+	530,000	543,000
Spius Cr	Spring	Spius Cr	Spius Cr	Fed Spr	0	15,208
				Smolt 1+ <sup>1</sup>	65,000	72,557
	Spring	Salmon R/TOMF	Salmon R/TOMF	Fed Spr	70,000	95,022
	Spring	Nicola R	Nicola R	Fed Spr	0	5,563
				Smolt 1+ <sup>1</sup>	200,000	213,562
	Spring	Coldwater R	Coldwater R	Smolt 1+ <sup>1</sup>	65,000	23,511
				Fed Spr	0	11,875
Tenderfoot Cr	Summer	Porteau Cv	Porteau Cv	Seapen	800,000	428,740
			Squamish Est	Seapen 0+	400,000	30,561
	Summer	Cheakamus R	Cheakamus R	Smolt 0+	100,000	104,380
	Fall	Cheakamus R	Cheakamus R	Smolt 0+	0	18,484

<sup>1</sup> Yearling smolts, to be released in 2011, are listed as number of fry on hand.

**Table 4-2b) Production of chinook salmon at Community Economic Development Projects and Designated Public Involvement Projects**

Project	Run	Stock	Release Site	Release Stage	2009 Brood	
					Release Target	Actual Release
Alouette R	Fall	Chilliwack R	Alouette R S	Smolt 0+	200,000	329,500
Chapman Cr	Fall	Lang Cr	Chapman Cr	Smolt 0+	100,000	96,000
Clayoquot	Fall	Kennedy R Low	Kennedy R Low	Smolt 0+	380,000	340,000
Cowichan R	Fall	Cowichan R	Cowichan R	Smolt 0+	1,000,000	421,329
			Cowichan Bay	Seapen0+	100,000	0
Englishman Enh	Fall	L Qualicum R	Englishman R	Fed Spr	210,000	215,000
Esquimalt Hb	Fall	Nitinat R	Esquimalt Hb	Seapen0+	172,000	225,993
Gillard Pass	Fall	Phillips R	Fanny Bay/JNST	Seapen0+	75,000	57,815
			Fanny Bay/JNST	Seapen1+	25,000	30,000
		Phillips R	Phillips Lk	Smolt 0+	75,000	66,785
			Phillips Lk	Smolt 1+	25,000	30,000
Goldstream R	Fall	Goldstream R	Goldstream R	Smolt 0+	36,000	20,000
Gwa'ni	Fall	Sebahall Cr	Vernon Lk	Smolt 0+	45,000	
	Fall	Woss R	Woss Lk	Smolt 0+	180,000	
Kingfisher Cr/TOMF	Summer	Shuswap R Low	Shuswap R Low	Smolt 0+	150,000	170,000
L Campbell R	Fall	L Campbell R	L Campbell R	Smolt 0+	75,000	55,000
Nanaimo R	Fall	Chemainus R	Chemainus R	Smolt 0+	160,000	61,902

	Fall	Nanaimo R	Nanaimo R	Smolt 0+	350,000	350,722
	Summer	First Lk/GSVI	First Lk/GSVI	Smolt 0+	180,000	221,184
Nicomekl R	Fall	Serpentine R	Nicomekl R	Smolt 0+	50,000	11,000
	Fall	Nicomekl R	Nicomekl R	Smolt 0+	0	45,000
Oyster R	Fall	Oyster R	Oyster R	Smolt 0+	45,000	80,000
P Hardy/Marble	Fall	Marble R	Marble R	Smolt 0+	900,000	502,061
			Quatsino Sd	Seapen0+	90,000	84,409
Powell R	Fall	Lang Cr	Willingdon Est	Seapen0+	40,000	40,000
			Lang Cr	Smolt 0+	150,000	847,945
			Duck Lk	Smolt 0+	600,000	
San Juan R	Fall	San Juan R	San Juan R	Smolt 0+	900,000	1,000,000
Sayward F&G	Fall	Salmon R/JNST	Salmon R/JNST	Smolt 0+	120,000	88,937
Sechelt	Fall	Lang Cr	Maclean Bay	Seapen0+	75,000	75,000
Serpentine R	Fall	Serpentine R	Serpentine R	Smolt 0+	57,600	100,000
Sliammon R	Fall	Lang Cr	Theodosia Est	Seapen0+	150,000	0
			Sliammon R	Smolt 0+	150,000	103,461
Sooke R	Fall	Sooke R	Sooke R	Smolt 0+	225,000	263,210
	Fall	Nitinat R	Sooke R	Smolt 0+	212,500	241,945
Tahsis R	Fall	Leiner R	Leiner R	Smolt 0+	72,000	103,000
	Fall	Tahsis R	Tahsis R	Smolt 0+	200,000	63,000
Thornton Cr	Fall	Toquart R	Toquart R	Smolt 0+	170,000	209,684
	Fall	Thornton Cr	Thornton Cr	Smolt 0+	216,000	284,885
Tofino	Fall	Tranquil Cr	Tranquil Cr	Smolt 0+	36,000	78,620
	Fall	Bedwell River	Bedwell River	Smolt 0+	58,000	11,620
	Fall	Cypre R	Cypre R	Smolt 0+	160,000	114,307

<sup>1</sup> Yearling smolts, to be released in 2011 are listed as number of fry on hand.

- Chehalis River Hatchery: 2009 summer run brood were obtained from returns to the river combined with a transplant from Chilliwack River, which has the same original upper Fraser River stock origin.
- Chilliwack River Hatchery: in 2009 the returning spring run adults spawned earlier than expected, so no broodstock was obtained, therefore no spring run Chilliwack Chinook were released in 2010. Alouette, Coquitlam (Poco Hatchery), and two small seapens in Burrard Inlet receive egg transplants from Chilliwack Hatchery each year.

- Conuma River Hatchery: Nootka Sound Watershed Society enhances the Gold River stock, but it is still incubated and partly reared at Conuma H.
- Little Qualicum River Hatchery: provides fry for the Englishman Enhancement project.
- Nitinat River Hatchery: some 2009 brood eggs from Sarita River stock were sent to Omega Pacific Fish Farm to be reared to yearling smolts for 2011 release.
- Puntledge River Hatchery: summer chinook are the focus of a concerted effort at rebuilding, having been badly depressed in the 1990s. Progeny from captive brood began returning in 2004 and are now contributing to the escapement. In addition, there has been a variety of habitat improvements in the system to reduce stress-related pre-spawn mortality and improve access up river for returning fish. A portion of the brood stock is being held on cooler water at Rosewall Creek Hatchery which greatly increases holding survival, fertility and incubation survival.
- Quinsam River Hatchery: is working on rebuilding the chinook run in Campbell R. The Salmon River stock eggs are incubated at Quinsam, but reared and released by Sayward Fish and Game project (see table 1b).
- Robertson Creek Hatchery: in 2009, Nahmint Chinook returns were low, resulting in a minimal 2010 release. Half of the 2009 brood eggs were taken to Omega Pacific Fish Farm to be reared to yearling smolt for 2011 release in an attempt to increase the post-release survival.
- Shuswap River Hatchery: as part of a request from Stock Assessment, 500K Lower Shuswap juveniles will be tagged, along with 150K Middle Shuswap juveniles. Both Lower and Middle Shuswap stocks are StAD indicator stocks, as well as providing a large sport fishery to the Interior. Shuswap Hatchery provides an eyed egg transfer to Kingfisher Interpretive Center.
- Spius Creek Hatchery: occasionally experiences high incidences of BKD. When BKD is low, excess production is released as small fry. Poor escapements to both the Coldwater and Salmon rivers resulted in releases well below target levels. Escapements to early-timed Chinook stocks enhanced out of Spius (Coldwater, Spius) have been declining for some time and may continue to restrict broodstock collection.
- Tenderfoot Creek Hatchery: a broodstock collection program was initiated to collect eggs from Cheakamus River chinook in the fall of 2005. This program was partially funded by CN Rail and was a response to the caustic soda spill into the Cheakamus River that occurred in August 2005. There are both summer and fall runs in the Cheakamus and in 2009 the hatchery took eggs from both runs. A small release of fall Chinook took place in 2010. A poor return of Porteau Cove Chinook resulted in about half of the egg target being attained in 2009, adversely affected the number of releases in 2010.
- Alouette River: the target was increased mid-season.
- Cowichan River Hatchery: did not attain their 2009 brood egg target due to very low returns to the river.
- Nanaimo River Hatchery: did not attain the 2009 brood Chemainus target due to low returns to the river.

- Nicomekl River Hatchery: adult broodstock are transferred in from Tynehead Enhancement Society Hatchery (Serpentine River stock), and Nicomekl Enhancement Society members do the egg take, incubation, rearing and release. Beginning with 2009 brood, they are taking Nicomekl broodstock as well.
- Nootka Sound Watershed Society: chinook eggs from Burman and Gold rivers are incubated and partly reared at Conuma River Hatchery and then finished in the Gold River area under the direction of the society.
- Powell River Enhancement Society: provides up to 400K Lang Creek stock eggs to other projects including Sliammon, Chapman Creek, Sechelt, & Texada Island Volunteers.
- Sliammon Hatchery: logistic and funding problems have prevented operation of Theodosia seapens for the past few years (since 2005 brood).

#### **4.7.2. Coho salmon**

Enhancement of coho is largely undertaken to support hatchery mark-selective recreational fishery opportunities in South Coast marine areas and terminal marine and freshwater areas adjacent to hatchery facilities.

**Table 4-3a) Production of coho salmon at DFO Enhancement facilities**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release <sup>1</sup>
Big Qualicum R	Fall	Big Qualicum R	Big Qualicum R	Smolts	1,000,000	902,860
Capilano R	Fall	Capilano R	Capilano R	Smolts	525,000	642,323
Chehalis R	Fall	Chehalis R	Chehalis R	Smolts	800,000	845,405
Chilliwack R	Fall	Chilliwack R	Chilliwack R	Smolts	1,200,000	1,281,659
Conuma R	Fall	Conuma R	Conuma Est	Seapen	50,000	65,317
			Conuma R	Fed Spr	52,000	56,456
Inch Cr	Fall	Norrish Cr	Norrish Cr	Smolts	150,000	184,034
	Fall	Serpentine R	Serpentine R	Smolts	75,000	79,247
	Fall	Nicomekl R	Nicomekl R	Smolts	75,000	70,225
	Fall	Stave R	Stave R	Smolts	225,000	244,844
	Fall	Inch Cr	Inch Cr	Smolts	150,000	202,193
Nitinat R	Fall	Nitinat R	Francis Lk/SWVI	Fed Spr	50,000	56,084
			Flora Lk	Fed Spr	25,000	28,041
			Darlington Lk	Fed Spr	25,000	28,041
			Nitinat R	Smolts	100,000	137,726
Puntledge R	Fall	Puntledge R	Puntledge R	Fed Spr	1,800,000	250,089
				Smolts	0	0
			Comox Lk	Fed Spr	0	878,728
			Puntledge R Up	Fed Spr	0	639,067
Quinsam R	Fall	Quinsam R	Quinsam R	Smolts	800,000	800,856
				Fed Spr	100,000	84,593
			Elk Falls Ch #1	Egg Plant	0	12,000
			Elk Falls Ch #3	Egg Plant	0	150,000
			Elk Falls Ch #2	Egg Plant	0	38,000
Robertson Cr	Fall	Robertson Cr	Robertson Cr	Smolts	400,000	460,111
Shuswap R	Fall	Eagle R	Eagle R	Fed Spr	0	31,080
				Smolts	20,000	28,556
	Fall	Duteau Cr	Duteau Cr	Fed Spr	30,000	26,230

				Smolts	0	20,000
	Fall	Salmon R/TOMF	Salmon R/TOMF	Smolts	70,000	6,442
				Fed Spr	60,000	6,463
Spilus Cr	Fall	Deadman R	Deadman R	Smolts	30,000	35,003
				Fed Spr	0	15,314
	Fall	Coldwater R	Coldwater R	Fed Spr	20,000	72,000
				Smolts	70,000	72,210
Tenderfoot Cr	Fall	Mamquam R	Mamquam R	Smolts	45,000	55,034
			Loggers Lane Cr	Egg Plnt	50,000	11,166
	Fall	Tenderfoot Cr	Loggers Lane Cr	Egg Plnt	0	60,439
			Elaho R	Fed Spr	0	19,019
			Far Point Ch	Fed Spr	0	31,508
			Brohm Lk	Fed Spr	50,000	12,000
			Tenderfoot Cr	Smolts	130,000	164,427
	Fall	Cheakamus R	Mykiss Ch	Egg Plnt	0	7,899
			Brohm Lk	Egg Plnt	0	7,146
			Brohm Lk	Fed Spr	0	12,000
			Elaho R	Fed Spr	0	24,769
			Cheakamus R	Fed Spr	0	30,153
			Cheakamus R	Smolts	90,000	83,031

<sup>1</sup> Smolts to be released in 2011 are listed as number of fry on hand.

<sup>2</sup> Some or all are mass marked with an adipose clip for Mark Selective Fishery opportunities.

**Table 4-3b) Production of coho salmon at Community Economic Development Projects and Designated Public Involvement Projects**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release <sup>1</sup>
Alouette R	Fall	Alouette R S	Alouette R S	Smolts	80,000	21,900
			Alouette R S	Fed Spr	100,000	0
Chapman Cr	Fall	Chapman Cr	Halfmoon Bay	Seapen	20,000	20,000
			Chapman Cr	Smolts	80,000	100,000
Fanny Bay/GSVI	Fall	Rosewall Cr	Rosewall Cr	Smolts	85,000	57,000
Gillard Pass	Fall	Ito Cr	Stuart Is Strms	Fed Spr	20,000	4,000
	Fall	Quinsam R	Stuart Is Strms	Fed Spr	0	29,000
Goldstream R	Fall	Goldstream R	Goldstream R	Smolts	90,000	165,000
Gwa'ni	Fall	Woss R	Woss R	Fed Spr	85,000	54,000

			Klalkakama Lk	Unfed	0	51,390
Halalt Band	Fall	Bonsall Cr	Bonsall Cr	Fed Spr	45,000	0
Horseshoe Bay	Fall	Capilano R	Horseshoe Bay	Seapen	5,000	0
Kanaka Cr	Fall	Kanaka Cr	Kanaka Cr	Smolts	50,000	27,280
				Fed Spr	80,000	0
L Campbell R	Fall	L Campbell R	L Campbell R	Fed Spr	24,300	10,000
				Smolts	30,000	45,000
Little R/GSVI	Fall	Little R/GSVI	Little R/GSVI	Fed Spr	15,000	47,000
Little R/GSVI	Fall	Little R/GSVI	Little R/GSVI	Smolts	30,000	20,000
Nanaimo R	Fall	Nanaimo R	Nanaimo R	Smolts	84,000	85,000
			Nanaimo R	Fed Spr	100,000	108,037
			Millstone R	Fed Spr	60,000	2,000
Nicomekl R	Fall	Nicomekl R	Nicomekl R	Fed Spr	0	12,000
				Smolts	75,000	See Inch Creek
Oyster R	Fall	Oyster R	Oyster R	Smolts	40,000	35,000
	Fall	Oyster R	Oyster R	Fed Spr	100,000	142,000
P Hardy/Marble	Fall	Marble R	Marble R	Fed Spr	162,000	44,015
	Fall	Washlawlis R	Washlawlis R	Unfed	90,000	0
P Hardy/Quatse	Fall	Quatse R	Quatse Lk	Fed Spr	22,500	34,016
			Quatse R	Fed Spr	22,500	0
			Quatse R	Smolts	90,000	90,000
	Fall	Cluxewe R	Cluxewe R	Smolts	90,000	100,000
				Fed Spr	45,000	0
				Unfed	0	58,960
	Fall	Waukwaas Cr	Waukwaas Cr	Fed Spr	40,000	26,373
				Smolts	60,000	100,000
Powell R	Summer	Lang Cr	Anderson Cr/Lang	Fed Spr	0	75,309
			Blackwater/GS MN	Fed Spr	0	75,309
			Lang Cr	Fed Fall	80,000	0
			Haslam Lk	Fed Spr	200,000	75,309
San Juan R	Fall	San Juan R	San Juan R	Fed Spr	175,000	350,000
Sechelt	Fall	Chapman Cr	Maclean Bay	Seapen	85,000	219,185
	Fall	Capilano R	Maclean Bay	Seapen	85,000	0
Serpentine R	Fall	Serpentine R	Serpentine R	Fed Spr	0	20,000
				Smolts	0	10,000
				Smolts	75,000	See Inch Cr
Seymour R	Fall	Seymour R/GSMN	Seymour R/GSMN	Fed Spr	40,000	95,482

			Hurry Cr	Smolts	40,000	61,261
Sliammon R	Fall	Sliammon R	Sliammon R	Fed Fall	50,000	0
Sooke R	Fall	Demamiel Cr	Young Lk	Fed Spr	35,000	150,816
				Smolts	80,000	0
Thompson R N	Fall	Louis Cr	Louis Cr	Smolts	20,000	0
	Fall	Dunn Cr	Dunn Cr	Smolts	20,000	25,236
	Fall	Lemieux Cr	Ianson Ch	Smolts	20,000	39,361
Thornton Cr	Fall	Thornton Cr	Thornton Cr	Smolts	40,000	43,273
Tofino	Fall	Kootowis Cr	Kootowis Cr	Fed Spr	81,000	0
	Fall	Tranquil Cr	Tranquil Cr	Fed Spr	60,000	0
	Fall	Cypre R	Cypre R	Fed Spr	81,000	63,000

<sup>1</sup> Smolts to be released in 2011 are listed as number of fry on hand.

<sup>2</sup> Some or all are mass marked with an adipose clip for Mark Selective Fishery opportunities

- Capilano River Hatchery: may provide Sechelt with 100,000 pre-smolts for Maclean Bay seapen smolt release if required. There is a common occurrence of softshell parasite on Capilano's coho eggs.
- Conuma River Hatchery: the coho program consists of a fed fry release unless community partnership funding is found to rear them to smolt.
- Inch Creek Hatchery: supports community programs on Nicomekl and Serpentine rivers by incubating and rearing their coho to smolt stage.
- North Thompson River, Dunn Creek Hatchery: no Louis Creek coho were collected for broodstock in 2009.
- Puntledge River Hatchery: all of the 2008 brood fish holding to smolt for 2010 release died during summer 2009 due to lethal river temperatures. Water temperatures in the Puntledge River have been increasing for several years, resulting in increasing mortality on fish holding over the summer. A decision was made to release all coho as fry from 2009 brood onward.
- The original 2009 broodyear target of 600,000 smolts and 200,000 fed fry was modified after the 2010 IFMP was published to a 1.8M release of fry. The 2011 targets are more reflective of habitat capacity so numbers of fry released will be significantly less.
- Shuswap River Hatchery: takes Duteau Creek eggs only when the run is poor. The 2009 return year was a relatively weak return year; however egg and fry release targets were met. A group of 20K smolts is being held for release in spring 2011 to avoid direct competition for habitat with wild and hatchery fry.
- Spius Creek Hatchery: Eagle River is a StAD indicator stock for South Thompson coho. Starting in 2009 Eagle River coho are being enhanced for the purpose of tagging up to 30K juveniles for assessment purposes. Due to water supply and space restrictions, the remainder of the fish were released as fry.
- A very poor adult return to the Salmon River resulted in a release size far below target.
- Due to BKD screening, excess fry that are surplus to smolt requirements have been released early. These changes have been captured in 2011 targets.

- Tenderfoot Creek Hatchery: also takes extra eggs for transfer to several small Public Involvement Projects.
- Chapman Creek: provides 100,000 eggs for the Sechelt project.
- Halalt Band: the capture of Bonsall Creek coho is shared by the Halalt Band, other local tribes, Ladysmith Sportsmen and Nanaimo Hatchery. It is an opportunistic enhancement, not occurring in all years.
- Nanaimo River Hatchery: takes eggs to allow for a 60K fry release to the Millstone River system, which now has access open to upper sections of the river, including Second Lake and Brannen Lake.
- Nicomekl River: enhance coho at their hatchery, transferring out ~2,500 eyed eggs to the Langley school district for classroom incubation projects, and producing fed fry for release into the Nicomekl River. Smolt releases are recorded under Inch Creek Hatchery, since Inch Creek hatchery incubates, rears, Ad-clips and releases 75K Nicomekl coho smolts. Volunteers from Nicomekl Enhancement Society assist in the egg take and release.
- Port Hardy/Marble: did not enhance Washlawlis River in 2009. Unable to achieve Marble target.
- Sechelt River: takes eggs from their own returns, for incubation and rearing at Chapman Creek Hatchery and also receives 85,000 pre-smolts from Chapman Creek for their seapen project in Maclean Bay.
- Serpentine River/Tynehead Hatchery: in addition to the coho that are incubated, reared and released from Tynehead as fed fry and smolts, ~100K eggs are incubated, reared and Ad-clipped at Inch Creek hatchery, and released as smolts. These smolt releases are recorded under Inch Creek Hatchery. Tynehead Hatchery members assist in the egg take and release of these smolts.
- Thompson River North: is enhancing Louis, Lemieux and Dunn Creek stocks. No eggs were collected from Louis Creek in 2009.
- Thornton Creek: only does stocks other than Thornton Creek when needed.
- Tofino Hatchery: no 2009 brood eggs were taken from Kootowis Creek or Tranquil Creek due to excellent escapements, resulting in no 2010 releases.
- Some other community hatcheries collect coho broodstock to provide potential opportunities for small hatchery mark-selective fisheries on local streams: Courtenay Fish and Game (Trent River), Millard Piercy Watershed Stewards and Parksville Fish and Game (French Creek) on Vancouver Island; and Brunette River, Coquitlam River, Mossom Creek and Noons Creek in the Lower Mainland.

### **4.7.3. Chum salmon**

Chum salmon are mainly produced for fisheries.

**Table 4-4a) Production of chum salmon at DFO Enhancement facilities**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release
Big Qualicum R	Fall	Big Qualicum R	Big Qualicum R	Chan Fry	54,000,000	10,763,516
Capilano R	Fall	Capilano R	Capilano R	Fed FW	0	64,242
Chehalis R	Fall	Chehalis R	Chehalis R	Egg Plnt	0	511,486
				Unfed	5,000,000	204,846
				Fed FW	1,000,000	1,746,314
Chilliwack R	Fall	Chilliwack R	Chilliwack R	Fed FW	2,000,000	894,866
			Salwein Cr	Fed FW	0	100,071
			Street Pd	Fed FW	0	97,514
Conuma R	Fall	Canton Cr	Canton Cr	Fed FW	1,000,000	854,548
	Fall	Sucwoa R	Sucwoa R	Fed FW	1,000,000	551,365
	Fall	Conuma R	Conuma Est	Seapen	1,500,000	1,814,475
	Fall	Tlupana R	Tlupana R	Fed FW	1,000,000	685,465
Inch Cr	Fall	Inch Cr	Inch Cr	Fed FW	800,000	1,033,325
			Nicomem Sl	Fed FW	200,000	0
L Qualicum R	Fall	L Qualicum R	L Qualicum R	Chan Fry	38,000,000	14,341,780
Nitinat R	Fall	Nitinat R	Nitinat Lk	Fed FW	30,000,000	5,252,749
Puntledge R	Fall	Puntledge R	Puntledge R	Fed FW	2,700,000	2,986,351
Tenderfoot Cr	Fall	Tenderfoot Cr	Tenderfoot Cr	Fed FW	75,000	273,516
			Loggers Lane Cr	Fed FW	0	112,110
Weaver Sp Ch	Fall	Weaver Sp Ch	Weaver Sp Ch	Chan Fry	2,700,000	3,225,677

**Table 4-4b) Production of chum salmon at Community Economic Development Projects and Designated Public Involvement Projects**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release
Alouette R	Fall	Alouette R S	Alouette R N	Fed FW	195,000	220,000
			Eagle Cr	Fed FW	0	50,000
			Brunette R	Fed FW	0	111,500
			Still Cr	Fed FW	0	88,500
Chapman Cr	Fall	Chapman Cr	Chapman Cr	Unfed	220,000	30,000
Fanny Bay/GSVI	Fall	Rosewall Cr	Rosewall Cr	Fed FW	225,000	165,562
Goldstream R	Fall	Goldstream R	Mount Douglas Cr	Fed FW	0	50,000
			Goldstream R	Fed FW	75,000	33,859
Gwa'ni	Fall	Nimpkish R	Wagidis Ch	Fed FW	9,000,000	740,046

		Low				
Halalt Band	Fall	Chemainus R	Chemainus R	Egg Plant	425,000	22,000
	Fall	Bonsall Cr	Bonsall Cr	Unfed	41,000	0
Kanaka Cr	Fall	Kanaka Cr	Brunette R	Unfed	0	50,000
			Kanaka Cr	Unfed	0	50,200
			Kanaka Cr	Fed FW	150,000	12,200
			Kaymar Cr	Fed FW	5,000	5,000
			Byrne Cr	Fed FW	25,000	25,000
Little R/GSVI	Fall	Puntledge R	Little R/GSVI	Fed FW	190,000	150,000
Nanaimo R	Fall	Nanaimo R	Nanaimo R	Unfed	1,062,500	373,022
Nicomekl R	Fall	Chehalis R	Nicomekl R	Unfed	95,000	100,000
Oyster R	Fall	Oyster R	Oyster R	Fed FW	320,000	0
P Hardy/Quatse	Fall	Quatse R	Quatse R	Fed FW	100,000	0
Powell R	Fall	Lang Cr	Willingdon Cr	Fed FW	0	70,000
			Lang Ch	Fed FW	750,000	613,852
Sechelt	Fall	Macleay Bay	Macleay Bay	Seapen	700,000	514,503
Serpentine R	Fall	Chehalis R	Serpentine R	Fed FW	150,000	180,000
		Serpentine R	Serpentine R	Fed FW	0	50,000
Seymour R	Fall	Alouette R S	Seymour R/GSMN	Fed FW	100,000	55,374
			Maplewood Cr	Fed FW	20,000	20,000
Sliammon R	Fall	Sliammon R	Sliammon R	Unfed	1,700,000	587,403
				Fed FW	900,000	351,163
Thornton Cr	Fall	Salmon Cr/SWVI	Salmon Cr/SWVI	Fed FW	500,000	605,219
	Fall	Twin R East	Twin R East	Fed FW	50,000	0
	Fall	Mercer Cr/SWVI	Mercer Cr/SWVI	Fed FW	50,000	0

- Big Qualicum River Hatchery: had very poor adult returns in both 2009 and 2010, resulting in low egg deposition in the channel. 950K fed fry are also being reared for release in 2011 to mitigate poor adult returns.
- Capilano River Hatchery: has not had a directed program to enhance chum, but they have decided to make more effort to obtain eggs and start to build the run back up. A target of 100K eggs was set at a production planning meeting in January, 2010 and was considered retroactive to 2009 brood.
- Chehalis River Hatchery: supplemental funding or assistance is provided in some years by the First Nation to maintain chum production at Chehalis Hatchery to provide an ESSR opportunity. Chehalis provides 100K fed fry to Nicomekl Hatchery, and 200K fed fry to Serpentine/Tynehead Hatchery. In 2010, releases of fed fry exceeded target while the unfed

fry release (which is considered surplus to the fed fry release) was far below target due to difficulty in obtaining enough broodstock.

- Chilliwack River Hatchery: the 2009 return was very poor and the target could not be attained.
- Conuma River Hatchery: fell short of their egg targets in 2009 due to adverse river conditions, low escapement levels and limited resources, resulting in a lower number of fed fry releases in 2009 than targeted. Returns were low again in 2010.
- Inch Creek Hatchery: takes additional eggs and transfers 50K fry each to West Slough and Yorkson Creek Public Involvement Projects.
- Little Qualicum River: experienced poor returns in 2009, adversely affecting the fed fry production in 2010. 950K fed fry are being reared for release in 2011 to mitigate poor adult returns.
- Nitinat River Hatchery: fell short of their release target in 2010 due to poor returns in 2009. The return was also poor in 2010.
- Puntledge River Hatchery: takes an extra ~180K eggs for Little River project. This stock continues to do fairly well.
- Quinsam River Hatchery: takes Campbell River stock for transfer to several small Public Involvement projects.
- Tenderfoot Creek Hatchery: takes eggs primarily for transfer to Public Involvement projects (200K for Terminal Cr/Bowen Isl & 200K for Nelson Cr).
- Chapman Creek: unable to achieve 2009 target.
- Goldstream Hatchery: takes extra eggs for transplants to several small creeks around the Victoria area and on the Gulf Islands.
- Gwan'i Hatchery: The Namgis First Nation provides supplemental funding to the Gwa'ni Hatchery to pay for the collection of up to 8M chum salmon eggs in addition to the 2M eggs in their CEDP contract. 1.5M lost to catastrophic event in hatchery.
- Halalt Band: unable to get broodstock in Bonsall Creek in 2009.
- Nanaimo River: the number of brood eggs attained for Nanaimo River stock includes regular production and eggs taken for the Gently Down the Stream program.
- Oyster River: unable to get broodstock in 2009.
- Port Hardy/Quatse: unable to get broodstock in 2009.
- Powell River: also transfers 70K eyed eggs to a PIP group on Texada Island.
- Sechelt Hatchery: is experiencing water and other infrastructure problems. Enhancement projects will be satellited from Chapman Creek for the near future. They took eggs from MacLean Bay returns in 2008 and 2009.
- Serpentine River/Tynehead Hatchery: in addition to the fry being transferred in from Chehalis for immediate release, Serpentine broodstock is also being collected for incubation and rearing at the hatchery due to increased rearing capacity.

- Seymour River Hatchery: chum targets vary. In odd years it is lower to allow for production of pinks. Additional eggs are collected for transfer to North Vancouver Schools for classroom incubation educational programs.
- Sliammon River: returns have been low for several years and they could not reach their egg target in 2009, resulting in releases lower than targeted in 2010. The 2010 return was also quite low, so the target was not attained.
- Thornton Creek: chum returns extremely poor over the last few years and no broodstock available in Mercer Creek or Twin River East.

#### **4.7.4. Pink salmon**

Pink returns to the east coast of Vancouver Island were high again in 2010, so Quinsam Hatchery was able to obtain all the eggs required for themselves and other projects. There is no even-year pink run in the Fraser.

**Table 4-5a) Production of pink salmon at DFO Enhancement facilities**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release
Chehalis R <sup>1</sup>	Fall	Chehalis R	Chehalis R	Unfed	250,000	742,251
		Weaver Sp Ch	Weaver Sp Ch	Egg Plnt	0	40,909
Puntledge R	Fall	Glendale Ch	Glendale Ch	Chan Fry	18,800,000	18,800,000
	Fall	Quinsam R	Puntledge R	Unfed	2,400,000	2,429,373
Quinsam R	Fall	Quinsam R	Discovery Pass	Seapen	1,000,000	697,057
			Quinsam R	Unfed	5,400,000	5,655,899
Tenderfoot Cr <sup>1</sup>	Fall	Cheakamus R	Squamish Est	Seapen	0	202,522
			Cheakamus R	Fed FW	1,000,000	801,613
Weaver Sp Ch <sup>1</sup>	Fall	Weaver Sp Ch	Weaver Sp Ch	Chan Fry	921,600	3,666,929

<sup>1</sup> Pinks are present on the Fraser River during odd years only

**Table 4-5b) Production of pink salmon at Community Economic Development Projects and Designated Public Involvement Projects**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release
Chapman Cr	Fall	Chapman Cr	Gibsons Harbour	Unfed	100,000	540,000
			Chapman Cr	Unfed	250,000	250,000
Cowichan R	Fall	Quinsam R	Cowichan Est	Seapen	225,000	249,450
Englishman Enh	Fall	Quinsam R	Englishman R	Unfed	1,000,000	900,000
Fanny Bay/GSVI	Fall	Quinsam R	Coal Cr	Unfed	1,000,000	0
			Chef Cr	Unfed	0	562,284
Kanaka Cr <sup>1</sup>	Fall	Harrison R	Kanaka Cr	Fed FW	600,000	452,000
Little R/GSVI	Fall	Puntledge R	Little R/GSVI	Unfed	120,000	0
Nanaimo R	Fall	Nanaimo R	Nanaimo Hrbr	Seapen	1,000,000	925,305
Nicomekl R	Fall	Chilliwack R	Nicomekl R	Unfed	0	134,249
Nile Cr	Fall	Quinsam R	Nile Cr	Unfed	1,000,000	1,000,000
Oyster R	Fall	Oyster R	Oyster R	Unfed	2,250,000	700,000
Powell River	Fall	Lang Cr	Lang Cr	Unfed	500,000	0
P Hardy/Quatse	Fall	Quatse R	Quatse R	Unfed	1,350,000	1,326,233
	Fall	Cluxewe R	Cluxewe R	Unfed	800,000	916,671
Sechelt	Fall	Chapman Cr	Maclean Bay	Seapen	250,000	393,857
Seymour R <sup>1</sup>	Fall	Chilliwack R	Seymour R/GSMN	Fed FW	1,440,000	936,258
			Mosquito Cr	Fed FW	0	50,000
Tsolum R	Fall	Quinsam R	Tsolum R	Unfed	1,000,000	970,000

<sup>1</sup> Pinks are present on the Fraser River during odd years only

- Chilliwack River Hatchery: provides ~1.6M eggs to Seymour and ~150K unfed fry to Nicomekl.
- Chehalis River Hatchery: takes additional eggs for distribution to many community projects.
- Puntledge River Hatchery: acquires eggs from Quinsam River Hatchery. Returns of previous transfers were left to spawn naturally in the Puntledge River watershed, most of them in the Tsolum River.
- Quinsam River Hatchery: provides eggs for many smaller projects (1M to Englishman Enhancement, 1M to Fanny Bay, 1.25M to Nile Creek and 1M to Tsolum River).
- Chapman Creek: beginning in 2007, a seapen at Gibson's Landing was added to increase returns for a sport fishery. Eggs were taken in 2009 for the Gibson's seapen and for transfer to Sechelt Hatchery.
- Cowichan River: began a pink seapen project in 2007, using Quinsam River stock.
- Fanny Bay: enhanced Chef Creek with limited number of fry.
- Kanaka Creek: obtains pink eggs (Harrison River system) from Chehalis Hatchery.
- Little River: unable to get broodstock in 2009.
- Nanaimo River Hatchery: started taking Nanaimo Creek broodstock as the stock rebuilds. 2009 was the first large return of pinks, where only Nanaimo Creek stock was used.
- Nicomekl River: obtains ~150K unfed fry from Chilliwack Hatchery.
- Oyster River: the target for 2009 brood was increased in an attempt to increase the numbers back to the river but this target was not achieved.
- Powell River: unable to enhance pink in 2009.
- Sechelt River: eggs and are incubated and reared at Chapman Creek Hatchery.
- Seymour River Hatchery: receives ~1.6M eggs from Chilliwack Hatchery.

#### **4.7.5. Sockeye salmon**

Sockeye production continued to focus efforts on maintaining production supporting stock conservation and sustainable fisheries. Sockeye returns to the Fraser River were lower than expected in 2009, but much higher than expected in 2010.

**Table 4-6a) Production of sockeye salmon at DFO Enhancement facilities**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release
Gates Sp Ch	Summer	Gates R	Gates R	Chan Fry	4,500,000	N/A
Horsefly Sp Ch	Summer	Horsefly Ch	Horsefly Ch	Chan Fry	17,500,000	3,287,116
Inch Sockeye Satellite	Summer	Pitt R Up	Pitt R Up	Fed Spr	2,000,000	1,949,793
	Fall	Cultus Lk	Cultus Lk	Fed Fall	150,000	132,957
				Fed Spr	550,000	103,149
				Smolts	50,000	51,000
Nadina Sp Ch	Summer	Nadina R	Nadina R	Chan Fry	3,500,000	3,526,000
Shuswap R	Summer	Okanagan R	Okanagan R	Fed Spr	800,000	891,700
Weaver Sp Ch	Fall	Weaver Sp Ch	Weaver Sp Ch	Chan Fry	46,800,000	34,284,658

<sup>1</sup> Smolts to be released in 2011 are listed as number of fry on hand

**Table 4-6b) Production of sockeye salmon at Community Economic Development Projects and Designated Public Involvement Projects**

Project	Run	Stock	Release Site	Stage	2009 Brood	
					Release Target	Actual Release
Gwa'ni	Fall	Vernon Lk	Vernon Lk	Unfed	400,000	0
	Fall	Woss Lk	Woss Lk	Fed Spr	800,000	503,159
Sakinaw Lake	Fall	Sakinaw Lk	Sakinaw Lk	Fed Spr	200,000	177,873

- Gates Creek Spawning Channel: channel escapement was below capacity in 2009. No juvenile assessment work was completed in 2010, therefore actual release size is unknown
- Horsefly Spawning Channel: was operated in 2009 in response to a drastic decline in escapement. Given low sockeye abundances, channel escapement was below capacity. Fry output reflects decreased egg deposition.
- Nadina Spawning Channel: channel escapement was below capacity in 2009. As lower numbers of adults expected resulted in a decreased target, actual production achieved target in 2009 brood.
- Weaver Creek Spawning Channel: in 2009, the return was low, but the pre-spawn mortality was much lower than in 2008.

- Gw'ani: did not take any Sebalhall Cr/Vernon Lk stock in 2009, resulting in no 2010 releases.
- Sakinaw Lake: had extremely low adult returns in 2008, 2009 and 2010, with no brood stock collected. Captives from several broods are currently holding at Rosewall Creek facility. Eggs were taken in 2008, 2009 and 2010 from captive brood stock.
- Robertson Creek Hatchery: undertakes an annual nutrient enrichment program on Great Central Lake to increase sockeye juvenile growth and survival rates.

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## **5. APPENDIX 5 - SOUTHERN B.C. / FRASER RIVER FIRST NATIONS FISHING PLAN (FSC FISHERIES ONLY)**

### **5.1. *Catch Monitoring and Reporting Initiatives***

#### **5.1.1. FN Electronic Reporting System**

Since the year 2000, Fisheries and Oceans Canada have been working with First Nations groups to design and develop an electronic recording and reporting systems for First Nations Food, Social and Ceremonial catch data. The PC based 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 licensing 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 this program has expanded to other interested First Nations group within the Pacific Region, including the B.C. Interior area, South Coast and the Central Coast. Approximately 34 First Nations groups have employed this software application.

For more information please contact Ron Goruk at 250-756-7392, Carmen McConnell at 250-756-7272.

#### **5.1.2. Improving Coded Wire Tag (CWT) sampling of FSC fisheries**

Many First Nations FSC fisheries have not been sampled for CWTs, and most of those that were have been inconsistently or inadequately sampled for CWTs. Since many of these fisheries are terminal and intercept chinook and/or coho indicator stocks, this is a serious concern because it generates unknown bias for cohort analyses and implementation of PST management regimes for chinook and coho salmon.

In 2006, the Department began addressing this concern in the lower Fraser River FSC fisheries that retain chinook or coho salmon. Fishery monitors, who were already in place for catch data collection, were instructed to obtain heads from adipose fin-clipped chinook and coho if the fisher did not object. Since then, this approach has been extended to other FSC fisheries in the Fraser watershed and on the Cowichan River.

In 2009, sampling in the Lower Fraser River (below Sawmill Creek) FSC fishery continued as in 2008 but was not consistently performed across all monitoring sites and no heads were recovered. In the mid-Fraser River (above Sawmill Creek to Lytton), sampling was introduced but no heads were recovered. In the BC Interior, sampling was introduced in Little Shuswap Lake, Lower Shuswap River and the mouth of the Bonaparte River and heads were recovered at all locations. Similarly, on the Cowichan River, sampling was introduced and some heads were

recovered. These programs will continue in 2011 with a focus on increasing participation and expanding to more areas.

## **5.2. Specific Conservation Measures**

### **5.2.1. Lower Strait of Georgia Chinook**

Protective measures will be considered in terminal areas to reduce harvest impacts. Potential measures will be the subject of discussion with First Nation communities prior to development of the fishing plan.

### **5.2.2. Interior Fraser River, Lower Fraser and Strait of Georgia coho**

Historical coded wire tag (CWT) data and DNA sampling indicate that Thompson and upper Fraser River coho are present in the lower Fraser River from late-August until mid-October. Closures during the following periods will be implemented in portions of the Fraser River to protect Thompson and upper Fraser River coho:

Fraser River - Below Mission	September 6 to October 7
Fraser River - Mission to Hope	September 8 to October 10
Fraser River - Hope to Sawmill Creek	September 10 to October 15
Fraser River - Sawmill Creek to Lytton	September 19 to December 31
Fraser River - Lytton to Williams Lake	September 26 to December 31
Fraser River - Upstream of Williams Lake	October 1 to December 31
Thompson River –	
Upstream to the outlet of Kamloops Lake	September 19 to December 31
Upstream of Kamloops Lake	September 24 to December 31

During these times fishing will be restricted to very limited selective and experimental fisheries for all harvesters.

### **5.2.3. Early Stuart Sockeye**

Based on the pre-season forecast (range: 16,000 to 42,000 and p50 midpoint forecast of 17,000), there is expected to be minimal or no sockeye available for harvest. In order to conserve Early Stuart sockeye, management will likely need to focus on restricting all fisheries. Fishery implementation will depend upon the in-season assessment of run size, the conservation and harvest plan (developed through pre-season consultations) and the available TAC for this stock group.

In past years, Early Stuart sockeye have been managed to avoid directed fisheries on 90% of the run using a closure window (Table 14). During the closure window, fishing for sockeye would not be permitted except for limited First Nation ceremonial licences for unplanned events.

#### **5.2.4. Early Summer Sockeye**

Harvest constraints are planned to provide further protection to weaker populations migrating in the earlier timed component of the Early Summer aggregate stock group. These measures will include an additional 1 week extension of the Early Stuart window closure (Table 14) and management of Canadian fisheries with the target of reducing exploitation rates to 25% or less on the weaker, earlier timed Early Summer stocks. Specific plans will be confirmed based on in-season information.

#### **5.2.5. Cultus Lake and Late Run Sockeye**

There are expected to be restrictions and closures for fisheries that target Fraser River sockeye stocks throughout southern BC in order to afford protection to Cultus Lake and Late Run stocks. Harvest limitations may also be required in the Fraser River upstream of the Vedder River confluence with the Fraser River to protect returns of Late Run sockeye that may be subject to significant levels of en-route mortality as forecasted by timing of river entry date.

#### **5.2.6. Sakinaw Lake Sockeye**

Harvest related measures to ensure protection of Sakinaw Lake sockeye are expected to continue in 2011. These measures include restrictions in First Nations FSC fisheries prior to the last week of July in Johnstone Strait and until early to mid-August in the northern Strait of Georgia. The waters near the mouth of Sakinaw Creek in Area 16 will be closed to fishing all season. Returns to Sakinaw Lake have been 100 or less since 2004, with no fish returning in 2007 or 2008, only 1 in 2009 and 29 fish in 2010. The 2009 smolt production which is expected to be the main component of the 2011 return was 62,000 smolts. The return of adult spawners in 2011 is expected to be very low.

#### **5.2.7. Nimpkish Sockeye**

The 2011 return is expected to continue to be low with a possible improving trend as evidenced in 2010. Harvest related measures continue to be required to minimize impacts on this stock. These measures include sockeye non-retention, in both First Nations FSC fisheries and recreational fisheries, occurring in Area 12 above Lewis Point until late July.

#### **5.2.8. Fraser River Chinook**

In the 2011 Salmon Outlook, Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, Summer 5<sub>2</sub> Chinook have been classified as *stocks of concern*. For Fraser Summer 4<sub>1</sub> Chinook, the outlook is near target/abundant. The 2011 forecast of the terminal spawner abundance (i.e. after all ocean fisheries removals) for Harrison Chinook is 40,082 age 3, 241,640 age 4, and 2,882 age 5 fish.

Management actions implemented in 2010 to protect and conserve Fraser Spring 4<sub>2</sub> Chinook in the Fraser River are planned to continue in 2011. These actions included limited fisheries for unplanned events prior to mid-June and a delayed start and reduced fishing times for communal fisheries beginning mid June. For the lower Fraser River, the management actions for Fraser Spring 4<sub>2</sub> Chinook are proposed until July 15<sup>th</sup>. Management actions for Fraser Spring 4<sub>2</sub>

Chinook also provide additional protection for the Fraser Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook as their migration timing overlaps significantly.

Management of Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook in fisheries after July 15<sup>th</sup> will depend on the in season abundance of chinook estimated from the Albion test fishery and will follow the management zones for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> outlined in Section 5.3.4.

For 2011, the Department is continuing to consult with First Nations on fishing plans for Food, Social and Ceremonial (FSC) fisheries.

### **5.2.9. Inshore Rockfish**

**The management objective for inshore rockfish is to introduce conservation strategies that will reverse declines and ensure stock rebuilding over time. A fishing mortality rate of less than 2.0 percent (all Pacific Region fisheries) will be required to achieve this objective.**

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.

### **5.3. Communal Licence Harvest Targets**

First Nations access to salmon for FSC purposes is managed through communal licences. These licences are designed for the effective management and regulation of First Nations fisheries through a negotiated series of mutually acceptable conditions wherever possible. These licenses are typically issued to individual bands or tribal groupings, and describe the dates, times and locations where harvesting may occur, including type of gear, and other conditions. Communal license for Southern Coastal First Nations are typically multi-species, and are issued on an annual basis. Shorter duration supplemental licenses are also issued on occasion. For in-river First Nations, licenses are typically of shorter duration, and are issued to provide for specific First Nations' salmon fisheries openings.

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. Where agreement is reached, agreed-to fisheries provisions form the basis of the communal license 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.

Draft anticipated harvest targets for communal licences in the Fraser River and south coast of BC are outlined in the table below. Consultation with First Nations in each of the areas is underway. Actual catches will be dependent on, among other factors, in-season assessments of actual stock strength and management measures taken to ensure conservation of individual stocks.

**Table 5-1. Communal licence harvest targets**

	<b>South Coast</b>	<b>Lower Fraser</b>	<b>Middle/Upper Fraser</b>	<b>Total</b>
Sockeye				
Fraser River	260,000	449,000	300,000	1,009,000
Non-Fraser River	20,000	0	0	20,000
Coho	43,500	0	1500*	44,500
Pink	60,000	125,000	500	185,500
Chum	155,000	72,000	500	227,500
Chinook	34,000	12,000	18,000	64,000
<b>Total Salmon</b>	<b>572,000</b>	<b>658,000</b>	<b>320,500</b>	<b>1,550,500</b>

\*Note: Majority of harvest in mid/upper Fraser area is anticipated to occur from terminal systems experiencing strong escapements as identified using enumeration by counting fence methodology.

#### **5.4. 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. Since 1994-95, when the ATP was first launched, over 278 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. All economic opportunity fisheries will be managed as the same priority as 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 economic opportunities for First Nations are on-going with First Nations and stakeholders. For 2011, as in previous years, the focus with First Nations will be on experimenting in terminal areas on abundant stocks. These fisheries will be conducted separately from food, social and ceremonial fisheries, under the same priority and similar rules as the commercial fishery and fish harvested will be off-set with licences retired from the commercial fishery.

Under the PICFI program, negotiations and planning toward the establishment of Commercial Fisheries Enterprises (CFE) continues. During 2011, it is expected that commercial access acquired through the PICFI program will be transferred on a permanent basis to these CFEs.

## 5.5. Demonstration Fisheries

The Department is considering the following demonstration fishery concept proposals for implementation in 2011:

Additional discussions are planned to develop the detailed plans for these fisheries.

### 1) SFC / Siska Partnership – Near Terminal Sockeye, Chinook and Pink Fisheries

The SFC / Siska partnership has submitted an Expression of Interest to the Pacific Integrated Commercial Fisheries Initiative. Approval to move to business plan development for a Commercial Fishing Enterprise has been granted with the intent to be operational for the 2011 season. Discussions are ongoing with groups participating in the partnership based on the viability of individual fisheries in 2011. The 2011 feasibility 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 a new occurrence and much of the processing and supporting infrastructure is still in development.

**REGION** - BC Interior

**PARTICIPANTS** – SFC / Siska Partnership – Secwepemc Fisheries Commission (SFC), Siska Traditions Society and other partners to be determined.

#### **LOCATION OF FISHERY -**

1. SFC Chinook fishery – Kamloops Lake
2. SFC Sockeye fishery – Kamloops Lake, Thompson River (at Steelhead Park), potentially locations further upstream dependant on fish quality
3. SFC Pink fishery – Kamloops Lake, Thompson River (at Steelhead Park),
4. Siska Chinook fishery – Fraser River at Siska Reserve
5. Siska Sockeye fishery – Fraser River at Siska Reserve
6. Siska Pink fishery – Fraser River at Siska Reserve
7. Cook's Ferry Sockeye fishery – Thompson River (between Spences Bridge and Ashcroft, upstream of the confluence with the Nicola River)
8. Cook's Ferry Chinook fishery – Thompson River (between Spences Bridge and Ashcroft, upstream of the confluence with the Nicola River)
9. Cook's Ferry Pink fishery – Thompson River (between Spences Bridge and Ashcroft, upstream of the confluence with the Nicola River)

#### **GEAR TYPE –**

1. SFC Chinook fishery – 8" mesh drift/set gill net
2. SFC Sockeye fishery – Beach seine and purse seine vessel(s) in lake
3. SFC Pink fishery – Beach seine and purse seine vessel(s) in lake
4. Siska Sockeye fishery – Fishwheel, beach seine/purse seine and dip net
5. Siska Pink fishery – Fishwheel, beach seine/purse seine and dip net
6. Siska Chinook fishery - Fishwheel, beach seine/purse seine and dip net

7. Cook's Ferry sockeye fishery – Beach seine and dip net
8. Cooks Ferry Chinook fishery – Beach seine or 8" mesh drift/set gill net
9. Cooks Ferry Pink fishery – Beach seine/dip net

**TIME FRAME - NOTE:** All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.

1. SFC Chinook fishery – fishery will target on late summer South Thompson (4<sub>1</sub>); potential start date of Aug 15 for a six week fishery ending Sept. 30
2. SFC Sockeye fishery – fishery will target Fall – South Thompson sockeye; potential start date of Aug 15 for a six week fishery ending Sept. 30
3. SFC Pink fishery – fishery will target on Fraser pinks; potential start date of Aug. 25 for a five week fishery ending Sept. 30
4. Siska Chinook fishery – fishery will target on late summer South Thompson (4<sub>1</sub>); potential start date of Aug 9 for a two week fishery ending Aug 20.
5. Siska Sockeye fishery – fishery will target on Fall – South Thompson sockeye; potential start date of Aug 9 for a four week fishery ending Sept 3
6. Siska Pink fishery – fishery will target on Fraser pink; potential start date of Aug 15 for a five week fishery ending Sept. 10
7. Cook's Ferry Sockeye fishery – fishery will target on Late run – South Thompson sockeye potential start date of Aug 15 for a six week fishery ending Sept. 30
8. Cook's Ferry Chinook fishery will target on late summer South Thompson (4<sub>1</sub>); potential start date of Aug 15 for a four week fishery ending Sept. 15
9. Cook's Ferry Pink fishery will target Fraser pink; potential start date of Aug 25. for a 4 week fishery ending Sept. 30

**ALLOCATION –**

1. SFC Chinook fishery – The SFC Chinook allocation for 2011 will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser chinook salmon as determined pre-season.
2. SFC Sockeye fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser sockeye.
3. SFC Pink fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser pink.
4. Siska Chinook fishery – The SFC Chinook allocation for 2011 will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser chinook salmon as determined pre-season.
5. Siska Sockeye fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser sockeye
6. Siska Pink fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser pink
7. Cook's Ferry Chinook fishery – The Cook's Ferry Chinook allocation for 2011 will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser chinook salmon as determined pre-season.
8. Cook's Ferry Sockeye fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser sockeye

9. Cook's Ferry Pink fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser pink

**MONITORING PLAN** – These fisheries will be monitored using designated landing sites and monitors for dockside validation of catch.

**CONTACTS –**

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Siska: Terry Raymond, CAO, Siska Indian Band

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Cooks Ferry: Chief David Walkem, c/o Cooks Ferry Indian Band

Phone (250) 458-2224, E-mail: [dwalkem@cooksferry.ca](mailto:dwalkem@cooksferry.ca)

**9) Upper Fraser Fisheries Conservation Alliance (UFFCA) Partnership - Near Terminal Sockeye and Pink Fisheries**

The UFFCA partnership has submitted an Expression of Interest to the Pacific Integrated Commercial Fisheries Initiative. Approval to move to business plan development for a Commercial Fishing Enterprise has been granted with the intent to be operational for the 2011 season. The 2011 feasibility 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 much of the processing and supporting infrastructure are still in development stages.

**REGION** - BC Interior

**PARTICIPANTS** - UFFCA Partnership – Northern Shuswap Tribal Council (NSTC); Tsilhqot'in National Government (TNG)/Xeni Gwet'in; Carrier Sekani Tribal Council (CSTC).

**LOCATION OF FISHERY -**

1. NSTC sockeye fishery – Quesnel River, Quesnel Lake, Chilcotin River and main stem Fraser near Churn Creek.
2. NSTC pink fishery - – Quesnel River, Quesnel Lake, Chilcotin River and main stem Fraser near Churn Creek.
3. TNG sockeye fishery – Chilko River, Chilko Lake and Chilcotin River.
4. TNG pink fishery - Chilko River, Chilko Lake and Chilcotin River
5. CSTC – Nechako River and or Stuart River

#### **GEAR TYPE –**

1. NSTC Sockeye fishery – Beach seine, purse seine and Fishwheel
2. NSTC pink fishery - Beach seine, purse seine and Fishwheel
3. TNG Sockeye fishery – Beach seine, dip net, partial weir/fish trap, and purse seine
4. TNG pink fishery - Beach seine, dip net, partial weir/fish trap, and purse seine
5. CSTC Sockeye Fishery – Beach seine, purse seine and set/gill nets

**TIME FRAME - NOTE:** All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.

1. NSTC Sockeye fishery – fishery will target on Summer run (Quesnel / Chilko / Late Stuart / Nechako Rivers) sockeye. Potential start date of Aug 16 for a six week fishery ending Sept. 30.
2. NSTC Pink fishery – fishery will target Fraser pink, potential start date of Aug 30 for a four week fishery ending Sept. 30.
3. TNG Sockeye fishery – fishery will target on Summer run (Chilko) sockeye. Potential start date of Aug 16 for a three week fishery ending Sept 4.
4. TNG pink fishery - – fishery will target Fraser pink, potential start date of Aug 30 for a four week fishery ending Sept. 30.
5. CSTC Sockeye fishery – fishery will target Summer run (Late Stuart / Nechako) sockeye. Potential start date of Aug 15 for a four week fishery ending Sept. 15

#### **ALLOCATION –**

1. NSTC Sockeye fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser sockeye.
2. NSTC Pink fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser pink.
3. TNG Sockeye fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser sockeye.
4. TNG Pink fishery – allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser pink.
5. CSTC Sockeye fishery - allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of Fraser sockeye.

**MONITORING PLAN –** These fisheries will be monitored using designated landing sites and monitors for dockside validation of catch.

#### **CONTACTS –**

DFO: Dale Michie, BC Interior PICFI Coordinator

Phone: 250-851-4853, Email: [dale.michiel@dfo-mpo.gc.ca](mailto:dale.michiel@dfo-mpo.gc.ca)

NSTC: Gord Sterritt, Fisheries Resource Manager, Northern Shuswap Tribal Council

Phone: 250-392-7361, Email: [g.sterritt@nstq.org](mailto:g.sterritt@nstq.org)

TNG: Paul Grinder, Fisheries Program Coordinator, Tsilhqot'in National Government

Phone: 250-392-3918, Email: [paul@tsilhqotin.ca](mailto:paul@tsilhqotin.ca)

UFFCA: Brian Toth, Executive Director, Upper Fraser Fisheries Conservation Alliance  
Phone: 250-562-7513, Email: [briantoth@shaw.ca](mailto:briantoth@shaw.ca)

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### 3) Okanagan Nation Alliance - Near Terminal Sockeye Fishery

The Okanagan Nation Alliance has submitted a feasibility concept proposal for 2011; ONA will be working towards sustaining economic sales of Okanagan Sockeye, in addition to working with strategic allies for increasing sales and trade from other in land commercial fisheries. The 2011 feasibility 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** –

1. ONA Sockeye fishery: Osoyoos Lake and Okanagan River

**GEAR TYPE** –

1. ONA Sockeye fishery – Purse seine(s), beach seine and or troll

**TIME FRAME** - NOTE: All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.

1. ONA Sockeye- fishery will target on Okanagan (Columbia) sockeye. Potential start date of July 20 for a four week fishery ending Aug. 10.

**ALLOCATION** –

Initial forecasts of 153,000 Columbia sockeye (90% Okanagan), may provide for economic opportunities in 2011. The biological escapement goal is 60,000 sockeye past Wells Dam in the Columbia River. Therefore, there is potential for an economic harvest between 500 and 5,000 sockeye. Harvesting will only be conducted if the Wells Dam counts are sufficient to meet spawning escapement and Food, Social and Ceremonial objectives for Okanagan sockeye. This proposed catch is pending sockeye counts over Wells Dam and subject to change.

**MONITORING PLAN** – These fisheries will be monitored using designated landing sites and monitors for dockside validation of catch.

**CONTACTS** –

DFO: Dale Michie, BC Interior PICFI Coordinator  
Phone: 250-851-4853, Email: [dale.michiel@dfo-mpo.gc.ca](mailto:dale.michiel@dfo-mpo.gc.ca)

ONA: Howie Wright, Fisheries Program Manager  
Phone: 250-707-0095, Email: [hwright@syilx.org](mailto:hwright@syilx.org)

#### 4) 2011 Harrison-Fraser River Demonstration Fishery

**REGION** - Lower Fraser Area

**PARTICIPANTS** - Chehalis and Scowlitz First Nations

#### **LOCATION OF FISHERY** -

Those waters of the Harrison River located between the outlet of Harrison Lake downstream to the Highway Number 7 Bridge.

- Subarea 6 - Sumas River to Harrison

Those 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 a line from a white boundary sign on the upstream side of the Fraser River at the mouth of the Harrison River, thence true south to a white boundary sign on the southern shore of the Fraser River and those waters of the Harrison River downstream of the Highway Number 7 Bridge.

- Subarea 7 - Harrison to Agassiz Bridge

Those 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 Harrison River, thence true south to a white boundary sign on the southern shore of the Fraser River and bounded on the east by the downstream side of the bridge across the Fraser River at Agassiz.

**GEAR TYPE** – Fraser sockeye, pink and chum: Beach Seine not exceed a maximum mesh size of 2 ¾ inches.

#### **ALLOCATION** –

Fraser Sockeye: allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC).

Fraser Pink: allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC).

Fraser Chum: allocation to be determined but will be expressed as a percentage (%) share of Commercial Total Allowable Catch (CTAC) of chum in the Fraser River.

**TIME FRAME** - : All fishery time frames are estimates and final dates will be determined according to in-season migration timing information.

Fraser Sockeye: This fishery would be planned to take place once a Fraser River sockeye Canadian Commercial TAC is identified, potentially late July to late August or early September.

Fraser Pink: This fishery would be planned to take place once a Fraser River pink Canadian Commercial TAC is identified, potentially mid to late September.

Fraser Chum: Mid October-End of November.

**MONITORING PLAN** - A Monitor will be present with every beach seining crew during all fishing activity. The Monitor shall not participate in any fishing activity while on duty. The Participants must report the number and species of salmon harvested in the Fishery, as well as the number of salmon retained, to Kim Charlie at Chehalis Fishing Authority (Tel: (604)796-2116, Fax: (604)796-3946) immediately following the fishery. The Chehalis Fishing Authority will collect all catch statistics and report this information on a daily basis to Matt Parslow, Management Biologist at the DFO office at Annacis Island (Tel: (604) 666-6608 Fax: (604) 666-8134) daily on the Fishery on the 'Catch Reporting Form' provided by DFO.

**CONTACTS** - DFO - Brian Matts: #3100 Annacis Parkway, Delta, BC  
Phone 604-666-2096

Kim Charlie at Chehalis Fishing Authority Phone: 604-796-2116

## **5.6. *Special Projects or Initiatives***

### **5.6.1. 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 was initiated in 2009 and continued in 2010 in an effort to further discussions on management principles and approaches for Fraser salmon. Meetings will continue during the winter and spring of 2011. A planning committee, with Terms of Reference, consists of one of the following including alternates: DFO Resource Management Area Chief; one Fraser River First Nation member; and one Island and Marine Working Group member.

### **5.6.2. FSC Coordinated Fishery**

In recent years, a number of marine First Nations have worked cooperatively to harvest salmon, particularly Fraser sockeye, for FSC purposes. There was no coordinated fishery in 2010. Discussions will be occurring amongst marine First Nations regarding the potential for a coordinated Fraser sockeye FSC fishery in 2011.

## **5.7. *Treaty Fisheries***

The Tsawwassen First Nations domestic fishery (Food, Social and Ceremonial) came into effect on April 3<sup>rd</sup>, 2009 as per the Tsawwassen First Nation Final Agreement. The Tsawwassen Fisheries Operation Guidelines (TFOG) sets out the operational principles, procedures and guidelines needed to assist Canada, BC and Tsawwassen in implementing Fisheries Chapter 9 and managing the Tsawwassen salmon fishery on an annual basis. The TFOG provides guidance

on how management decisions with respect to the Tsawwassen fishery will be made via the Joint Fisheries Committee, how abundance is estimated, biological and harvesting considerations, catch monitoring and reporting requirements, etc. Each year the Joint Fisheries Committee will make recommendations to the Minister on the issuance of specific 'Harvest Documents' to license the salmon fishery for food, social and ceremonial harvests.

More information on the Treaty can be found at: <http://www.bctreaty.net/>

### **5.7.1. Tsawwassen Fisheries (Domestic)**

As per the Tsawwassen Fisheries Operation Guidelines (TFOG), each year the Tsawwassen First Nation will develop a Tsawwassen Annual Fishing Plan (TAFP) for the harvest of salmon as per the Tsawwassen First Nation Final Agreement. The TAFP will include the Tsawwassen preference for stocks and species to be harvested, locations, timing, access to specific runs, method of harvest, catch monitoring and reporting, enforcement, etc. The TAFP is then presented to the Joint Fisheries Committee (JFC) for their review. The JFC is made up of representatives of Canada (DFO), Province of BC and the Tsawwassen First Nation. The Joint Fisheries Committee considers the TAFP in making its recommendations to the Minister of Fisheries and Oceans about the issuance of Harvest Document(s) which in effect license 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 FSC allocation for salmon under the Tsawwassen First Nations Final Agreement is as follows:

#### Sockeye Salmon

In any year, the Tsawwassen Fishing Right Allocation for sockeye salmon will be:

- 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.

#### Chum Salmon

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.

#### Pink Salmon

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.

### Chinook Salmon

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.

### Coho Salmon

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.

#### **5.7.2. Tsawwassen Fisheries (Commercial)**

In addition to the allocation of salmon for FSC, 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 does not affirm aboriginal or Treaty rights. Fishing undertaken via the Harvest Agreement will be comparable to the requirements of the current Fraser River commercial fishery (Economic Opportunity First Nation fishery), or a general Commercial Fishery (Area E). For 2010, the HA will be comparable to the Economic opportunity First Nation 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 Harvest Agreement 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 Joint Fisheries Committee set up by the Tsawwassen Final Agreement will conduct a post season review.

Salmon allocation under the Harvest Agreement:

- **Sockeye:** 0.78% of the Commercial Allowable Catch for Fraser River Sockeye Salmon for that year.
- **Chum:** 3.27% of the Commercial Allowable Catch for Fraser River Chum Salmon for that year.
- **Pink:** 0.78% of the Commercial Allowable Catch for Fraser River Pink Salmon for that year.

#### **5.7.3. Maa-nulth Fisheries**

The Maa-nulth First Nations fishery for domestic purposes (food, social and ceremonial), subject to conservation, public health or public safety, under the Maa-nulth First Nations Final Agreement (Treaty) will come into effect on April 1, 2011. The Maa-nulth First Nations comprise five individual First Nations; Huu-ay-aht First Nations, Ka:'yu:'k't'h'/Che:k'tles7et'h' First Nations, Toquaht Nation, Uchucklesaht Tribe and the Ucluelet First Nation on the west coast of Vancouver Island.

The Maa-nulth Fisheries Operational Guidelines (FOG) sets out the operational principles, procedures and guidelines to assist Canada, BC and Maa-nulth in implementing the Fisheries Chapter of the Treaty. The FOG provides guidance on the Maa-nulth fishery incorporating biological, harvesting, catch monitoring and reporting considerations, and other matters of the Treaty.

Each year the Joint Fisheries Committee, constituted under the Treaty, will make recommendations to the Minister on the issuance of Harvest Documents to authorize harvesting for domestic purposes. The in season management will vary depending upon the species, the coordination of other fisheries, in season species abundance levels, total allowable catch levels, or available quotas for harvest as set by the Minister.

More information on the Treaty can be found at: <http://www.ainc-inac.gc.ca/ai/scr/bc/trts/agrmts/mna/fa/mnafa-eng.pdf>

## **6. APPENDIX 6 - SOUTHERN B.C. / FRASER RIVER RECREATIONAL FISHING PLAN**

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 *2011 to 2013 British Columbia Tidal Waters Sport Fishing Guide* and the *2011 to 2013 British Columbia Freshwater Salmon Supplement*.

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.htm>

*A Vision for Recreational Fisheries in British Columbia 2009-2013* developed cooperatively by DFO, the Province of B.C. and the SFAB with funding support from the PICFI was finalized in 2010. It serves as a framework for developing initiatives and actions to support achievement of a collective vision for the recreational fishery in B.C.

The recreational fisheries Vision is available at:

[www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.htm](http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/index-eng.htm)

### **6.1. Catch Monitoring and Reporting Initiatives**

#### **6.1.1. Increasing Coded Wire Tag (CWT) submission rates**

The CWT program relies on voluntary submissions of heads from adipose fin-clipped chinook and coho salmon to estimate the quantity and stock composition of salmon in various fisheries. Over the past several years, submission rates have decreased. Returns of heads from adipose clipped coho salmon have become so low that they no longer provide sufficiently precise CWT catch estimates for stock assessment purposes. In certain fisheries, recovery rates of heads from adipose clipped chinook salmon are also low.

Sport catch taken on guided trips, both lodge-based and non-lodge based, is one sector of the sport fishery that has seen increased head submission rates in recent years, due to cooperation of the guides in collecting and in some cases delivering heads. In 2011, the Department will strive to increase the proportion of guiding companies collecting heads to better represent their fishing activity. Where possible, head collections and logbook data will be combined to realize the full benefits of these programs.

To increase awareness of the CWT program and to increase the rate of salmon head submissions, the Department is increasing promotion of the CWT program through communications with the SFAB and Sport Fishing Institute. For further information on the CWT program, please see:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/tag-etiquette/SHRP-PRTS-eng.htm>

#### **6.1.2. 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 and Sport Fishing Advisory Boards to develop catch monitoring standards and logbook systems for the recreational fishery.

In 2011 the Department will be continuing with this co-management project with the Sport Fishing Institute and the local Sport Fishing Advisory Boards by expanding the pilot for the 5th consecutive year. The software application consists of three components: a PC based component, a Dockside handheld component, and an On Water handheld component. The design of the handheld components is based on the content of current paper logbooks and advice from the recreational sector. The ultimate goal of this new initiative is to improve the efficiency and compliance of reporting catch and other recreational fishing information to the Department.

For more information please contact Ron Goruk at 250-756-7392 or Carmen McConnell at 250-756-7272.

## **6.2. Chinook**

Conservation concerns persist for wild Chinook originating from WCVI systems, Lower Strait of Georgia (in particular the Cowichan River Chinook) stocks and the Fraser River Spring 4<sub>2</sub>, Spring 5<sub>2</sub> and Summer 5<sub>2</sub> stocks.

### **6.2.1. Lower Strait of Georgia**

Conservation concerns for Lower Strait of Georgia (LGS) Chinook stocks will guide fisheries planning in 2011. The Cowichan River Chinook stock is an indicator stock of the LGS Chinook aggregate. Escapement trends have been declining in recent years. Management actions instituted in 2009 and 2010 are planned for 2011 and will include a number of Chinook non-retention areas and closed areas.

### **6.2.2. West Coast Vancouver Island**

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 lower the exploitation rate on adult female chinook that are travelling along the shoreline back to their natal streams. The surfline is defined in the *Pacific Fishery Management Area Regulations, 2007*.

Management actions for 2011 in the chinook conservation corridor are still being analyzed and once developed will be consulted upon. However, in 2010 the management actions included a daily limit of two chinook with a maximum size limit of 77 cm (excluding that portion of the corridor south of 48°55.872'N and 125°33.028'W) similar to 2009. This measure was to continue the protection of large mature female chinook larger than 77cm. These large fish are age 4 and older, which are the primary spawners for the WCVI wild stocks. In 2011, management measures in Area 24 inside the surf line are proposed to protect returning WCVI wild chinook stocks in this area. At the request of the SFAB, staff will explore the possibility of a retention fishery for chinook >77cm in a portion of Subarea 25-13.

The 2011 forecast of chinook to the Stamp River and the Conuma hatchery is currently being developed.

### 6.2.3. Fraser River Chinook

In the 2011 Salmon Outlook, Spring 4<sub>2</sub>, Spring 5<sub>2</sub>, Summer 5<sub>2</sub> Chinook have been classified as *stocks of concern*. For Fraser Summer 4<sub>1</sub> Chinook, the outlook is near target/abundant. The 2011 forecast of the terminal spawner abundance (i.e. after all ocean fisheries removals) for Harrison Chinook is 40,082 age 3, 241,640 age 4, and 2,882 age 5 fish.

Management actions implemented in 2010 to protect and conserve Fraser Spring 4<sub>2</sub> Chinook for portions of Areas 18, 19, 20, 29 and in the Fraser River are planned to continue in 2011 as outlined below. The management actions outlined below also provide additional protection for the Fraser Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook as their migration timing overlaps significantly.

#### Juan de Fuca recreational fishery:

- March 1 through June 17, the daily limit is two (2) Chinook per day which may be wild or hatchery marked between 45 and 67 cm or hatchery marked greater than 67cm in Subareas 19-1 to 19-4 and 20-5.
- June 18 through July 15, the daily limit is two (2) Chinook salmon per day of which only one (1) Chinook may be greater than 67 cm in Subareas 19-1 to 19-4, a portion of area 20-5. The minimum size limit in these areas is 45 cm in length.

#### Strait of Georgia recreational fishery:

- May X through July 15, the daily limit is two (2) Chinook salmon per day of which only one (1) Chinook may be greater than 67cm in Subareas 18-1 to 18-6, 18-9, 18-11, 19-5, and portions of Subareas 29-4 and 29-5. The minimize size limit in these areas is 62cm.
- May 2 through July 15, off the mouth of the Fraser in Subareas 29-6, 29-7, 29-9 and 29-10, non-retention of Chinook salmon.

#### Fraser River recreational fishery (tidal and non-tidal Fraser):

- i) Tidal and non-tidal Fraser in Region 2: January 1 through July 15, No fishing for salmon
- ii) non-tidal Fraser in Region 3: January 1 through July 15, no fishing for salmon in the Thompson River from Kamloops Lake downstream to the confluence of the Fraser River and waters of the Fraser River downstream of the confluence of the Thompson River to the Alexandra Bridge. These measures may be reviewed in season if there is new information.
- iii) non-tidal Fraser in Region 5: January 1 to July 15, no fishing for salmon
- iv) non-tidal Fraser in Region 7: January 1 to December 31, no fishing for salmon except as otherwise noted as follows: July 10 to July 25, from the powerline crossing the Fraser River near College Heights, upstream to the Northwood bridge crossing the Fraser River, opportunities expected.

Management of Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook will depend on the in season abundance of Chinook estimated from the Albion test fishery and will follow the management zones for Spring 5<sub>2</sub> and Summer 5<sub>2</sub> outlined in Section 5.3.4.

Given uncertainty about returns and a lack of pre-season forecast, the Department plans to proceed with management actions consistent with zone 1 (see section 5.3.4) unless the test fishery indicates returns are larger.

- For fisheries in Subareas 29-6, -7, -9 and -10 the management actions may range from those in place on July 15<sup>th</sup> to protect Spring 4<sub>2</sub> Chinook, a reduction in the daily limit or a size limit restriction e.g. between 62 and 77cm, or regular limits based on management zone.
- For fisheries in the Fraser River, both tidal and non-tidal, the management actions may range from those in place on July 15<sup>th</sup> to protect Spring 4<sub>2</sub> Chinook, a reduction in the daily limit or a size limit restriction e.g. between 30 – 77 cm, or regular limits based on management zone.

These management actions if warranted will be in place after July 15<sup>th</sup> until the end of July in the lower Fraser River when greater than 70% of the Spring 5<sub>2</sub> and Summer 5<sub>2</sub> Chinook are expected to have passed Albion.

### 6.3. **Interior Fraser River Coho**

Conservation measures to protect coho will be similar to those implemented in 2010. There will be no retention of wild coho, with the exception of some terminal areas which have an identified surplus.

Selective hatchery marked coho fishing opportunities will be similar to those provided in 2010. That is, you may retain two hatchery marked coho per day from June 1 to December 31 in tidal waters unless otherwise specified in the final plan or by fishery notice. Increased opportunities for the recreational fishery on hatchery marked coho will be determined in-season. A hatchery marked coho is defined as one that has a healed scar in place of an adipose fin.

Interior Fraser River coho are present in the lower Fraser River from late August until mid-October. Conservation measures are necessary during the time period when much of the run passes through an area. These dates are adjusted slightly each year to commence on the Tuesday following Labour Day. Conservation measures, including no fishing for coho and a bait ban, will be in place in the portion of the river listed during the times listed below:

Fraser River - Below Mission	September 6 to October 7
Fraser River - Mission to Hope	September 8 to October 10
Fraser River - Hope to Sawmill Creek	September 10 to October 15
Fraser River - Sawmill Creek to Lytton	September 19 to December 31
Fraser River - Lytton to Williams Lake	September 26 to December 31
Fraser River - Upstream of Williams Lake	October 1 to December 31

Thompson River –

Upstream to the outlet of Kamloops Lake  
Upstream of Kamloops Lake

September 19 to December 31  
September 24 to December 31

Opportunities for selective hatchery marked coho in the tidal and non-tidal waters of the Fraser River after the closures noted above can be found in Appendix 8 in each respective Region.

Decisions with respect to management actions deemed necessary to address conservation concerns will be made in consideration of the objectives listed in Section 4 of this plan.

#### **6.4. Sockeye**

Measures are required in order to meet conservation objectives for stocks of concern such as the Fraser River Late Run timing group, Cultus Lake, Sakinaw Lake and Nimpkish River sockeye stocks.

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. For example, in inside waters (Johnstone Strait, Strait of Georgia, Strait of Juan de Fuca) sockeye retention is unlikely to be permitted until late July or early August when more abundant stocks are migrating through the area. 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 2011, sockeye fishing opportunities are anticipated to begin in late July in tidal waters or early August in non-tidal waters **subject to identification of a total allowable catch.**

The sockeye return to the Somass River is expected to be above levels required to support fishing opportunities for all sectors in Area 23.

#### **6.5. Pink**

In most south coast tidal waters, the daily limit will be four pink salmon. See Appendix 7.

#### **6.6. Chum**

In most south coast tidal waters the daily limit will be four chum. See Appendix 7.

## 7. APPENDIX 7: TIDAL SALMON SPORT FISHING GUIDELINES

### SOUTH COAST WATERS - AREAS 11 TO 29, 121 AND 123 TO 127

1. The management measures for 2011 WCVI Chinook inside the management corridor identified as 2 under 77 cm are still To be determined
2. The aggregate daily limit for all species of Pacific salmon (other than kokanee) from tidal and non-tidal waters combined is four (4).
3. Unless otherwise specified in the table below, the daily limit for chinook is 2 per day and all retained chinook must measure 45 cm or more from tip of nose to tail fork. All coho, sockeye, pink and chum must measure 30 cm or more.
4. A barbless hook is in effect year-round.
5. There is an annual limit of 30 adult Chinook, in the aggregate, from any tidal waters, of which at most, 10 may be caught in the tidal waters of the Fraser River, 15 may be caught in the waters of Areas 12 to 18, 28 and 29 and that portion of Area 19 north of Cadboro Point, and 20 may be caught in the waters of Area 20 and that portion of Area 19 south of Cadboro Point. For the remainder of the West coast of Vancouver Island (that portion of Area 20 West of Sheringham Point to Area 27, 121 to 127) and Areas 1 to 11, 101 to 111, 130, and 142 the annual aggregate limit is 30 chinook.
6. Coho non retention is in effect in all areas from Jan 01-May 31. For those areas where the daily limit is specified for coho at 2 or 4 per day, you may retain both hatchery marked coho and unmarked coho. In all other areas you may retain 2 hatchery marked coho per day from Jun 01-Dec 31. A hatchery marked fish is defined as one which has a healed scar in place of the adipose fin.
7. All Area/Subarea descriptions provided in square brackets are approximations. For more exact information, please see the *Pacific Fishery Management Area Regulations, 2007*.
8. Rockfish Conservation Areas (RCA's) are currently in effect throughout the south coast. These areas are closed to all finfish fishing. Descriptions of these closures can be found on the Internet at: [www.pac.dfo-mpo.gc.ca/recfish](http://www.pac.dfo-mpo.gc.ca/recfish).
9. **IT IS IMPORTANT TO NOTE THAT CHANGES TO THE TABLE BELOW MAY OCCUR IN-SEASON AND TO CHECK WITH YOUR LOCAL DFO OFFICE BEFORE FISHING TO BECOME AWARE OF ANY IN SEASON CHANGES.**

WATERS	SPECIES	DATES	LIMITS / GEAR
All Areas (Areas 11 to 29 and 111), <b>unless otherwise specified below.</b>	Chinook	Jan 01-Dec 31	2 per day
	Coho	Jun 01-Dec 31	2 hatchery marked fish per day
	Sockeye	Jan 01- <b>Dec</b> 31	To be determined Special restrictions may be introduced to protect specific stocks. Check with your local DFO office prior to fishing.
	Pink	Jan 01-Dec 31	4 per day
	Chum	Jan 01-Dec 31	4 per day
Areas 121 and 123 to 127	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
	Chinook	Jan 01-Dec 31	2 per day
	Sockeye	Jan 01- <b>Dec</b> 31	Special restrictions may be

WATERS	SPECIES	DATES	LIMITS / GEAR
			introduced to protect specific stocks. Check with your local DFO office prior to fishing.
Areas 121 and 123 to 127	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
	Chinook	Jan 01-Dec 31	2 per day
	Sockeye	Jan 01-Dec 31	Special restrictions may be introduced to protect specific stocks. Check with your local DFO office prior to fishing.
	Pink	Jan 01-Dec 31	4 per day
	Chum	Jan 01-Dec 31	4 per day
<b>Area 11 and 111</b>			
Subareas 11-1 and 11-2, 12-14 and 111	Coho	Jun 01-Jul 31	2 per day
		Aug 01-Dec 31	2 per day, one of which may be wild (unmarked). Additional opportunities are being considered and evaluated.
Subareas 11-3 to 11-10 (Inside of Nakwakto Rapids)	Coho	Apr 01-Dec 31	2 per day
<b>Area 12</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
Subareas 12-3 to 12-13, 12-15 to 12-19 and 12-21 to 12-48	Coho	Jun 01-July 31	2 per day, one of which may be wild (unmarked)
Where salmon fishing is permitted			
That portion of Subarea 12-4 shoreward of a line running from Lewis Point to 50°32.839' north latitude and 126°50.122 west longitude near the southwest entrance to Telegraph Cove commonly known as Beaver Cove.	Coho	Aug 01-Dec 31	2 per day, one of which may be wild (unmarked)
That portion of Subarea 12-19, the waters of McNeill Bay inside a line from Ledge Point to the BC Ferry Terminal.	Coho	Aug 01-Dec 31	2 per day, one of which may be wild (unmarked)
Subareas 12-26 to 12-48	Coho	Aug 01-Dec 31	2 per day, one of which may be wild (unmarked)
In Subarea 12-16, those waters of Hardy Bay inside a line from Daphne Point to Duval Point where salmon fishing is permitted.	Coho	Aug 01-Dec 31	4 hatchery marked fish per day
In Subarea 12-16, the waters of Hardy Bay shoreward of a line from a boundary sign on the Keltic Seafoods wharf to a boundary sign on the opposite shore. (inner portion of Hardy Bay)	All	Aug 01-Sep 30	You may only use a single-pointed hook that measures no more than 15 mm between the point and shank when fishing.

<b>WATERS</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
In Subarea 12-16, the mouth of the Keogh River within a 400 m radius of the shore.	All	Aug 01-Sep 30	You may only use a single-pointed hook that measures no more than 15 mm between the point and shank when fishing.
In Subarea 12-17, those waters inside a line that starts at a boundary sign approx. 1.9 km northwest of the Cluxewe river mouth, then to 50°37.53' N and 127°12.21'W, then to 50°36.98'N and 127°09.53'W, then 200° true to a boundary sign on the shore.	Pink	Aug 01-Sep 30	1 per day
	All		You may only use a single-pointed hook that measures no more than 15 mm between the point and shank when fishing.
That portion of Subarea 12-19 [Broughton Strait southerly of a line from Ledge Point to the light on the southern end of Haddington Is, then to the light on Yellow Bluff on Cormorant Is, then following the southerly shoreline to a marker on Gordon Bluff, then to Lewis Point on Vancouver Is]	Chinook	Aug 01-Oct 31	<i>You may not retain chinook.</i>
<b>Area 13</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
In Subarea 13-5, those waters bounded on the south by a line from the boat ramp on Tyee Spit 185 m east in line with Shag Rock on Quadra Island, on the north by a line from the tip of Tyee Spit 185 m east in line with April Point and on the west by a line from the low water mark between the north and south boundaries.	All	Jul 15-Sep 15	Vessels under motor power are prohibited, under regulations of the <i>Canada Shipping Act</i> .
In Subareas 13-3 and 13-5, those waters of Discovery Passage and the Campbell River inside a line true east of the fishing boundary sign at Orange Point to the middle of the channel, then southeasterly down the middle of the channel to the intersection of a line running from a boundary sign on the southern end of Hidden Harbour breakwater, then true east to Quadra Island.	All	Jul 15-Sep 30	Only a single-pointed hook may be used. The use of natural bait is prohibited. No person shall angle with a fishing line or downrigger line to which is attached a) a weight that is greater than 168 grams/6 ounces; or b) an attracting device that is not affixed directly to the hook [Licence Condition].
Subarea 13-20 to 13-21 and that portion of Subarea 13-22 described as those waters in Bute Inlet from the RCA boundary sign at Littleton Point across to the opposite shore at 50°49.9' N, 124°51.63' W	Coho	Aug 01-Sep 15	2 per day, one of which may be wild (unmarked)
Subarea 13-22 commonly known and described as those waters of Bute Inlet lying Northerly inside of a line running from a marker at Alpha Bluff to a marker on the opposite shore to the RCA boundary at the head of Bute Inlet.	Chinook	Jun 01-Sep 30	<i>You may not retain Chinook.</i>
<b>Area 14</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
In that portion of Subarea 14-11, Baynes Sound inside a line from the Cape Lazo Light, then to the P-54 Bell Buoy on Comox Bar, then to Longbeak	Chinook	May 01-Aug 31	<i>You may not retain chinook.</i>

<b>WATERS</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Point, then to the mouth of Hart (Washer) Creek	Coho	Sep 01-Dec 31	2 per day, only one of which may be wild
Those waters of Lambert channel bounded from a marker off Nile Creek, north along Vancouver shoreline to Mapleguard Point, thence along the Harbour limit boundary to southern point of Chrome Island, then to southern tip of Denman Island, thence north along shore to Whalebone Point, thence to <i>Shingle Spit</i> on Hornby Island, thence along the shore to Norman Point, thence south from Norman Point 2.4Nm to a position (49°28.25'N and 124°36.54'W), and back to Nile Creek marker.	Chinook	Jun 15-Aug 15	<i>You may not retain Chinook.</i>
Those waters, inside a line from 49°46.74'N and 124°59.06'W near the boat launch at Kitty Coleman Provincial Park, thence north-easterly to 49°47.35'N and 124°57.68'W, thence southerly to 49°45.14'N and 124°54.32'W, thence southwest to the navigation light at the Little River Ferry Dock.	Chinook	Jun 01-Jun 30	<i>You may not retain Chinook.</i>
Those waters of Sentry Shoals within a 1.50Nm radius of the Sentry Shoal Marker Buoy.	Chinook	Jun 01-Jun 30	<i>You may not retain Chinook.</i>
Subareas 14-14. [Comox Harbour]	Chinook	Jan 01-Dec 31	<i>You may not retain Chinook.</i>
The waters of Puntledge River mouth and the shoreline.	All Species	Aug 1-Oct 15	A single barbless hook restriction applies
<b>Area 15</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
Those waters of Algerine and Shearwater Passages bounded by a line from the southern most point of Harwood Island southerly to the navigational light on Rebecca Rocks hence northwest to the easterly most point to Vivian Island then northerly to the navigational marker at Mystery Reef hence west to the navigational marker on Atrevida Reef then southerly to the northern most point of Harwood Island then hence along the western shore of Harwood Island back to the point of commencement at the most southerly tip of Harwood Island.	Chinook	Jun 15-Aug 15	<i>You may not retain Chinook.</i>
That portion of Subarea 15-6 [Toba Inlet] easterly of a line from a boundary sign at Snout Point to a boundary sign on the opposite shore.	Chinook	Jan 01-Sep 30	<i>You may not retain Chinook.</i>
That portion of Subarea 15-1 east of a line from Albion Point (locally known as Black Point) to Scotchfir Point.	Coho	Aug 15-Oct 15	2 per day
<b>Area 16</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
Those waters in Subarea 16-5 and portion of Subarea 16-6) Sechelt Inlet and Porpoise Bay, southerly of a line from Nine Mile Point to a boundary sign on the opposite shore).	Coho	Jun 01-Dec 31	4 hatchery marked fish per day
	Chinook	Jul 1-Dec 31	2 per day, minimum size limit is 41 cm

WATERS	SPECIES	DATES	LIMITS / GEAR
<b>Area 17</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
In Subarea 17-4, except for those waters southeasterly of a line from Shingle Point to Pilkey Point and Subareas 17-5 to 17-7, 17-9, 17-13 to 17-17, [Northumberland Channel, Pylades Channel, Stuart Channel], thence a portion of Subarea 17-12 inside a line from Tinson Point to Snake Island Light (RCA Boundary) to the southern Five Finger Island group to the RCA boundary starting Horswell Channel Buoy (49°12.93'N, 123°56.03'W) to north of Horswell Bluff (49°12.93'N, 123°56.47'W).	Chinook	Aug 01-Oct 15	<i>You may not retain Chinook.</i>
In Subareas 17-18 to 17-20 and a portion of 17-12 those waters inside a line from Icarus Point on Vancouver Island true north 2 nm, thence northwesterly to the Navy buoy in Ballenas Channel, thence to Nankivell Point at the entrance to Schooner Cove on Vancouver Island	Chinook	Aug 01-Oct 15	<i>You may not retain Chinook.</i>
<b>Area 18</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
Subareas 18-1 to 18-6, 18-9 and 18-11	Chinook	May X-Jul 15	2 per day, one (1) of which may be greater than 67 cm
In Subareas 18-7 and 18-8, that portion of Subarea 18-7 that lies <b>northerly</b> of a line from a square white boundary sign on Vancouver Island, near 48°46.179'N and 123°34.654'W, to a square white boundary sign on Saltspring Island SE of Burial Islet, near 48°45.992'N and 123°33.777'W, <b>and southerly</b> of a line from a square white boundary sign on Saltspring Island approximately 1.5 nautical miles ESE of Musgrave Point, near 48°43.982'N and 123°31.418'W, to a square white boundary sign on Vancouver Island approximately 0.5 nautical miles NW of Cherry Point, near 48°43.197'N and 123°33.708'W.	Chinook	Aug 01-Oct 15	<i>You may not retain Chinook.</i>
In Subareas 18-6 to 18-8, 18-10 [Fulford Harbour, Satellite Channel, Shute Passage, Sansum Narrows]	Chinook	Aug 01-Oct 15	<i>You may not retain Chinook.</i>
In Subarea 18-10, the waters of Fulford Harbour inside or NW of a line between a fishing boundary sign located near the navigation light and Jackson Rock on the north shore of Fulford Harbour across the Harbour to a boundary sign on the opposite shore.	All	Oct 10-Jan 15	Only a single-pointed hook may be used
Subarea 18- 8, inside of a line between Separation Point and Cherry Point.	Coho	Nov 1-Dec 31	2 per day
<b>Area 19</b>			
In that portion of Subareas 19-1 to 19-4 [south of Cadboro Point] and Subarea 20-5 (those waters near Victoria between Cadboro Point to	Chinook	Mar 02-Jun 17	Minimum size limit is 45 cm

WATERS	SPECIES	DATES	LIMITS / GEAR
Sheringham Point			
Subareas 19-1 to 19-4 [south of Cadboro Point]	Chinook	Mar 02-Jun 17	2 per day between 45 and 67 cm or hatchery marked Chinook salmon only that are greater than 67 cm in length.
		Jun 18-Jul 15	2 per day, one (1) of which may be greater than 67 cm.
Subarea 19-5	Chinook	May X-Jul 15	2 per day, one (1) of which may be greater than 67 cm.
Subareas 19-5 to 19-12 [north of Cadboro Point]	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
In Subareas 19-7 to 19-10 [Saanich Inlet].	Chinook	Aug 01-Oct 15	<i>You may not retain Chinook.</i>
Area 19	Coho	Oct 01-Dec 31	2 per day, only one of which maybe wild
<b>Area 20</b>			
Those waters of Subareas 20-1 and 20-2 inside or northerly of a line from Owen Point to the Port San Juan Light and Whistle Buoy then to Woods Nose.	Chinook	Jul 15-Oct 25	<i>You may not retain Chinook.</i>
Those waters in Subarea 20-2 and a portion of Subarea 20-1 shoreward of a line between a square white boundary sign at Owen Point, the Port San Juan Light and Whistle Buoy, and San Juan Point. (after Labour Day)	Coho	Sep 07-Dec 31	4 per day, only two of which may be wild
Those waters in a portion of Subareas 20-1 (seaward of a line between a square white boundary sign at Owen Point, the Port San Juan Light and Whistle Buoy, and San Juan Point) and 20-3 to 20-7.	Coho	Oct 01-Dec 31	4 per day, only one of which may be wild
Subarea 20-5	Chinook	Jan 01-Feb 28 and Jun 18-Dec 31	Minimum size limit is 45 cm
Subarea 20-5	Chinook	Mar 01-Jun 17	2 per day between 45 and 67 cm or hatchery marked Chinook salmon only that are greater than 67 cm in length
		Jun 18-Jul 15	2 per day, one (1) of which may be greater than 67 cm
Subareas 20-6 and 20-7 [Sooke Inlet, Sooke Harbour and Sooke Basin, northerly of a line from Muir Point to Possession Point]	Chinook	Aug 01-Oct 15	<i>You may not retain Chinook.</i>
<b>Area 21 and 121</b>			
Area 21, seaward of a line from the boundary sign about 1 mile southeast of Tsusiat Falls, then to the marker buoy off Clo-oose, then to Dare Point.	Chinook	Aug 01-Oct 15	2 per day, only one of which may be greater than 77 cm
Area 121, shoreward of a line 1 nautical mile seaward of a line from Pachena Point to Bonilla Point light.			
Area 21	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per

WATERS	SPECIES	DATES	LIMITS / GEAR
			day
<b>Area 22 [Nitinat Lake]</b>			
Entire Area	Sockeye	Jan 01-Dec 31	<i>No fishing for sockeye</i>
	All	Aug 01-Oct 31	Only a single-pointed hook may be used.
Southerly of a line from Windy Point to a boundary sign on the opposite shore.	Coho	Jun 1-July 31	2 per day
		Aug 01-Dec 31	4 per day
Northeasterly of a line from Windy Point to a boundary sign on the opposite shore.	All	Aug 01-Oct 31	<i>No fishing for salmon</i>
<b>Area 23 and 123</b>			
Area 23	Sockeye	Closed until further notice	Possible opportunities <b>May-September depends</b> on run size forecast
	Chinook	Aug 1-Oct 15	2 per day, minimum size 45 cm
In Subarea 23-1, the waters of Port Alberni Harbour northerly of a line from a boundary sign in upper Alberni Harbour situated at 49°14.19 N and 124°50.23 W then through the southern most point of Hoik Island thence to the flashing green light at the mouth of the Somass River thence due east to a boundary sign on the opposite shore to the tidal boundary markers at Paper Mill Dam on the Somass River	All	Jan 01-Dec 31	Only a single-pointed hook may be used
<b>In Subareas 23-1 to 23-3,</b>	<b>Coho</b>	<b>Jun 01-Jul 31</b>	<b>2 per day</b>
		<b>Aug 01-Dec 31</b>	<b>4 per day</b>
In those portions of Subareas 23-2 and 23-3, those waters southerly of a line from a square, white fishing boundary sign at the mouth of Chesnucknuw Creek to a square, white fishing boundary sign on the western shore of Alberni Inlet, and northeasterly of a line from Star Point to a square, white fishing boundary sign at the mouth of Handy Creek.	Chinook	Aug 01-Sep 30	<i>You may not retain Chinook.</i>
Subareas 23-4 to 23-11 [Barkley Sound seaward of a line from a <b>boundary sign on Vancouver Island just north of Assits Island Light to Chup Point, to a boundary sign on Seddall Island south of Ecoole.</b>	Chinook	Aug 01-Oct 15	2 per day, only 1 of which may be greater than 77 cm.
Those portions of Subareas 23-4 to 23-11 bounded in the south by a line from Amphitrite Point Light to the Chow Island Light, then to the Benson Island Light, then to the Coaster Channel Light, then to the southwestern tip of Sanford Island, then to Aguilar Point and in the north by a line from a boundary sign on Vancouver Island just north of Assits Island Light to Chup Point to a boundary sign on Seddall Island south of Ecoole	Coho	Jun 01-Aug 31	2 per day
		Sep 1-Dec 31	4 per day

<b>WATERS</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Area 123 and those portions of Subareas 23-7, 23-8, and 23-11, seaward of a line from Amphitrite Point to the Chrow Island Light, then to the Benson Island Light, then to the Coaster Channel Light, then to the southwestern tip of Sanford Island, then to Aguilar Point	Coho	Sep 1-Dec 31	4 hatchery marked fish per day
That portion of Area 123, shoreward of a line drawn one nautical mile seaward of the surfline and <b>southeasterly</b> of a line commencing at 48°55.872 N, 125°33.028 W near Ucluelet on Vancouver Island and intersecting the conservation corridor at 48°54.877 N, 125°34.259 W	Chinook	Aug 01-Oct 15	2 fish per day, only 1 of which may be greater than 77 cm
That portion of Area 123, shoreward of a line drawn one nautical mile seaward of the surfline and <b>northwesterly</b> of a line commencing at 48°55.872 N, 125°33.028 W near Ucluelet on Vancouver Island and intersecting the conservation corridor at 48°54.877 N, 125°34.259 W			2 per day, maximum size limit of 77 cm
<b>Area 24 and 124</b>			
That portion of Subarea 24-2 northerly of Starling Point [Sydney Inlet], that portion of Subareas 24-3 southwesterly of a line commencing at 49°24.640' N, 126°08.646' W on Vancouver Island to 49°24.562' N, 126°07.480' W on Obstruction Island, that portion of , Subarea 24-4 northerly of a line commencing on Flores Island at 49°18.005' N, 126°04.141' W then to 49°18.250' N, 126°03.132' W on McKay Island then following the McKay Island shoreline to 49°18.404' N, 126°01.939' W then to 49°19.279' N, 126°01.399' W on Vancouver Island and 24-14 [Miller Channel]	All	Aug 01- <b>Dec 31</b>	<i>You may not retain salmon.</i>
	Coho	Jan 1-Jul 31	<i>You may not retain coho</i>
Subarea 24-6, bounded in the north by a line commencing at Kutcouc Point (49°14.961' N, 126°04.817' W) on Flores Island to 49°14.637' N, 126°00.825' W on Vancouver Island near the Chetarpe I.R. and northeasterly of a line from Siwash Cove to the NW tip of Blunden Is and from the SW tip of Blunden Is to Ahous Point.	Chinook	Aug 01- <b>Oct 31</b>	<b><i>You may not retain Chinook</i></b>
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, only 2 of which may be wild
Subarea 24-7 [Bedwell Sound]	All	Aug 01-Oct 31	<i>You may not retain salmon.</i>
	Coho	Jan 01-Jul 31	<i>You may not retain coho</i>
Subarea 24-8, northeasterly of a line from Moser Point on Vargas Is, to the NW tip of Wickaninish Is, then from the S tip of Wickaninish Is to the SE tip of Echachis Is, then to Lennard Is Light, then to Cox Point.	Chinook	Aug 01-Oct 31	<b><i>You may not retain Chinook</i></b>
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, only 2 of which may be wild
Subarea 24-8, southwesterly of the line described above.	Chinook	Aug 01-Oct 15	<b><i>You may not retain Chinook</i></b>
	Coho	Sep 01-Dec 31	4 hatchery marked fish per day
Subarea 24-9 that portion of Subarea 24-9 westerly of a line commencing at Ginnard Point on Meares Island then to a point on the Vancouver Island shoreline on the opposite shore of Browning	Chinook	Aug 01-Oct 31	<b><i>You may not retain Chinook</i></b>
	Coho	Jun 01- Aug 31	2 per day

<b>WATERS</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Passage at 49°07.48'N, 125°51.81'W		Sep 01–Dec 31	4 per day, only 2 of which may be wild
Subarea 24-9 easterly of the line described above	Coho	Jun 01-July 31	2 per day
		Nov 01-Dec 31	<b>You may not retain Chinook</b>
Subarea 24-10, NW of boundary signs on opposite sides of the entrance to Warn Bay	All	Aug 01-Dec 31	<i>You may not retain salmon</i>
	Coho	Jan 01-Jul 31	<i>You may not retain coho</i>
Subarea 24-10 [Fortune Channel], except for Warn Bay	Chinook	Aug 01-Dec 31	<i>You may not retain Chinook.</i>
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, only 2 of which may be wild
Subarea 24-11, [Indian Bay, Windy Bay, lower Tofino Inlet] except for Grice Bay	Chinook	Aug 01-Dec31	<i>You may not retain Chinook.</i>
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, only 2 of which may be wild
Subarea 24-11, southerly of a line between boundary signs approx. half way to the head of Grice Bay.	All	Aug 01-Dec 31	<i>You may not retain salmon</i>
	Coho	Jan 01-Jul 31	<i>You may not retain coho</i>
Subarea 24-12 [Tofino Inlet, northerly of boundary signs just south of Warne Is]	All	Aug 01-Dec 31	<i>You may not retain salmon</i>
	Coho	Jan 01-Jul 31	<i>You may not retain coho</i>
That portion of Area 124, shoreward of a line drawn approximately one nautical mile seaward of the surfline.	Chinook	Aug 01-Oct 15	2 per day, maximum size limit of 77 cm
Area 124 and that portion of Subareas 24-2 seaward of a line from Starling Point on Flores Island true west to a boundary sign on Vancouver Island and those portions of sub-areas 24-6 and 24-8 seaward of a line from Cox Point to the Lennard Island Light, then to Echachis Island, then to Wickaninnish Island, then to Moser Point on Vargas Island, then from the northwest tip of Ahous Point on Vargas Island to the southwest tip of Blunden Island, then from the northwest tip of Blunden Island to Siwash Cove on Flores Island,	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
	Coho	Sep 01-Dec 31	4 hatchery marked fish per day
	Chinook	Aug 01-Oct 15	2 per day, maximum size limit of 77 cm
<b>Area 25 and 125</b>			
<b>Nootka Sound</b>			
Subareas 25-1 to 25-3 [Muchalat Inlet]	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
	Coho	Jun 01-Jul 14	2 per day
		Oct 16-Dec 31	4 per day
Subarea 25-4, northwesterly of a line from Salter Point to Hoiss Point	<b>Coho</b>	<b>Jun 01-Jul 14</b>	<b>2 per day</b>
		<b>Oct 16-Dec 31</b>	<b>4 per day</b>
Subarea 25-4, northerly of a line from Hoiss Point to San Carlos Pt on Bligh Island then following the Bligh Island shoreline easterly to a point at or near 49°40.77' N and 126°30.20' W then to a boundary sign on the opposite shore of Hana Channel excluding Hisnit Inlet, Head Bay and Nesook Bay.	Coho	Jun 01-Jul 31	2 per day
		Aug 01-Dec 31	4 per day
	Chinook	Jan 01-Dec31	2 per day
That portion of Subarea 25-4, southwesterly of a line from Hoiss Point to San Carlos Point	Chinook	Jul 15-Oct 15	2 per day, only 1 of which may be greater than 77 cm
	Coho	Jun 01- Aug 31	2 per day
Sep 1- Dec 31		4 per day	

<b>WATERS</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
That portion of Subarea 25-4, southeasterly of a line from a boundary sign located on Bligh Island at or near 49°40.77' N and 126°30.20' W to a boundary sign on the opposite shore of Hana Channel.	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
	Coho	Jun 01-Jul 14	2 per day
Oct 16-Dec 31		4 per day	
Subarea 25-5 [Tlupana Inlet north of Princess Royal Point], excluding Nesook Bay and Head Bay	Chinook	Jan 01-Dec 31	2 per day
	Coho	Jun 01-Jul 31	2 per day
Aug 01-Dec 31		4 per day	
That portion of Subarea 25-6 NE of a line from the southern entrance to San Gertrudis Cove to the southern tip of the Pantoja Islands to Clerke Peninsula Light, excluding Kendrick Inlet.	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day
That portion of Subarea 25-6 SE of the line described above.	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 per day
That portion of Subarea 25-6 SW of a line from the southern entrance to San Gertrudis Cove to the southern tip of the Pantoja Islands to Clerke Peninsula Light, excluding Kendrick Inlet	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 per day
That portion of Subarea 25-6 NW of a line from Boston Point to Salter Point [Kendrick Inlet]	Coho	Jun 01-Jul 14	2 per day
		Oct 16-Dec 31	4 per day
That portion of Subarea 25-6 NW of a line commencing at a point on the Nootka Island shoreline located north of Friendly Cove, at 49°35.946' N, 126°36.848' W. to Discovery Point on the opposite shore of Nootka Sound.	Chinook	Jul 15-Oct 15	2 fish per day, only 1 of which may be greater than 77 cm
That portion of 25-6 SW of the line described above	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
Subarea 25-7	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01-Aug 31	2 hatchery marked per day
Sep 01-Dec 31		4 per day	
That portion of Subarea 25-8 (Tahsis Inlet) from a boundary line commencing at Mozino Point to a boundary sign on the opposite shore of Tahsis Inlet south to a boundary line from the northerly tip of Strange Island to a boundary sign on the opposite shore of Tahsis Inlet	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
Subarea 25-15 [Zuciarte Channel]	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
Subarea 25-16 and that portion of Subarea 25-8 northerly of a line commencing at Mozino Point to a boundary sign on the opposite shore of Tahsis Inlet	Coho	Jun 01-Jul 14	2 per day
		Oct 16-Dec 31	4 per day
<b>Esperanza Inlet</b>			
Subareas 25-9 [Hecate Channel], 25-11 [Port Eliza] and 25-12 [Espinoza Inlet]	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
	Coho	Jun 01-Jul 14	2 per day
Oct 16-Dec 31		4 per day, 2 of which may be wild	
Subarea 25-13 and 25-14	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01-Aug 31	2 per day

WATERS	SPECIES	DATES	LIMITS / GEAR
		Sep 01-Dec 31	4 per day
Area 125, shoreward of a line drawn approximately one nautical mile seaward of the surfline.	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
Area 125, seaward of the surfline.	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
<b>Area 26 and 126</b>			
Subarea 26-1, seaward of a line from White Cliff Head to a marker Rugged Point.	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
Subarea 26-1, shoreward of line described above.	All	Jul 15-Oct 15	<i>You may not retain salmon</i>
Subareas 26-2 to 26-5 and 26-9	All	Jul 15-Oct 15	<i>You may not retain salmon</i>
Subarea 26-6, seaward of the line from the most westerly point of Union Island to a boundary marker on the opposite shore of Vancouver Island.	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
Subarea 26-6, shoreward of line described above.	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
Subareas 26-7 and 26-11	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01-Aug 31	2 hatchery marked fish per day.
		Sep 01-Dec 31	4 hatchery marked fish per day
Subarea 26-8 (Malksope Inlet) and Subareas 26-9 (Ouokinish Inlet) seaward of a line from boundary signs on opposite sides of the entrance to the inlets.	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
Subareas 26-8 and 26-9, shoreward of line described above	All	Jul 15-Oct 15	<i>You may not retain salmon.</i>
Subarea 26-10, easterly of the Rockfish Conservation Area boundary.	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm
	Coho	Jun 01- Aug 31	2 hatchery marked fish per day.
		Sep 01-Dec 31	4 hatchery marked fish per day
Area 126, shoreward of a line drawn approximately one nautical mile seaward of the	Chinook	Jul 15-Oct 15	2 per day, maximum size limit of 77 cm

WATERS	SPECIES	DATES	LIMITS / GEAR
surflines. [surflines are lines from Solandar Island to Clerke Point, to Jakobson Point, to Lookout Island to Tatchu Point]	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
Area 126	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
<b>Area 27 and 127</b>			
Portion of Subarea 27-1 excluding the portion lying inside the Topknot RCA	Chinook	Jul 15-Sep 30	2 per day, 1 of which may be greater than 77 cm
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, 2 of which may be wild
Portion of Subarea 27-2 excluding the portion lying inside the Topknot RCA and Subarea 27-3	Chinook	Jul 15-Sep 30	2 per day, 1 of which may be greater than 77 cm
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, 2 of which may be wild
Subarea 27-4 [waters inside a line from Lawn Point to Solandar Island, then to Cape Cook]	Chinook	Jul 15-Sep 30	2 per day, maximum size limit of 77 cm
Subareas 27-7 to 27-11 [Quatsino Sound east of the Cliffe Point Light, Holberg Inlet and Neroutsos Inlet].	Chinook	Aug 01-Sep 30	<i>You may not retain Chinook.</i>
	Coho	Jun 01-Aug 31	2 per day
		Sep 01-Dec 31	4 per day, 2 of which may be wild
Area 127, shoreward of a line drawn approximately one nautical mile seaward of the surflines from Lawn point to Cape Scott.	Chinook	Jul 15-Sep 30	2 per day, 1 of which may be greater than 77 cm
Area 127 shoreward of a line drawn approx. 1 nm seaward of the surflines from Lawn Point to Solander Island.	Chinook	Jul 15-Sep 30	2 per day Maximum size limit of 77 cm
Area 127, seaward of the surflines.	Coho	Jun 01-Aug 31	2 hatchery marked fish per day
		Sep 01-Dec 31	4 hatchery marked fish per day
<b>Area 28</b>			
Entire Area	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
	Sockeye		To be determined Check with your local DFO office.
	Pink		To be announced
Subareas 28-1 to 28-7 and 28-9	Coho	Apr 01-Mar 31	2 hatchery marked fish per day
Subareas 28-11 to 28-14.[Burrard Inlet east of Second Narrows/ Iron Workers Memorial Bridge, Indian Arm and Port Moody Arm]	Coho	Apr 01-Sep 30	2 hatchery marked fish per day

<b>WATERS</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Subareas 28-11 to 28-14.[Burrard Inlet east of Second Narrows/ Iron Workers Memorial Bridge, Indian Arm and Port Moody Arm]	Coho	Oct 01-Mar 31	<i>You may not retain coho.</i>
<b>Area 29</b>			
Entire Area	Sockeye		To be determined Check with your local DFO office.
Subareas 29-1 to 29-5 & 29-8	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
Subareas 29-4 and 29-5 – That portion that lies south from a point on the east side of Valdes Island located at 49.05.562N 123.39.989W then extending 57 degrees True for 5 nautical miles to a point at 49.08.316N 123.33.669W.	Chinook	May X-Jul 15	2 per day, 1 of which may be greater than 67 cm.
Subareas 29-6, 29-7, 27-9 & 29-10	Chinook	Jan 01-Dec 31	Minimum size limit is 62 cm
		May 2-Jul 15	<i>You may not retain Chinook.</i>
		Jul 16-Jul 29	To be determined Check with your local DFO office.
		Aug 01-Dec 31	2 per day over 62cm
Subareas 29-11 to 29-17 (Tidal waters of the Fraser)	Chinook	Jan 01-Jul 15	<i>No fishing for salmon</i>
		Jul 16-Dec 31	<b>Minimum size limit 30 cm</b>
		Jul 16-Jul 29	To be determined Check with your local DFO office.
		Jul 30-Aug 31	4 per day, only 1 over 50cm
		Sep 01-Dec 31	4 per day, only 1 over 62cm
Portions of 29-1 commencing one half mile ribbon boundary from true South of the Western boundary of Snickett Park (49° 27.625N 123° 45.903W) to one half mile true South of the marker at the entrance to the Port Stalashen Marina (49° 25.875N 123° 42.824W)	Coho	Sep 15-Dec 31	2 per day
	Coho	Sep 06-Oct 07	<i>No fishing for coho</i> <i>Bait ban</i>
	Coho	Oct 8-Dec 31	2 hatchery marked fish per day. Minimum size limit 25 cm.
That portion of Subarea 29-3 easterly of a line from Gower Point to the Tango 10 Light Buoy, then to the northern tip of Lulu Island.	Coho	Jan 01-Dec 31	2 hatchery marked fish per day

## FINFISH CLOSURES

### There is no fishing for finfish in the following waters.

Finfish includes salmon, rockfish, lingcod, herring, halibut and any other fish with fins. Finfish does not mean crustaceans, echinoderms, molluscs, shellfish and marine mammals.

**Note** that this table does not include the Rockfish Conservation Areas (RCA). For information on the location of the RCA's please see Appendix 2.

WATERS	DATES
<b>Area 11 and 111</b>	
No finfish closures, check for RCA's.	
<b>Area 12</b>	
In Area 12, the waters of Port McNeill Bay westerly of a line from a boundary sign at the north end of the Western Forest Products jetty, true north to a boundary sign on the opposite shore of Ledge Point Peninsula.	Aug 15-Dec 31
In Area 12, the mouth of Scott Cove Creek and Viner Sound shoreward of a line between fishing boundary signs located at King Point and on the point 1 km south from the mouth of Scott Cove Creek.	Aug 15-Sep 30
In Area 12, the waters of the mouth of Klinaklini River (Knight Inlet) shoreward of a line from a fishing boundary sign at the southern entrance to Wahshihlas Bay to a fishing boundary sign at Rubble Point.	Apr 01-Mar 31
In Area 12, the mouth of Kingcome River shoreward of a line from a fishing boundary sign on Petley Point to a fishing boundary sign on a point on the opposite shore of Kingcome Inlet.	Apr 01-Mar 31
In Area 12, the mouth of Wakeman River north of a line connecting two fishing boundary signs located on opposite shores approximately 6 km from the head of Wakeman Sound.	Apr 01-Mar 31
In Area 12, the mouth of Nimpkish River inside a line from a fishing boundary sign at a point on the shore of Vancouver Island approximately 1.5 km east of Broad Point, then to a navigational aid in the middle of Haddington Passage, then to a fishing boundary sign at a point approximately 1 km east of Willow Creek, then to the tidal water boundary signs approximately 100 m upstream of the Highway 19 bridge.	Jun 01-Nov 30
Subarea 12-20 [Those waters of Parson Bay bounded inside a line from Red Point on Harbledown Island to a marker on the most northwest point of Parson Island, from there following the northern shore to the most easterly point and from there true east to Harbledown Island]	Jun 15-Sep 30
<b>Area 13</b>	
Those waters of Discovery Passage and the Campbell River inside a line true east of the fishing boundary sign at Orange Point to the middle of the channel, then southeasterly down the middle of the channel to the intersection of a line running from a boundary sign on the southern end of Hidden Harbour breakwater, then true east to Quadra Island, is closed to fishing for all finfish, except for the Campbell River Discovery Pier. <b>The area around the Discovery Pier will remain open inside a line running true east 50 meters into Discovery Passage at the north end of the pier, then southeasterly down the Discovery Passage to the intersection of a line running true east 50 meters at the south end of the Discovery Pier.</b>	Oct 01-Oct 31
In Area 13, those waters inside a line from the float at Yaculta Indian Village on Quadra Island true west one nautical mile, thence southeast 160 <sup>0</sup> true to the intersection with a line drawn from the fishing boundary sign on Willow Point to the Wilby Shoal light buoy, thence to the Cape Mudge light on Quadra Island.	Jul 15 - Aug 31
In Area 13, the waters of Village Bay inside a line from a fishing boundary sign at the north entrance of Village Bay, Quadra Island, to a boundary sign at the south entrance of Village Bay.	Jul 1-Oct 31

<b>WATERS</b>	<b>DATES</b>
Subarea 13-24 [The waters of Phillips Arm northerly of a line from Hewitt Point north easterly to Shirley Creek on the opposite shore].	Apr 01-Mar 31
Subarea 13-34 [The waters of Salmon Bay, bounded on the north by a line from Graveyard Point to the ferry landing on the opposite shore, and on the south by the downstream side of the first bridge upstream on the Salmon River].	Jun 01-Dec 31
<b>Area 14</b>	
In Area 14, Comox Harbour - inside a line from a fishing boundary sign near Trent River to a light at the tip of Goose Spit, except the shallow shore line defined as the waters inside and shoreward of the 2 m depth contour measured below the chart datum (0 tide). You may fish from the shoreline but not for chinook.	May 01-Aug 31
In Area 14, the tidal waters within a 75 m radius of the mouth of the Trent River, the mouth of Hart (Washer) Creek and the mouth of Mallard Creek.	Sep 01-Nov 30
<b>Area 15</b>	
No finfish closures, check for RCA's.	
<b>Area 16</b>	
In Area 16, the waters at the mouth of Sakinaw Creek, east of a line between boundary signs on the north and south sides of Sakinaw Bay.	Jun 15-Sep 15
<b>Area 17</b>	
A portion of Subarea 17-14 southerly from a line from Shaft Point on Newcastle Island to Pimbury Point on Vancouver Island and including a portion of Subarea 17-15 southwesterly of a line from Duke Point to Gallows Point on Protection Island	Jul 15-Oct 25
In Area 17, that portion of the Nanaimo River from the Cedar Bridge to the white square boundary signs approximately 400 m downstream of the Cedar Bridge.	Oct 25-Nov 30
In Area 17, the tidal waters of the Chemainus River and off the Chemainus River mouth, inside a line commencing at Bare Point on Vancouver Island to the light on North Reef, to Sherard Point on Vancouver Island, thence following the shoreline northerly to a boundary sign on the Chemainus River near the Bald Eagle Campground, thence across the river to the opposite bank, thence following the Vancouver Island shoreline northerly to the beginning point.	Jul 15-Oct 31
<b>Area 18</b>	
In Area 18, the waters of Cowichan Bay inside a line from a fishing boundary sign near Separation Point on Vancouver Island to Wilcuma Wharf.	Aug 01-Oct 31
In Subareas 18-7 and 18-8, that portion of Subarea 18-8 that lies easterly of a line from a square white boundary sign at Separation Point to a square white boundary sign at Wilcuma Wharf in Cowichan Bay; and that portion of Subarea 18-7 that lies southerly of a line from a square white boundary sign on Vancouver Island, near 48°46.179' N and 123°34.654' W, to a square white boundary sign on Saltspring Island SE of Burial Islet, near 48°45.992' N and 123°33.777' W, <b>and</b> northerly of a line from a square white boundary sign on Saltspring Island approximately 1.5 nautical miles ESE of Musgrave Point, near 48°43.982' N and 123°31.418' W, to a square white boundary sign on Vancouver Island approximately 0.5 nautical miles NW of Cherry Point, near 48°43.197' N and 123°33.708' W.	Aug 01-Oct 15
<b>Area 19</b>	
In Area 19, the waters of Saanich Inlet inside a line from Whiskey Point to Verdier Point.	Sep 15-Nov 30
Subarea 19-12. [Saanich Inlet, south of Christmas Point]	Sep 01-Nov 30

WATERS	DATES
<b>Area 20</b>	
In Area 20, those waters that are inside a line that begins at a white square boundary sign located approximately 0.8 nautical miles west of Owen Point, then to 48°32.45' N and 124°32.05' W, then to the Port San Juan Light and Whistle Buoy, then to Woods Nose, then across Port San Juan to a white square boundary sign at 48°33.23' N and 124°28.55' W.	Aug 15-Sep 07
<b>Area 21 and 121</b>	
Those portions of Subareas 121-1 and 121-2 inside a line from 48°34.00' north latitude and 125°06.00' west longitude, thence to 48°34.00' north latitude and 124°54.20' west longitude, thence to 48°29.62' north latitude and 124°43.40' west longitude, thence following the International Boundary between Canada and the United States of America to 48°29.55' north latitude and 124°56.20' west longitude, thence in a straight line to the point of commencement [Swiftsure Bank]	Apr 01-Mar 31
<b>Area 22 [Nitinat Lake]</b>	
In Area 22, those waters of Nitinat Lake that lie inside or northeasterly of a line from boundary signs at the northeastern and northwestern tips of land at the head of the lake including the tidal portion of the Nitinat River..	Aug 01-Oct 31
<b>Area 23 and 123</b>	
In Subarea 23-1, the lower Somass River from a line commencing at a boundary sign in upper Alberni Harbour situated at 49°14.19 north latitude and 124°50.23 west longitude thence through the southern most point of Hoik Island thence to the flashing green light at the mouth of the Somass River thence due east to a boundary sign on the opposite shore and to a line at the tidal boundary markers at Paper Mill Dam on the Somass River.	Jul 24-Sep 30
That portion of Subarea 23-3 bounded by a line west of Brooksby Point to Burrough Point at the mouth of Uchucklesit Inlet.	Jun 30 – Oct 31
That portion of Subarea 23-2 bounded on the north by line drawn 127° true from Hocking Point to a square, white fishing boundary sign on the eastern shore of Alberni Inlet, and on the south by a line from a square, white fishing boundary sign at Chesnucknuw Creek to a square, white fishing boundary sign on the western shore of Alberni Inlet.	Aug 01-Sep 30
Those portions of Subarea 23-3 bounded on the north by a line from Star Point to a white square fishing boundary sign at the mouth of Handy Creek and on the south by a line from just north of Assits to the navigation light at Chup Point. (in Area 23).	Aug 01-Sep 30
In Subarea 23-4 that portion of Rainy Bay inside a line commencing at a boundary sign on Seddall Island south of Ecoole to a boundary sign on Chup Point	Aug 01-Sep 30
That portion of Subarea 23-4 inside a line from a square, white fishing boundary sign on the eastern shore of the entrance to Poett Nook to San Jose Islets Light, thence to a square, white fishing boundary sign Vancouver Island (0.3nm east of the southern tip of Congreve Island).	Aug 01-Sep 30
<b>Area 24 and 124</b>	
In Area 24, the waters of Kennedy Cove, inside a line between fishing boundary signs on the outer southwest corner and the outer northeast corner of the Cove.	Apr 01-Mar 31
That portion of Subarea 24-4 southerly of a line commencing on Flores Island at 49°18.005' N, 126°04.141' W then to 49°18.250' N, 126°03.132' W on McKay Island then following the McKay Island shoreline to 49°18.404' N, 126°01.939' W then to 49°19.279' N, 126°01.399' W on Vancouver Island,	Aug 01-Oct 31
Subarea 24-5	Aug 01-Oct 31

<b>WATERS</b>	<b>DATES</b>
That portion of Subarea 24-6 northerly of a line commencing at Kutcouc Point (49°14.961' N, 126°04.817' W) on Flores Island to 49°14.637' N, 126°00.825' W on Vancouver Island near the Chetarpe I.R.	Aug 01-Oct 31
That portion of Subarea 24-9 easterly of a line commencing at Ginnard Point (49°08.069' N, 125°51.169' W) on Meares Island to 49°07.483' N, 125°51.811' W on Vancouver Island to the Subarea boundary at Auseth Point.	Aug 01-Oct 31
Subarea 24-13 and that portion of Subarea 24-3 northerly of a line commencing at 49°24.640' N, 126°08.646' W on Vancouver Island to 49°24.562' N, 126°07.480' W on Obstruction Island then to the Subarea boundary (commencing at 49°25.419' N, 126°07.347' W on Vancouver Island to 49°24.990' N, 126°06.655' W on Obstruction Island)	Aug 01-Oct 31
<b>Area 25 and 125</b>	
Subarea 25-1 [Those waters of Muchalat Inlet lying easterly of the Gold River Harbour Limit].	Jul 15-Oct 15
That portion of Subarea 25-4 inside a line drawn between square white fishing boundary signs on opposite sides of the entrance to Hisnit Inlet.	Jul 15-Oct 15
That portion of Subarea 25-4 northwesterly of a line from Salter Point to Hoiss Point.	Jul 15-Oct 15
That portion of Subarea 25-5 inside a line drawn between square white fishing boundary signs on opposite sides of the entrance to Nesook bay.	Jul 15-Oct 15
That portion of Subarea 25-5 inside a line drawn between square white fishing boundary signs on the opposite sides of the entrance to Head Bay.	Jul 15-Oct 15
That portion of Subarea 25-6 northwesterly of a line from Boston Point to Salter Point (Kendrick Inlet).	Jul 15-Oct 15
That portion of Subarea 25-8 northerly of a line from Mozino Point to a fishing boundary sign on the opposite shore.	Jul 15-Oct 15
The portion of Subarea 25-8 southeasterly of a line from the most northerly tip of Strange Island to a square white boundary sign on the opposite shore of Tahsis Inlet.	Jul 15-Oct 15
Subarea 25-10 [Zeballos Inlet northerly of boundary signs near Little Zeballos River]	Jul 15-Oct 15
Subarea 25-16 [Tahsis].	Jul 15-Oct 15
<b>Area 26 and 126</b>	
No finfish closures, check for RCA's.	
<b>Area 27 and 127</b>	
In Area 27, the portion of Varney Bay from the Marble River tidal boundary downstream to the fishing boundary signs at the entrance of Varney Bay.	Jul 01-Dec 31
<b>Area 28</b>	
In Area 28, the waters of Howe Sound easterly of a line drawn from a fishing boundary sign 300 m north of the mouth of Britannia Creek to the southern tip of Minaty Bay.	May 30-Sep 30
In Area 28, the waters of Mannion Bay (Deep Bay) on Bowen Island, lying westerly of a line between two fishing boundary signs near the entrance to Mannion Bay.	Sep 01-Dec 31
That portion of Subarea 28-2 bounded by a line commencing from the southernmost point of Whytecliff Park, thence in a straight line to a point located 100 m east of the most south easterly point of Whyte Islet, thence following the southern shoreline of Whyte Islet at a distance of 100 m to a point lying 100 m from the most south westerly point of Whyte Islet, thence in a straight line to a point lying 100 m west of White Cliff Point, thence following the shoreline at a distance of 100 m in a northerly direction to a point 100 m north of Lookout Point, thence following the shoreline at a distance of 100 m in an easterly direction to a point 100 m perpendicular to the most northerly point of Whytecliff Park, thence to the northernmost point of Whytecliff Park on the mainland [Whytecliff Park].	Apr 01-Mar 31

<b>WATERS</b>	<b>DATES</b>
That portion of Subarea 28-4 east of a line drawn from the white fishing boundary sign located at the south shore of Porteau Cove, northerly in a straight line to the white fishing boundary sign located on the north shore of Porteau Cove [Porteau Cove].	Apr 01-Mar 31
That portion of Subarea 28-6 bounded by a line commencing at the southwest entrance to Starboat Cove, thence seaward in a southwest direction for 85 m, thence westerly following the shoreline for 100 m, thence to the southernmost tip of Point Atkinson (125 m east of the lighthouse) [Point Atkinson].	Apr 01-Mar 31
<b>Area 29</b>	
No finfish closures, check for RCA's.	

DRAFT #2

## 8. APPENDIX 8: FRESHWATER SALMON SPORT FISHING GUIDELINES

**IT IS IMPORTANT TO NOTE THAT CHANGES TO THE TABLE BELOW MAY OCCUR IN-SEASON AND TO CHECK WITH YOUR LOCAL DFO OFFICE OR AT <http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/fresh-douce/index-eng.htm> BEFORE FISHING TO BECOME AWARE OF ANY IN SEASON CHANGES.**

1. Unless otherwise stated in the table, the daily limit in all waters of regions is zero (0).
2. The aggregate daily limit for all species of Pacific salmon (other than kokanee) from tidal and non-tidal waters combined is four (4).
3. A single, barbless hook is in effect year round for all streams in all regions.

### REGION 1: VANCOUVER ISLAND

Please read these guidelines in conjunction with the *Freshwater Fishing Regulations Synopsis*.

1. All retained Chinook and sockeye must measure 30 cm or more from tip of nose to tail fork, and all coho must measure 25 cm or more.
2. There is an annual limit of 10 adult Chinook from all non-tidal waters. All retained adult Chinook must be recorded immediately on the back of your Provincial Non-tidal Angling Licence. An “adult Chinook” in Region 1 is defined as being over 50 cm

WATERS	SPECIFIC AREA	SPECIES	DATES	LIMITS / GEAR
Campbell River	From a boundary sign at the end of Maple Street downstream to the boundary sign at the cement block	All	Aug 01-Oct 31	<i>No fishing for salmon</i>
	Downstream of the confluence with the Quinsam River.	Pink	Jul 15-Sep 15	4 per day, none less than 30 cm
		Coho	Oct 01-Dec 31	4 wild or hatchery marked per day, only 2 over 35 cm, both of which must be hatchery marked.
Cayeghle River	Including Colonial River	Coho	Apr 01-Mar 31	1 per day
Cluxewe River		Coho	Apr 01-Mar 31	2 hatchery marked fish per day
Chemainus River		Coho	Oct 15-Mar 31	1 per day, none over 35 cm
Colonial River, see Cayeghle River				
Conuma River		Chinook	Aug 25-Dec 31	2 per day, only 1 over 77 cm
		Coho	Aug 25-Dec 31	2 per day, wild or hatchery marked
Cowichan River	Including tributaries and Cowichan Lake	Chinook		<i>No fishing for chinook</i>
		Coho	Apr 01-Mar31	1 per day, none over 35 cm
	Cowichan River downstream from Skutz Falls to the Highway 1 bridge	Coho		To be determined
		Chum		To be determined
	Downstream of the weir on Cowichan Lake to 66 Mile Trestle	All	Aug 01-Nov 15	Fly-Fishing Only

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
	66 Mile Trestle downstream to the Tidal Boundary	All	Aug 01-Nov 15	<i>No fishing for salmon</i>
Goldstream River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Koksilah River	Including tributaries.	Chinook	<b>Apr 01-Mar 31</b>	<i>No fishing for chinook</i>
		Coho	Apr 01-Mar 31	1 per day, none over 35 cm
Little Qualicum River		Chinook	Oct 01-Nov 30	1 per day
		Coho	Oct 01-Nov 30	1 per day
		Chum		To be determined
Nahwitti River		Coho	Apr 01-Mar 31	1 per day
Nanaimo River	Including tributaries, except in the area described below	Coho	Oct 15-Mar 31	1 per day, none over 35 cm
	Cedar Road Bridge upstream for approximately 400 m to the square white boundary signs located near the Hwy 19 bridge crossing.	All	Sep 15-Oct 30	<i>No fishing for salmon</i>
	From the upstream side of the Cedar Bridge, upstream to the end of Boswell Rd (commonly known as "Firehall Pool".	Coho	Nov 01-Mar 31	1 per day, none over 35 cm
		Chum	Nov 01-Nov 30	2 per day
Nitinat River	Upstream of Parker Creek	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
	Downstream of Parker Creek, except in the areas and times described below.	Chinook	Aug 25-Sep 30	2 per day, only 1 over 77 cm
		Coho	Aug 25-Sep 30	2 per day
		Coho	Oct 15-Dec 31	2 per day
		Chum	Oct 15-Dec 31	2 per day
	Within 100 meter radius of the Nitinat River hatchery water intake and fishway.	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
	Between fishing boundary signs located approximately 100 m above and below Red Rock Pool.	All	Aug 25-Dec 31	<i>No fishing for salmon</i>
From 50 m upstream to 50 m downstream of the Nitinat River Bridge.	All	Aug 25-Dec 31	<i>No fishing for salmon</i>	
Puntledge and Courtenay Rivers	From the weir at the lower hatchery to signs approximately 75 m downstream of the weir	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
	Downstream from a boundary marker located 75 m downstream of the weir at the lower hatchery (excluding the Morrison Creek closure)	Chinook		To be determined
		Coho	Oct 01-Nov 30	4 per day, only 2 over 35cm
		Chum		<b>2 per day</b>

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
	Puntledge River between boundary signs located within 100 m upstream and downstream of the confluence with Morrison Creek	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Qualicum River		Chinook	Aug 01-Oct 15	4 per day, none over 62 cm
			Oct 16-Dec 31	4 per day, only 2 over 62cm
		Coho		To be determined
		Chum	Oct 01- Nov 30	1 per day
	From the Reserve boundary below the Big Qualicum hatchery downstream to the Highway 19 A bridge	All	Nov 1-Dec 31	<i>No fishing for salmon</i>
	Downstream of the E&N Railway bridge	All	Dec 01-Jun 15	<i>No fishing for salmon</i>
Quatse River		Coho	Jun 15-Mar 31	2 hatchery marked fish per day
Quinsam River		Coho	Oct 01-Mar 31	4 per day, only 2 over 35 cm, both of which must be hatchery marked
		Pink	Aug 15-Sep 15	4 per day, none less than 30 cm
Reay Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
San Juan River		Coho	Oct 01-Dec 31	Opportunities dependant on in-season run size (coho over 35 cm).
Seymour River		Coho	Apr 01-Mar 31	2 per day
Shawnigan Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Somass River	except in those areas and times listed below	Chinook	Aug 25-Dec 31	2 per day, only 1 over 77 cm
		Coho	Aug.25-Dec 31	2 per day
	Tidal boundary at Papermill Dam on the Somass River to boundary signs approximately 1.0 km upstream (Falls Road Gravel Pit and the southernmost end of Collins Farm/ArrowVale Campground-Hector Road)	All	Aug 25-Nov 15	<i>No fishing for salmon</i>
Somass River tributaries		All	May 01-Oct 31	Natural bait ban
Sproat River	From Sproat Lake downstream to fishing boundary signs approximately 300 m downstream of the Highway 4 bridge	All	Jun 15-Nov 15	<i>Closed to fishing</i>
			May 01-Oct 31	Natural bait ban
Stamp River	Except in those areas and times listed below	Chinook	Aug 25-Dec 31	2 per day, only 1 over 77 cm
		Coho	Aug 25-Dec 31	2 per day

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
	From the confluence of the Ash River upstream to the Great Central Lake Dam	All	Jan 01-Apr 30	<i>Closed to fishing</i>
	From boundary signs on either side of the Stamp River at the Powerline Crossing downstream approximately 500 m to boundary signs on either side of the Stamp River at the inlet to the Stamp River (hatchery) lagoon	All	Oct 01-Oct 14	<i>No fishing for salmon</i>
	From boundary signs on either side of the Stamp River located at the inlet to the Stamp River (hatchery) lagoon downstream approximately 750 m to boundary signs on either side of the Stamp River	All	Aug 25-Oct 31	<i>No fishing for salmon</i>
	Upstream of boundary signs located approx 500 m downstream of Stamp River Falls to boundary signs located approximately 200 m. upstream (above) Stamp River Falls	All	Jun 15-Nov 15	<b>Closed to fishing</b>
	Downstream of the boundary signs at the "Bucket" (approx. 250 m above the Beaver Creek and Stamp River confluence)	All	May 01-Sep 14	Natural bait ban
Stamp River tributaries		All	May 01-Oct 31	Natural bait ban
Washlawlis River		Coho	Apr 01-Mar 31	1 per day
Waukwaas River		Coho	Apr 01-Mar 31	1 per day

## FRESHWATER SALMON SPORT FISHING REGULATIONS REGION 2: LOWER MAINLAND

1. All retained coho must measure 25 cm or more from tip of nose to tail fork, and all retained Chinook, chum, pink, and sockeye must measure 30 cm or more from tip of nose to tail fork.
2. There is an annual limit of 10 adult Chinook from all non-tidal waters. All retained adult Chinook must be recorded immediately on the back of your Provincial Non-tidal Angling Licence. An "adult Chinook" in Region 2 is defined as being over 50 cm except in the following areas where an "adult Chinook" is defined as being over 62 cm:
  - a) the Fraser River downstream of the powerline crossing approximately 1 km upstream of the Aggasiz/Rosedale bridge from Sep 01 - Dec 31,
  - b) the Chilliwack/Vedder River (including Sumas River); the Harrison River and the Capilano River.

WATERS	SPECIFIC AREA	SPECIES	DATES	LIMITS / GEAR
Alouette River and tributaries	Upstream of 216th St. including the North Alouette River and tributaries to that part	Chinook	Apr 01-Jun 30	<i>No fishing for Chinook</i>
			Jul 01-Mar 31	1 per day
	Coho	Apr 01-Aug 31	<i>No fishing for coho</i>	
	Downstream of a line between two triangular white fishing boundary signs in Allco Park	Coho	Oct 01-Dec 31	1 hatchery marked fish per day
		Chum	Oct 01-Dec 31	1 per day
Birkenhead River	From the Birkenhead Birdge located approx. 6 km north of Mount Currie on Portage Road to the canyon located approx. 10 km upstream of the bridge	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Booth Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Brunette River	Downstream of Cariboo Rd.	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Little Campbell River	Downstream of 12 <sup>th</sup> Ave including tributaries to that part	Chinook	Jan 01-July 31	<i>No fishing for Chinook</i>
			Aug 01-Sep 14	1 hatchery marked fish per day
			-Sep 15-Dec 31	<i>No fishing for Chinook</i>
		Coho	Oct 01-Dec 31	1 hatchery marked fish per day
Capilano River	Including tributaries	All	Aug 01-Oct 31	Bait ban
		Coho	Jan 01-Aug 31	4 hatchery marked fish per day, only 2 over 30 cm
			Sep 01-Dec 31	4 hatchery marked fish per day
Chapman Creek	Upstream of tidal water boundary signs located below the Highway 101 Bridge	Coho	Jul 01-Mar 31	4 hatchery marked fish per day, only 2 over 35 cm
		Chinook	Jul 01-Mar 31	4 per day, only 2 over 50 cm
Cheakamus River		Coho	Apr 01-Mar 31	1 hatchery mark fish per day

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Chehalis River	Downstream of the logging bridge 2.4 km downstream of Chehalis Lake, including tributaries to that part	All	Sep 01-Dec 31	Daylight hours only
		Coho	Jul 01-Mar 31	4 hatchery marked fish per day
		Chinook	Jan 01-May 31	<i>No fishing for Chinook</i>
			Jun 01-Aug 10	4 per day, only 1 over 50 cm
			Aug 11-Sep 15	<i>No fishing for Chinook</i>
			Sep 16-Dec 31	4 per day, only 1 over 62 cm
Chum	Nov 1-Nov 30	2 per day		
Chehalis River Hatchery	From the hatchery outlet downstream to the confluence with the Chehalis/Harrison Rivers	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Chilliwack/Vedder River (including Sumas River)	Upstream from a line between two triangular boundary signs on either side of the Chilliwack River 100 m downstream of the confluence of the Chilliwack River and Slesse Creek	All	Jan 1-Dec 31	<i>No fishing for salmon</i>
		From a line between two triangular boundary signs on either side of the Chilliwack River 100 m from the confluence of the Chilliwack River and Slesse Creek downstream including that portion of the Sumas River from the Barrow Town Pump Station downstream to boundary signs near the confluence with the Fraser River	All	Sep 01-Dec 31
		Coho	Jul 01-Mar 31	4 hatchery marked fish per day
		Chum	Jul 01-Oct 15	1 per day
		Chinook	Jul 01-Dec 31	4 per day, only 1 over 62 cm
		Pink	Jul 01-Dec 31	Proposed 4 per day
Cogburn Creek		Coho	Sep 01-Mar 31	2 hatchery marked fish per day
Coquitlam River		Chinook	Apr 01-Jun 30	<i>No fishing for Chinook</i>
			Jul 01-Mar 31	1 per day
		Coho	Oct 01-Dec 31	1 hatchery marked fish per day
Dewdney Slough - See Nicomen Slough				

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Fraser River	From the downstream side of the CPR Bridge at Mission upstream to the Highway #1 Bridge at Hope, except Landstrom Bar (described below) which is closed to all angling from May 1 to Oct. 31	All	Apr 01-Jul 15 and Jan 01-Mar 31	No fishing for salmon
		All	Jul 01-Dec 31	Daylight hours only
		All	Sep 08-Oct 10	Bait ban
		Coho	Sep 08-Oct 10	No fishing for coho
		Coho	Oct 11 -Dec 31	2 hatchery marked fish per day
		Chinook	Jul 16 – Aug 31	To be determined
			Sep 01-Dec 31	4 per day, only 1 over 62 cm
		Chum	Jul 16-Dec 31	2 per day
		Sockeye	August	To be determined
		Pink	Jul 16-Dec 31	Proposed 4 per day
		Fraser River	From the downstream side of the Highway #1 Bridge at Hope upstream to the Alexandra Bridge	All
All	Jul 01-Dec 31			Daylight hours only
All	Sep 10-Oct 15			Bait ban
Coho	Sep 10-Oct 15			No fishing for coho
Coho	Oct 16-Dec 31			2 hatchery marked fish per day
Chinook	Jul 16-Aug 31			To be determined
	Sep 01-Dec 31			4 per day, only 1 over 62 cm
Chum	Jul 16-Dec 31			2 per day
Sockeye	August			To be determined
Pink	Jul 16-Dec 31			Proposed 4 per day
Landstrom Bar is those waters of the Fraser River inside a line beginning at a fishing boundary sign on the eastern end of Landstrom Bar, then to a fishing boundary sign on the opposite bank, then to a fishing boundary sign at the southern end of Croft Island, then westerly to a fishing boundary sign on the nearest bank of the river, then following the river bank to the beginning point.				
Harrison River	From the outlet of Harrison Lake downstream to the Highway 7 bridge	All	Jul 01-Dec 31	Daylight hours only
		Coho	Sep 01-Mar 31	4 hatchery marked fish per day
		Chum	Apr 01-Mar 31	2 per day
		Pink		To be determined
	From the Highway 7 bridge downstream to the confluence with the Fraser River	All	Jul 01-Dec 31	Daylight hours only
		Coho	Sep 01-Mar 31	4 hatchery marked fish per day
		Chinook	Sep 01-Dec 31	4 per day, 1 over 62 cm
		Chum	Apr 01-Mar 31	2 per day
		Pink	Apr 01-Mar 31	Proposed 4 per day
		Sockeye	August	To be determined
Hope Slough		All	Apr 01-Mar 31	No fishing for salmon
Inch Creek	From the hatchery outlet to the confluence with Norrish Creek/Nicomén Slough	All	Apr 01-Mar 31	No fishing for salmon
Indian River		Chinook	Apr 01-Mar 31	No fishing for Chinook
Kanaka Creek	Upstream of the 112th Ave bridge	All	Apr 01-Mar 31	No fishing for salmon
	Downstream of the 112th Ave bridge	Coho	Nov 1-Nov 30	1 hatchery marked fish per day

WATERS	SPECIFIC AREA	SPECIES	DATES	LIMITS / GEAR
Khartoum Lake		All	Apr 01-Mar 31	Single barbless hook.
		Chinook	Apr 01-Mar 31	4 per day
		Coho	Apr 01-Mar 31	4 per day
Lois Lake		All	Apr 01-Mar 31	Single barbless hook.
		Chinook	Apr 01-Mar 31	4 per day
		Coho	Apr 01-Mar 31	4 per day
Mamquam River		Coho	Apr 01-Mar 31	1 hatchery marked fish per day
McLennan Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Nicomekl River	Downstream of 208th Street	Chinook	Sep 01-Dec 31	1 per day
		Coho	Oct 01-Dec 31	1 hatchery marked fish per day
Nicomen (including Dewdney) Slough	From the confluence of Siddle (Bell's) Creek downstream to the Fraser River	Coho	Apr 01-Mar 31	4 hatchery marked fish per day, only 2 over 35 cm
	From the Highway 7 bridge at Dewdney downstream to the Fraser River	Chum	Apr 01-Mar 31	2 per day
Norrish (Suicide) Creek		Coho	Apr 01-Mar 31	4 hatchery marked fish per day, only 2 over 35 cm
Pitt River	Upper and Lower, including tributaries	Chinook	Apr 01-Mar 31	<i>No fishing for Chinook</i>
Sakinaw Lake	East of a line from a boundary sign north of the Sakinaw boat launch, southwesterly to a boundary sign at 49°11.50'N and 123°58.45'W (this encompasses the bay at Haskins Creek and the unnamed bay southwest of the boat launch); and the body of water known as Bear Bay, east of 124°02.13'W (marked by boundary signs)	All	Nov 01-Dec 31	<i>No fishing for salmon</i>
Scott (Hoy) Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Serpentine River	Downstream of 168 <sup>th</sup> Street	Chinook	Aug 01-Dec 31	1 per day
		Coho	Oct 01-Dec 31	1 hatchery marked fish per day
		Chum	Oct 01-Oct 31	1 per day
Seymour River		All	Aug 01-Dec 31	single barbless hook with no greater than 15 mm from point to shank
		Chinook	Sep 01-Dec 31	2 per day, none over 62 cm
		Coho	Apr 01-Mar 31	2 hatchery marked fish per day
Silverdale Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Squamish River (Including Powerhouse Channel)	Downstream of the boundary signs at the powerline crossing approx. 1.5 km upstream of the confluence with the Cheakamus	All	Apr 01-Mar 31	Bait Ban

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
See also Cheakamus River and Mamquam River		Coho	Apr 01-Mar 31	1 hatchery marked fish per day
Stave River	Downstream of B.C. Hydro Dam to the CPR Railway Bridge	Coho	Apr 01-Mar 31	4 hatchery marked fish per day, only 2 over 35 cm
		Chum	Apr 01-Mar 31	2 per day
		Pink	Apr 01-Mar 31	Proposed 4 per day
	That portion of the Stave River, known as the Ruskin Spawning Channel on the east bank of the BC Hydro park from the inlet near the dam, downstream to the boat ramp crossing	All	Apr 01-Mar 31	No fishing for salmon
Sumas River - See Chilliwack River				
Vedder River - See Chilliwack River				

## FRESHWATER SALMON SPORT FISHING OPPORTUNITIES REGION 3: THOMPSON-NICOLA

Please read these regulations in conjunction with the *Freshwater Fishing Regulations Synopsis*.

1. All retained Chinook and sockeye must measure 30cm or more from tip of nose to tail fork.
2. There is an annual limit of 10 adult Chinook from all non tidal waters. All retained adult Chinook must be recorded immediately on the back of your Provincial Non-tidal Angling licence. An "adult Chinook" in Region 3 is defined as being over 50 cm

WATERS	SPECIFIC AREA	SPECIES	DATES	LIMITS / GEAR
All	Any lake or stream or part thereof in Region 3, unless otherwise stated below	Coho, sockeye, pink and chum	Apr 01-Mar 31	<i>No fishing for coho, sockeye, pink or chum.</i>
Adams Lake	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Adams River	Upstream and downstream of Adams Lake	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Albred River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Anstey River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Barriere River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Bonaparte River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Bridge River	downstream from Road 40 bridge to the confluence of the Fraser R. (see also Fraser R. opportunity)	Chinook		To be determined
		All	Jan 01-Jun 20 and Jul 17-Dec 31	<i>No fishing for salmon</i>
Cayoosh Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Clearwater River	from Clearwater Lake downstream to the confluence of the North Thompson R. (except CLOSED from Murtle R downstream to 35km post from Aug 16 - 31 to protect Mahood R. Chinook)	Chinook		To be determined
		All	Sep 01-Dec 31	<i>No fishing for salmon</i>
Coldwater River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Deadman River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Dunn Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Eagle River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Finn Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Fraser River	mainstem of the Fraser R. in Region 3 except for that portion of the Fraser R. described below	Chinook	<b>Jul 16-Sep 18</b>	<b>4 per day none over 50cm</b>
	from the confluence of the Fraser/Seton River downstream to fishing boundary signs located on both sides of the river approximately 4 km downstream of the town of Lillooet.	Chinook		To be determined
		Sockeye		To be determined
		Pink		To be determined

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
	from the confluence with the Bridge R. downstream to the BC Railway bridge, 2km north of Lillooet ( <i>see also Bridge River opportunity</i> )	Chinook		To be determined
	Upstream of Thompson River confluence	All	Apr 01-Jul 15 and Sep 26-Mar 31	No fishing for salmon
	Downstream of Thompson River confluence	All	Apr 01-Jul 15 and Sep 19-Mar 31	No fishing for salmon
Kamloops Lake		Chinook	Aug 22-Sep 18	4 per day, 1 over 50cm
Lemieux Creek		All	Apr 01-Mar 31	No fishing for salmon
Little Shuswap Lake – See South Thompson River				
Louis Creek	Including tributaries	All	Apr 01-Mar 31	No fishing for salmon
Mahood River		All	Apr 01-Mar 31	No fishing for salmon
Maka Creek		All	Apr 01-Mar 31	No fishing for salmon
Mara Lake – See Shuswap Lake				
Nahatlatch River		All	Apr 01-Mar 31	No fishing for salmon
Nicola River	Upstream and downstream of Nicola Lake	All	Apr 01-Mar 31	No fishing for salmon
North Thompson River	downstream of Station Road Bridge in Clearwater to the Ferry crossing at Little Fort.	Chinook		To be determined
	Mainstem river	All	Sep 01-Dec 31	No fishing for salmon
Salmon River	Upstream of CPR Bridge	All	Apr 01-Mar 31	No fishing for salmon
Scotch Creek		All	Apr 01-Mar 31	No fishing for salmon
Seymour River		All	Apr 01-Mar 31	No fishing for salmon
Shuswap Lake	Including Little Shuswap and Mara Lakes (see exception under South Thompson River and for Little Shuswap Lake)	All	Apr 01-Mar 31	No fishing for salmon
South Thompson River	Between Little Shuswap Lake and Hwy 5 Bridge at Kamloops	All	Apr 01-Mar 31	No fishing for salmon ( <i>See Chinook exception below</i> ).
	From the green can buoy near outlet of Little River to 100m downstream of Campbell Creek	Chinook	Aug 15-Sep 22	4 per day , 2 over 50cm. Monthly limit is 6 over 50cm.
		All	Sep 23-Dec 31	No fishing for salmon
Spius Creek		All	Apr 01-Dec 31	No fishing for salmon
Stein River		All	Apr 01-Dec 31	No fishing for salmon
Thompson River	From Kamloops Lake downstream to the confluence with the Fraser River	All	Apr 01-Jul 15 and Sep 19-Mar 31	No fishing for salmon
		Chinook	Jul 16-Aug 21	4 per day, 0 over 50cm.
			Aug 22-Sep 18	4 per day, 1 over 50 cm
		Sockeye		To be determined
		Pink		To be determined

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
	from confluence with Bonaparte River to boundary sign approx. 1 km downstream. North Bank of the river only	Chinook		To be determined
	Five locations i) Savona – Lake outlet to 1 km downstream of the Hwy bridge. ii) Walhachin bridge – 1km upstream and downstream iii) Juniper Beach park upstream boundary to approx 1.5 km downstream. iv) Ashcroft – 1km upstream of mouth of Bonaparte R. Existing Martel Chinook fishery boundary to Goldpan Provincial Park.	Pink		To be determined
		Chinook	Aug 22-Sep 18	4 per day, only 1 over 50 cm
		Sockeye		To be determined

## FRESHWATER SALMON SPORT FISHING OPPORTUNITIES REGION 5A: CARIBOO

### (Part A, Fraser River Watershed, Management Units 5-1 to 5-5 and 5-12 to 5-16)

Please read these regulations in conjunction with the *Freshwater Fishing Regulations Synopsis*.

1. All retained Chinook must measure 30 cm or more from tip of nose to fork in tail (fork length).
2. There is an annual limit of 10 adult Chinook from all non-tidal waters. All retained adult Chinook must be recorded immediately on the back of your Provincial Non-tidal Angling Licence. An "adult Chinook" in Region 5 is defined as being over 50 cm (fork length).

WATERS	SPECIFIC AREA	SPECIES	DATES	LIMITS / GEAR
All	Any lake or stream or part thereof in Region 5A unless otherwise stated below	Sockeye, Pink, Coho and Chum	Apr 01-Mar 31	<i>No fishing for sockeye, pink, coho or chum.</i>
Baker Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Cariboo River	From confluence of the Quesnel River to the confluence of Seller Creek.	Chinook		To be determined
Chilcotin Lake		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Chilcotin River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Chilko River	From Chilko Lake downstream to boundary signs 1.5 km upstream of Siwash Bridge (12 km upstream from Chilcotin River junction).	Chinook		To be determined
Elkin Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Fraser River (including tributaries)	Downstream of the confluence with Williams Lake River	All	Apr 01-Jul 15 and Sep 26-Mar 31	<i>No fishing for salmon</i>
	Upstream of the confluence with the Williams Lake River		Apr 01-Jul 15 and Oct 01-Mar 31	
Horsefly River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
McKinley Creek	Downstream of McKinley Lake	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Mitchell River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Quesnel Lake		All	Apr 01-Mar 31	<i>No fishing for salmon (see sockeye exception below)</i>
	The waters of Horsefly Bay located on Quesnel Lake inside a line connecting fishing boundary signs located on opposite shorelines at the entrance to the bay.	Sockeye		To be determined
Quesnel River	Downstream of Poquette Creek	Chinook		To be determined
	Downstream from boundary signs at the mouth of Quesnel Canyon to the Johnston Subdivision bridge near Quesnel, BC	Sockeye		To be determined

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
Taseko River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Westroad (Blackwater) River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>

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## FRESHWATER SALMON SPORT FISHING OPPORTUNITIES REGION 7: Omineca-Peace

Please read these regulations in conjunction with the *Freshwater Fishing Regulations Synopsis*.

1. All retained Chinook must measure 30 cm or more from tip of nose to fork in tail (fork length).
2. There is an annual limit of 10 adult Chinook from all non-tidal waters. All retained adult Chinook must be recorded immediately on the back of your Provincial Non-tidal Angling Licence. An "adult Chinook" in Region 7 is defined as being over 50 cm (fork length).

<b>WATERS</b>	<b>SPECIFIC AREA</b>	<b>SPECIES</b>	<b>DATES</b>	<b>LIMITS / GEAR</b>
All	Any lake or stream or part thereof in Region 7 unless otherwise stated below	Sockeye, Pink, Coho and Chum	Apr 01-Mar 31	<i>No fishing for sockeye, pink, coho or chum.</i>
Bowron River	From the Forestry Road bridge nearest to the Fraser River, upstream to the Bowron Forest Road Bridge crossing near Haggan Creek	Chinook		To be determined
Endako River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Fraser River	From power lines crossing near College Heights upstream to the Northwoods Bridge crossing the Fraser River	Chinook		To be determined
	Above McLennan River	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
	Mainstem river (including tributaries) except as noted above	All	Apr 01-Jul 15 and Oct 01-Mar 31	<i>No fishing for salmon</i>
Goat River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Holmes River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
McGregor River		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Nechako River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon (see sockeye exception below)</i>
	Upstream from the boundary signs at the confluence with the Fraser river to the Highway 97 bridge (John Hart bridge)	Sockeye		To be determined
Salmon River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Slim Creek	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Stuart River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Swift Creek	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Westroad (Blackwater) River	Including tributaries	All	Apr 01-Mar 31	<i>No fishing for salmon</i>

## FRESHWATER SALMON SPORT FISHING OPPORTUNITIES REGION 8: OKANAGAN

Please read these regulations in conjunction with the *Freshwater Fishing Regulations Synopsis*.

1. All retained Chinook must measure 30 cm or more from tip of nose to fork in tail (fork length).
2. There is an annual limit of 10 adult Chinook from all Non-tidal waters. All retained adult Chinook must be recorded immediately on the back of your Provincial Non-tidal angling licence. An "adult Chinook" in Region 7 is defined as being over 50 cm (fork length).

WATERS	SPECIFIC AREA	SPECIES	DATES	LIMITS / GEAR
All	Any lake or stream or part thereof in Region 8, unless otherwise stated below	Sockeye, pink, coho and chum	Apr 01-Mar 31	<i>No fishing for sockeye, pink, coho or chum.</i>
Bessette Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Duteau Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Harris Creek		All	Apr 01-Mar 31	<i>No fishing for salmon</i>
Mabel Lake	south of fishing boundary signs located on opposite shores approx. 1 km from Wap Creek	Chinook	Jul 25- Aug 15 Daylight hours only	1 per day, over 77 cm Monthly limit is 4, including all Shuswap River and Mabel Lake chinook.
			Aug 16-Sep 12 Daylight hours only	4 per day, only 2 over 50 cm Monthly limit is 4 over 50 cm, including all Shuswap River and Mabel Lake chinook.
		All	Sep 13-Dec 31	<i>No fishing for salmon</i>
Osoyoos Lake	In the waters of the North basin of Osoyoos Lake from the Hwy #3 Bridge north to a line commencing at the East side of the lake at the mouth of Inkameep Creek, GPS coordinates 49° 04 13.08 N, 119° 30 19.03 W to Inkameep Lodge Pier on the west side of the lake GPS coordinates 49° 03 49.35N, 119° 30 24.44W.	Sockeye	To be determined	2 per/ day
Shuswap River	(middle) between Shuswap Falls and Mabel Lake except closed between from the water survey station approximately 300m	Chinook	Jul 25-Aug 15 Daylight hours only	1 per day over 77 cm Monthly limit is 4 over, including all Shuswap River and Mabel Lake chinook.
		All	Aug 16 -Dec 31	<i>No fishing for salmon</i>

	down stream of Shuswap Falls Hatchery to Fishing Boundary signs 1 km down stream. No fishing for salmon			
	(lower) upstream from signs above Mara Bridge to Mabel Lake	Chinook	Jul 25-Aug 15 Daylight hours only	1 per day, over 77 cm Monthly limit is 4 including all Shuswap River and Mabel Lake chinook.
			Aug 16-Sep 12	4 per day, only 2 over 50 cm Monthly limit is 4 including all Shuswap River and Mabel Lake chinook
		All	Sep 13-Dec 31	No fishing for salmon
Wap Creek		All	Apr 01-Mar 31	No fishing for salmon

## 9. APPENDIX 9 - SOUTHERN B.C. / FRASER RIVER COMMERCIAL FISHING PLAN

### 9.1. Catch Monitoring and Reporting Initiatives

The development of an improved catch monitoring regime will continue to be a priority in the management of commercial fisheries. The Department will work with the Commercial Salmon Advisory Board and Area Harvest Committees to implement tools and develop annual catch monitoring plans for commercial fisheries. The standards focus on data collected to estimate catches, releases, and essential biological data, such as CWT sampling, for stock assessments and fishery evaluations.

The Department implemented start and end fishing reporting requirements for all Southern Commercial Licence Area fleets in 2010. Start and end fishing reporting requirements will be implemented for all the Northern Commercial Area Licence fleets in 2011. Consultations will occur with commercial fleets that currently do not have this requirement in effect.

Traceability of commercially harvested fish is increasingly a focus of concern as a result of the need to provide market confidence in resource sustainability and product safety. The Department will work with all fleets to implement components of traceability. These could include mandatory hail-in/hail-out provisions (currently in place in troll fisheries) and a pilot mandatory dockside monitoring program.

### 9.2. Coded Wire Tag (CWT) Sampling of Freezer Troll Catch

The importance of adequately CWT sampling this catch has increased as the portion of landings frozen at sea has increased. There are three ongoing concerns with CWT sampling of freezer troll catch which will continue to be addressed in 2011.

The first concern results from the removal of heads from the catch at sea when trollers freeze their catch. For commercial landings chosen for CWT sampling, sampling activity must examine 100% of the landed fish, and collect all heads that are suspected to contain a CWT. Therefore, trollers removing heads at sea are required by Condition of Licence to keep all heads from retained chinook and coho and deliver them to processing plants when landing their catch. However, heads are not always delivered, and when they are delivered, many deliveries have to be excluded from the CWT sample because they contain fewer heads than the body count in the landing.

The second concern also results from the removal of heads before sampling. Recognizing that freezer trollers 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'. Unfortunately, many deliveries of snouts have to be excluded from the CWT sample because the snouts have been cut too small, making it likely that CWTs actually present in the fish are not included in the sample.

To help address these concerns, the Department:

- i) has standardized the requirements regarding head retention and delivery from all retained coho and chinook in the Conditions of Licence for all troll Licence Areas;
- ii) has specified, as a Condition of Licence, the minimum portion of each head that must be retained;
- iii) will provide instructions regarding these conditions, via troll Fishery Notices, this document (Appendix 11), and other routes.

The third concern results because freezer trollers often land two or more weeks worth of catch during one landing. The Mark Recovery Program (MRP) is required to estimate the catch of CWTs by week. Ice trollers land often enough that CWTs detected in their catch can be attributed to the week they were caught in. However, when freezer trollers land after a trip lasting two or more weeks, and deliver heads for the entire fishing trip duration, it is unknown which week each discovered CWT was caught in; thus, such samples can not contribute to the estimates of CWT catch by week (but are still useful for improving estimates of CWT catch in each fishery).

To address this concern, the Department has implemented a program in which special purpose bags and labels are provided to freezer trollers for use in storing and labelling head samples separately according to the week they were caught. For 2011, freezer trollers will be able to pick up packages of bags and labels at Pacific Fishery Licensing Unit offices in Vancouver, Nanaimo, and Prince Rupert. Vessel masters unable to pick up bags from licensing offices should contact the Department toll-free at 1-866-483-9994 to arrange delivery.

### **9.3. 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 5.3 – 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.

In 2011, DFO will continue 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 stock, 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: [www.pac.dfo-mpo.gc.ca/species/salmon/policies/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/species/salmon/policies/default_e.htm). See Section 6.9 for further details for 2011 projects.

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.

### **9.4. Commercial Salmon Allocation Implementation Plan**

This section describes anticipated commercial licence area allocations for each gear type and for each species of salmon. These anticipated licence area allocations 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 including all conservation measures currently in effect. Where appropriate the potential harvest identified is a range that reflects the most recent approved forecasts for each stock grouping. In other cases, the potential harvest represents the informed point estimate of fisheries managers based upon historic average return rates and/or available analysis.

Although best efforts will be made to achieve these coast-wide allocation targets, no guarantees are offered that target allocations will actually be achieved in any given year. The achievement of these targets will depend upon the ability to fish selectively and the conservation needs of the resource. In the event that target allocations are not achieved, no compensatory adjustments will be made to future allocations. “Catch up/make up” adjustments to future target allocations will not be considered in the event that a gear type does not meet its target allocation.

The following operational guidelines also apply:

- Individual licence holders and groups of licence holders will not be permitted to make their own allocation transfer arrangements unless agreed to by DFO under Demonstration Fisheries arrangements.
- As in recent 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).
- Harvest from commercial assessment fisheries intended to obtain information that will benefit a specific fleet will be considered part of the allocation of the fleet conducting the fishery.
- The target allocations for gill net D and gill net E area licences will attempt to equalize the relative average catch per licence in sockeye equivalents.
- The target allocations for troll G and troll H area licences will attempt to equalize the relative average catch per licence in sockeye equivalents.
- If after spawning escapement objectives are met, and despite best efforts, it becomes apparent that an area licence group is unable to achieve its target allocation, subject to conservation requirements, uncaught balances will be given first to the same gear type in a different licence area and, second to different gear types in a manner that reflects their relative target allocations.

It is noted that these are not fixed entitlements but are a projection of available fishing opportunities given present forecasts of stock abundance and best efforts to achieve coast-wide target allocations by gear type. These represent the intentions of fisheries management if abundance is as expected and all other things are equal. However, in many cases in-season adjustments will be necessary to address conservation concerns or other unforeseen events.

#### NORTH COAST

##### North Coast Sockeye

Areas	Potential Harvest (Pieces)	Seine A	Gill Net C	Troll F
1, 3 to 5, 101 to 105	321.5K	25%	74.8%	0.2%
6 to 10	20K	25%	75%	0%

Notes on sockeye allocations:

Area 3 (Nass) estimate of 100K, area 4 (Skeena) estimate of 220K, and area F estimate of 1.5K were used for planning purposes. The actual TAC available will be established based on in-season information

##### North Coast Pink

Areas	Potential Harvest (pieces)	Seine A	Gill Net C	Troll F
1 to 5, and 101 to 105	4.65M	74%	24%	2%
6 to 10	3M	85%	15%	0%

##### North Coast Chum

Areas	Potential Harvest (pieces)	Seine A	Gill Net C	Troll F
1,2,101 to 111,130,142	-	55%	45%	0%
3 to 5	-	0%	100%	0%
6 to 10	50K	55%	45%	0%

Notes on chum allocations:

Catch shares in Areas 6 to 10 have been highly variable in recent years and depends on amount of gear fishing.

#### North Coast Coho

Areas	Potential Harvest (Pieces)	Seine A	Gill Net C	Troll F
1 to 10, 101, 102, 105-107, 130, 142	150K	10%	7%	83%

Notes on coho allocations:

There will be opportunities for directed coho harvest in troll fisheries on the north coast of B.C.  
North Coast Chinook

Areas	Potential Harvest (Pieces)	Seine A	Gill Net C	Troll F
1 to 5,101, 102, 130, 142	137K	0%	4.2%	95.8%
6 to 10	3K	0%	99%	1%

Notes on chinook allocations:

There are no directed chinook fisheries on the north coast of B.C. for the seine fleet. Directed gill net fisheries occur in Areas 4 and 8 and there is some by-catch in other north coast fisheries. Areas 1-5 troll, the TAC is determined by the Pacific Salmon Treaty arrangements. The PST allocation for the Area F troll fleet is preliminarily set at 132.4K. However, due to conservation concerns for other stocks the expected harvest may be less than this level.

#### SOUTH COAST

##### South Coast Sockeye

Areas	Potential Harvest (Pieces)	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
Area 23	92K	60%	40%		0%	
Fraser River Sockeye	200K	48.5%	21.5%	25%	0%	5%

Notes on sockeye allocations:

Fraser River sockeye: Based on pre-season information, the potential commercial harvest of Fraser River sockeye considered for planning purposes ranged from 0K to 2.5M. However, protective measures will be implemented to address uncertainty about returns, environmental conditions as well as conservation concerns for Sakinaw Lake, Cultus Lake and Late Run sockeye. These factors could substantially reduce opportunities to harvest the full TAC. The Fraser River sockeye TAC will be established based on in-season information

Barkley sockeye: The current estimate of potential harvest is based on a pre-season estimate of a 600K return. Sockeye abundance will be reforecast in-season and as a result actual catch available could change.

**South Coast Pink**

Areas	Potential Harvest (Pieces)	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
Fraser River	4M	65%	10%	10.5%	6.5%	8%
Mainland Inlets (A12)	5K	73%	9%	0%	0%	18%

**Notes on pink allocations:**

Fraser River pinks: Based on pre-season information, the potential commercial harvest of Fraser River pinks has a range of 2M to 20M. However, protective measures will be implemented to address uncertainty about returns as well as conservation concerns for Cultus Lake and Late Run sockeye. These factors could substantially reduce opportunities to harvest the full TAC. The Fraser River pink TAC will be established based on in-season information  
 Potential harvests of Mainland Pinks will be determined inseason.

**South Coast Chum**

Areas	Potential Harvest (Pieces)	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
11 to 19, 28 to 29	685K	63%	19%	12%	0%	6%
21 to 22	0.2K	70%		29%	1%	
23 to 27	10.5K	0%	98%	0%	2%	0%

**Notes on chum allocations:**

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. Anticipated catch in Johnstone Strait is approximately 600K with an additional 85K estimated in the Strait of Georgia and the Fraser River.

For Fraser River chum, harvest opportunities will be constrained by conservation concerns for Interior Fraser River steelhead.

**South Coast Coho**

Areas	Potential Harvest (Pieces)	Seine B	Gill Net D	GILL NET E	Troll G	Troll H
11 to 20, 29	0K	55%	15%	15%	0%	15%
21 to 27, 121, 123 to 127	0.5K	0%	0%	0%	100%	0%

**Notes on coho allocations:**

Inside coho - no coho retention fisheries planned.

WCVI coho - It is anticipated that retention of adipose clipped coho will be permitted in offshore troll fisheries in the latter half of September.

**South Coast Chinook**

Areas	Harvest Forecast (Pieces)	Seine B	Gill Net D	Gill Net E	Troll G	Troll H
11 to 20, 29	3K	0%	0%	100 %	0%	0%
21 to 27, 121 to 127	135.3K	0%	2.6%	0%	97.4%	0%

**Notes on chinook allocations:**

Inside chinook - chinook by-catch during Area E sockeye directed fisheries in Area 29. Discussions are also occurring about a possible Chinook demonstration fishery in area 29.

AABM Chinook - the TAC is determined by the Pacific Salmon Treaty arrangements. For commercial allocation planning purposes allocation for the Area G troll fleet of 131.8K was used but this amount will be adjusted inseason if observed First Nation and recreational catches differ from anticipated levels. In addition, conservation concerns for other stocks the expected harvest may be less than this level.

**9.5. 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. Over the past several years federal court decisions have required changes to the way DFO has traditionally delivered test fishing programs. As in the 2010 salmon fishing season, DFO will work in close collaboration with resource users to ensure that the fisheries data collections necessary to set TAC's and to ensure conservation will continue to be undertaken.

**9.6. Licence Application and Issuance**

The 2011/2012 Salmon licensing period will encompass April 1, 2011 to March 31, 2012. Applications must be completed and submitted to a Pacific Fishery Licence Unit by March 31, 2012 along with the required fee to maintain the licence eligibility whether fishing will take place or not.

Prior to annual licence issue, vessel owners must ensure that:

- a) Any Ministerial conditions placed on the licence eligibility have been met
- b) Any conditions of the previous year's licence have been met, such as:
  - i. Submission of all harvest logs or a nil report for 2010 (for further information contact the Salmon Catch Monitoring Unit at (250) 756-7279 or 250-729-8385); and
  - ii. Submission of all fish slips for 2010 (for further information contact the Regional Data Unit at (604) 666-2716).

For further licensing information see: <http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.htm>

#### **9.6.1. Fisher Identification Number**

Unique Fish Harvester Identification Numbers (FIN's) are assigned to all Pacific commercial harvesters. Once the FIN is issued to a fish harvester, it does not change from year to year. More information on FIN's may be obtained from your DFO fisheries manager or a Pacific Fishery Licensing Unit (PFLU): in Vancouver (604) 666-0566; in Nanaimo (250) 754-0400; in Prince Rupert (250) 627-3413.

### ***9.7. Mandatory Log-Book and In-season Catch Reporting Program***

#### **9.7.1. Commercial Electronic Logbooks (E-Logs)**

For the 2011 fishing season, Fisheries and Oceans Canada will be continuing a co-management arrangement with commercial salmon fishermen and will be available to fishers for the 7th consecutive salmon season. The software will be promoted from a pilot phase to production phase where the Electronic Logbook system (now termed DFO E-Log) will be available to all commercial salmon fishers that meet the hardware requirements. The PC based software application has been designed following the current paper versions of the commercial salmon logbooks for gill net, seine and troll. E-logs have been also developed for the prawn and tuna fisheries. The ultimate goal of this initiative is to improve efficiency and compliance of reporting catch to the Department.

Currently, there may be as many as 100 commercial salmon fishing vessels from all the licence groups employing the DFO E-Log along the Pacific Coast. Catch data and other fishing information will be transmitted to the Department in the manner outlined in their conditions of licence, with respect to electronic logbooks. Participants in this pilot will not be required to purchase the salmon logbook service or be required to phone in their catch and fishery information to the service provider. Authority for continuing to use or start to use the DFO E-

Log will be determined by DFO and will be based on the previous season or season's compliance for reporting catch and other fishing information to DFO.

For more information please contact Ron Goruk at 250-756-7392, Carmen McConnell at 250-756-7272.

Note: The 2011/12 fiscal year is the last year of PICFI funding and it is anticipated that these initiatives will be sun setting unless further funding can be secured. If there are any groups interested in piloting any of these

### **9.8. *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 may be permitted, in addition to some terminal opportunities in areas such as the WCVI where surpluses of coho and chinook may be identified. 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.

### **9.9. *Revival Tanks***

Revival tanks conforming to the conditions of licence will be required for all vessels participating in commercial salmon fisheries. All prohibited species captured incidentally must be either revived in the revival tank and released, or released directly to the water in a manner that causes the least harm. If in-season indicators show a deterioration of expected stock levels, additional measures may be implemented.

Revival tank construction drawings and additional details are available from the Fisheries and Oceans Canada website at: [http://www.pac.dfo-mpo.gc.ca/ops/fm/selective/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/ops/fm/selective/default_e.htm).

### **9.10. *Gill Net Construction***

Gill nets of two different constructions may be used in all South Coast areas except for Areas 20 and 22, where net construction must be of the 30 filament type (multi-strand). Net construction in all other areas may either be of the 30 filament type (multi-strand) or Alaska Twist (six strands).

The use of Alaska Twist gill nets with four or five filaments of equal diameter in each twine of the web will be permitted in certain gill net fisheries, (excluding Areas 20 and 22) in 2011, providing that an approved study has been undertaken. Fish harvesters that wish to use this gear should contact their local fishery manager.

Specific restrictions, such as the specifications for net construction and revival tanks, are found in the conditions attached to individual licenses. Fish harvesters are urged to read these conditions carefully to ensure that their vessel and fishing techniques are in accordance with their licence.

### **9.11. Retention of Lingcod by Salmon Troll**

To help meet the conservation and sustainability objectives under groundfish integration, an individual quota (IQ) system has been established for the lingcod fishery. Initial allocation of quota was based on catch history from 1996 to 2003 as this time period coincided with the Dockside Monitoring Program. For those who have fished lingcod in conjunction with salmon during the qualifying years, fish slips were used to determine catch.

Implementation of a commercial groundfish integrated fishery has management implications for those wishing to retain lingcod while salmon trolling. Similar to last year, 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 acquire sufficient quota to do so.

Requirements include the following (less than 500 lbs of lingcod per trip):

- Vessel must have sufficient IVQ.
- Transportation requirement – All lingcod must be transported by the licensed vessel either directly to land or to a fish pen.
- Hail in and Hail out requirements through the designated service provider - Archipelago Marine Research Ltd (AMR).
- 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 new electronic monitoring requirements. For more information on these requirements please refer to the 2010/2011 Groundfish Integrated Fisheries Management Plan.

The salmon troll fishery is currently permitted to retain 20 rockfish per day (excluding Yelloweye, Quillback, China, Tiger and Copper, as by-catch to salmon fishing (i.e. during salmon troll open times and when salmon are retained on board the vessel). This allowance will continue in 2010. There are no additional monitoring requirements.

### **9.12. Selective Fishing / Conservation Measures**

In 2011, 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.

### **9.12.1. Other Conservation Measures**

In 2011, 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 being announced for that respective gear type. Information on this management initiative can be obtained from Department charter vessels on the grounds and from Fisheries and Oceans Canada offices.

### **9.13. Catch Monitoring Standards**

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. To address all elements of the Wild Salmon Policy, an effective catch reporting system is required to assess the status of Conservation Units.

In addition, a fully developed, well documented and statistically verifiable fishery monitoring system is one important component of "eco-certification". Yet another facet of this is the issue of bio-security and the need to insure traceability of fish from the water to the buyer. Traceability can increase the value of products, assure continued access to world markets and assist with longer term economic stability of the commercial fishing industry. An essential first step in traceability is the full documentation of the commercial harvest together with its source fishery and fishing fleet. Finally, DFO is committed to implementing defined shares in the management of salmon fisheries; confidence among all harvesters in catch data is essential to achieving the trust required to support defined harvest shares.

- A 'share-based' management framework as envisioned in Pacific Fisheries Reform requires accurate, timely and verifiable catch reporting. However, several issues have been identified with the current monitoring of Pacific commercial salmon fisheries and the reporting of catch and associated harvest mortalities, including inconsistent requirements, inaccessible data, poor data precision and incomplete or missing data.

The Department is currently consulting on the "Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries – A Discussion Paper". The paper proposes 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 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 to commercial, aboriginal and recreational fisheries harvesters to determine specific monitoring objectives.

For additional information on the framework see the DFO Consultation website:

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

#### **9.14. *Demonstration Fisheries (Pacific Fisheries Reform)***

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. Projects that fall under this category may include investigating quota management in salmon fisheries, fishing in an unconventional area/time, or testing the abundance of stocks prior to full fleet fisheries. Special projects or initiatives may have significant components that relate to selective fishing.

Special projects or initiatives should be planned well in advance of proposed implementation so that effective planning and approval can take place. If a group is interested in pursuing a special project or initiative they should contact the appropriate departmental resource manager and advisors for that fishery. After discussion, the resource manager will likely require a detailed proposal to submit for approval.

It should be noted that all special projects will have to be evaluated for conflicts with recent court cases regarding the Minister's authority regarding use of fish.

For more information, please refer to Appendix 5 section 5.5 and 9.17.

#### **9.15. *South Coast Net***

Actual 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 Early Stuart, Late Run and Cultus Lake sockeye, Nimpkish sockeye, Sakinaw sockeye and Interior Fraser coho in areas where these stocks are present. The Summer and Late Run stock groups are expected to be dominant components of this year's return.

DFO has received a request from the Area B Seine harvest committee to permit the use of powered auxiliary vessels (power skiffs) in Johnstone Strait (Areas 12 and 13) during ITQ fisheries for sockeye and pink salmon. Currently the use of power skiffs is only permitted for Area B Seine in Areas 19-21, 29 and 121. The request to use power skiffs in Areas 12 and 13 is currently under discussion and a decision will be made prior to the start of the fishing season.

2011 is a dominant cycle year for Fraser River pink salmon, above average returns are expected in 2011. Fisheries will be planned and managed consistent with Fraser River sockeye, Interior Fraser coho, Fraser River steelhead, and Fraser River pink management objectives.

#### **9.15.1. Juan de Fuca Strait and Fraser River (Area 20)**

In Area 20, controlled fishing opportunities targeting Fraser River sockeye will be considered for licence Area B; however, this will be subject to available TAC, in-season diversion rate estimates of Fraser River sockeye and estimated impacts on Interior Fraser coho. Seine opportunities directed at Fraser River pink salmon are not anticipated in Area 20 due to Interior Fraser River constraints, however this will be confirmed in-season.

Area B is considering a selective fishing study in Area 20 in 2011 to evaluate coho release mortality rates that should be applied to this fishery in the future. Currently a 70% coho release mortality rate is applied based on a study in 2002. The study may also be designed to address some or all of the following including: release mortality rates for sockeye, coho stock composition (e.g. DNA sampling) and seine bunt mesh comparisons.

In the lower Fraser River, Area B has proposed a limited effort and harvest experimental demonstration seine fishery to explore Fraser sockeye harvest opportunities in 2011 that may apply to future potential opportunities. This proposal is being considered for implementation in 2011 subject to addressing any potential gear group conflicts, in-season information and available Area B TAC. Refer to Appendix 9 section 9.17 for further details.

The majority of the Area B Fraser River sockeye and pink harvest is expected to be from the Johnstone Strait harvest area. However, subject to in-season information, Area B seine opportunities are also expected in Juan de Fuca (Area 20), in Area 18, in Area 29 off the Fraser River mouth, and a limited demonstration fishery in the lower Fraser River. Opportunities and fishing locations will be confirmed based on in-season information.

Opportunities are anticipated for Area E in Area 29; opportunities will be confirmed based on in-season information.

The Fraser River Panel in conjunction with Fisheries and Ocean Canada 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 - Area 20 and 29

- No fisheries anticipated prior to late-July in order to protect Fraser River Early Stuart sockeye stocks.

Late July to Mid August - Area 20

- Limited, controlled effort seine fisheries are anticipated to be available, fleet size limitations, strict selective fishing techniques and monitoring will be required.
- Avoidance of coho, Cultus and Late Run sockeye constraints, TAC and diversion rate will be factors determining available harvest opportunities during this period.

#### Late July to Mid August - Area 29

- Area E opportunities are anticipated subject to available TAC, and Cultus and Late Run sockeye constraints.
- In the lower Fraser River, Area B is planning for a limited effort and harvest experimental demonstration fishery to explore Fraser sockeye harvest opportunities. This opportunity will be subject to available TAC, Cultus and Late Run sockeye harvest constraints and must consider other harvest plans and requirements in this area.

#### Late August to early September – Area 20

- Directed fisheries in Area 20 for Fraser River pinks are not anticipated due to constraints on Interior Fraser coho.

#### Early September to Mid October - Area 20 and 29

- Area 20 to remain closed to protect Interior Fraser coho and Cultus Lake sockeye.
- Area 29 fishing opportunities may not be available due to Interior Fraser coho, Cultus Lake sockeye and Interior Fraser River steelhead management constraints.

#### Late October to Early November - Area 29

- Gill net fishing opportunities for chum salmon will be confirmed in-season, based upon in-season assessment of the abundance of the chum salmon return and management objectives for Interior Fraser steelhead.

#### Early November to Late November - Area 29

- Potential gill net fishing opportunities will be determined in-season, based upon in-season assessment of the chum salmon return.

Refer to Appendix 9 section 9.17 for details on proposed demonstration fisheries.

### **9.15.2. Johnstone Strait (Areas 11 to 13)**

#### 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 sockeye. No fishing opportunities are available above Lewis Point prior to late July to protect returning Nimpkish River sockeye.

#### Late July to Mid August - Areas 11 to 13

- Gill net and seine opportunities targeting Fraser River sockeye are anticipated. Opportunities will be subject to available TAC and constraints for Cultus Lake and Late Run sockeye and Interior Fraser coho.

#### Late August to Mid September - Areas 11 to 13

- No directed Fraser River sockeye fishing opportunities are anticipated due to management constraints for Cultus Lake and Late Run sockeye, and Interior Fraser coho.
- Directed Fraser River pink fisheries are anticipated subject to available TAC and constraints for Cultus Lake and Late Run sockeye, and Interior Fraser coho.

Late July to early September - Areas 12 and 13 (Mainland Inlets)

- Mainland Inlet pink – Although this is the off-cycle year for most mainland inlet pink stocks, odd-year returns have shown an improving trend in recent years. Returns are expected to be low to near target abundance. In-season assessments will determine if any potential fishing opportunities are available. There will be no fishing opportunities unless surpluses are identified in-season.
- Terminal Summer Run Chum – Area D gill net is exploring limited effort opportunities in terminal areas where returns may be abundant. Discussions are continuing regarding potential opportunities. Any fishing opportunities will be confirmed in-season.

Early October to Late October - Areas 12 and 13 (Johnstone Strait mixed stock chum fishery)

- The 2011 chum outlook indicates low to near target returns based on generally below average escapements in the 2007 brood year and early indications of improved marine survival. The fixed harvest rate strategy which was implemented starting in 2002 is planned to continue in 2011. For seines, two fisheries are anticipated and will be scheduled for before and after the peak of the run. Area B is also exploring options for a demonstration ITQ fishery. Gill net fisheries will be scheduled during the October time period.
- Specific fishing plans will be determined pre-season following consultation with industry. A chum working group meeting will be scheduled during the May – June time period to begin this planning process.

Late November to early December

- No fishing opportunities directed at Nimpkish River chum are anticipated due to an expected poor return and recent trends of poor returns. In-season assessment will confirm the potential for any harvest opportunities.

Refer to Appendix 9 section 9.17 for details on proposed demonstration fisheries.

### **9.15.3. Strait of Georgia (Areas 14 to 19)**

No fisheries are planned to occur in Area 16 (Sabine Channel). Consideration may be given in-season for Fraser River sockeye fisheries in Sabine Channel if warranted and will be subject to Sakinaw Lake sockeye constraints as well as constraints for other stocks of concern.

The 2011 chum outlook indicates below average returns to most terminal areas based on below average escapements to most systems in the brood year coupled with poor marine survival. Chum fishing opportunities in terminal areas will be determined in-season and discussed through pre-season meetings and the chum advisory process. The following opportunities may be available:

Early October to Late-November - Area 14

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.

#### Late-October to Mid-November - Area 16

Gill net and seine opportunities are not anticipated due to the recent trend of poor returns; however, this will be confirmed in-season. Subject to escapement levels in Jervis Inlet in the Tzoonie, Deserted and Skwakwa Rivers. Area B seine opportunities will depend on abundance and allocation status.

#### 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.

#### Late-October to Early December - Areas 18 and 19

Possible Area E and B fisheries in Satellite Channel and Saanich Inlet. Openings are subject to in-season abundance estimates for the Cowichan and Goldstream Rivers. Fishing opportunities will be dependent on abundance and also licence area allocation status.

Refer to Appendix 9 section 9.17 for details on proposed demonstration fisheries.

### **9.15.4. West Coast Vancouver Island (Areas 21 to 27)**

Preliminary forecast information for WCVI chinook, sockeye and chum salmon are completed.

#### **Sockeye**

Mid June to Late July/Early August - Area 23

- Preliminary forecast for Barkley Sound sockeye is above levels required to support fishing opportunities for all sectors in Area 23.
- Opportunities will be determined based on in-season assessment.

#### **Chinook**

Mid August – Early September Area 23

- Gill net and seine opportunities in Alberni Inlet are uncertain at this time and dependent on the pre-season forecast and allocation guidelines.

Mid August - Area 25

- Gill net opportunities in Tlupana Inlet dependent on the pre-season forecast and allocation guidelines.

#### **Chum**

Mid September to Late October - Area 23

- Limited small fleet gill net opportunities in Barkley Sound dependent on the pre-season forecast and allocation guidelines.

Mid September to Late October - Area 24

- Limited small fleet gill net opportunities in Clayoquot Sound dependent on the pre-season forecast and allocation guidelines.

Mid September to Late October - Area 25

- Possible gill net chum fisheries in outer Nootka Sound (Subarea 25-7 and portion of 25-6). Maximum 50 boat days per week operating a maximum 2 days per week (fleet size of 25 or less).
- Limited small fleet gill net fishery in Esperanza Inlet (Subarea 25-13 and portions of 25-14) dependent on the pre-season forecast and allocation guidelines.
- Possible seine opportunity dependent on abundance levels and allocation considerations.
- Terminal fisheries in Tlupana Inlet based on identified surplus chums to enhanced systems.

October - Area 21 and 121

- Dependent on pre-season forecast Area E gill net fishery anticipated for two days per week starting and limited fleet seine fisheries October 01-08 (daylight only) 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.

## **9.16. Area G Troll**

### **9.16.1. Sockeye**

No opportunities to harvest Barkley Sound or Fraser River sockeye in 2011 are planned based coast-wide gear shares and the commercial licence area allocation plan (Section 9.4).

### **9.16.2. Fraser River Pink**

There is anticipated fishable surplus of Fraser pink salmon anticipated in 2011.

### **9.16.3. Chum-West Coast Vancouver Island**

Troll opportunities will be dependent on abundance and allocation guidelines. Consultations with Area G troll may be conducted to discuss possible terminal chum opportunities. The chum return is forecasted to again be below average for the SWVI at 565,000 – compared to the 1995 – 2009 average of 1,054,000 fish. There may be opportunities available to Area G Troll in areas such as Nootka Sound (Areas 25 and 125) and Nitinat (Areas 21 and 121). This will be determined in-season based on escapement and coast-wide gear allocation. Terminal chum opportunities usually occur in early October. Chum salmon may also be retained as incidental catch in other directed fisheries, such as the chinook fishery in Areas 23 to 27, and 123 to 127.

### **9.16.4. Coho**

Management measures to protect stocks of concern, including Interior Fraser and Strait of Georgia coho, will constrain WCVI fisheries in the offshore area. However, there may be potential opportunities available for select hatchery marked coho retention during directed

chinook fisheries. Any fishery that allows select hatchery marked coho retention will occur after September 15 when Interior Fraser and Strait of Georgia coho have migrated through the fishing area.

Area G has requested access to wild coho and select hatchery marked coho when levels of abundance are high. This request is currently being reviewed by departmental staff. The Department's objective is to limit the Interior Fraser River coho to an exploitation rate of 3% (not including terminal harvest or systems experiencing strong escapements). This request requires additional evaluation to determine impacts on the ability to meet the Interior Fraser coho objective (Section 4.1.2) and consistency with the salmon allocation policy.

#### **9.16.5. Chinook**

Under the PST, WCVI chinook fisheries are based on an Aggregate Abundance Based Management (AABM) model. Fisheries are prosecuted on an aggregate of United States and Canadian chinook stocks. Initial abundance forecasts provide estimates for two years in advance. For management purposes, the chinook fishery year encompasses the period October to September.

For the 2010/2011 season, which ends September 2011, pre-season fishing plans could be subject to change pending the results of consultations focussing on the conservation and protection of Fraser River, Lower Georgia Strait and WCVI chinook stocks. The consultation process begins in the early spring period as part of the IFMP planning process.

For planning purposes, the preliminary Area G harvest level is determined by subtracting the anticipated First Nations (5,000) and recreational (55,000) catches from the total TAC of 196,800 chinook. The WCVI commercial Area G troll fishery harvest level is therefore 136,800 chinook. Adjustments to this harvest level may be made inseason based upon observed First Nations and recreational catches.

Within the bounds of the PST provisions, Area G troll chinook fisheries will be managed to limit impacts on domestic stocks of concern, including Fraser River Spring 4<sub>2</sub> chinook, Fraser River Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook, WCVI chinook, Lower Strait of Georgia (LGS) chinook, and Interior Fraser coho.

Fraser River Spring 4<sub>2</sub> chinook, Fraser River Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook stocks are present off the WCVI during the spring and summer period, most prevalently when they landfall on their migration back to the Fraser River. Time/area and effort restrictions, similar to the previous year, will be implemented to limit Area G impacts on Fraser chinook stocks of concern.

LGS chinook, identified in the fishery by the tagged Cowichan River stock, are broadly distributed in time and area on the WCVI. A number of management approaches have been utilized in previous troll fisheries to limit impacts on LGS chinook. Initially, limits were set on Cowichan chinook CWT encounters with the objective of a 10% reduction in harvest rate on LGS chinook. Given the uncertainty associated with the relatively small proportion of LGS chinook in the WCVI fishery, the approach of reducing the overall Area G harvest rate by reducing the Area G TAC was adopted to limit impacts in 2008. For 2011, it is anticipated that

the substantial reduction in Area G harvest rate under the 2009 PST agreement should 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 continue 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 Area G in 2010/2011 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 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.

### **Anticipated Chinook Opportunities for Area G Troll**

Management actions will be taken in the 2010/2011 chinook year to limit the annual exploitation rate on LGS chinook, Fraser River Spring 4<sub>2</sub> chinook, Fraser River Spring 5<sub>2</sub> and Summer 5<sub>2</sub> chinook, WCVI chinook and Interior Fraser coho. The following fishing plan is subject to change if the status of a domestic stock passing the WCVI changes to a “stock of concern”. Fishery openings are planned to distribute harvests proportionately over all fishery periods subject to constraints to protect stocks of concern.

Area G has requested the department to consider flexibility in determining fishing opportunities regarding the minimum size limit of chinook, earlier start date of the plug fishery and coho retention. Staff are currently reviewing the requests.

### **October to March**

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 4<sub>2</sub> chinook is stock of concern. Fraser River Spring 4<sub>2</sub> chinook appear to migrate off the continental shelf outside the WCVI troll harvest area. However, a portion of the stock is vulnerable to the troll fishery on their return migration. In 2008/09, a time–area closure for the WCVI troll was increased to provide further protection for Early-Timed Fraser chinook during the period in which they were

vulnerable to the fishery.

A full time-area closure will be maintained from March 15 to April 18 to avoid interception of Fraser River Spring 4<sub>2</sub> chinook.

### **April 19 to June 15**

Stock composition data indicate the relative abundance of Fraser and Columbia chinook in the fishery increases during this period. Many of the Fraser and Columbia origin stocks vulnerable to the fishery during this period are relatively abundant. With the exception of LGS chinook and Fraser River Spring 4<sub>2</sub> chinook in SWVI 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 5<sub>2</sub> and Summer 5<sub>2</sub> chinook and Interior Fraser 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 portions of Area 123 open May 7. These management actions are implemented in order to avoid interception of Fraser River spring 4<sub>2</sub> chinook. For May 1 through May 30 the boat day cap is 1000 boat days and for June 1 through June 15 time period, the boat day cap is 650 boat days.

### **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 coho and WCVI Chinook. 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 5<sub>2</sub> and Fraser River summer 5<sub>2</sub> chinook. For the 2010/11 year, the Department is reviewing allowing the fishery to open in the last week of July subject to an analysis of impacts on Fraser River spring 5<sub>2</sub> and Fraser River summer 5<sub>2</sub> chinook and other stocks of concern.

### **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 5<sub>2</sub> and Fraser River summer 5<sub>2</sub> chinook are less vulnerable to the fishery at this time. However, opportunities for harvest in August are limited due to increasing interception of Interior Fraser coho and WCVI Chinook.

The harvest level may be adjusted to ensure sufficient WCVI AABM TAC remains for First Nation and recreational fisheries. In addition, the fishery will be managed to minimize mortality on Interior 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 2011**

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 coho and WCVI chinook, which are present until about mid-September. After mid-September, Interior Fraser coho are not vulnerable to the fishery and retention of adipose fin clip (AFC) coho has been permitted in recent years. In addition, September may be utilized to harvest any remaining available WCVI AABM harvest as the chinook model calendar year ends on September 30<sup>th</sup>.

The 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 must be managed to avoid interception of coho and WCVI chinook. After September 15, retention of adipose fin clip (AFC) hatchery origin coho may be permitted.

## **October 2011 through winter time period to May 2012**

As of October 2011, chinook fisheries will be managed under PST defined allowable limits for the 2011/12 fishery year. For the winter period from October to early-March, low intensity fisheries are anticipated. Harvest will be distributed throughout the chinook annual fishing year (October 1 to September 30) so as not to disproportionately impact any particular stock. In the March to May period, management measures will likely continue to be required to protect Fraser Spring 4<sub>2</sub> Chinook.

### **9.17. Area H Troll**

#### **9.17.1. Sockeye**

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 Late Run and Cultus Lake sockeye, Nimpkish sockeye, Sakinaw sockeye and Interior Fraser coho. In 2011, directed commercial fisheries targeting Fraser River sockeye returns are anticipated. The 2011 Fraser River sockeye pre-season forecast is expected to be available by late March. Fishing opportunities will be planned and managed consistent with Fraser River sockeye management objectives.

If an opportunity is available, the following Subareas are expected to open in late July to mid August: 12-1, a portion of 12-2, 12-3, 12-4, 13-7 (excluding Deepwater Bay), 13-8, 13-9 and 13-27 to 13-32. Additional Subareas may open in upper Area 12 subject to the development of a fishing strategy for all gear types in that area. A staggered opening (from north to south) or closure (from south to north) may be considered if it results in increased fishing time without increased impacts on stocks of concern.

In addition, Areas 18 and 29 may open in relation to the abundance and timing of Early Summer and Summer run stocks which may not be timed with opportunities in Johnstone Strait. Fishing opportunities in the lower Strait of Georgia will be confirmed in-season following consultation with industry and will depend on run size, diversion rate, and remaining Area H allocation.

See Appendix 10 for demonstration fisheries under consideration.

### **9.17.2. Pink**

#### **9.17.2.1. Fraser River Pink**

2011 is a dominant cycle year for Fraser River pink salmon; above average returns are expected. Fisheries will be planned and managed consistent with Fraser River sockeye, Interior Fraser coho, Fraser River steelhead, and Fraser River pink management objectives.

#### **9.17.2.2. Mainland Inlet Pink**

Odd years are typically off-cycle years for most mainland inlet pink systems. Fishing opportunities in 2011 are not anticipated but will be confirmed in-season based on abundance assessments (e.g. over flights, escapement counts and possibly assessment fisheries). A troll fishery may be conducted in late July in Area 12 to assist in determining the abundance of pink. Boundaries will be determined in-season. Coho sensitive areas will remain closed. Fishing opportunities will be considered in mid to late August to mid-September in Area 12, 13, 18 and 29 if stocks appear to be returning in sufficient abundance. Details will be determined in-season.

### **9.17.3. Chum**

Early October/Late October - Area 12 and 13

- Johnstone Strait chum returns are highly variable, however they are expected to return below to near target in 2011 based on the below average parental brood abundance in 2007 and higher marine survivals of out migrating stocks in 2008.
- Chum fishing opportunities are anticipated to commence in the first week of October. The “mixed-stock harvest strategy” chum fishing plan will be finalized pre-season following consultations with stakeholders.
- See Section 9.17 for demonstration fisheries under consideration.

October/November – Area 14-17

- Chum fishing opportunities in terminal areas will be determined in-season and discussed through pre-season meetings and the chum advisory process.

Mid to Late October - Area 29

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

### **9.17.4. Coho**

There will be no coho retention opportunities in 2011; however, limited terminal assessment fishery opportunities may be considered subject to in-season information but are not anticipated.

### **9.17.5. Chinook**

Due to concerns for Lower Strait of Georgia stocks, no directed chinook fisheries are planned for 2011 and there will be non-retention in fisheries directed at other stocks. Limited terminal assessment fishery opportunities may be considered subject to in-season information.

### **9.18. 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.

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 Department is considering the following demonstration fishery concept proposals for implementation in 2011:

## **1) 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 2009 and 2010.

The purpose of this experimental fishery project is to demonstrate the effectiveness of harvesting Fraser River sockeye 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 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.

**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 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 Canadian Commercial TAC is identified. It is anticipated that this experimental fishery would take place sometime within the time period of late July to mid to late August.

Fishing activities would be scheduled to minimize potential impacts on other fisheries in this area including First Nations and Area E gill net fisheries. 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 Area B 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 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; there will be non-retention of all other species.

**MONITORING PLAN** - As per the Area B and H Fraser River sockeye 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 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.

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## 2) Area B Seine Johnstone Strait Chum Effort Share Based Demonstration Fishery

Note: This proposal is tentative and currently under discussion between the Department and the Area B Harvest Committee.

The Area B Harvest Committee has expressed an interest in continuing to further explore options for a share based approach to the Johnstone Strait chum seine fishery.

In addition to evaluation work that was done in 2008, considerable planning and modelling work will be required to further explore what options might be available for a full share based approach to this fishery that can adequately meet the Johnstone Strait chum fixed harvest rate management objectives (20% harvest rate) as well as Area B harvest interests in this fishery. Abundance based shares are not being considered for 2011, however discussions are underway regarding effort based shares.

**REGION** - South Coast

**PARTICIPANTS** - All Area B license holders.

**LOCATION OF FISHERY** - The fishing area that will be considered is Johnstone Strait (portions of Areas 12 and 13).

**GEAR TYPE** - Seine gear and selective fishing measures are mandatory and are specified by license conditions.

**TIME FRAME** - The fishery would occur during the October time period.

**ALLOCATION** - Allocation would be based on the assumption that effort can be shared between the licence holders without exceeding the fixed 20% harvest rate objective. Further work is required to explore options and possibilities of an effort share based approach to this fishery.

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 is a requirement for 100% dockside validation of the catch at designated off-loading locations. Over flights will be conducted and charter patrol will monitor the fishery.

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### **3) 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 and 2010 and the limited fishery that occurred in 2008.

**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 Area 18 and portions of Area 29 off the Fraser River mouth. Note that a separate demonstration fishery proposal is provided for a demonstration – experimental seine fishery in the lower Fraser River. In Area 20, additional measures will be in place to minimize impacts on coho. Consideration for seine fishing opportunities in Area 20 will also be dependant 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 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.

**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 mid July to mid to late August.

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 dependant 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 limited in boat days due to impacts on coho.

**ALLOCATION** - The fishery will be based on available Fraser River sockeye commercial TAC. Shares between licence areas will be based on the 2011 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 licensed vessels 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 will remain fixed in-season subject to amendments for seasonal 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 if necessary following Fraser River Panel meetings (usually Tuesday and Friday) depending on abundance and stock composition.

Quota will be transferable within each licence area (e.g. Area B to Area B or Area H to Area H) as well as between licence areas (e.g. Area B to Area H or Area H to Area B). Transfers to or from other South Coast or Pacific Integrated Fisheries Initiative (PICFI) commercial fisheries will be considered.

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. By-catch retention species that are permitted during directed sockeye fisheries will not be ITQ.

**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. Over flights will be conducted and charter patrol will monitor the fishery.

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.

**CONTACTS** - DFO – Matt Mortimer, Resource Management,  
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ABHC – Chris Ashton, Area B Seine,  
Phone: 604-725-0137, Email: [areab@telus.net](mailto:areab@telus.net)

AHHC – Peter Sakich, Area H Troll  
Phone: 250-247-8380, Email: [sakich@island.net](mailto:sakich@island.net)

#### **4) Area B Seine, Area D Gillnet and Area H Troll Fraser River Pink Individual Transferable Quota (ITQ) Demonstration Fishery.**

This demonstration fishery will be similar to the Area B and Area H quota based ITQ Fraser River pink that was planned for 2009.

**REGION** - South Coast and Lower Fraser River Areas

**PARTICIPANTS** - All Area B, D and H licence holders.

**LOCATION OF FISHERY** - Seine fishing areas that will be considered in the fishery include: Johnstone Strait (portions of Areas 12 and 13), portions of Area 18 and portions of Area 29 off the Fraser River mouth.

Gillnet fishing areas that will be considered in the fishery include: Johnstone Strait (portions of Areas 12 and 13) and possibly (pending further discussion) portions of Area 14.

Troll fishing areas that will be considered in the fishery include: Johnstone Strait (portions of Area 12 and 13), portions of Area 18 and portions of Area 29 off the Fraser River mouth.

In Areas 12 and 13 additional restrictions will be identified around test-fishing locations to minimize impacts on test-fishery assessment requirements.

**GEAR TYPE** – Seine, Gillnet and Troll gear, selective fishing measures are mandatory and are specified by licence conditions.

**TIME FRAME** - This fishery is planned to occur when Fraser River pink Canadian Commercial TAC is identified. It is anticipated that this fishery will take place within the time period of late August to mid September.

The Area H troll fishery is anticipated to be open on a 7 day per week basis as TAC permits. The Area B seine and the Area D gillnet fishery is expected to be open 5 to 7 days per week and will be dependant on the amount of available TAC and the available time frame for the fishery.

**ALLOCATION** - The fishery will be based on available Fraser River pink commercial TAC. Shares between licence areas will be based on the 2011 commercial allocation plan.

The Fraser River pink quota (ITQ) will be determined by DFO by dividing the respective Area B and Area H Fraser River pink allocations by the total number of licensed vessels for Areas B, D 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 will remain fixed in-season subject to amendments for seasonal quota transactions.

The TAC may be distributed over the course of the fishery in increments.

The TAC will be announced by fishery notice and may be adjusted if necessary following Fraser River Panel meetings (usually Tuesday and Friday) depending on abundance.

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 and/or Area D or Area H to Area B and/or Area D or Area D to Area B and/or Area H). Transfers to or from other South Coast or Pacific Integrated Fisheries Initiative (PICFI) commercial fisheries will be considered.

The target species pink, by-catch retention of chum 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 is a requirement for 100% dockside validation of the catch at designated off-loading locations. Over flights will be conducted and charter patrol will monitor the fishery.

**CONTACTS** - DFO – Matt Mortimer, Resource Management,  
Phone: 250-286-5886, Email: [matt.mortimer@dfo-mpo.gc.ca](mailto:matt.mortimer@dfo-mpo.gc.ca)

AHC – Chris Ashton, Area B Seine,  
Phone: 604-725-0137, Email: [areab@telus.net](mailto:areab@telus.net)

AHHC – Peter Sakich, Area H Troll  
Phone: 250-247-8380, Email: [sakich@island.net](mailto:sakich@island.net)

ADHC – Ryan McEachern  
Phone: 604-219-0014, Email: [ryanmceachern@shaw.ca](mailto:ryanmceachern@shaw.ca)

**5) Area B Seine harvesting of pinks salmon in Area 12 with a shallow seine net.**

This is a new demonstration fishery proposed for 2011. The purpose of this demonstration fishery project is to test whether pink salmon can be effectively harvested with minimal sockeye by-catch. If this fishery demonstrates this method to be effective, the Area B Harvest Committee will be approaching DFO to discuss the option of a targeted pink fishery from the period of mid-August through early September when sockeye-directed fisheries are normally closed.

**REGION** - South Coast

**PARTICIPANTS** - One or two Area B seine vessels

**LOCATION OF FISHERY** - Seine fishing areas that will be considered in the fishery include: Johnstone Strait (portions of Areas 12 and portions of Area 13).

**GEAR TYPE** – Shallow seine net (3-strip/375 mesh). Seine selective fishing measures are mandatory and are specified by licence conditions.

**TIME FRAME** - This fishery is planned to occur when Fraser River pink and sockeye Canadian Commercial TAC (CCTAC) is identified. It is anticipated that this fishery will take place within the time period of early to mid August. This fishery will only take place during Area B seine commercial openings.

**ALLOCATION** - The fishery will be based on available Fraser River pink and sockeye commercial TAC. Shares between licence areas will be based on the 2011 commercial allocation plan.

The target species is pink salmon. Retention of chum salmon is permitted. Sockeye retention will be subject to available CCTAC. In the event there is no sockeye CCTAC, sockeye will be released. 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 off-loading locations. The vessel(s) participating in the shallow seine pink demonstration fishery will have an observer on board to verify effectiveness of harvesting pinks with a shallow seine. Charter Patrol will monitor the vessel for by-catch.

**CONTACTS** - DFO – Matt Mortimer, Resource Management,  
Phone: 250-286-5886, Email: [matt.mortimer@dfo-mpo.gc.ca](mailto:matt.mortimer@dfo-mpo.gc.ca)

AHC – Chris Ashton, Area B Seine,  
Phone: 604-725-0137, Email: [areab@telus.net](mailto:areab@telus.net)

## **6) Area H troll Johnstone Strait Chum Individual Transferable Effort demonstration fishery**

It is anticipated that this fishery will be similar to the effort based ITQ fishery that occurred in 2009 and 2010.

**REGION** - South Coast

**PARTICIPANTS** - All Area H troll licence holders.

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

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

**TIME FRAME OF FISHERY** - The fishery is anticipated to commence during the last few days in September until the first few days in November and 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 potential closures on seine fishing days depending on the structure of the seine fishery.

**ALLOCATION** Boat day allocations are based on the anticipated amount of effort and the distribution of that effort in order to stay within Area H's 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 in 2010 is under review and will be confirmed prior to the start of the 2011 season. Boat days will be permitted to be transferred between other Area H licence holders within fishing periods but not between periods. The carry-over rule between periods is currently under review.

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. There will be a continuation of the Vessel Monitoring System pilot.

### **CONTACTS**

DFO – Terry Palfrey, Resource Management

Phone: 250-756-7158, Email: [terrence.palfrey@dfo-mpo.gc.ca](mailto:terrence.palfrey@dfo-mpo.gc.ca)

AHC – Peter Sakich, Area H Troll,

Phone: 250-247-8380, Email: [sakich@island.net](mailto:sakich@island.net)



## **7) Area E Gill Net Chinook Pooled Demonstration Fishery**

**REGION** - Lower Fraser Area

**PARTICIPANTS** - All Area E licence holders with a valid 2011 salmon licence will be eligible to register for pools.

**LOCATION OF FISHERY** - Area 29 – Lower Fraser R. Mainstem (Mission to Steveston).

**GEAR TYPE** - Gill net gear -minimum 8 inch (203mm) mesh size.

**TIME FRAME** - Target dates are mid to late August.

**ALLOCATION** - The target species for this demo fishery is Fraser R. Chinook (Summer Run 4<sub>1</sub> chinook– i.e.: South Thompson). The amount available for harvest in 2011 will be determined pre-season and is expected to be up to 2,000 pieces. This demonstration will be subject to in-season constraints, including the availability of sockeye by-catch.

**MONITORING PLAN** - In addition to requirements outlined in the Area E Condition of Licence, there is a requirement for 100% dockside validation of the catch at designated off-loading locations.

**CONTACTS** - DFO - Barbara Mueller, Resource Management – Lower Fraser Area  
(Phone: 604-666-2370 / Email: [barbara.mueller@dfo-mpo.gc.ca](mailto:barbara.mueller@dfo-mpo.gc.ca))

AHC – Bob McKamey, Area E Gill net (AEHC)  
Phone: 604-826-2658 / Email: [aehc@shaw.ca](mailto:aehc@shaw.ca)

## **8) Area E Gill Net Pink Beach Seine Demonstration fishery**

**REGION** - Lower Fraser Area

**PARTICIPANTS** - Beach Seine Crew(s) will be identified pre-season – through AEHC.

**LOCATION OF FISHERY** - Area 29 – Lower Fraser R. Mainstem. Potential site location includes the Duncan Bar Area and other sites to be determined.

**GEAR TYPE** - Beach Seine gear – beach seine net specifications

**TIME FRAME** - This fishery would be planned to take place once a Fraser River Pink TAC is identified, potentially starting in late August. Fishing dates/times would be confirmed in-season through the FRP process.

**ALLOCATION** - For this demonstration fishery to proceed, Area E Fraser River Pink TAC is required and is to be confirmed in-season.

**MONITORING PLAN** - In addition to requirements outlined in the Area E Condition of Licence, there is a requirement for 100% dockside validation of the catch at designated off-loading locations.

**CONTACTS** - DFO - Barbara Mueller, Resource Management – Lower Fraser Area, Phone: 604-666-2370, Email: [barbara.mueller@dfo-mpo.gc.ca](mailto:barbara.mueller@dfo-mpo.gc.ca)

AHC – Bob McKamey, Area E Gill net (AEHC)  
Phone: 604-826-2658, Email: [aehc@shaw.ca](mailto:aehc@shaw.ca)

## **9) Area E Gill Net Chum Beach Seine Demonstration fishery**

**REGION** - Lower Fraser Area

**PARTICIPANTS** - Beach Seine Crew(s) will be identified pre-season – through AEHC.

**LOCATION OF FISHERY** - Area 29 – Lower Fraser R. Mainstem. Potential site location includes the Duncan Bar Area and other sites to be determined.

**GEAR TYPE** - Beach Seine gear – beach seine net specifications

**TIME FRAME** - This fishery would be planned to take place once a Fraser River Chum TAC is identified in about mid-October. Fishing dates/times would be confirmed in-season through the integrated planning process (Chum Working Group).

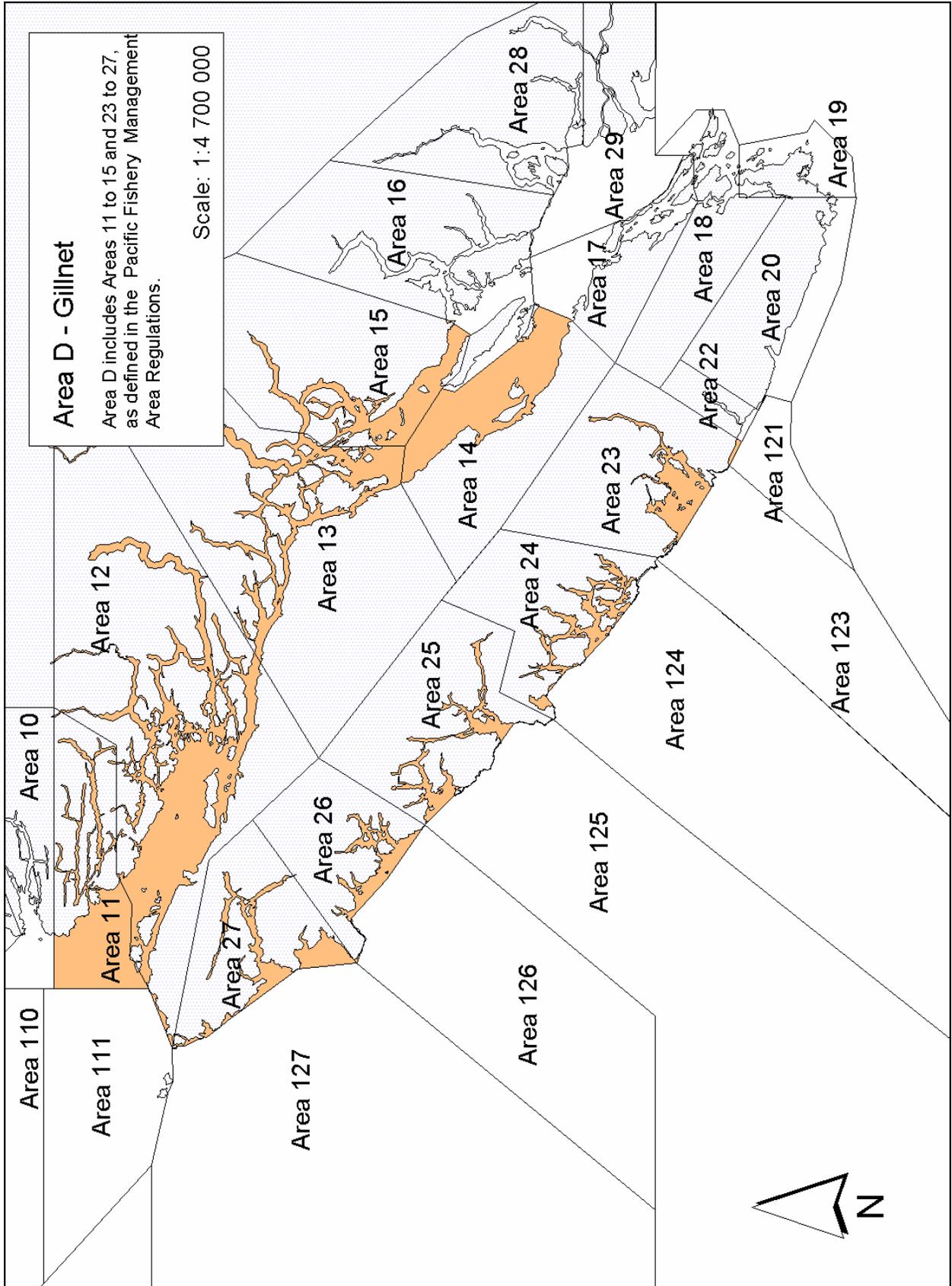
**ALLOCATION** - For this demonstration fishery to proceed, Area E Fraser River Chum TAC is required and is to be confirmed in-season.

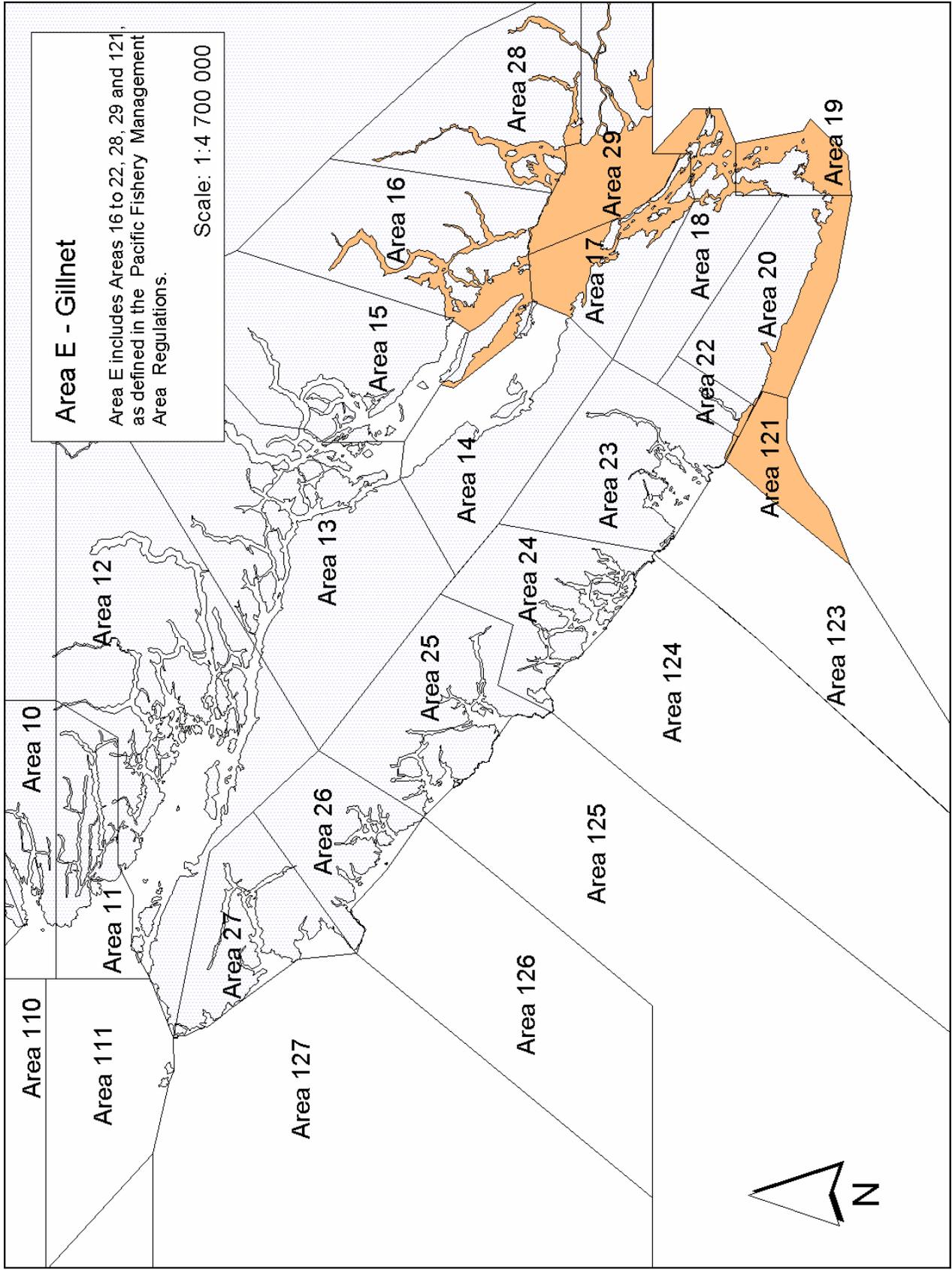
**MONITORING PLAN** - In addition to requirements outlined in the Area E Condition of Licence, there is a requirement for 100% dockside validation of the catch at designated off-loading locations.

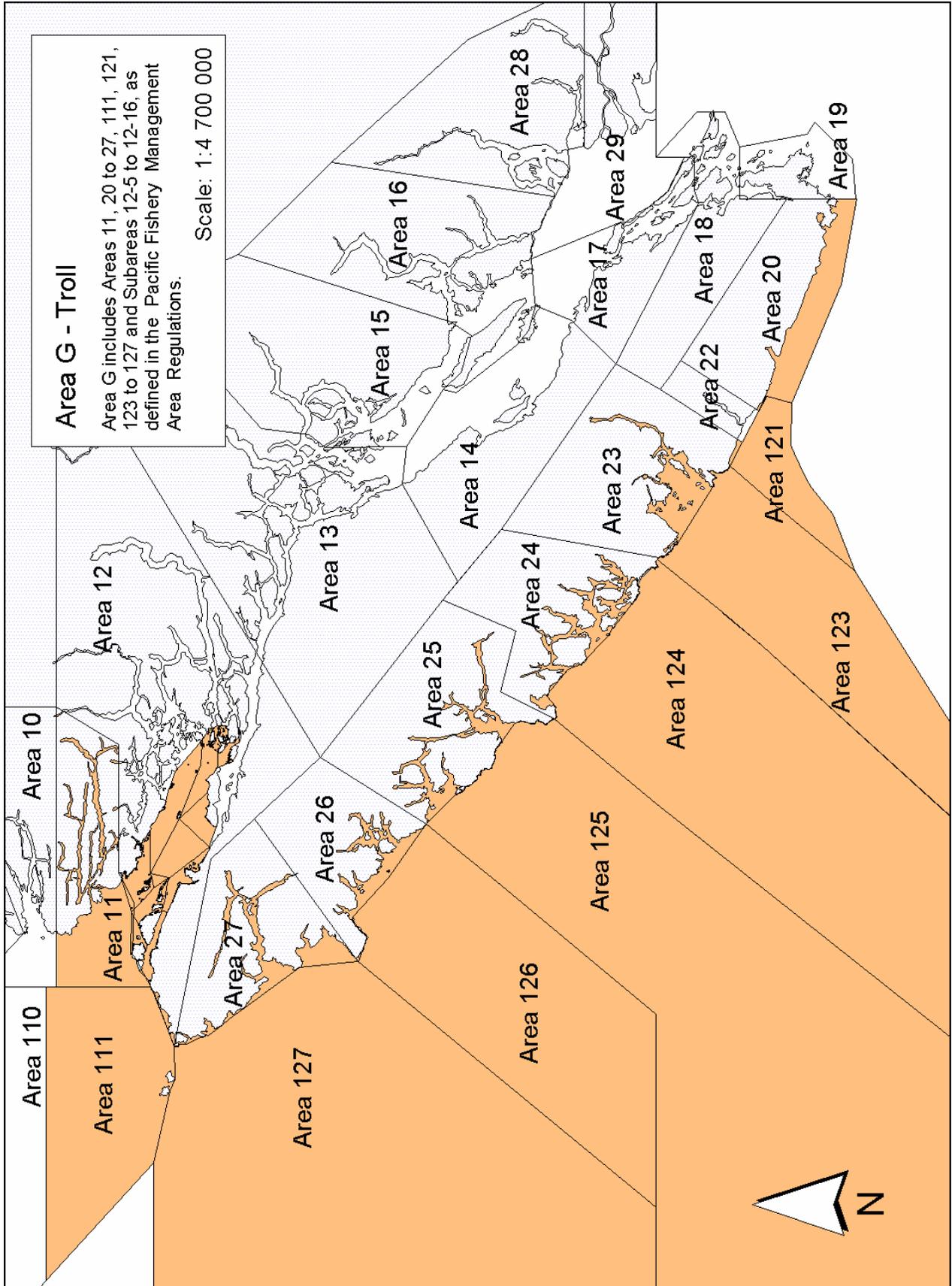
**CONTACTS** - DFO - Barbara Mueller, Resource Management – Lower Fraser Area, Phone: 604-666-2370, Email: [barbara.mueller@dfo-mpo.gc.ca](mailto:barbara.mueller@dfo-mpo.gc.ca)

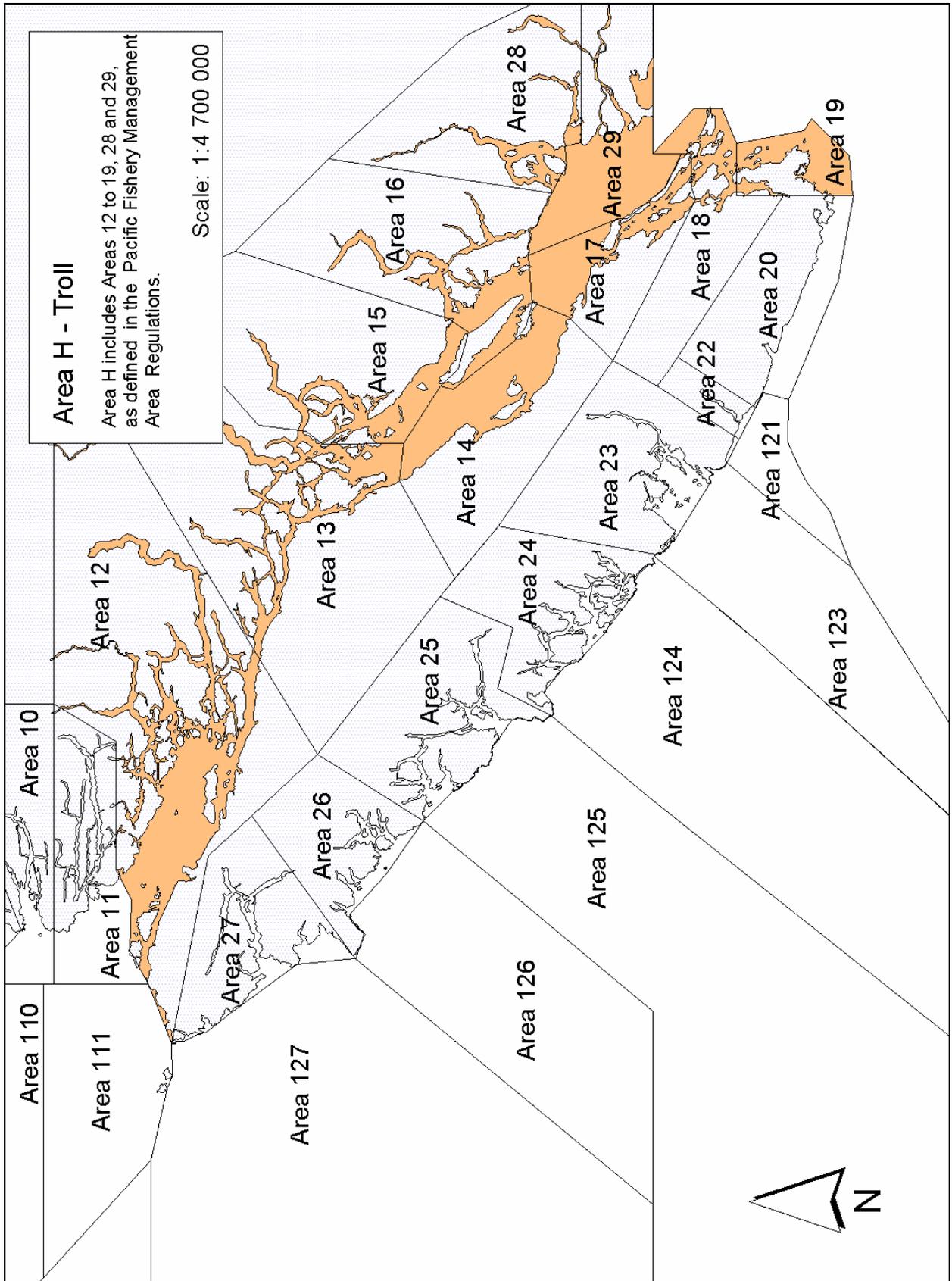
AHC – Bob McKamey, Area E Gill net (AEHC)  
Phone: 604-826-2658, Email: [aehc@shaw.ca](mailto:aehc@shaw.ca)

**10. APPENDIX 10 – MAPS OF THE COMMERCIAL SALMON LICENCE AREAS**





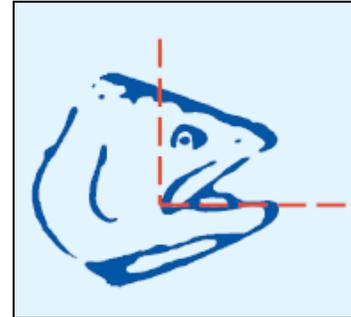




## 11. APPENDIX 11 – CHINOOK AND COHO HEAD RETENTION REQUIREMENTS FOR FREEZER TROLLERS

### 11.1 Head Retention

Troll vessel masters that are freezing their catch at sea must retain all heads from all Chinook and coho kept. 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 centimetre behind the eye, and ending at the back corner of the mouth. The figure to the right indicates the minimum portion of each head that must be retained



### 11.2 Head Storage

Heads must be stored using special purpose bags and labels available free of charge from the Department. These bags and labels are supplied free of charge by the Department and can be obtained in three ways:

- a) Pick them up at Pacific Fishery Licencing Unit offices in Nanaimo, Prince Rupert, and Vancouver.
- b) Make arrangements for delivery by contacting the Department toll-free at 1-866-483-9994.
- c) Get them from coded-wire tag samplers at fish plants.

Each bag must contain only the heads from a single week of fishing (where weeks run from Sunday to Saturday). This requirement had been added to maximize the run timing information obtained through coded wire tag sampling of the heads.

Finally, heads must be kept frozen until delivery.

### 11.3 Head Delivery

The vessel master shall ensure that all bags containing heads are offloaded at the first designated fish landing station at which Chinook and/or coho catch is offloaded. All bags must be securely closed, and labelled with vessel name and V.R.N., the first and last day of fishing on which the heads contained in the bag were caught, and the Management Area(s) in which those salmon were caught. Contact J O Thomas & Assoc. for sampling and collection details: phone toll-free 1-800-663-3344. Please call one day in advance of offload.

For exact head retention requirements, trollers freezing their catch should refer to their Conditions of Licence.

## 12. APPENDIX 12 – LOGBOOK SAMPLES

Will be available for the final IFMP

### 13. APPENDIX 13: SALMON ENHANCEMENT OBJECTIVES

**DFO's Salmonid Enhancement Program major facilities (OPS) undertake salmon production to support vulnerable stocks and to provide harvest opportunities through sustainable fisheries. DFO also works with hatcheries operated by volunteers and community and First Nation groups under contract to DFO to meet shared objectives for cooperative fisheries, public stewardship, habitat conservation and fish production.**

#### **i. General**

Production targets are proposed in the IFMP for the coming brood year following planning discussions held within DFO, usually in January of each year. Several DFO sectors are involved in the production planning meetings including Oceans, Habitat and Enhancement Branch (OHEB), of which SEP is a part, Stock Assessment Division (StAD) and Fisheries and Aquaculture Management Branch (FAM). These meetings involve biologists, fish management personnel, hatchery staff and Community Advisors. Suggestions for changes to production strategies are proposed and discussed. Reasons for proposed changes may include: need to reduce targets where there is a large surplus of adults returning to the river; need to increase targets where a stock needs rebuilding; or need to increase targets to produce enough fish to tag for use as an indicator stock. The biological implications are always considered and priorities developed. Proposals for changes to targets that were agreed to at the meetings and approved by DFO Area Managers are included in the IFMP and form part of the external consultative process. Reasons for the proposed changes are given in the comments following the tables. For 2011 the format has been changed, leaving out the egg targets and adding information on type and numbers of marks.

#### **ii. Chinook salmon**

**Table 1a) Proposed 2011 brood production targets for Chinook salmon at DFO enhancement facilities**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Big Qualicum R	Big Qualicum R	Fall	Big Qualicum R	Smolt 0+	AdCWT	550,000	3,500,000	3,600,000
			Horne Lk	Smolt 0+		0	400,000	0
Capilano R	Capilano R	Fall	Burrard In	Seapen0+		0	100,000	100,000
			Capilano R	Smolt 0+		0	460,000	460,000
Chehalis R	Chehalis R	Summer	Chehalis R	Smolt 1+		0	0	*100,000
			Chehalis R	Smolt 0+		0	390,000	500,000
	Harrison R	Fall	Harrison R	Smolt 0+	AdCWT	300,000	300,000	300,000
Chilliwack R	Chilliwack R	Summer	Chilliwack R	Smolt 0+		0	410,000	500,000
		Fall	Chilliwack R	Smolt 0+	Otolith, AdCWT CWTonly	1,000,000 200,000 100,000	1,000,000	1,000,000

		Spring	Chilliwack R	Smolt 0+	AdCWT	0	50,000	50,000
Conuma R	Burman R	Fall	Burman Est	Seapen0+	Otolith	350,000	350,000	350,000
	Conuma R	Fall	Conuma Est	Seapen0+	Otolith	1,700,000	2,700,000	2,700,000
	Gold R	Fall	Gold Est	Seapen0+	Otolith	300,000	300,000	300,000
	Sucwoa R	Fall	Sucwoa Est	Seapen0+	Otolith	40,000	40,000	40,000
	Tlupana R	Fall	Tlupana Est	Seapen0+	Otolith	40,000	40,000	40,000
Inch Cr	Maria Sl	Summer	Hope Sl	Smolt 0+		0	0	
L Qualicum R	L Qualicum R	Fall	L Qualicum R	Smolt 0+		0	2,250,000	2,250,000
Nitinat R	Nitinat R	Fall	Nitinat Lk	Seapen0+	Otolith	4,000,000	3,000,000	4,000,000
		Fall	Sooke Hb	Seapen0+	Otolith	50,000	50,000	50,000
	Sarita R	Fall	Poett Nook	Seapen0+	Otolith	250,000	250,000	250,000
		Fall	Sarita R	Smolt 0+	Otolith	250,000	250,000	250,000
Puntledge R	Puntledge R	Summer	Comox Lk	Fed Spr	AdCWT	90,000	0	250,000
	Puntledge R	Summer	Puntledge R	Seapen0+		0	400,000	0
				Smolt 0+	AdCWT	180,000	1,400,000	1,200,000
		Fall	Puntledge R	Smolt 0+	AdCWT	60,000	1,200,000	1,200,000
Quinsam R	Quinsam R	Fall	Campbell R	Unfed	Otolith	960,000	960,000	960,000
			Discovery Pass	Seapen0+	Otolith AdCWT	1,000,000 100,000	1,000,000	1,000,000
			Quinsam R	Smolt 0+	Otolith AdCWT	1,900,000 500,000	1,900,000	1,900,000
Robertson Cr	Nahmint R	Fall	Nahmint R	Seapen0+	AdCWT	25,000	60,000	60,000
				Smolt 0+	Otolith AdCWT	225,000 25,000	165,000	165,000
Robertson Cr	Robertson Cr	Fall	Robertson Cr	Smolt 0+	Otolith AdCWT	6,000,000 450,000	6,000,000	6,000,000
Shuswap R	Shuswap R Low	Summer	Shuswap R Low	Smolt 0+	AdCWT	500,000	530,000	530,000
	Shuswap R Middle	Summer	Shuswap R Middle	Egg Plant		0	0	50,000
				Smolt 0+	AdCWT	150,000	150,000	150,000
Spius Cr	Coldwater R	Spring	Coldwater R	Fed Spr		0	0	30,000
				Smolt 1+		0	65,000	65,000
	Nicola R	Spring	Nicola R	Fed Spr		0	0	50,000
				Smolt 1+	AdCWT	200,000	200,000	200,000
	Salmon R/TOMF	Spring	Salmon R/TOMF	Fed Spr		0	70,000	70,000
	Spius Cr	Spring	Spius Cr	Fed Spr		0	0	30,000
				Smolt 1+		0	65,000	65,000
Tenderfoot Cr	Ashlu Cr	Summer	Ashlu Cr	Smolt 0+		0	100,000	0
	Cheakamus R	Summer	Cheakamus R	Smolt 0+		0	100,000	100,000
	Porteau Cv	Summer	Elaho R	Fed Spr		0	800,000	500,000
			Porteau Cv	Seapen0+		0	800,000	500,000
	Squamish R	Summer	Squamish R	Smolt 0+		0	100,000	0

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTonly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

\* Two rearing strategies are listed in the table above. One or the other rearing strategy will be implemented, pending discussions that will take place this Spring 2011, regarding biological considerations.

**Table 1b) Proposed 2011 brood production targets for chinook salmon at Community Economic Development Program and Designated Public Involvement Projects.**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Alouette R	Chilliwack R	Fall	Alouette R	Smolt 0+		0	50,000	75,000
Chapman Cr	Lang Cr	Fall	Chapman Cr	Smolt 0+		0	100,000	100,000
Clayoquot	Kennedy R Low	Fall	Kennedy R Low	Smolt 0+		0	380,000	380,000
			Kennedy R Up	Smolt 0+		0		100,000
Cowichan R	Cowichan R	Fall	Cowichan Est	Seapen0+		0	250,000	0
			Cowichan R	Fed Spr		0	150,000	0
				Smolt 0+	AdCWT	650,000	600,000	700,000
Englishman Enh	L Qualicum R	Fall	Englishman R	Fed Spr		0	210,000	210,000
Esquimalt Hb	Nitinat R	Fall	Esquimalt Hb	Seapen0+		0	225,000	0
Gillard Pass	Phillips R	Fall	Fanny Bay/JNST	Seapen 1+	AdCWT	25,000	25,000	25,000
			Fanny Bay/JNST	Seapen0+	AdCWT	50,000	50,000	75,000
			Phillips R	Smolt 0+	AdCWT	50,000	50,000	75,000
			Phillips R	Smolt 1+	AdCWT	25,000	25,000	25,000
Goldstream R	Goldstream R	Fall	Goldstream R	Smolt 0+		0	240,000	240,000
Gwa'ni	Nimpkish R	Fall	Nimpkish R Low	Smolt 0+	Otolith	112,500	112,500	112,500
			Woss Lk	Smolt 0+	Otolith	112,500	112,500	112,500
Kingfisher Cr/TOMF	Shuswap R Low	Summer	Shuswap R Low	Smolt 0+		0	150,000	150,000
L Campbell R	L Campbell R	Fall	L Campbell R	Smolt 0+		0	75,000	75,000
Nanaimo R	Chemainus R	Fall	Chemainus R	Smolt 0+	AdCWT	50,000	160,000	160,000
	First Lk/GSVI	Summer	First Lk/GSVI	Smolt 0+	Otolith	180,000	180,000	180,000
	Nanaimo R	Fall	Nanaimo R	Smolt 0+	Otolith	160,000	425,000	415,000
				Unfed		0		10,000
Nicomekl R	Serpentine R	Fall	Nicomekl R	Smolt 0+		0	50,000	50,000
Oyster R	Oyster R	Fall	Oyster R	Smolt 0+		0	45,000	55,000
P Hardy/Marble	Colonial +Cayeghle	Fall	Colonia l+Cayeghle	Smolt 0+	Otolith	30,000		30,000
	Marble R	Fall	Marble R	Smolt 0+	Otolith	900,000	900,000	900,000
			Quatsino Sd	Seapen0+	Otolith	90,000	90,000	90,000
Powell R	Lang Cr	Fall	Duck Lk	Smolt 0+		0	600,000	600,000
			Lang Cr	Smolt 0+		0	150,000	110,000
			Sturt Bay	Seapen0+		0	40,000	80,000
			Willingdon Est	Seapen0+		0	40,000	40,000
San Juan R	San Juan R	Fall	San Juan Est	Seapen0+	Otolith	40,000		40,000
			San Juan R	Smolt 0+	Otolith	860,000	900,000	860,000
Sayward	Salmon	Fall	Salmon R/JNST	Smolt 0+	Otolith	120,000	120,000	120,000

F&G	R/JNST							
Sechelt	Lang Cr	Fall	Maclean Bay	Seapen0+		0	75,000	75,000
Serpentine R	Serpentine R	Fall	Serpentine R	Smolt 0+		0	57,600	100,000
Sliammon R	Lang Cr	Fall	Sliammon R	Smolt 0+		0	150,000	*150,000
	Lang Cr	Fall	Theodosia Est	Seapen0+		0	150,000	0
	Sliammon R	Fall	Sliammon R	Smolt 0+		0	0	150,000
Sooke R	Nitinat R	Fall	Sooke R	Smolt 0+	Otolith	212,500	212,500	212,500
	Sooke R	Fall	Sooke R	Fed Spr		0	225,000	225,000
Tahsis R	Leiner R	Fall	Leiner In	Seapen0+	Otolith	150,000	150,000	150,000
	Tahsis R	Fall	Tahsis In	Seapen0+	Otolith	150,000	150,000	150,000
Thornton Cr	Thornton Cr	Fall	Thornton Cr	Smolt 0+		0	216,000	216,000
	Toquart R	Fall	Toquart R	Smolt 0+		0	170,000	170,000
Tofino	Bedwell River	Fall	Bedwell River	Smolt 0+	AdCWT	15,000	58,000	33,000
	Cypre R	Fall	Cypre R	Smolt 0+		0	160,000	160,000
	Tranquil Cr	Fall	Tranquil Cr	Smolt 0+		0	36,000	36,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTonly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

\* Will use Lang creek broodstock if Sliammon broodstock is not obtainable.

Big Qualicum: will release 100k in September to assess a late release strategy.

Capilano River Hatchery: will rear 100K chinook in seapens near the West Vancouver Laboratory.

Chehalis River Hatchery: two rearing strategies are listed in the table above for Chehalis R summer stock 2011 brood chinook. One or the other rearing strategy will be implemented, pending discussions that will take place this Spring 2011, regarding biological considerations. Stock Assessment plan to mark all 300,000 Harrison River Chinook if possible for at least the 2011-2012 broods. This increase in tagging is at the request of Stock Assessment in support of the Harrison River indicator program.

Chilliwack River Hatchery: will continue to attempt to enhance the small spring run chinook population indigenous to the upper reaches of the Chilliwack River. The target proposed is a maximum and is unlikely to be achieved as it is extremely difficult to access adults in the upper river. This stock has not been enhanced since 2005. Chilliwack hatchery also take extra eggs from the fall run for transfers to small PIP projects in the lower mainland (20K smolts to each of two seapens in Burrard Inlet , 25K eyed eggs to Coquitlam River (Poco hatchery) and 75K eggs to Alouette River hatchery).

Conuma River Hatchery: the DFO target is for 1.7M seapen smolts from Conuma River. There is a collaborative agreement for an additional 1M Conuma chinook in place for the 2011 egg take with the Nootka Sound Watershed Society.

Inch Creek Hatchery: no chinook enhancement is done. A decision was made to monitor Maria Slough and enhance that stock only when needed. Returns are fairly consistent now.

Nitinat River Hatchery: is proposing to release an additional 1M as smaller smolts in an effort to produce later returning, larger adults.

Puntledge River Hatchery: will continue to incubate and partially rear a portion of the summer run Puntledge chinook on cooler water at Rosewall Creek Hatchery. In addition, a lake release strategy will be used to help improve river migration of returning adults.

Robertson Creek Hatchery: juvenile assessments of yearling component to be completed in 2011 to determine feasibility of yearling releases of Nahmint stock, which is a stock of concern.

Shuswap River Hatchery: Middle Shuswap River egg plant target is comprised of eggs surplus to meeting target smolt output. Funding continues to be available to tag 500K Lower Shuswap fish, in addition to 150K Middle Shuswap fish. The Lower Shuswap chinook stock is a StAD indicator stock for the South Thompson.

Spilus Creek Hatchery: can be prone to outbreaks of BKD. Fed fry targets have been added to allow for early release of surplus fry due to disease screening.

Tenderfoot Creek Hatchery: will continue to enhance Cheakamus chinook, although Canadian National Railway is now paying only for assessment as part of the mitigation for the caustic soda spill that occurred in 2005. The Porteau Cove seapen production was reduced in 2011 to provide fish for fisheries, but allow the hatchery to pursue some rebuilding goals. The fry resulting from Porteau broodstock collection would be released into the upper Elaho River at less than 1 gram in size in an effort to rebuild this major Squamish system stock. The chinook migrating from the upper Elaho were mainly yearlings, due to the cold water and slow growth associated with it, so the small fry will have plenty of time to adapt to these conditions after release. Habitat restoration projects will continue to be developed on the major chinook salmon spawning tributaries within the Squamish River watershed.

Alouette River Hatchery: 75K eyed eggs will be transferred in from Chilliwack Hatchery. These will be incubated at Alouette and released as smolts.

Clayquot: will release into Upper Kennedy River if enough eggs are obtained and if DNA analysis shows that they are the same stock as Lower Kennedy River.

Cowichan River Hatchery: the target was reduced to 1M eggs (700K smolt release), due to ongoing problems with the water supply. They may not attain this number with the present returns to the river because they are allowed to take only 33% of the female returns to the river, not including fish taken for FSC purposes. Exact numbers planned for fed fry, smolt, fall smolt and seapen releases will be determined later, depending on the number of fry available. 50K of the 650K tags noted in the table will be used either for the seapen release or for the fall smolt release.

Gillard Pass Hatchery: Will be doing a smolt 1+ release on 2009 brood (tagging the seapen release) and plan to do the same again on 2010 and 2011 brood years.

Goldstream River Hatchery: target for the chinook stock is incidental as it is a very minor stock in this river.

Gwa'ni Hatchery: stock is taken from several tributaries in the Nimpkish watershed. The exact division of the smolt release among the sites may change.

Kingfisher Creek Hatchery: some chinook are released as unfed fry and some as 1-2 gm fed fry. Up to 100K eyed eggs may be transferred from Shuswap Hatchery, but only if surplus eggs are available.

Port Hardy/Marble: will return to enhancing Colonial+Cayeghle.

Powell River Hatchery: is proposing to release an extra 40K from Sturt Bay seapens and 40k less as river smolts.

Sliammon River Hatchery: will use Lang creek broodstock if \*Sliammon broodstock is not obtainable. For the past two years, Sliammon Chinook runs have been good enough to take eggs and not rely on Lang Creek.

An additional 170k chinook target releases by South Coast Area PIP projects.

**iii. Coho salmon**

A series of experimental coho smolt release studies is being considered to investigate productive capacity in the Strait of Georgia, which began with the 2010 brood.

**Table 2a) Proposed 2011 brood production targets for coho salmon at DFO enhancement facilities**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Big Qualicum R	Big Qualicum R	Fall	Horne Lk	Fed Spr	AdCWT	80,000	200,000	200,000
				Smolts	AdCWT Ad	40,000 560,000	800,000	600,000
Capilano R	Capilano R	Fall	Capilano R	Smolts	Ad	525,000	525,000	525,000
Chehalis R	Chehalis R	Fall	Chehalis R	Smolts	Ad	800,000	800,000	800,000
Chilliwack R	Chilliwack R	Fall	Chilliwack R	Smolts	Ad	1,200,000	1,200,000	1,000,000
Conuma R	Conuma R	Fall	Conuma R	Fed Spr		0	52,000	52,000
				Smolts	Ad	50,000	50,000	50,000
					Ad	50,000		
Inch Cr	Inch Cr	Fall	Inch Cr	Smolts	AdCWT CWTonly	640,000 40,000	5130,000	5130,000
	Nicomekl R	Fall	Nicomekl R	Smolts	Ad	75,000	75,000	75,000
	Norrish Cr	Fall	Norrish Cr	Smolts	Ad	150,000	150,000	150,000
	Serpentine R	Fall	Serpentine R	Smolts	Ad	75,000	75,000	75,000
	Stave R	Fall	Stave R	Smolts	Ad	75,000	225,000	75,000
Nitinat R	Nitinat R	Fall	Darlington Lk	Fed	Ad &	25,000	25,000	25,000

				Spr	Otolith			
			Flora Lk	Fed Spr	Ad & Otolith	25,000	25,000	25,000
			Francis Lk/SWVI	Fed Spr	Ad & Otolith	50,000	50,000	50,000
			Nitinat R	Smolts	Ad & Otolith	200,000	100,000	200,000
Puntledge R	Puntledge R	Fall	Comox Lk	Fed Spr		0	900,000	0
		Fall	Cruickshank R	Fed Spr		0	300,000	0
		Fall	Puntledge R	Fed Spr		0	300,000	0
		Fall	Puntledge R Up	Fed Spr	AdCWT	200,000	300,000	800,000
Quinsam R	Quinsam R	Fall	Quinsam R	Fed Spr		0	100,000	350,000
				Smolts	Ad AdCWT CWOnly	670,000 40,000 40,000	800,000	750,000
Robertson Cr	Robertson Cr	Fall	Robertson Cr	Smolts	Ad AdCWT	160,000 40,000	200,000	200,000
Shuswap R	Duteau Cr	Fall	Duteau Cr	Fed Spr		0	0	20,000
				Smolts		0	0	20,000
Spilus Cr	Eagle R	Fall	Eagle R	Fed Spr		0	0	10,000
				Smolts	AdCWT	25,000	65,000	25,000
	Salmon R/TOMF	Fall	Salmon R/TOMF	Fed Spr		0	65,000	65,000
				Smolts		0	65,000	65,000
	Coldwater R	Fall	Coldwater R	Fed Spr		0	20,000	20,000
				Smolts	AdCWT	40,000	65,000	65,000
	Deadman R	Fall	Deadman R	Fed Spr		0	0	10,000
				Smolts		0	30,000	30,000
Tenderfoot Cr	Cheakamus R	Fall	Cheakamus R	Smolts	Ad	0	90,000	90,000
	Tenderfoot Cr	Fall	Loggers Lane Cr	Fed Spr		0	50,000	50,000
			Brohm Lk	Fed Spr		0	0	50,000
			Elaho R	Fed Spr		0	0	50,000
			Tenderfoot Cr	Smolts	Ad	150,000	150,000	150,000
	Mamquam R	Fall	Mamquam R	Smolts	Ad	90,000	90,000	90,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWOnly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

**Table 2b) Proposed 2011 brood production targets for coho salmon at Community Economic Development Program, Designated Public Involvement Projects and Aboriginal Fisheries Strategy Projects.**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark	2010 Brood Release	2011 Brood Release Target
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						(2011)	Target	
Alouette R	Alouette R S	Fall	Alouette R S	Fed Spr		0	100,000	75,000
				Smolts	Ad	25,000	80,000	25,000
Chapman Cr	Chapman Cr	Fall	Chapman Cr	Smolts	Ad	50,000	80,000	50,000
		Fall	Halfmoon Bay	Seapen	Ad	20,000	20,000	20,000
Fanny Bay/GSVI	Coal Cr	Fall	Coal Cr	Smolts		0	0	8,000
	Rosewall Cr	Fall	Rosewall Cr	Smolts	Ad	85,000	85,000	85,000
Gillard Pass	Quinsam R	Fall	Stuart Is Strms	Fed Spr		0	20,000	22,500
Goldstream R	Goldstream R	Fall	Goldstream R	Smolts	AdCWT	40,000	135,000	135,000
Gwa'ni	Nimpkish R	Fall	Nimpkish R	Fed Spr		0	0	100,000
				Smolts		0	100,000	100,000
Halalt Band	Bonsall Cr	Fall	Bonsall Cr	Fed Spr		0	45,000	45,000
Horseshoe Bay	Capilano R	Fall	Horseshoe Bay	Seapen		0	5,000	0
Kanaka Cr	Kanaka Cr	Fall	Kanaka Cr	Fed Spr		0	80,000	50,000
				Smolts	Ad	10,000	10,000	10,000
			Brunette R	Fed Spr		0	0	50,000
				Smolts		0	0	13,000
			Byrne Cr	Smolts		0	0	4,000
			Kaymar Cr	Smolts		0	0	1,000
			Cougar Canyon Cr	Smolts		0	0	1,000
L Campbell R	L Campbell R	Fall	L Campbell R	Fed Spr		0	24,300	10,000
				Smolts	Ad	30,000	30,000	30,000
Little R/GSVI	Little R/GSVI	Fall	Little R/GSVI	Fed Spr		0	40,000	20,000
				Smolts	Ad	30,000	30,000	30,000
Nanaimo R	Nanaimo R	Fall	Millstone R	Fed Spr		0	60,000	24,000
			Nanaimo R	Fed Spr		0	140,000	140,000
				Smolts		0	84,000	84,000
Nicomekl R	Nicomekl R	Fall	Nicomekl R	Fed Spr		0	0	40,000
Oyster R	Oyster R	Fall	Oyster R	Fed Spr		0	100,000	70,000
				Smolts		0	40,000	40,000
P Hardy/Marble	Colonial+ Cayeghle	Fall	Colonial+ Cayeghle	Fed Spr		0	0	51,000
	Marble R	Fall	Marble R	Fed Spr		0	36,000	32,000
				Smolts		0	144,000	130,000
	Washlawlis R	Fall	Washlawlis R	Smolts		0		85,000
				Unfed		0	90,000	40,000
	Waukwaas Cr	Fall	Waukwaas Cr	Smolts		0	100,000	0
				Unfed		0	30,000	0
P Hardy /Quatse	Cluxewe R	Fall	Cluxewe R	Fed Spr		0	30,000	30,000
				Smolts	Ad	100,000	100,000	100,000
	Quatse R	Fall	Quatse Lk	Fed Spr		0	15,000	15,000
			Quatse R	Fed Spr		0	15,000	15,000
				Smolts	Ad	100,000	100,000	100,000
	Waukwaas Cr	Fall	Waukwaas Cr	Smolts	Ad	100,000	100,000	100,000
				Unfed		0	0	30,000
Powell R	Lang Cr	Summer	Haslam Lk	Fed Spr		0	200,000	0
			Lang Cr	Fed Fall	Ad	280,000	100,000	280,000
San Juan R	San Juan R	Fall	San Juan R	Fed Spr		0	175,000	165,000
Sayward F&G	Salmon	Fall	Salmon R/JNST	Fed Spr		0	81,000	0

	R/JNST							
Sechelt	Capilano R	Fall	Maclean Bay	Seapen		0	85,000	0
	Chapman Cr	Fall	Maclean Bay	Seapen		0	85,000	85,000
Serpentine R	Serpentine R	Fall	Serpentine R	Fed Spr		0	0	50,000
			Watershed Cr	Fed Spr		0	0	25,000
			Joe Brown Cr	Fed Spr		0	0	25,000
			Serpentine R	Smolts	Ad	0	0	10,000
Seymour R	Seymour R/GSMN	Fall	Hurry Cr	Smolts	Ad	20,000	40,000	35,000
			Seymour R/GSMN	Fed Spr			40,000	100,000
Sliammon R	Sliammon R	Fall	Sliammon Lk	Fed Fall	Ad	50,000	50,000	60,000
Sooke R	Demamiel Cr	Fall	Young Lk	Fed Spr		0	135,000	135,000
Thompson R N	Dunn Cr	Fall	Dunn Cr	Smolts	CWT only	10,000	20,000	20,250
	Lemieux Cr	Fall	Ianson Ch	Smolts	CWT only	10,000	20,000	20,250
	Louis Cr	Fall	Louis Cr	Smolts	CWT only	10,000	20,000	20,250
Thornton Cr	Thornton Cr	Fall	Thornton Cr	Smolts		0	22,500	25,000
Tofino	Cypre R	Fall	Cypre R	Fed Spr	Ad	55,000	81,000	55,000
	Kootowis Cr	Fall	Kootowis Cr	Fed Spr	Ad	35,000	81,000	35,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTonly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

Production of adipose clipped smolts for potential harvest opportunities of 2011 brood coho will continue for small stocks not covered in the IFMP, including: Coquitlam River (Poco hatchery) in the Lower Mainland and French Creek and Millard Creek on Vancouver Island.

Big Qualicum River Hatchery: There is a proposal to release 600K as river smolts plus 200K coho as fed fry to Horne Lake and tag 80k of these to assess fry survival rates.

Capilano River Hatchery: incubates and rears 100K smolts for seapens at Sechelt in years when they are needed. There is no plan to incubate and rear smolts for these seapens for 2011 brood.

Chilliwack River Hatchery: reduced coho smolt production from 1.2M to 1.0M releases for 2011 brood. 3K additional eyed eggs are transferred out to Chilliwack Schools.

Conuma River Hatchery: the DFO target is for a 52K fed fry release. An additional egg collection and release of 50K coho as yearling smolts will occur, subject to funding by the Nootka Sound Watershed Society.

Inch Creek Hatchery: the Inch Creek stock is used as the Lower Fraser hatchery coho indicator stock. The hatchery releases a double-index tag group on Inch Creek stock (640K adipose-clipped CWTs and 40K CWTs without adipose clips to represent unmarked natural river production in the fisheries). An experimental early-timed group was discontinued after the 2008 brood. Stave river coho production has been reduced from 225K to 75K in order to allow for increased chum production.

Nitinat River Hatchery: is proposing to release an additional 100K as smaller smolts, hoping to see more later, larger returning adults.

Puntledge River Hatchery: for the foreseeable future the coho will be released as fed fry and will no longer be adipose clipped for mark-selective fisheries. 200k of the fry will be tagged to assess survival and exploitation rates. The target was reduced from 2010 based on assessment of habitat capacity. The 2010 target was based on a target adult return.

Quinsam River Hatchery: Due to hatchery renovations, there may be a reduction in 2011 smolt release numbers and an increase in 2010 fry release numbers.

Robertson Creek Hatchery: the target was reduced in 2010, from 400K to 200K, due to continued large surplus adult production to the river.

Shuswap River Hatchery: Eggs are only collected on weak years from Duteau Creek. 2011 is expected to be a weak return year, so enhancement will resume. Exact release strategy dependant on total wild escapement to the system, as well as flow conditions; greater numbers of wild adults and low snowpack may result in decreased numbers of fry released due to concerns over competition for available habitat with wild fry juveniles.

Spius Creek Hatchery: Eagle River coho continue to be enhanced and tagged at the hatchery to provide a new indicator stock for the Interior. The release target has been adjusted to reflect available space and water at hatchery for incubation and rearing. If more space becomes available, StAD would like to increase output to 30K tagged smolts. The numbers of fed fry released for each stock are dependent on the numbers of eggs taken, BKD incidence and the habitat available.

Gwa'ni Hatchery (Nimpkish River): a decision was made to increase the target (beginning in 2009) and change to a smolt release strategy to three tributaries. For 2011 it is proposed to return to fry releases, based on assessment of habitat capacity.

Kanaka Creek Hatchery: release stages, numbers and sites have been redistributed in an attempt to match the estimated natural production of coho.

Little Campbell River Hatchery: will hold approximately 10K of their smolts to a 30 gm experimental June release, rather than a 20 gm May release. L Campbell hatchery provides eggs for classroom incubation projects in the Langley, Delta, Richmond and Surrey school districts.

Little River Hatchery: planned to reduce fed fry target again this year as in 2009, based on assessment of habitat capacity.

Nicomekl R Hatchery: additional Nicomekl coho production (75K) is reported under Inch Creek Hatchery, as Inch provides the incubation, rearing and marking, and Nicomekl Enhancement Society assists in the egg take and eventual smolt release. Nicomekl R Hatchery provides eggs for classroom incubation projects in the Langley, Delta, Richmond and Surrey school districts.

Port Hardy/Marble and Quatse Hatcheries: Waukwaas Creek enhancement moved from Marble to Quatse hatchery.

Serpentine R (Tynehead Hatchery): additional Serpentine coho production (75K) is reported under Inch Creek Hatchery, as Inch provides the incubation, rearing and marking, and the Serpentine volunteer group assists in the egg take and eventual smolt release. Tynehead Hatchery provides eggs for classroom incubation projects in the Langley, Delta, Richmond and Surrey school districts. Two new release sites were added for 2011 brood, Watershed Creek and Joe Brown Creek.

Seymour River Hatchery: 15,000 additional smolts are transferred out to Westridge Terminal seapens (7,500) and Ioco/Reed Point seapens (7,500).

A late release experiment began with 2009 brood coho smolts. For 2011, approximately 10K are proposed to be held for a late release. They will be differentially marked.

Thompson River, North (Dunn Creek Hatchery): 20K Lemieux Creek coho will be raised at Spius Creek Hatchery, 20K Louis Creek coho will be incubated at Spius and then transferred to the Dunn Creek facility for rearing and 20K Dunn Creek coho will be raised at the Dunn Creek facility.

120k additional target coho production from South Coast Area PIP projects.

**iv. Chum salmon**

**Table 3a) Proposed 2011 brood production targets for chum salmon at DFO enhancement facilities**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Big Qualicum R	Big Qualicum R	Fall	Big Qualicum R	Chan Fry	AdRV	250,000	54,000,000	54,000,000
				Fed FW	AdLV	100,000	950,000	950,000
Capilano R	Capilano R	Fall	Capilano R	Fed FW		0	90,000	90,000
Chehalis R	Chehalis R	Fall	Chehalis R	Fed FW		0	1,000,000	2,000,000
			Chehalis R	Unfed		0	5,000,000	5,000,000
Chilliwack R	Chilliwack R	Fall	Chilliwack R	Fed FW		0	2,000,000	1,000,000
			Peach Cr	Fed FW		0	0	1,000,000
			Atchelitz Cr	Unfed		0	0	200,000
			Luckakuck Cr	Unfed		0	0	200,000
			L Chill. R	Unfed		0	0	200,000
Conuma R	Canton Cr	Fall	Canton Cr	Fed FW	Otolith	1,000,000	1,000,000	1,000,000
	Conuma R	Fall	Conuma Est	Seapen	Otolith	1,500,000	1,500,000	1,500,000
	Sucwoa R	Fall	Sucwoa R	Fed FW	Otolith	1,000,000	1,000,000	0
	Tlupana R	Fall	Tlupana R	Fed FW	Otolith	1,000,000	1,000,000	1,000,000
Inch Cr	Inch Cr	Fall	Chilqua Cr	Fed FW		0	0	250,000
			Inch Cr	Fed FW		0	800,000	1,000,000

			Nicomen SI	Fed FW		0	200,000	500250,000
			Railroad Cr	Fed FW		0	0	250,000
	Stave R	Fall	Stave R	Fed FW		0	0	1,000,000
L Qualicum R	L Qualicum R	Fall	L Qualicum R	Chan Fry		0	38,000,000	38,000,000
				Fed FW		0	950,000	950,000
Nitinat R	Nitinat R	Fall	Nitinat Lk	Fed FW	Otolith	25,000,000	25,000,000	25,000,000
			Nitinat R	Fed FW	Otolith	5,000,000	5,000,000	5,000,000
Puntledge R	Puntledge R	Fall	Puntledge R	Fed FW		0	2,700,000	2,700,000
Tenderfoot Cr	Tenderfoot Cr	Fall	Tenderfoot Cr	Fed FW		0	75,000	500,000
Weaver Sp Ch	Weaver Sp Ch	Fall	Weaver Sp Ch	Chan Fry		0	2,700,000	2,700,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTONly = CWT without Adclip, Ad = adipose clipped, RV = right ventral clipped, LV = left ventral clipped, Otolith = otolith marked.

**Table 3b) Proposed 2011 brood production targets for chum salmon at Community Economic Development Program, Designated Public Involvement Projects and Aboriginal Fisheries Strategy Projects.**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Alouette R	Alouette R S	Fall	Alouette R S	Fed FW		0	195,000	400,000
			Brunette R	Fed FW		0	0	250,000
Fanny Bay/GSVI	Rosewall Cr	Fall	Rosewall Cr	Unfed		0	225,000	225,000
Goldstream R	Goldstream R	Fall	Goldstream R	Fed FW		0	675,000	675,000
Gwa'ni	Nimpkish R Low	Fall	Nimpkish R Low	Fed FW		0	9,000,000	9,000,000
Halalt Band	Bonsall Cr	Fall	Bonsall Cr	Unfed		0	41,000	41,000
	Chemainus R	Fall	Chemainus R	Egg Plant		0	425,000	425,000
Kanaka Cr	Kanaka Cr	Fall	Brunette R	Unfed		0	0	50,000
			Byrne Cr	Fed FW		0	25,000	25,000
			Kanaka Cr	Fed FW		0	150,000	25,000
			Kaymar Cr	Fed FW		0	5,000	5,000
Little R/GSVI	Puntledge R	Fall	Little R/GSVI	Unfed		0	190,000	190,000
Nanaimo R	Nanaimo R	Fall	Nanaimo R	Unfed		0	1,062,500	900,000
Nicomekl R	Chehalis R	Fall	Nicomekl R	Unfed		0	95,000	100,000
Oyster R	Oyster R	Fall	Oyster R	Fed FW		0	320,000	320,000
	Puntledge R	Fall	Oyster R	Fed FW		0	0	*180,000
P Hardy/Quatse	Quatse R	Fall	Quatse R	Fed FW		0	100,000	100,000
Powell R	Lang Cr	Fall	Lang Cr	Fed FW		0	750,000	750,000
San Juan R	San Juan R	Fall	San Juan R	Fed FW		0	36,000	36,000
Sechelt	Angus Cr	Fall	Maclean Bay	Seapen		0	700,000	500,000
Serpentine R	Chehalis R	Fall	Serpentine R	Fed FW		0	150,000	150,000

			Watershed Cr	Fed FW		0	0	25,000
			Joe Brown Cr	Fed FW		0	0	25,000
	Serpentine R	Fall	Serpentine R	Fed FW		0	0	65,000
Seymour R	Alouette R S	Fall	Maplewood Cr	Fed FW		0	20,000	20,000
	Alouette R S	Fall	Seymour R/GSMN	Fed FW		0	100,000	70,000
Sliammon R	Sliammon R	Fall	Sliammon R	Fed FW		0	900,000	900,000
				Unfed		0	1,700,000	1,700,000
Thornton Cr	Mercer Cr/SWVI	Fall	Mercer Cr/SWVI	Fed FW		0	50,000	50,000
	Salmon Cr/SWVI	Fall	Salmon Cr/SWVI	Fed FW		0	500,000	500,000
	Twin R East	Fall	Twin R East	Fed FW		0	50,000	50,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTonly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

\* Puntledge River target is a backup in case of poor returns of Oyster native stock.

**Big Qualicum River Hatchery:** Analysis of data for fin-clipped chum shows a major reduction in the survival rate for fry migrating from the channel. In 2011, an additional 1M chum eggs will be taken, incubated and reared at the hatchery to approximately 1 gram to help rebuild this depressed stock 100K fry will be differentially marked to distinguish them from the channel production.

**Chehalis River Hatchery:** the fed fry target has been increased from 1M to 2M. This is part of an overall increase in Fraser Valley chum production. The existing 5M unfed fry release will take place only with Chehalis Band assistance during the egg-take.

**Chilliwack River Hatchery:** has increased their chum production and added a new release site (Peach Creek) in response to declining chum survivals in the Fraser Valley.

**Conuma Hatchery:** There is a proposal to stop enhancement of Sucwoa River stock, dependent on DNA analysis.

**Inch Creek Hatchery:** chum production has been increased as part of an overall Fraser Valley initiative. 1.2M eggs will be taken from Stave River with a release target of 1M fed fry, and 2.5 M eggs will be taken from Inch Creek, with a release target of 1M to Inch Creek, 50250K to Nicomen Slough, 250K to Railroad Creek, and 25500K to Chilqua Creek. Chilqua Creek is a groundwater stream that traditionally had a chum run; beaver dams have restricted access for the past several years. Enhancement will occur in combination with stream monitoring for access.

**Little Qualicum River Hatchery:** Analysis of data for fin-clipped chum shows a major reduction in the survival rate for fry migrating from the channel. In 2011, an additional 1M chum eggs will be taken, incubated and reared at Big Qualicum River Hatchery to approximately 1 gram to help rebuild this depressed stock.

Tenderfoot Creek Hatchery: chum production has been increased as part of an overall Regional Lower Fraser Area initiative..

Gwa'ni Hatchery: The Namgis First Nation provides supplemental funding to the Gwa'ni Hatchery to pay for the collection of up to 8M chum salmon eggs in addition to the 2M eggs in their CEDP contract.

Kanaka Creek: 10,000 additional eyed eggs are transferred out to Burnaby, Coquitlam, Maple Ridge, New West and Vancouver school districts for classroom incubation projects. As well, 40,000 additional fed fry are transferred to Spanish Banks Creek project.

Nicomekl River: receives fed fry from Chehalis hatchery, then immediately release them into Nicomekl River.

Oyster River: Puntledge River target is a backup in case of poor returns of Oyster native stock.

Serpentine River (Tynehead hatchery): receives fed fry from Chehalis hatchery, then will immediately release them into Serpentine River and two new release sites; Watershed Creek and Joe Brown Creek. Due to increased rearing capacity at Tynehead Hatchery, Serpentine River broodstock is now being collected, incubated and reared at the hatchery.

Seymour River Hatchery: target is usually slightly reduced in odd years to allow room for pink production.

Additional chum transferred by the above hatcheries to other projects not included in the tables include: Chehalis River (325K for Nicomekl & Serpentine projects); Goldstream River (50K for local public involvement projects); Inch Creek (100K for West Sl & Yorkson Cr projects); Lang Creek (70k for local public involvement projects); Tenderfoot Creek (200K for Bowen Island/Terminal Cr); Puntledge River (800K for Area 14N projects); Quinsam River (315K Campbell River chum eggs for local public involvement projects); and Kanaka Creek (60K for lower Fraser River projects and schools). In addition, South Coast Area PIP projects have release targets of another 650k chum.

**v. Pink**

**Table 4a) Proposed 2011 brood production targets for pink salmon at DFO enhancement facilities**

Project	Stock	Run	Release Site	Stage	Mk <sup>2</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Chehalis R <sup>1</sup>	Chehalis R	Fall	Chehalis R	Fed FW		0	0	700,000
Chilliwack R <sup>1</sup>	Chilliwack R	Fall	Chilliwack R	Fed FW		0	0	700,000
Puntledge R	Glendale Ch	Fall	Glendale Ch	Chan Fry		0	18,800,000	18,800,000
	Quinsam R	Fall	Puntledge R	Unfed		0	2,400,000	2,400,000

Quinsam R	Quinsam R	Fall	Discovery Pass	Seapen		0	700,000	700,000
			Quinsam R	Unfed		0	3,300,000	3,300,000
Tenderfoot Cr	Cheakamus R	Fall	Cheakamus R	Unfed		0	0	500,000

<sup>1</sup> Pink salmon are present on the Fraser River & Cheakamus River during odd years only.

<sup>2</sup> Mark Type – Pink salmon are not marked at this time.

**Table 4b) Proposed 2011 brood production targets for pink salmon at Community Economic Development Program and Designated Public Involvement Projects**

Project	Stock	Run	Release Site	Stage	Mk <sup>2</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Chapman Cr	Chapman Cr	Fall	Chapman Cr	Unfed		0	250,000	250,000
			Gibsons Harbour	Unfed		0	100,000	
Cowichan R	Nanaimo R	Fall	Cowichan Bay	Seapen		0	0	250,000
	Quinsam R	Fall	Cowichan Bay	Seapen		0	200,000	*250,000
Englishman Enh	Nanaimo R	Fall	Englishman R	Unfed		0	0	900,000
	Quinsam R	Fall	Englishman R	Unfed		0	900,000	*900,000
Fanny Bay/GSVI	Quinsam R	Fall	Coal Cr	Unfed		0	900,000	900,000
Kanaka Cr <sup>1</sup>	Harrison R	Fall	Kanaka Cr	Unfed		0	0	400,000
Nanaimo R	Nanaimo R	Fall	Nanaimo Area Strms	Seapen	Otolith	900,000	900,000	900,000
Nicomekl R <sup>1</sup>	Chilliwack R	Fall	Nicomekl R	Fed FW		0	0	150,000
Nile Cr	Big Qualicum R	Fall	Deep Bay/GSVI	Seapen		0	450,000	0
	Quinsam R	Fall	Deep Bay/GSVI	Seapen		0	0	200,000
			Nile Cr	Unfed		0	900,000	900,000
Oyster R	Oyster R	Fall	Oyster R	Unfed		0	2,250,000	2,250,000
P Hardy/Quatse	Cluxewe R	Fall	Cluxewe R	Unfed		0	800,000	800,000
	Quatse R	Fall	Quatse R	Unfed		0	1,350,000	1,350,000
Powell R	Lang Cr	Fall	Lang Cr	Unfed		0	500,000	500,000
Sechelt	Chapman Cr	Fall	Gibsons Harbour	Unfed		0		100,000
			Maclean Bay	Seapen		0	450,000	500,000
Seymour R <sup>1</sup>	Chilliwack R	Fall	Seymour R/GSMN	Unfed		0	0	1,000,000
			McCartney Cr	Unfed		0	0	150,000
			Brothers Cr	Unfed		0	0	75,000

			Rodgers Cr	Unfed		0	0	75,000
Tsolum R	Quinsam R	Fall	Tsolum R	Unfed		0	900,000	900,000

<sup>1</sup> Pink salmon are present on the Fraser River during odd years only.

<sup>2</sup> Mark Type – pink salmon are not marked at this time.

\* Quinsam pink stock will be used if unable to attain enough Nanaimo eggs.

Chehalis River Hatchery: takes an 12.5M eggs from the Harrison system to supply eggs to several small Public Involvement projects, as well as Kanaka Creek Hatchery.

Chilliwack River Hatchery: also takes 1.6M eggs for transfer to Seymour Hatchery & transfers out 150,000 unfed fry to Nicomekl R project.

Quinsam River Hatchery: The target is set at a base production to the river of 4M fry released and up to a maximum of 6.8M fry released if the escapement drops below 50K adults. Quinsam also supplies eggs for approved transfers to other additional east coast Vancouver Island projects (including Casey Creek, Coal Creek, and Mohun Creek) to re-establish former pink runs and contribute to local recreational fisheries. Depending on availability, this amounts to about 8M eggs over and above the Quinsam target. To reduce pressure on the Quinsam/Campbell pink population, some projects now collect eggs from returns from previous transplants (e.g. Nanaimo R).

Cowichan Pink Seapen: will use Nanaimo River stock if possible, with Quinsam River eggs as a backup if necessary.

Englishman Enhancement: will use Nanaimo River stock if possible, with Quinsam River eggs as a backup if necessary.

Kanaka Creek: will attempt to obtain eggs from Kanaka Creek broodstock in 2013.

Nanaimo River Hatchery: receives eggs from Quinsam River H.

Nile Creek: Deep Bay Pink Seapen receives fry from Quinsam River Hatchery.

Sechelt: Gibson's Harbour seapen receives fry from Chapman Creek Hatchery.

Seymour River: receive 1.6M eggs from Chilliwack R hatchery. Community Advisors will assist in the release of fry to McCartney Cr, Rodgers Cr and Brothers Creek.

There is an additional 380k pink PIP target production in South Coast Area.

## vi. Sockeye

**Table 5a) Proposed 2011 brood production targets for sockeye salmon at DFO enhancement facilities**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type	Target Number	2010 Brood	2011 Brood
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					(2011)	to Mark (2011)	Release Target	Release Target
Gates Sp Ch	Gates R	Summer	Gates R	Chan Fry		0	4,500,000	4,500,000
Horsefly Sp Ch	Horsefly Ch	Summer	Horsefly Ch	Chan Fry		0	17,500,000	17,500,000
Inch Sockeye Satellite	Cultus Lk	Fall	Cultus Lk	Fed Fall	Ad	150,000	150,000	150,000
			Cultus Lk	Fed Spr	Ad	550,000	550,000	550,000
			Sweltzer Cr	Smolts	AdCWT	50,000	50,000	50,000
	Pitt R Up	Summer	Pitt R Up	Fed Spr	Otolith	2,000,000	2,000,000	2,000,000
Nadina Sp Ch	Nadina R	Summer	Nadina R	Chan Fry		0	3,500,000	3,500,000
Shuswap R	Adams R Up	Summer	Adams R Up	Fed Spr		0	0	0
	Okanagan R	Summer	Okanagan R	Fed Spr	Otolith	800,000	800,000	800,000
Weaver Sp Ch	Weaver Sp Ch	Fall	Weaver Sp Ch	Chan Fry		0	46,800,000	46,800,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTONly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

**Table 5b) Proposed 2011 brood production targets for sockeye salmon at Community Economic Development Program and Designated Public Involvement Projects**

Project	Stock	Run	Release Site	Stage	Mk <sup>1</sup> Type (2011)	Target Number to Mark (2011)	2010 Brood Release Target	2011 Brood Release Target
Gwa'ni	Vernon Lk	Fall	Vernon Lk	Unfed	Otolith	400,000	400,000	400,000
	Woss Lk	Fall	Woss Lk	Unfed	Otolith	800,000	800,000	800,000
Sakinaw Lake	Sakinaw Lk	Fall	Sakinaw Lk	Fed Spr	Ad	300,000	850,000	1,000,000

<sup>1</sup>Mark Type: AdCWT = CWT with Adclip, CWTONly = CWT without Adclip, Ad = adipose clipped, Otolith = otolith marked.

Inch Sockeye Satellite: survival rates to adult for Cultus Lake releases have been developed as part of the Cultus Lake Recovery Plan: 0.15% for summer releases, 0.3% for fall releases and 3% for smolt releases. In 2011, enhancement activities will continue and progeny of the captive brood program from previous generations will continue to be released. However, eggs for the captive brood program will no longer be collected.

Shuswap River Hatchery: the target for Okanagan Lake sockeye remains reduced, partly to make room for more chinook.

The Upper Adams River sockeye return in 2010 was greater than expected. Ongoing analysis of returns in 2004 has shown indications that enhancement efforts may have been more successful than previously thought. Further enhancement may be considered if escapements increase to a level that would allow broodstock collection.

Sakinaw Lake: the National Recovery Plan includes an egg target based on 50% of female spawners, rather than a specific number. All resulting fry are released as fed fry to Sakinaw Lake from Ouillet Creek Hatchery. These fry are supplemented with fry derived from captive brood

with some reared at Rosewall Creek Hatchery and some at Ouillet Creek H. Returns were extremely low in 2008, 2009 and 2010 (1-30 fish counted through the fence each year), so all releases were from captive brood. If there are sufficient adults returning in 2011, up to 300k eggs from natural spawners will be incubated and reared at Ouillet. These fish may be clipped. Captive brood rearing will continue through 2011.

#### 14. APPENDIX 14: GLOSSARY

A more comprehensive glossary is available online at:

<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especies/salmon-saumon/gloss-eng.htm>

AABM	Aggregate Abundance Based Management
AAROM	Aboriginal Aquatic Resource and Oceans Management
AHC	Area Harvest Committee
AFS	Aboriginal Fisheries Strategy
ATP	Allocation Transfer Program
AUC	Area Under the Curve
BKD	Bacterial Kidney Disease
COHO ABM	Coho Abundance Based Management
COSEWIC	Committee for the Status of Endangered Wildlife in Canada
CPUE	Catch per unit effort
CSAB	Commercial Salmon Advisory Board
CWT	Coded wire tag
ESSR	Excess Salmon to Spawning Requirements
FRP	Fraser River Panel
FSC	Food, social and ceremonial
IHPC	Integrated Harvest Planning Committee
ISBM	Individual Stock Based Management
MVI	Mid Vancouver Island
PICFI	Pacific Integrated Commercial Fisheries Initiative
PSARC	Pacific Scientific Advice Review Committee
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
RCA	Rockfish Conservation Area
SARA	Species at Risk Act
SEP	Salmonid Enhancement Program
SFAB	Sport Fishing Advisory Board
SHMF	Selective Hatchery Mark Fishery
TAC	Total allowable catch
WCVI	West Coast Vancouver Island
WSP	Wild Salmon Policy ( <i>Canada's Policy for Conservation of Wild Pacific Salmon</i> )