

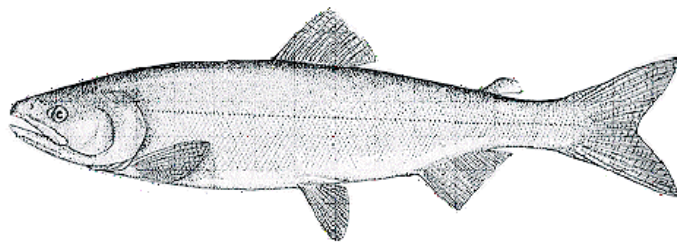
# **PACIFIC REGION**

## **INTEGRATED FISHERIES MANAGEMENT PLAN**

### **CHINOOK AND FALL CHUM SALMON**

**July 1, 2015 to June 30, 2016**

**YUKON RIVER, Y.T.**



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## DEPARTMENTAL CONTACTS

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

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

### Regional Headquarters

Regional Director, Fisheries Management Branch  
Director, Resource Management, Program Delivery  
Salmon and PICFI Director  
Regional Resource Manager - Salmon  
Regional Salmon Officer  
Regional Recreational Fisheries Co-ordinator  
Regional Director, Conservation and Protection  
Regional Director, Ecosystem Management  
Director, Aquaculture Management Division

Pacific Fishery Licence Unit (By appointment only)  
200-401 Burrard Street  
Vancouver, B.C. V6C 3S4

Rebecca Reid (604) 666-0753  
Paul Ryall (604) 666-0115  
Lisa Kerr (604) 666-0208  
Jeff Grout (604) 666-0497  
Kelly Binning (604) 666-3935  
Devona Adams (604) 666-3271  
Tom Hlavac (Acting) (604) 666-0604  
Bonnie Antcliffe (604) 666-6532  
Diana Trager (604) 666-7009

Toll-Free 1-877-535-7307  
Email: [fishing-peche@dfo-mpo.gc.ca](mailto:fishing-peche@dfo-mpo.gc.ca)

### Yukon River Operational Area

Area Director  
Manager, Treaties and Fisheries (Yukon)  
Fishery Manager (Yukon)  
Area Chief, Conservation and Protection  
Detachment Supervisor, Conservation & Protection  
Stock Assessment Biologist (III)  
Stock Assessment Biologist (II)  
Salmonid Enhancement Program Team Lead  
Salmonid Enhancement Program Biologist  
24 Hour Recorded Information (Salmon Hot Line)

Steve Gotch (867) 393-6719  
Nathan Millar (867) 393-6840  
Mary Ellen Jarvis (867) 393-6815  
Cliff Todd (Acting) (250) 851-4922  
Katherine Pelletier (867) 393-6820  
Trix Tanner (867) 393-6865  
Elizabeth MacDonald (867) 393-6720  
Michael Crowe (250) 851-4963  
Sean Collins (867) 393-6785  
Whitehorse (867) 393-6662  
Toll Free (877) 393-3133

### Other Key Contacts

Yukon Salmon Sub-Committee (SSC) Office (867) 393-6725  
Pacific Salmon Commission (PSC) Office (604) 684-8081



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## INDEX OF WEB-BASED INFORMATION

A more comprehensive index of web-based information is available at [www.pac.dfo-mpo.gc.ca](http://www.pac.dfo-mpo.gc.ca). If you don't have access to the Internet, the Fisheries and Oceans Canada office can download and print the information you need. Please allow a minimum of one week to obtain the information.

### FISHERIES AND OCEANS CANADA - GENERAL INFORMATION

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

General information on the Department.

**Acts, Orders, and Regulations:** ([www.dfo-mpo.gc.ca/communic/policy/dnload\\_e.htm](http://www.dfo-mpo.gc.ca/communic/policy/dnload_e.htm))

Fisheries Act, Oceans Act.

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

Administration and Enforcement of the Fish Habitat Protection 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.

**Waves:** (<http://www.dfo-mpo.gc.ca/libraries-bibliotheques/index-eng.htm>)

DFO online library catalogue.

**Pacific Salmon Treaty** ([http://www.psc.org/about\\_treaty.htm](http://www.psc.org/about_treaty.htm))

Full text of the 1999 Agreement with updates (including the *Yukon River Salmon Agreement*).

### PACIFIC REGION - GENERAL

**Overview of Policies and Programs:**

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

Brief summaries of policies (e.g. Wild Salmon Policy, Allocation Policy, Improved Decision Making, and Selective Fishing), brief summary of programs and treaties.

**Oceans Program:** (<http://www.dfo-mpo.gc.ca/oceans/oceans-eng.htm>)

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

**Pacific Region – Fisheries Management Main Page:**

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

**Twitter: DFO Pacific@DFO\_Pacific**

Information about Fisheries and Oceans Canada in the Pacific Region



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**Compliance and Enforcement:** (<http://www.dfo-mpo.gc.ca/fm-gp/enf-loi/index-eng.htm>)

Enforcement issues and strategies, “*Observe, Record, Report*”.

**Treaty and Aboriginal Fisheries Programs:**

(<http://www.pac.dfo-mpo.gc.ca/abor-autoc/agreements-ententes-eng.html>)

Aboriginal Fishing, AFS Agreements, Programs, Treaty Negotiations.

**Recreational Fisheries:** (<http://www.pac.dfo-mpo.gc.ca/yukon/rec/index-eng.html>)

General information for salmon fishing: licencing, species ID, restricted fishing areas, tagging and test fishing, DFO office locations; Fishing Notices.

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

groundfish, pelagic and minor finfish, salmon and shellfish homepages; test fishing and selective fishing information; commercial fishery notices (openings and closures); Integrated Fishery Management Plans.

**Integrated Fisheries Management Plans:** (<http://www.pac.dfo-mpo.gc.ca/fm-gp/ifmp-eng.html>)

(Registration required to view page); Groundfish, Herring, Shellfish (invertebrates), Minor Finfish, Salmon, Archived Management Plans.

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

Want to receive fishery notices by e-mail? If you are a recreational sport 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, easy and free.

**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.

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

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

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

E-mail: [fishing-peche@dfo-mpo.gc.ca](mailto:fishing-peche@dfo-mpo.gc.ca) (include your name and the DFO Region in which you fish).

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

Salmon facts, salmon lifecycle, salmon fisheries, enhancement and conservation, research and assessment, salmon consultations (meeting schedules, minutes); policies, reports and agreements; glossary of salmon terms.



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**Regional Publications Online:** (<http://www.pac.dfo-mpo.gc.ca/publications/index-eng.html>)

Agreements, treaties and acts, brochures and fact sheets, guideline documents, newsletters, reports and technical publications.

**Ecosystems:** (<http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>)

Working near water, publications (legislation, policy, guidelines, educational resources, brochures, newsletters and bulletins, papers and abstracts, reports).

**Species at Risk Act (SARA) Legal Listings Consultations:** ([www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)).

Information on the *Species at Risk Act* and how it is being implemented; Links to SARA public registry, COSEWIC, Canada Gazette; listing of current consultations.

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

Science divisions, research facilities, PSARC, international research initiatives.

**Community Mapping Network:** (<http://www.cmnbc.ca/>)

Community Mapping Network (CMN) is to provide a service that collects and integrates natural resource information, maps and mapping information to promote sustainable resource management and to assist planning sustainable communities in the Yukon and British Columbia, Canada

**Maps with Data & GIS Info:** (<http://www.pac.dfo-mpo.gc.ca/gis-sig/maps-cartes-eng.htm>)

GIS Maps and Data

## YUKON TRANSBOUNDARY RIVERS AREA

**Fisheries and Oceans Canada, Yukon Transboundary Rives Area:** (<http://www.pac.dfo-mpo.gc.ca/yukon/index-eng.html>)

## YUKON RIVER PANEL

**Yukon River Panel:** (<http://yukonriverpanel.com/salmon/>)

*Yukon River Salmon Agreement*, Restoration and Enhancement Fund Reports, Panel reports.

## YUKON SALMON SUB-COMMITTEE

**Yukon Salmon Subcommittee Homepage:** (<http://www.yssc.ca/>)

A public advisory body to the Minister of Fisheries & Oceans Canada and Yukon First Nations.

## FORWARD

The purpose of this Integrated Fisheries Management Plan (IFMP) is to identify the main objectives and requirements for the Canadian Yukon River 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) staff, legislated co-management boards and committees (including the Yukon Salmon Sub-Committee), First Nations, harvesters, and other interested parties. This IFMP provides a common understanding of the basic “rules” for the sustainable management of the fisheries resource.

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

Where DFO is responsible for implementing obligations under Yukon First Nation Final Agreements, the IFMP will be implemented in a manner consistent with those obligations.

In an effort to reduce the length of the IFMP, the focus has shifted from detailed descriptions of specific information to an integrated discussion of the purpose behind management measures, with extensive references to websites covering the details. Most of the details gauged to be of specific interest to Yukon fishers (biological synopsis, spawning stock status, overview of the fishery, landings and markets, assessment processes and legislation) have been retained.



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## NEW FOR 2015/2016

### Highlights / Key Changes for the Yukon River IFMP

- a) Yukon Salmon Conservation Catch Card:
  - Anglers who plan to fish for salmon in the Yukon (Yukon River mainstem and all tributaries as well as the Alsek River watershed) may now purchase their Salmon Conservation Catch Card online (<http://www.pac.dfo-mpo.gc.ca/yukon/rec/catchcard-carteprises-eng.html>)
- b) Yukon River Mainstem (Chinook Salmon):
  - Below average / poor pre-season outlook.
  - Updates to the in-season management matrix.
  - Limited First Nation subsistence fishery allocation anticipated – contingent on in-season run abundance.
  - Localized or broad (watershed) restriction of recreational fishery anticipated.
  - No directed commercial or domestic fishery opportunities anticipated.
- c) Yukon River Mainstem (Fall Chum Salmon):
  - Above average / strong pre-season outlook
  - No restriction of First Nation subsistence fishery allocation anticipated.
  - No restriction of recreational fishery anticipated.
  - Opportunity for directed commercial and domestic fishery anticipated.
- d) Porcupine / Fishing Branch River (Fall Chum Salmon):
  - Very poor pre-season outlook / minimum spawning escapement may not be achieved.
  - In-season restriction of fisheries may be required - contingent on run abundance.



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# 1. OVERVIEW

## 1.1 Introduction

Fisheries and Oceans Canada is responsible for the conservation and sustainable use of Canada's fisheries resources and is the principal management authority for Yukon River salmon. In addition to Fisheries and Oceans Canada's role, the management of salmon harvest in Canadian portion of the Yukon River involves a number of Governments and mandated bodies. The Yukon Salmon Sub-Committee (SSC) of the Fish and Wildlife Management Board is established pursuant to Chapter 16 of each *Yukon First Nation Final Agreement*, as described in the framework *Umbrella Final Agreement* (UFA). The SSC is established as the main instrument of salmon management in the Yukon and has the mandate to make recommendations, in the public interest, to the Minister of DFO and Yukon First Nations on matters related to salmon. The SSC is required to annually consult with Yukon First Nations and subsequently provide recommendations to the Minister of DFO on allocation of salmon by both user groups and areas. DFO supports the SSC through the provision of technical expertise, provision of secretariat support, and participation in the First Nation consultation and public meeting processes. The engagements of the SSC have been established as the principal form of First Nation, public and stakeholder consultations on all matters pertaining to Yukon River salmon in Canada.

As Canadian-origin salmon from the upper Yukon River migrate through Alaska, the United States fishery on the Yukon River has a large influence on the salmon returning into the Canadian section of the drainage. Given the Transboundary (international) nature of the Yukon River, management of Canadian-origin salmon stocks are governed under Chapter 8 of the *Pacific Salmon Treaty* (PST) (*Yukon River Salmon Agreement* (YRSA)). The YRSA is implemented through the bilateral U.S. Canada Yukon River Panel which has the authority to provide recommendations on escapement goals, harvest sharing provisions and management measures to signatories to the Agreement. Consistent with Yukon First Nation Final Agreements, SSC members comprise the majority of the Canadian members of the Yukon River Panel.

This IFMP, and management strategies described within, are based on recommendations from the Yukon River Panel, the SSC and Yukon First Nations and covers a one-year span. It concerns the management strategies for Chinook and fall chum<sup>1</sup> salmon fisheries on the Yukon River. The IFMP contains comprehensive decision guidelines, which set out the rationale for management decisions and describes the range of departmental responses to changing in-season information. Decision guidelines may be reviewed and modified, if necessary, to reflect new considerations. This document also contains a brief overview of Yukon River salmon fisheries, and is meant to inform fishers, processors and other interested parties about the expected run sizes, management considerations and plans.

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<sup>1</sup> Canadian-origin Yukon River chum salmon are referred to as "fall chum" salmon since their timing and genetic stock identification is distinct from "summer chum" salmon, which typically migrate earlier and spawn mostly within US portions of the drainage.



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Management actions outlined in this plan are subject to change in response to in-season variables such as salmon migration timing, abundance, and environmental conditions. While fishing opportunities outlined in this plan are anticipated based on pre-season information, they are not guaranteed. The SSC and DFO will continue to consult with First Nations, commercial, domestic<sup>2</sup> and recreational fishers throughout the season regarding fishing activities and allocations, particularly when in-season revisions are required to address specific conservation concerns.

The development and implementation of this IFMP supports the Departmental commitment to achieving long-term goals of salmon conservation, sustainable use of the resource and improved decision-making processes through consultation. Names, addresses and telephone numbers of the principal contact persons involved with Yukon River salmon management matters appear in the Contacts section of this document. Feedback on this IFMP is encouraged so that future plans can be made as useful as possible to stakeholders.

General information, such as details about biology, policy, historical information and many other departmental initiatives can be found online through a variety of web links listed in the Index of Web-Based Information section of this document.

## 1.2 History

Salmon have always played a pivotal role in the fabric of the Yukon. They are an integral part of the ecosystem providing a source of food and nutrients for a wide variety of flora and fauna. They have been a key food source for First Nations for millennia and more recently, played a very important part in the socio-economic life and in the developmental history of north-western Canada.

Because of their significance and the very high level of interest in ensuring these populations can endure, prudent and careful management supported by the broad spectrum of interests is required. Salmon are currently under a variety of threats including unstable conditions resulting from environmental changes, marine conditions, and in some cases, overexploitation.

## 1.3 Location of Fishery

This IFMP describes the Chinook and fall chum salmon fisheries in the Canadian portion of the Yukon River watershed (see Map Appendix 8).

## 1.4 Types of Fishery, Participants and Characteristics

There are four different types of fisheries for salmon in the Canadian portion of the Yukon River drainage including: First Nation (subsistence); commercial; recreational; and domestic<sup>2</sup> fisheries.

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<sup>2</sup> The Yukon domestic fishery is considered a non-aboriginal subsistence fishery.



### *1.4.1 First Nation Fishery*

The longest standing fishery in the Yukon is the First Nation fishery, which is widespread throughout the Yukon River drainage in Canada. Yukon First Nation fishers have traditionally relied heavily on the salmon resources of the Yukon. In accordance with DFO's approach to fishery prioritization in the Yukon, once conservation needs are met Yukon First Nation fisheries receive primary access to salmon. The First Nation subsistence fishery is managed through DFO's communal licensing process. As per individual First Nation Final Agreements, First Nation individuals who wish to fish for subsistence purposes outside their traditional territory must first obtain consent from the First Nation whose territory they wish to fish in.

Currently 12 communal licences are issued annually to First Nations within the Yukon (including the Porcupine River) watershed. Subsistence fisheries primarily employ set gillnets, fish wheels (in larger tributary sites and in the mainstem Yukon River) drift gillnets (in the Teslin River), and gaffs in the smaller headwater streams. Depending on annual run timing, First Nation fishers usually commence fishing for Chinook salmon in early to mid-July and continue until subsistence needs are met. Fishing for fall chum salmon in the upper Yukon is usually completed by mid-October. However, on the Porcupine River, the fishery continues to operate through November with netting frequently occurring under the ice.

### *1.4.2 Licencing Service Changes*

Fisheries and Oceans Canada (DFO) introduced the web-based National Online Licensing System (NOLS) in the spring of 2013. This web-based system replaces in-person counter service at Pacific Fishery Licencing Units. Commercial fish harvesters/licence holders/vessel owners will now use the new online system to view, pay for and print their commercial fishing licences, licence conditions and/or receipts.

Commercial fish harvesters received a one-time use DFO Passcode in 2013 which allowed them to log into NOLS to register and activate their accounts. On initial log-in, commercial fish harvesters created their own unique Username and Password which must be used to access their NOLS accounts in order to pay licence fees and request issuance of a licence.

Licence renewal and payment of fees is mandatory on an annual basis prior to the expiry date of each fishery, in order to maintain the eligibility to be issued the licence in the future. Please note the licence eligibility will cease if it is not renewed annually.

In 2015, documentation will be provided by email detailing full procedures for salmon licence renewal/fees payment via NOLS, including the new 'Submit Request' feature allowing communal commercial licence eligibility holders to designate a vessel (application forms no longer required). Upon DFO receiving the required payment and all necessary information (i.e. logbook clearance), the licence will be issued and notification will be sent via email to advise licence holders/vessel owners that a change has been made to the licence holder's NOLS account. The licence documents,



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licence conditions and receipt will be available to be printed from NOLS at that time. For queries, NOLS access problems, or transactions that are not yet available in NOLS (e.g. vessel replacements and nominations), licensing services will continue to be available via:

Telephone: 1-877-535-7307 (request / identify 'Pacific Region')  
Fax: 1-604-666-5855  
E-mail: [fishing-peche@dfo-mpo.gc.ca](mailto:fishing-peche@dfo-mpo.gc.ca) (specify 'Pacific Region' in the subject line)

Please visit the Pacific Region Licencing website and subscribe to fishery notices for updates on NOLS and licencing services: <http://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/index-eng.html> . Information on NOLS may be found on the DFO internet site at: <http://www.dfo-mpo.gc.ca/fm-gp/sdc-cps/licence-permis-eng.htm>.

### *1.4.3 Commercial Fishery*

The Canadian Yukon River commercial salmon fishery began in 1898 and the first licences were issued the following year by the Royal Northwest Mounted Police (RCMP) under authority granted from L.H. Davies, the then Minister of the Federal Department of Marine and Fisheries. The commercial fishery currently involves up to 22 licensed fishers, with a minimum of eight additional licences guaranteed to Yukon First Nations (total of 30).

The mainstem Yukon River commercial salmon fishery is restricted to the following areas:

- a) In the Yukon River, downstream from Tatchun Creek to Dozen Islands (excluding a closed section around the mouth of the Klondike River);
- b) In the Stewart River downstream from the mouth of the McQuesten River until September 30, otherwise closed; and
- c) In the Pelly River downstream from the mouth of the MacMillan River.

Commercial fishing gear may consist of:

- a) Up to three fish wheels;
- b) Up to two fish wheels and up to 45 meters of gillnet (2 nets maximum);
- c) One fish wheel and up to 65 meters of gillnet (3 nets maximum); or
- d) Up to 90 meters of gillnet consisting of a maximum of four nets.

Fish wheels are only permitted in the mainstem Yukon portion of the commercial fishing areas.

During years of sufficient salmon abundance (when there are no conservation concerns), the commercial fishery typically opens in early July for Chinook salmon with specific schedules dependent upon run timing and the strength of the run. The commercial fishery for fall chum salmon



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occurs after Chinook (based on run timing), peaking in mid-September and concluding in mid to late October.

#### *1.4.4 Recreational Fishery*

The first official recreational salmon fishing licences in the Yukon were issued in 1949 shortly after the construction of the Alaska Highway (1942-1947). The majority of recreational fishing effort for salmon in the Yukon River watershed occurs in the mainstem near Tatchun Creek, as well as Klondike, Teslin, and Pelly Rivers. The timing of recreational Chinook salmon fishing effort on the Yukon River is typically from mid to late July through August. It is unlawful to use any hook other than a single-pointed barbless hook with a distance of 2 cm (3/4 in.) or less between the point and the shank while angling for salmon in the Yukon River and major tributaries from July 1st to October 15th. Fall chum salmon are not commonly targeted in the recreational fishery.

In addition to holding a valid Yukon Angling Licence, anglers targeting Yukon River salmon are also required to obtain a Yukon Salmon Conservation Catch Card (YSCCC) prior to fishing for salmon. If a salmon is caught and landed, the angler must immediately record the date, location, species, sex, presence of tags, presence of adipose fins and type of gear used. This information must be recorded even if the salmon is intended to be (or is) released. All recreational anglers who are issued a YSCCC must return the completed card (even if salmon fishing did not occur, or no salmon were caught) to DFO by no later than November 30. Failure to submit the YSCCC could result in a fine or forfeiture of future recreational salmon fishing privileges. For the 2015 season, the YSCCC is available for purchase online, as well as a number of vendors throughout the Yukon.

#### *1.4.5 Domestic Fishery*

The domestic fishery was first initiated in 1899 to allow British subjects and Yukon residents to fish for personal use with up to 300 yards of gillnet. This fishery was eliminated in 1961 but then re-instated in 1974 to allow Yukon residents living in remote areas to harvest salmon for food. The domestic fishery currently involves 7 licensed fishers who fish primarily for Chinook salmon. Domestic fisheries are restricted to the same geographic areas as commercial fisheries while fishing gear is limited to one gillnet of up to 90 meters in length. When there are no conservation concerns, the domestic fishery generally follows the same schedule of openings and closures as the commercial fishery.



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## 2. 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 resources. This section provides a brief overview of key policies and the legal context for Pacific salmon management. Policies are 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.

Additional information is accessible on-line and can be found through the Index of Web-based Information in this report.

### 2.1 Pacific Salmon Treaty

In March 1985, Canada and the United States agreed to co-operate in the management, conservation, harvest sharing, research and enhancement of Pacific salmon stocks of mutual concern by ratifying the PST. The Pacific Salmon Commission (PSC), established under the PST, provides regulatory and policy advice as well as recommendations to Canada and the United States with respect to interception salmon fisheries.

Although fishing arrangements pertaining to Yukon River salmon stocks were not initially included in the PST when it took effect in 1985, it did commit the Parties to negotiate arrangements for the Yukon River salmon. Subsequently, negotiations regarding the conservation, harvest, management, restoration and enhancement of Canadian-origin Yukon River salmon stocks were undertaken between the Parties. Between 1985 and 2001 Canadian and U.S. delegations, which included First Nation representatives, fishers, processors and government representatives met frequently to negotiate the needs of each Party. On March 29, 2001, Canadian and U.S. negotiators initialed a draft YRSA intended to address key matters pertaining to Canadian-origin salmon in the Yukon River issues. Highlights of the agreement include: the creation of the Yukon River Panel (YRP) and Yukon River Joint Technical Committee (JTC); conservation and harvest sharing targets for Canadian-origin salmon stocks; guidance for coordinated management (including spawning requirements), rebuilding plans, habitat protection and restoration and enhancement guidelines; and, the Yukon River Restoration and Enhancement Fund (REF). With an exchange of diplomatic notes in December 2002, the Parties ratified the YRSA as Chapter 8 of the PST.

### 2.2 Umbrella Final Agreement and Yukon First Nation Final Agreements

The Umbrella Final Agreement (UFA) was approved in 1993 by the Government of Canada, Government of Yukon and Yukon First Nations as represented by the Council of Yukon First



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Nations (CYFN). The UFA has served as a framework for the establishment of 11 individual Yukon First Nation Final Agreements ratified in the Yukon to date. Yukon First Nation Final Agreements represent an exchange of undefined aboriginal rights for defined treaty rights. Individual Yukon First Nation Final Agreements set out specific rights for the particular First Nation and its Citizens which are protected under the Canadian Constitution. Importantly, Chapter 16 of the Final Agreements establish the framework for many aspects of salmon management and allocation processes in the Yukon, including the creation of the Yukon Salmon Sub-Committee and guaranteeing that the majority of Canadian representation on the Yukon River Panel is comprised of Salmon Sub-Committee members. First Nation access to Yukon River salmon for subsistence harvest purposes is afforded the highest priority after conservation requirements are met.

## 2.3 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 (FSC) 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).

Where First Nation treaties have not been finalized, 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, as well as stock and enhancement programs.

The Aboriginal Aquatic Resources and Oceans Management (AAROM) program has been implemented in some areas 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 – a level at which there is a certain number of 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.



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

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

The *Wild Salmon Policy* (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 policy provides for the identification of irreplaceable groupings of stocks (called "Conservation Units" (CU)) and the identification of upper and lower benchmarks that are a measure of the status of each CU. Other features of the WSP include the monitoring of habitat status and a process for public engagement in the establishment of long term strategic plans for Conservation Units. In implementing the WSP, the Department has focused on the identification of Conservation Units following a standardized methodology, which included the examination of the distribution and timing of salmon, genetics, eco-regions and climate.

For Canadian-origin Yukon River Chinook salmon, 12 Conservation Units have been identified:

1. North Yukon River (including the Yukon River and tributaries downstream of the Stewart-Yukon confluence);
2. Mid Yukon River (extending from the White-Yukon confluence upstream (and including) the Little Salmon drainage);
3. Upper Yukon and tributaries upstream of the Yukon-Teslin confluence;
4. Stewart River and tributaries;
5. White River and tributaries;
6. Pelly River and tributaries;
7. Nordenskiöld River and tributaries;
8. Big Salmon River and tributaries;
9. Teslin River including tributaries and headwaters;
10. Old Crow River (tributary to Porcupine River);
11. Salmon Fork River (tributary to Porcupine River);
12. Porcupine River and all other tributaries (excluding Old Crow and Salmon Fork Rivers).

For chum salmon, 7 Conservation Units have been identified:

1. North Yukon River downstream from the Yukon-White confluence;
2. Middle Yukon River;
3. South Yukon River upstream of the Yukon-Teslin confluence;



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4. White River and tributaries;
5. Teslin River and tributaries;
6. Porcupine River and tributaries including the Fishing Branch;
7. Old Crow River (tributary to the Porcupine River);

In the future, the Department anticipates a review and renewal of the Wild Salmon Policy Implementation Plan in order to allow alignment with changes to legislation and programs since its release in 2005.

*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 this plan.

## 2.5 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 identifying standards that must be achieved as well as clarifying roles and responsibilities of the Department and harvesters. Catch monitoring programs have been developed for Yukon fisheries including First Nation (subsistence), domestic, recreational and commercial. Monitoring programs will ensure that the fishery information required to make critical management decisions is available to all those who need it, when it is required. Furthermore, catch data required to effectively manage and report on domestic and international harvest sharing arrangements. The Department finalized the “Strategic Framework for Fisheries Monitoring and Catch Reporting in the Pacific Fisheries” (the Framework) in the spring of 2012. The Framework outlines how consistent risk assessment criteria can be applied to each fishery to determine the level of monitoring required, while allowing for final monitoring and reporting programs to reflect the fishery's unique characteristics. More information is available at:

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

## 2.6 Species at Risk Act

The *Species at Risk Act* (SARA) came into force in 2003. The purposes of the Federal Act are “to prevent wildlife species from being extirpated or becoming extinct, and to provide for the recovery of a wildlife species that is 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”. By definition, an extirpated wildlife species is a species that no longer exists in the wild in Canada but exists elsewhere in the wild, whereas, an extinct wildlife species is a wildlife species that no longer exists.



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In addition to the existing prohibitions under the *Fisheries Act*, it is illegal to kill, harm, harass, capture, take, possess, collect, buy, sell or trade any species listed under SARA or any part or derivative of an individual of a SARA listed species. It is also illegal to damage or destroy a listed species residence. 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.

In the Yukon, one fish species is currently listed under SARA. The Squanga whitefish (*Coregonus sp.*) is listed under schedule 3 of SARA with a status designation of “special concern”. Squanga whitefish has only been found in Dezadeash, Squanga, Seaforth, Little Teslin and Teenah lakes in south-central Yukon.

The Bering cisco is an anadromous whitefish species commonly encountered in the Yukon River and in the coastal waters of Alaska in the Bering, Beaufort and Chukchi seas. Within the Yukon River drainage, spawning migrations are almost exclusively limited to Alaskan tributaries, although a few enter Canadian portions of the drainage with sporadic observations occurring as far upstream as Dawson City. Bering cisco were occasionally caught in assessment fish wheels operated by DFO between 1982 to 2008 as well as gillnets fished by Dawson area fishers. In 1990, the Bering cisco (*Coregonus laurettae*) was considered by the *Committee On the Status of Endangered Wildlife In Canada* (COSEWIC) as a species of special concern however has not been listed due to limited information on presence and uncertainty over any identified threats in the Canadian portion of the Yukon River. Consultations regarding the potential listing of Bering cisco indicated there was little support for listing this species due to the abundance of neighboring Alaskan populations in the upper Yukon River. More information on SARA or COSEWIC can be found at: [www.cosewic.gc.ca/index.htm](http://www.cosewic.gc.ca/index.htm) or [www.sararegistry.gc.ca/](http://www.sararegistry.gc.ca/).

## 2.7 Salmonid Enhancement Program

The Salmonid Enhancement Program (SEP) in the Pacific Region is comprised of nearly 300 projects including 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). SEP enhances Chinook and chum salmon at the population level supporting sustainable fisheries through fish production that provides harvest opportunities. Fish production from the program also supports stock assessment and conservation, both of which enable harvest management as well as community involvement and public education. Although the vast majority of SEP projects are located in British Columbia, a few existing (and emerging) projects have been fostered in the Yukon.



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## 2.8 Scientific Support

The research activities of the Department's Science Branch are summarized in annual reports and/or scientific papers that are peer reviewed through the Pacific Scientific Advice Review Committee (PSARC), which has recently been changed to the Centre for Scientific Advice – Pacific (CSAP). The advice is then forwarded to the appropriate sectors for review and adoption as required. Additional information and PSARC reports are available at: (<http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/research-recherche/assessment-eng.html>)

Research on Yukon River salmon stocks is being conducted through coordinated efforts of the Department, U.S. agencies (ADF&G, USF&W and NMFS), Yukon First Nations and a number of private firms and academic institutions. Many of the public programs and some government projects are funded through the Yukon River Restoration and Enhancement Fund.

In addition, investigations into the marine ecology of Pacific salmon are continuing through the Bering-Aleutian Salmon International Survey (BASIS). This program, which commenced in 2000, is designed to improve the understanding of the biological response of salmon within an ecological context during a period of climate change. More information on BASIS can be found at: [http://www.npafc.org/new/science\\_basis.html](http://www.npafc.org/new/science_basis.html).

The annual report of the JTC provides additional information on research and management-related activities undertaken on the Yukon River. The most recent JTC report can be accessed through the YRP website at: <http://yukonriverpanel.com/salmon/publications/joint-technical-committee-reports/>

## 2.9 Integrated Fisheries Management Plan Approval Process

Following the development of this IFMP the Department's Yukon Transboundary Rivers Area operational office, the plan is reviewed by senior Departmental officials with responsibility for salmon management in Pacific Region. The Yukon River Chinook and Chum Salmon IFMP is considered final once approved by the Pacific Regional Director General of Fisheries and Oceans Canada.



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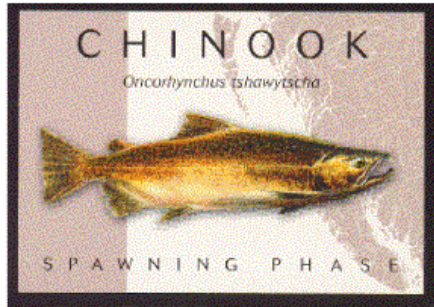
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### 3. STOCK ASSESSMENT, SCIENCE and TRADITIONAL ECOLOGICAL KNOWLEDGE

#### 3.1 Biological Synopsis

##### 3.1.1 Chinook Salmon (*Oncorhynchus tshawytscha*)



Chinook salmon spawn in streams and rivers along the west coast of North America. The Yukon River is one of the most northerly of the major Chinook spawning rivers, and hosts some of the longest upstream migrating salmon stocks in the world. Some headwater stocks migrate in excess of 2,960 kilometers in freshwater to reach their spawning grounds in the Yukon and northern British Columbia. The majority of Chinook salmon spawning in the upper Yukon River occurs

in August, with some degree of variability depending on the exact latitude of the spawning stream

In the Yukon River drainage basin, Chinook fry emerge during the spring and early summer from the gravel in which they were spawned. Some fry leave the rivers of their birth, or “natal” streams, soon after emergence. They may be carried downstream into larger rivers by the spring freshet. At some point, many will then migrate into other streams to feed. These streams may not have been used by spawning Chinook, in which case they are called “non-natal” streams. Young-of-the-year start to enter non-natal tributaries in late June and may migrate significant distances upstream (in a number of documented cases upwards of 75 kilometers) and hundreds of kilometers downstream. High densities may be found immediately downstream of physical obstructions such as beaver dams. Monitoring activities have also identified major emigrations from smaller tributaries during summer high water events. In large rivers, juvenile Chinook are most easily found along margins and in the mixing zones below where streams and rivers join the Yukon River. In lakes, they have been found in nearshore waters and near the mouths of tributaries. Juveniles may be abundant in tributaries not used for spawning. Populations of young-of-the-year (age-0+) juveniles in non-natal, non-spawning streams generally have a larger average body size than those in natal streams at any given time. Body size also tends to be larger for fry that are ascending non-natal and non-spawning tributaries at any given time after the start of the upstream migration of juveniles.

Yukon River Chinook salmon fry must grow rapidly and build up reserves of fat for their first winter in freshwater. This is called the freshwater “rearing” phase. Successful over-wintering of age-1+ juveniles has been documented only in streams and smaller rivers, although it is expected to also occur in larger rivers. Over-wintering has not yet been documented in lakes. No juvenile Chinook salmon were identified in the stomachs of 219 predatory fish (burbot, lake trout and inconnu) captured in Lake Laberge during the winters of 1985 through 1989. Some Chinook fry never leave the freshwater environment. These fish, which are almost invariably males, mature and



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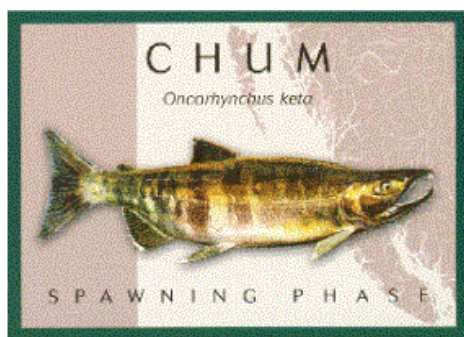
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reach spawning condition at a small size and are referred to as residuals. In spring, some portion of the over-wintering population remains in small streams until early to mid-June.

The downstream migration of juveniles was studied in the Dawson city area in 2002, 2003 and 2004 using a rotary screw trap operated on the mainstem Yukon River upstream of the Klondike River confluence. One important finding was the observation that large numbers of age 0+ juveniles present in the Dawson area had emigrated from up river tributaries located several hundreds of kilometers upstream.

### 3.1.2 Fall Chum Salmon (*Oncorhynchus keta*)



Fall chum salmon spawn in rivers and streams along most of the west coast of North America, and along the Bering and Arctic coasts eastwards to, and including, the Mackenzie River drainage. The upper Yukon River stocks of this species may have the longest upstream fall Chum spawning migration in the world with some stocks migrating over 2,700 kilometres<sup>3</sup> in freshwater. In more southerly rivers, adult freshwater migrations tend to be much shorter with spawning occurring closer to the estuaries.

There are two runs of chum salmon that enter the mouth of the Yukon River. The first to arrive are the “summer chum”, which enter the river mouth in early June and reach peak abundance around the third week of June. Fall chum generally spawn in the lower 800 kilometres of the Yukon drainage and, until recently, were not believed to migrate into the Canadian section of the drainage. The observance of early-timed fall chum salmon found in the Chandindu River, Mickey Creek (tributary of the Fortymile River), and the Klondike River could possibly be a component of the larger Yukon River “summer chum” stock.

Adult fall chum salmon are characterized at the river mouth by later run timing, larger body size and a more silvery appearance than summer chum salmon. Spawning occurs primarily in the upper portions of the drainage. Compared to the summer run, fall chum runs are generally less abundant in overall number but do comprise nearly the entirety of the Canadian-origin stock.

Upper Yukon fall chum salmon return as spawning adults to the river mouth generally from mid-July through early September after spending up to five years in the ocean. Peak migration timing of fall chum salmon entering the Canadian portion of the drainage usually occurs mid-September. Predominant age classes of mature upper Yukon fall chum salmon include age-four (62%) and age-five (35%). Spawning has been documented in ground water discharge areas that have water with a

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<sup>3</sup> Spawning fall chum salmon have been observed spawning on the Teslin River near Boswell Creek and are known to migrate into Teslin Lake.



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fairly constant flow rate and temperature (between three and seven degrees Celsius), along cutbanks and in riffle areas of the mainstem Yukon, and in side channels and sloughs. Peak spawning usually occurs during October through early November.

Juvenile upper Yukon fall chum salmon emerge from the gravel during the spring (April/May). After emergence, they appear to spend little time in the natal area. By mid-June, most have moved away from the spawning areas however little is known about the downstream migration of juveniles although it likely occurs close to the time of spring break-up.

### 3.2 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.

DFO is moving away from management of salmon on a single species and moving towards an integrated ecosystem approach to science. Strategy 3 of *Canada's Policy for the Management of Wild Pacific Salmon*, also known as the WSP, states the Department's intent to progressively incorporate ecosystem values in salmon management (Inclusion of Ecosystem Values and Monitoring). Strategy 3 further identifies the actions required to incorporate ecosystem values as:

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

One of the greatest challenges in implementation of the WSP is balancing the goals of maintaining and restoring healthy and diverse salmon populations and their habitats, with social and economic objectives that reflect people's values and preferences. Standardized monitoring and assessment of wild salmon populations, habitat and eventually ecosystem status will facilitate the development of comprehensive integrated strategic plans (WSP Strategy 4) that will address the goals of the WSP while addressing the needs of people. Outcomes of these plans will include biological objectives for salmon production from Conservation Units and, where appropriate, anticipated timeframes for rebuilding, as well as management plans for fisheries and watersheds, which reflect open, transparent, and inclusive decision processes involving First Nations, communities, environmental organizations, fishers and governments.

The Department conducts programs to monitor and study environmental conditions. These programs include:

- Monitoring of physical and chemical ocean conditions,
- Chlorophyll and phytoplankton timing and abundance.

The 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.

### 3.3 Aboriginal Traditional Knowledge/Traditional Ecological Knowledge

Both Aboriginal Traditional Knowledge (ATK) and Traditional Ecological Knowledge (TEK) are cumulative knowledge gathered over generations and encompasses regional, local and spiritual connections to ecosystems and all forms of plant and animal life. ATK is knowledge held by Aboriginal peoples and communities, while TEK is local knowledge held by Non-Aboriginal communities, including industry, academia, and public sectors. While qualitatively different, both are cumulative knowledge that may also be gathered over generations and are regionally and locally specific and can often be utilized to improve the management process.

The growing awareness of the value of ATK and TEK is reflected in the increasing requirements for both to be included in environmental assessments, co-management arrangements, species at risk recovery plans, and all coastal management decision-making processes. ATK and TEK may inform and fill knowledge gaps related to the health of salmon stocks and to aid decision making related to development and resource use. Government and the scientific community acknowledge the need to access and consider ATK and TEK in meaningful and respectful ways. However, the challenge for resource managers is how to engage knowledge holders and how to ensure that the information can be accessed and considered in a mutually acceptable manner, by both knowledge holders, and the broader community of First Nations, stakeholders, managers, and policy makers involved in the fisheries.

The WSP acknowledges the importance of integrating ATK and TEK into the strategic planning process. The Department is exploring best practices to develop an approach for incorporating ATK and TEK into WSP integrated planning. The Department will also consider identifying potential partnerships with First Nation organizations to develop an approach for integrating ATK into WSP, particularly in planning initiatives.

The federal SARA makes a special reference to the inclusion of Traditional Knowledge in the recovery of species at risk. The Department has developed an operational guidance document for SARA practitioners (*Guidance on Considering Traditional Knowledge in Species at Risk Implementation, 2011*).



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### 3.4 Stock Assessment

Since 2009, a sonar program located at Eagle, Alaska (immediately downstream of the Canadian border) has been the main means of assessing both Chinook and fall chum salmon returning to the Yukon River (mainstem) in Canada and provides the border passage estimates necessary to manage mainstem Canadian fisheries. This sonar program replaced a long-standing mark-recapture assessment project. In the Porcupine River drainage, both a sonar program on the Porcupine River proper and a weir on the Fishing Branch have provided information on border passage / run size and spawning escapement of fall chum salmon.

In addition to these border passage assessments there are several other assessment programs that provide information on spawning escapement in select tributaries. Aerial surveys of select index areas in the upper Yukon River are conducted in some years. The Whitehorse Rapids Fishway provides information on the escapement of wild and hatchery-origin returns into the upper Yukon drainage above the Whitehorse hydroelectric dam. Additional escapement enumeration projects are conducted by other parties including First Nations and independent contractors supported by the Yukon River Restoration and Enhancement Fund.

Most catch and escapement monitoring programs also include a sampling component to determine the age, size and sex composition of the fish being monitored. Ages are usually determined from scale readings however samples collected from fish in spawning areas may include additional structures such as fin rays and otoliths as scales are frequently resorbed. Spaghetti-tagged fish recovered in headwater tributaries provide valuable information about migration rates and run timing.

Considerable effort is being spent on collecting tissue samples from major spawning populations throughout the Yukon drainage to complete the genetic baselines for genetic stock identification (GSI) and to increase the capability to monitor specific stocks and/or groups of stocks that lack escapement data. GSI baseline sampling is being incorporated into many existing stock assessment projects (both agency and non-agency funded projects) throughout the drainage. The fall chum salmon genetic baseline is considered to be well developed, whereas the Chinook salmon baseline requires considerable effort due to the many individual stocks (approximately 100) and remote location of many of these stocks.

### 3.5 Precautionary Approach

Generally, scientific advice to Fisheries Managers 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 continuation of the precautionary approach to management of salmon resources. Decisions on recovery and fisheries objectives will consider the Strategic Planning Process described under WSP Strategy 4.



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### 3.6 Research

An overview of the science & research in the Pacific Region is available on DFO's Pacific region website (see index of web-based information).

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. In 2011, DFO implemented a science-based climate change program focused on adaptation in decisions and activities to consider the vulnerabilities, risks, impacts, and opportunities associated with a changing climate.
- Salmon in Regional Ecosystems (SIRE) program investigates the mechanisms controlling recruitment variations and changes in productive capacity of salmon stocks within freshwater and/or marine ecosystems.
- Ongoing research related to improving forecasting ability for salmon stocks and CUs is being conducted by DFO Stock Assessment and the Fisheries & Oceanography Working Group. The annual State of the Pacific Ocean Report is published by the Canadian Science Advisory Secretariat (CSAS) and is available at:  
<http://www.meds-sdmm.dfo-mpo.gc.ca/csas-sccs/applications/publications/index-eng.asp>
- DFO scientists and in collaboration with other organizations (North Pacific Anadromous Fish Commission (NPAFC), 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.

## 4. SOCIAL CULTURAL AND ECONOMIC IMPORTANCE

### 4.1 Aboriginal Participation

First Nation culture recognizes the importance of stewardship and responsibility to care for salmon, a responsibility that has been handed down over time. Part of this stewardship responsibility is to ensure that salmon are available for future generations. Through their fishing activities, First Nation communities are able to maintain a linkage to the salmon and gain knowledge of the salmon stock's abundance and health. This continued awareness allows First Nation people to contribute to support the development of effective management strategies through the provision of information on local and regional observations. Consultation and engagement with First Nations includes participation on a number of levels and in a variety of ways. These exchanges and involvement may include bilateral consultations, advisory processes, management boards, technical groups and other roundtable forums.

Generally, DFO manages aboriginal fisheries to provide access for food, social, ceremonial (FSC) and for commercial purposes. With respect to fishing for FSC purposes, DFO manages this fishery to ensure that after conservation needs are met, the FSC fishery has priority over other fisheries.

### 4.2 Recreational Sector

Economic benefits from the recreational fishers include, but are not limited to the purchase of: angling licences, Salmon Conservation Catch Cards, angling equipment, accommodation and travel / air charter services. In addition to economic benefits, recreational fishing also has added social and cultural benefits as it is considered a tradition and lifestyle for many people. Fishing provides people with the opportunity to interact with the natural environment and increases their awareness of salmon resources. The increased awareness is commonly associated with an enhanced sense of stewardship as well as overall social value.

### 4.3 Commercial Sector

Commercial fishers benefit from the salmon fishery economical, socially and culturally. The economic elements are often assessed through financial gains associated with commercial fishing activities, although the social and cultural benefits are not as easily quantified. Fishers may also derive benefits from the social aspects of the fishery, such as interactions with other fishers and fishery managers.



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## 5. MANAGEMENT ISSUES

### 5.1 Canada – U.S. International Agreement: *Yukon River Salmon Agreement*

In March 2001, Canada and the U.S. concluded the Yukon River salmon negotiations, which had been ongoing since 1971. The comprehensive Yukon River Salmon Agreement (YRSA) was been ratified by the Parties and incorporated into the PST in 2002. The YRSA contains specific obligations for the Parties to manage fisheries to achieve conservation and harvest sharing objectives for Canadian-origin Yukon River Salmon stocks.

### 5.2 Uncertainty Regarding Runs

There have been significant swings in the production of Yukon River salmon in recent years with generally poor runs in the 2007 to 2014 period for upper Yukon Chinook salmon, the 1998-2001 period for upper Yukon fall chum salmon and more recently for Fishing Branch River / Porcupine fall chum salmon. It is believed that changes in marine survival play a significant role in these abundance fluctuations and it is reasonable to expect this situation will continue in the foreseeable future. Changes in marine conditions have proven challenging to monitor and forecast while the resulting effects on salmon survival and production has been difficult to predict.

### 5.3 Uncertain Market Conditions

Low fish volumes and the lack of a major local buyer/processor have hindered the commercial fishery for over the past decade. Although the opportunity to harvest fall (mainstem) chum salmon is anticipated in 2015, the availability of viable markets due to remoteness and timing of the fishery is anticipated to continue to be a significant limiting factor.



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## 6. OBJECTIVES

### 6.1 Conservation Objectives

**Restore and maintain healthy and diverse salmon populations and their habitat for the benefit and enjoyment of the people of Canada in perpetuity.**

Fisheries will be managed in accordance with the WSP. The policy goal listed above will be advanced by safeguarding the genetic diversity of wild salmon populations, maintaining habitat and ecosystem integrity, and managing fisheries for sustainable benefits.

The fisheries management approach defined within the Yukon River Salmon Agreement of the PST is abundance-based. This approach defines resource conservation as the paramount objective, with harvest fluctuating according to actual abundance rather than to pre-determined (guaranteed) levels. Abundance-based management (ABM) approaches have been developed for upper Yukon Chinook and fall chum salmon as well as Porcupine (Fishing Branch) River fall chum salmon. On a drainage-wide scale, the full implementation of reliable ABM regimes awaits the development of improved in-season run abundance, harvest monitoring and stock identification techniques primarily in Alaskan fisheries.

DFO establishes escapement goals for the Chinook and fall chum salmon returns prior to each fishing season after considering recommendations from the YRP and SSC. The Yukon River Management Matrix was developed following extensive consultations with Yukon First Nations, fishers, the SSC. This Matrix provides specific reference (trigger) points that result in pre-defined management actions. The trigger points are separated into three management zones: the RED ZONE where no harvesting opportunities are available; the YELLOW ZONE where reductions to First Nation subsistence fisheries are implemented and no harvest opportunities through other fisheries exist; and, the GREEN ZONE where fishing opportunities for all fisheries are considered. Conservation concerns are foremost in years with low run sizes. Notably, following recommendations provided by the SSC, the Yukon River Management Matrix (mainstem Chinook salmon) has been updated for the 2015 season to improve alignment with the escapement objectives identified by the YRP.

The original escapement goals for rebuilt Canadian-origin fall Chum salmon within the mainstem Yukon River (>80,000) and the Fishing Branch River (50,000-120,000) within the Porcupine drainage were presented in Appendix 1 of the YRSA. Similarly, the initial rebuilt Canadian-origin Chinook salmon escapement goal (33,000-43,000) for the mainstem Yukon River was presented in Appendix 2 of the YRSA. The “mainstem” Yukon River is defined as the upper Yukon River drainage excluding the Porcupine drainage. These initial goals were developed without the benefit of a long time series of supporting data. In this regard the modification of goals, as more / new data becomes available, has been undertaken periodically by the YRP. In anticipation that escapement objectives may change, Paragraph 16 of the YRSA allows such revisions to occur.



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For 2015, the YRP adopted the following Interim Management Escapement Goal (IMEG) ranges:

42,500 – 55,000 for Canadian-origin Chinook salmon;

70,000 – 104,000 for upper Yukon River Canadian-origin fall chum salmon, and;

22,000 – 49,000 Canadian-origin Porcupine River fall chum salmon at Fishing Branch River.

## 6.2 First Nation Fisheries Objectives

**The objective is to manage fisheries in recognition of *Section 35* of the Canadian Constitution, constitutional priority of the First Nations fishery.**

Subject to conservation needs, first priority is afforded to First Nations for opportunities to harvest Yukon River salmon for FSC / subsistence purposes and any treaty obligations. Specific treaty obligations and considerations are described within individual First Nation Final Agreements.

## 6.3 International Objectives

**The objective is to manage Canadian fisheries on the Yukon River to ensure that obligations within the YRSA are achieved.**

Besides meeting the escapement, management, allocation and conservation targets described in this IFMP, Canada has an overarching international obligation to manage its harvest within agreed harvest sharing arrangements as defined within the YRSA.

## 6.4 Domestic Allocation Objectives

**The objective is to manage fisheries in a manner that is consistent with *An Allocation Policy for Pacific Salmon*.**

*An Allocation Policy for Pacific Salmon* can be found on-line at: <http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/pol/index-eng.html>. The *Allocation Policy for Pacific Salmon* identifies the priority for allocation of salmon harvest and sets sharing arrangements for each of the three different gear groups.

The allocation priorities are described below:



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**Priority 1:** Attain escapement goals and maintain fish habitat that will result in optimum production of the stocks;

**Priority 2:** Provide for the basic needs of the First Nation fisheries for FSC purposes, and for the Basic Needs Allocations, where specified, in First Nation Final Agreements; and

**Priority 3:** Provide salmon harvesting opportunities for recreational, commercial and domestic fishers. These fisheries are provided to harvest fish providing there are no restrictions required in the First Nation fishery.

International allocations are specified in the YRSA, whereas domestic allocations may be recommended by the SSC, in consultation with stakeholders. These recommendations are frequently influenced by the historical performance of respective fisheries.

Achieving these objectives in the Yukon drainage is difficult due to many factors such as: the biological complexity of the stocks; the wide distribution of spawning streams; wide fluctuations in run sizes; increasing efficiency and demands of user groups; and, the requirement for a precautionary approach to fisheries management that protects and conserves wild stocks.

## 6.5 Communication Objectives

**The objective is to provide timely information to fishers, communities and the public regarding the status of salmon runs and management decisions.**

Fisheries and Oceans Canada will compile and communicate weekly run status updates once Chinook salmon arrive at the international border. Included in the updates will be the latest stock assessment information based on the Eagle sonar assessment program, catch information and fishery management information (i.e. openings/closures) in both Canada and the U.S..

## 6.6 Enforcement Objectives

**The objective is to ensure compliance with Acts and Regulations associated with the management of Pacific salmon.**

The *Yukon Territory Fishery Regulations*, the *Fishery General Regulations* and the *Aboriginal Communal Fishing Licences Regulations*, established pursuant to the *Fisheries Act*, are the main legislative guides utilized by DFO for the management of salmon in the Yukon. The Conservation and Protection (C&P) program of Fisheries and Oceans Canada is responsible for monitoring and enforcing compliance with the *Fisheries Act* and the associated regulations in relation to anadromous fish in both lakes and river systems, and to ensure compliance with habitat provisions in all water frequented by fish. C&P will continue to work cooperatively with First Nations and



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other Federal and Territorial agencies and departments (e.g. Canadian Food Inspection Agency, Yukon Territorial Government Environment, etc.) to deliver services.

Fishery officers work closely with other management and enforcement agencies such as the Canadian Food Inspection Agency, RCMP, Renewable Resource/Conservation Officers, Parks Canada, Canada Border Services Agency and First Nation management bodies. These partners assist fishery officers in carrying out their mandate. Where possible, the sharing of human resources and equipment reduces the occurrence of overlapping patrols and shows a concerted effort to manage cost-effectively within a budget. Due to the remoteness and extensive size of the patrol area, patrol efforts are undertaken in a strategic manner based on pre-identified priorities or, where appropriate, as a result of complaints or identified concerns rather than on random/routine patrols.



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## 7. ACCESS AND ALLOCATION

Allocation decisions are made in accordance with the recommendations from the SSC, First Nation Final Agreements and the *Allocation Policy for Pacific Salmon*. The allocation policy is based upon a hierarchy of priorities. At low run sizes, subject to conservation concerns, the only fisheries that are provided an allocation are First Nations' fisheries for FSC purposes. At higher run sizes, fishing opportunities for recreational, domestic and commercial fisheries will be considered as long as the projected run abundance is sufficient to meet escapement and First Nation requirements. The Basic Needs Allocations (BNA) for First Nations that harvest mainstem Yukon River salmon have yet to be resolved; however, the BNA of chum, Chinook, and coho salmon for the Vuntut Gwitchin First Nation (VGFN) in the Porcupine River has been settled and is contained within the VGFN Final Agreement (16.10.7.4). Notwithstanding this, a primary objective of this management plan is to address the requirements of the First Nation fishery for FSC purposes, which is constitutionally protected.

### 7.1 Long Term Objectives for the Fisheries

There are four key long-term objectives:

- a) Meet the obligations contained in the Canada/U.S. *Yukon River Salmon Agreement*;
- b) Conserve and restore spawning stocks and habitats;
- c) Determine the basic needs of the First Nation fishery; and
- d) Develop and/or maintain sustainable and viable Canadian fisheries.

#### 7.1.1 Meeting Obligations of the Yukon River Salmon Agreement

The YRP met twice during the 2014/5 meeting cycle, once in December 2014 (in Anchorage) and once in April 2015 (in Whitehorse). Principal items addressed by the YRP included a post-season review of the 2014 salmon season, reviewing the 2015 run outlooks, evaluating re-building options for Porcupine (Fishing Branch) chum salmon, reviewing and approving projects to be funded under the REF in 2015 and recommending escapement goals for Canadian-origin Yukon River salmon stocks.

The Yukon Joint Technical Committee met twice during the past year and prepared the *Yukon River Salmon 2014 Season Summary and 2015 Season Outlook* annual report. The report is available through Fisheries and Oceans Canada, the Alaska Department of Fish and Game or the YRP website (<http://yukonriverpanel.com/salmon/wp-content/uploads/2009/03/rir3a201501.pdf> ).

Since 2002, Canadian Yukon River salmon management plans have been developed to ensure consistency with harvest sharing provisions of the YRSA. Extensive communications occur during each season between Canadian and U.S. fishery managers to exchange updated in-season data and fishery information. Through the REF, the Yukon River Drainage Fisheries Association (YRDFA)



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will again be hosting drainage-wide (U.S. / Canada) conference calls to gather and disseminate information about fishery and run status throughout the season. For 2015, the calls, which are intended for individuals from communities along the Yukon River, will occur at 14:00 hours (Pacific time zone) each Tuesday afternoon (commencing on June 2). In addition, DFO will be hosting weekly conference calls with Canadian First Nation representatives each Wednesday at 10:00 (commencing June 17<sup>th</sup>). The purpose of the weekly calls is to disseminate information on the status of Canadian-origin salmon runs, assessment programs, and the in-season management strategy.

### *7.1.2 Conserving and Restoring Salmon Spawning Stocks and Habitat*

Management measures taken to address conservation concerns for Yukon salmon stocks include closures and/or delayed openings of the commercial, domestic, and recreational fisheries. If conservation concerns exist, these fisheries are generally not opened until in-season assessments indicate that escapement targets and First Nation requirements will be achieved. Reduction or removal of the total allowable catch allocations to First Nation subsistence fisheries will occur through receipt of recommendations from the SSC or in emergency situations as described within Yukon First Nation Final Agreements. The general concern for conservation is heightened through the pre-season meetings and it is recognized there is a commitment to adjusting fisheries during times of poor abundance.

### *7.1.3 Determining Basic Needs Allocations in the First Nation Fishery*

The Yukon First Nation Final Agreements stipulate that the Basic Needs Allocations (BNA) for Yukon First Nation fisheries (mainstem salmon stocks) will be finalized after completion of the Yukon River Drainage Basin Harvest Study. The Harvest Study was completed after the 2002 season, however discussions regarding Yukon First Nation BNA have yet to be concluded.

### *7.1.4 Developing and/or Maintaining Sustainable and Viable Canadian Fisheries*

Progress on this issue has been accomplished through the implementation of an abundance-based management approach and through some of the harvest sharing, run rebuilding and restoration and enhancement provisions negotiated in the YRSA. As has become apparent during recent years of low productivity, the sustainability and/or viability of some fisheries at the levels maintained prior to 1998 is not likely achievable in the foreseeable future. During times when commercial harvest opportunities are low, greater effort will be required to maximize the benefit from the fish that can be harvested. This may require new approaches to the handling and processing of salmon and the development of innovative value-added approaches.



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## 8. DECISION GUIDELINES AND MANAGEMENT MEASURES

The comprehensive decision guidelines that follow outline the management responses that will be invoked under a range of 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.

Pre-season decisions are made during the development of fishing plans and are based on pre-season run outlooks. These decisions are the result of technical analyses and are based on advice received during consultations and YRP meetings. Some of the essential considerations include the identification of spawning escapement targets and the expected First Nations' harvest. These two items are required early in the process to facilitate the development of fishing plans and decision guidelines for other fisheries.

In-season assessment of the Canadian-origin upper Yukon chinook and fall chum salmon escapement rely on a combination of downstream (Pilot station sonar and lower Yukon Test Fisheries) assessment programs and the U.S./Canada Eagle sonar program located immediately downstream of the international border. For the Yukon River fisheries in Canada, management decisions will proceed cautiously and be guided initially by the pre-season run outlooks. As the season progresses, management decisions will be increasingly guided by in-season run size and escapement projections. Decision guidelines in this IFMP include specific run sizes or trigger points. These set the bounds for management zones (RED, YELLOW and GREEN ZONES), and detail which fisheries will proceed, be adjusted, or be closed.

### 8.1 Canadian-Origin Yukon River Chinook Salmon Decision Guidelines

#### 8.1.1 *Pre-season Canadian-Origin Yukon River Chinook Salmon Decisions - 2015*

The management of Canadian-origin Yukon River Chinook salmon is overseen under the umbrella of the YRSA. The YRP renewed an IMEG range of 42,500 – 55,000 for Canadian-origin upper Yukon River Chinook salmon for the 2015 season; this is the target number of Chinook salmon to reach the spawning grounds in the upper Yukon drainage in Canada. The success of achieving this goal will be based on data from the Eagle sonar program minus catch data from fisheries occurring upstream of the sonar, namely the estimated U.S. subsistence catch near the community of Eagle, Alaska and the catch data from Canadian fisheries.

The anticipated pre-season outlook for Canadian-origin Chinook salmon is 59,000 to 70,000 – a below average run size. Following a series of years where the lower end of the escapement goal has not been achieved (5 of the past 8 years), the significance of ensuring that a sufficient number of adult Chinook salmon reach spawning grounds in Canada is of paramount importance to sustaining the health of this stock into the future. In particular, the current period of low productivity and marginal stock recruitment rates (approximately only 1 adult produced for each spawning adult)



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indicates that a low rate of adult escapement is likely to preclude the recovery of the abundance of Canadian-origin Chinook salmon in the near future. Given the poor pre-season forecast, there is some uncertainty over whether a sufficient number of Chinook salmon will reach their spawning grounds in Canada to achieve the escapement goal range.

### *8.1.2 In-Season Canadian-Origin Yukon River Chinook Salmon Decisions - 2015*

**Decision matrix:** At the recommendation of the SSC, the in-season fishery management decision matrix for Yukon River Chinook salmon in Canada has been revised to reflect the escapement goal range defined by the YRP pursuant to the YRSA. In addition, to improve the likelihood that conservation objectives will be achieved, a mid-point management target of 48,750 will be used to guide in-season management decisions. Salmon fishing opportunities in Canada will be determined based on in-season assessments of run strength. As in previous years, the Yukon River Chinook salmon decision matrix will be employed to determine management actions (Table 1). The matrix summarizes the management reference points, general allocation plans and anticipated management responses for 2015 under different run size scenarios. It is important to note that the incorporation of the IMEG range of 42,500 – 55,000 and management target of 48,750 in 2015 results in the following decision thresholds:

- a. Removal of all Chinook salmon harvest allocations in Canada if the border escapement projection is < 42,500. Border escapement projections this low, i.e. in the RED ZONE, represent a high conservation risk.
- b. Voluntary reduction of First Nation subsistence fisheries will be sought if the run size to the border is projected to be in the 42,500 to 48,750 range (the specific level of reduction requested is contingent on run abundance) – YELLOW ZONE (lower).
- c. First Nation subsistence fisheries will be provided the opportunity to harvest Chinook salmon if there is a high degree of confidence that the border escapement will be between 48,750 and 55,000 fish – YELLOW ZONE (upper). Again, some voluntary reduction of the subsistence harvest will be sought in accordance with run abundance.
- d. A harvest allocation for recreational, commercial and domestic fisheries will only be considered if there is a high degree of confidence that the spawning escapement will exceed 55,000 Chinook salmon (border escapement minus anticipated First Nation subsistence harvest).

**Determination of run status in-season:** An early indication of the run timing and potential abundance is determined through assessment projects carried out in the lower Yukon River by U.S. management agencies (ADF&G and USF&W) and through other U.S. projects. These assessment programs include test fisheries in the lower Yukon River and at Rampart Rapids, sonar estimates



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from Pilot Station (combined with stock identification data if available), and Alaskan subsistence and commercial fishery results. Although this information is generally not specific to Canadian-origin stocks, it is useful in obtaining a preliminary indication of run characteristics (with the exception of the Pilot Station assessment program that can combine sonar estimates and genetic identification of samples to estimate the return of Canadian-origin fish). Notably, the information derived from lower river assessment programs in some years (most recently in 2013) resulted in the overestimate of potential Canadian-origin Chinook salmon abundance. Due to the poor strength of the 2015 pre-season outlook, in-season results derived from these programs will be employed cautiously towards informing management decisions in Canada.

In-season engagements between U.S. and Canadian managers commence mid-May to ensure that by the time stocks reach the Canadian section of the drainage there is an indication of potential abundance and run timing characteristics based on lower river observations. This information serves to identify deviations from pre-season forecasts and allows time to prepare Canadian managers and fishers for potential changes to fishing plans.

Table 1. In-season fishery management decision matrix for Yukon River Chinook salmon in Canada.

	<b>Border Escapement Projections</b>	<b>Fishery</b>	<b>Guideline Harvest</b>	<b>Anticipated Management Action</b>
<b>RED ZONE</b>	<b>&lt; 42,500</b>	FN	0	Removal of allocation for conservation purposes
		RF	0	Closed – Directed salmon fishing prohibited
		CF	0	Closed
		DF	0	Closed
<b>YELLOW ZONE</b>	<b>42,500 – 55,000<sup>1</sup></b>  <b>*Management Target 48,750</b>	FN	0 to 8,000	Catch target to vary with abundance within zone: limited harvest below 48,750; up to 8,000 catch at run of 55,000. Catch is subject to international harvest sharing provisions
		RF	0	Closed – No retention permitted
		CF	0	Closed
		DF	0	Closed
<b>GREEN ZONE</b>	<b>&gt; 55,000<sup>2</sup></b>	FN	Variable	Unrestricted
		RF	100 – 500	Allocation (harvest opportunities) subject to international harvest sharing provisions
		CF	Variable	
		DF	100–300	

**Legend:** FN = First Nation fishery; CF = commercial fishery; RF = recreational fishery; DF = domestic fishery.

\*Notes – <sup>1</sup> The Management Target of 48,750 is the minimum number of salmon intended to reach the spawning grounds.

<sup>2</sup> Allocation of Chinook salmon to Canadian recreational, commercial or domestic fisheries will only be considered if the number of Chinook salmon returning to Canada, in excess of First Nation Harvest, is likely to exceed 55,000.

Once Chinook salmon near the international border, the assessment focus shifts to the joint U.S. / Canada Eagle sonar program. In 2015, the in-season border passage estimates will be based on information from this program.

If the in-season projections indicate a need to invoke unforeseen emergency closures “until further notice” in any fishery to address conservation concerns, the SSC will be consulted prior to implementation.

**2015 Chinook salmon management strategy:** Based on the pre-season outlook, and consideration of past forecast errors, there is some uncertainty that the Canadian-origin Chinook salmon escapement goal range (42,500 – 55,000) may not be achieved. The combination of a poor pre-season forecast and the failure to achieve minimum escapement targets in 5 of the past 8 years creates considerable concern over the long-term health of Canadian-origin Yukon River Chinook salmon stocks. Following consultations with Yukon First Nations, commercial, domestic and recreational fishery participants, as well as members of the public, the SSC has recommended a conservative management approach be adopted for the 2015 season. The revision of the in-season fishery management decision matrix for Yukon River Chinook salmon in Canada to align with the escapement objectives identified by the YRP, along with the use of a management target situated in the mid-point of the escapement goal range is anticipated to result in a greater likelihood of meeting spawning escapement objectives. Given the poor pre-season outlook, an in-season assessment of run strength (based on the Eagle sonar project) will be required to determine if abundance will be sufficient to achieve spawning escapement in advance of initiating fisheries in Canada. Consistent with this approach, the allocation of allowable harvest of Chinook salmon through commercial, domestic and sport fisheries will be varied to 0, while the total allowable catch allocation for First Nation subsistence fisheries will be confirmed once a reliable in-season assessment of Canadian-origin Chinook salmon abundance is generated.

To ensure that the delay of the Total Allowable Catch allocation of Chinook salmon to First Nation subsistence fisheries is implemented only to the extent reasonably necessary to achieve the conservation objective, DFO will closely monitor the return of Chinook salmon into Canada via the Eagle sonar assessment program and determine an in-season estimate as early as possible. Given the run timing anticipated in 2015, it is likely that the Canadian-origin Chinook salmon international border passage estimate will be confirmed with a reasonable degree of confidence on or before July 17, 2015.

Effective June 17, 2015, Fisheries and Oceans Canada and the Yukon Salmon Sub-Committee will be hosting weekly conference calls to provide Yukon First Nations with information on the return of Chinook salmon into Canada. The call will also provide the opportunity to discuss any changes the management strategy, should the return of Chinook salmon improve in-season.

### *8.1.3 Canadian-Origin Yukon River Chinook Salmon Constraints*

The harvest sharing provisions of the YRSA for Canadian-origin upper Yukon Chinook salmon for the 2015 season are as follows (see Appendix 2 of Chapter 8 of the PST).



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- When the amount of fish that can be caught by both Canada and US (i.e. the total allowable catch or TAC) is less than 110,000 Chinook salmon, the Canadian harvest can be in the range of 20-26% of the TAC;
- If the TAC is greater than 110,000 Chinook salmon, the Canadian harvest can be in the range of 20-26% of 110,000 plus 50% of the allowable catch in excess of 110,000 Chinook salmon;
- The U.S. obligation is to deliver enough fish into Canada to meet the spawning escapement goal and the midpoint of the Canadian harvest share.

## 8.2 Canadian-Origin Yukon River Fall Chum Salmon Decision Guidelines

### 8.2.1 *Pre-season Canadian-Origin Yukon River Fall Chum Salmon Decisions - 2015*

Canadian-origin Yukon River fall chum salmon are managed under the umbrella of the YRSA, with the YRP meeting annually to review management strategies, stock health and recommend Canadian-origin spawning escapement goals. Since the brood year escapements achieved the level defined in the YRSA for a rebuilt upper Yukon River fall chum stock, the YRP has maintained the an escapement goal of range of 70,000-104,000 for several years. The range was established to offer increased flexibility with respect to uncertainties associated with management. The range reflects the required number of spawning adults to achieve maximum sustained yield of this stock in future years.

### 8.2.2 *In-season Canadian-Origin Yukon River Fall Chum Salmon Decisions - 2015*

**Decision matrix:** Fishing opportunities for mainstem Yukon River fall chum salmon in Canada will be determined based on in-season assessments of run strength. As in previous years, the Canadian Yukon River (mainstem) chum salmon decision matrix will be employed to determine management actions (Table 2). The matrix summarizes the management reference points, general allocation plans and anticipated management responses for 2015 under different run size scenarios.



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Table 2. In-season fishery management decision matrix - mainstem Yukon River fall chum salmon.

	Border Escapement Projections	Fishery	Guideline Harvest	Anticipated Management Action
RED ZONE	< 40,000	FN	0	Closures considered.
		CF	0	Closed.
		RF	0	Closed, i.e. fall Chum quota varied to zero.
		DF	0	Closed.
YELLOW ZONE	40,000 – 73,000	FN	0 to 3,000	Catch target to vary with abundance within zone. Catch is subject to International harvest sharing provisions.
		CF	0	Closed.
		RF	0	Closed, i.e. fall Chum quota varied to zero.
		DF	0	Closed.
GREEN ZONE	> 73,000	FN	3,000+	Unrestricted.
		CF	Variable	Catch target to vary with abundance and be consistent with International agreement on harvest shares.
		RF	0	Fishing opportunity provided, no catch anticipated.
		DF	0	Fishing opportunity provided, no catch anticipated.
Legend: FN = First Nation fishery; CF = commercial fishery; RF = recreational fishery; DF = domestic fishery.				

The current escapement goal range of 70,000 – 104,000 for Canadian-origin mainstem Yukon River fall chum salmon results in the following decision thresholds:

Recreational, commercial and domestic fisheries will not open unless it is expected the border escapement will be greater than 73,000 chum salmon based on projections from the Eagle sonar program. Fishing opportunities afforded to these fishing sectors will depend on the run size projections and harvest sharing provisions. A border escapement of > 73,000 is sufficient to allow for a full First Nation fishery, while allowing enough fish to reach the spawning grounds to satisfy the lower end of the escapement goal range.

Voluntary reduction of First Nation subsistence fisheries will be sought if the run size to the border is projected to be in the 40,000 to 73,000 range and the expected catch is consistent with harvest sharing provisions. No other fisheries would be permitted to target chum salmon. Removal of the total allowable catch allocation to First Nation subsistence fisheries will be considered if required spawning escapement is unlikely to be achieved. Border escapement projections in the RED ZONE, represent a high conservation risk.

**Determination of Run Status In-season:** Genetic stock identification data will be used in conjunction with the Pilot Station sonar counts to develop a preliminary index of the Canadian run size to the upper Yukon. As in prior year, these data have been used to provide an early indication of potential upper Yukon run strength as the fish move through the lower section of the Yukon River in Alaska. Once fall chum salmon migrate into the Canadian portion of the drainage, attention

will shift to determining abundance using the Eagle sonar estimates. A reliable in-season projection based on the Eagle sonar program is expected to be available after the first week in September.

**2015 Fall Chum Salmon Management Strategy:** The 2015 pre-season forecast estimate for Canadian-origin mainstem chum salmon is 236,000 to 294,000, with the mid-point of this range anticipated. The current (international border and spawning) escapement goal established by the YRP pursuant to Chapter 8 of the Pacific Salmon Treaty is 70,000 – 104,000 adult chum salmon. Based on the recommendations received from the SSC, the Total Allowable Catch allocated to First Nation subsistence fisheries in 2015 is unrestricted. Commercial and domestic harvest allocations are anticipated in accordance with YRSA international treaty harvest share allocations.

### *8.2.3 Canadian-Origin Yukon River Fall Chum Salmon Constraints*

For Canadian-origin Yukon fall Chum salmon stocks, the harvest sharing provisions of the YRSA are as follows:

- When the TAC is < 120,000 fall Chum, the Canadian harvest share is 29%-35% of the TAC;
- If the TAC is greater than 120,000 fall Chum salmon, the Canadian harvest can be 29%-35% of 120,000 plus 50% of the allowable catch in excess of 120,000 fish;
- The U.S. obligation is to deliver enough fish into Canada to meet the spawning escapement goal and the midpoint of the Canadian harvest share.

## **8.3 Porcupine River Fall Chum Salmon Decision Guidelines**

### *8.3.1 Pre-season Canadian-Origin Porcupine River Fall Chum Salmon Decisions - 2015*

The YRP has renewed an IMEG range of 22,000 to 49,000 Canadian-origin Porcupine River fall chum salmon at the Fishing Branch River for the 2015 season. The analysis used to establish the current IMEG assumes fishery exploitation has been low to moderate and the production regime has been somewhat stable. Under these conditions, a sustainable escapement goal range (not necessarily the number of spawners at maximum sustained yield) tends to overlap with the historical escapement range. The analysis uses escapement contrast (i.e., maximum/minimum escapement) and harvest rate information to determine the percentile range of actual escapement that should form the basis of the escapement goal range. Although discontinued in 2013 and 2014, the Fishing Branch Assessment Program is anticipated to be renewed in 2015 in order to establish a reliable escapement determination of chum salmon into Fishing Branch River. This assessment program will be run concurrently with the Porcupine River mainstem sonar operation that has been in place since 2013.



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### 8.3.2 *In-season Canadian-Origin Porcupine River fall Chum Salmon Decisions - 2015*

If the in-season Fishing Branch River escapement projection exceeds 22,000 fall chum salmon, an allocation will be made available to the Vuntut Gwitchin fishery. If in-season information suggests that restrictions are required within the First Nation fishery, DFO, the SSC and the Vuntut Gwitchin Government (VGG) will discuss potential conservation options in advance of implementation.

**Determination of run status in-season:** The development of Canadian fishery management decisions will consider U.S. information including the Ramparts Rapids fish wheel data, sonar information from Pilot Station and U.S. test and commercial fishery information. U.S. genetic stock ID data will be used in conjunction with the Pilot Station sonar counts to develop a preliminary index of the Canadian run size to the Porcupine River drainage (and by extension to the Fishing Branch River).

**2015 Canadian-Origin Porcupine River Chum Salmon Management Strategy:** The lower end (minimum) of the spawning escapement goal range has not been achieved on the Fishing Branch River in 4 of the past 8 seasons. Chum salmon spawning escapement to the Fishing Branch River in 2014 was well below the pre-season forecast estimate of 40,000 to 52,000. It is estimated that only 7,300 adult chum salmon reached their spawning grounds on the Fishing Branch River. The current escapement goal established by the YRP pursuant to Chapter 8 of the YRSA is 22,000 – 49,000 adult chum salmon escapement to the Fishing Branch River. The 2015 pre-season outlook for Fishing Branch River fall chum salmon is 14,000 to 26,000 (very poor). Based on the recommendations received from the Yukon Salmon Sub-Committee, the Total Allowable Catch allocated to First Nation subsistence fisheries may require restriction in 2015 in order to achieve minimum spawning escapement requirements.

### 8.3.3 *Canadian-Origin Porcupine River Fall Chum Salmon Constraints*

Harvest sharing provisions for Canadian-origin Porcupine River fall Chum salmon stocks is not specified in the YRSA. To ensure sufficient Porcupine River spawning escapements and the sustainability of the stocks into the future, the YRSA does stipulate that:

- a) The Parties shall not initiate new fisheries on Canadian origin stocks within the Porcupine River drainage before December 31, 2006; and
- b) Following this period, any Party that intends to initiate a new fishery on the Porcupine River shall inform the Yukon River Panel, which shall recommend conservation and management measures.

## 8.4 First Nations – Food, Social and Ceremonial

The *Allocation Policy for Pacific Salmon* provides that, after requirements for conservation, the first priority in salmon allocation is to provide harvest opportunities to First Nations for FSC purposes, and to meet treaty obligations, as laid out in First Nation Final Agreements. First Nation harvest

opportunities are managed through communal FSC licences issued to First Nations and/or according to provisions included in Yukon First Nation Final Agreements.

## 8.5 Recreational Fisheries

No opportunity for harvest of Chinook salmon through recreational fisheries will be provided unless spawning escapement and First Nation subsistence requirements are likely to be achieved. Opportunity for harvest of Yukon River chum salmon through recreational fisheries is anticipated, although participation in this fishery is anticipated to be low. No recreational effort targeting Porcupine River chum salmon is anticipated.

## 8.6 Commercial and Domestic Fisheries

No opportunity for harvest of Chinook salmon through commercial or domestic fisheries will be provided in 2015 unless spawning escapement and First Nation subsistence requirements are likely to be achieved, and surplus fish are likely to be available for harvest. The opportunity for directed commercial fisheries for Chinook salmon in 2015 is highly unlikely and should not be anticipated. Opportunity for harvest of Yukon River chum salmon through commercial and domestic fisheries is anticipated. No commercial or domestic effort targeting Porcupine River chum salmon is anticipated.

## 8.7 Selective Fisheries

Selective fishing is defined as the ability to avoid non-targeted fish (and could include specific sizes and/or sexes within species), invertebrates, birds, and mammals or, if encountered, to release them alive and unharmed. 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 selective harvesting gear and related practices.

Selective harvesting standards will be set in the context of the *Policy for Selective Fishing in Canada's Pacific Fisheries* and the *Allocation Policy for Pacific Salmon*. In the future, priority will be given to those who have demonstrated the ability to meet or exceed the selective fishing standards. The Department encourages the incorporation of selective fishing experiments into regular fisheries where appropriate.

In the context of the Yukon River salmon fisheries, there is an interest in undertaking initiatives that use selective fishing gear which could allow for the release of larger-sized Chinook salmon, and the release of female Chinook salmon, or the ability to target smaller male fish. Traditional knowledge, anecdotal information, and recent scientific information, suggest that the average weight (and size) of Yukon River Chinook salmon has decreased over time. Two potential explanations for the decrease are historical fishing practices (which targeted larger- sized fish for many years) or variation in environmental conditions.



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A selective fishery demonstration program using fish wheels received funding from the YRP in 2006, 2007 and 2008. In 2006, a fish wheel equipped with holding pens was operated during commercial fishery openings near a commercial fishing site to facilitate a comparison between the selective gear and the commercial catch in the same area during the same time period. The project demonstrated that fish wheels could catch as many fish as nets and allow successful release of females and larger fish. Unfortunately, few opportunities for commercial fisheries directed at Chinook salmon have occurred due to poor returns over the past several years.

## 8.8 By-catch Management

The *Allocation Policy for Pacific Salmon* describes priorities and considerations for the directed harvest of target stocks. However, these opportunities may have to be constrained due to conservation concerns for species, stocks or stock aggregates also encountered during these directed fisheries. 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 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 conservation objectives.

Yukon River salmon migrate into the Bering Sea during the spring and summer after spending 0, 1, or 2 winters rearing in fresh water, depending on the species. Information on stock origin from tagging, scale pattern, parasites, and genetic analysis indicate that Yukon River salmon are present throughout the Bering Sea, in regions of the North Pacific Ocean south of the Aleutian chain, and the Gulf of Alaska during their ocean migration.

The by-catch of Chinook salmon in both the Alaskan Bering Sea - Aleutian Islands area (BSAI) and the Gulf of Alaska (GOA) groundfish fisheries rose significantly in the late 1990's and early 2000's, peaking in 2007. Since then, due to the implementation of a number of fishing strategies intended to minimize the interception of salmon, by-catch levels have been reduced considerably. For example, since 2012 it is estimated that fewer than 2,000 upper Yukon River Chinook salmon were incidentally intercepted in the Bering Sea groundfish fishery. Salmon by-catch in all Bering Sea and Gulf of Alaska groundfish fisheries is monitored through an on-board independent observer program. Except for donations to food banks, salmon cannot be retained or sold. In past years, concerns over the escalating by-catch have been expressed by the YRP to the North Pacific Fishery Management Council, which oversees the management of these groundfish fisheries. The primary concerns expressed was that interception of Yukon salmon in these fisheries is inconsistent with the YRSA, which obliges the Parties to decrease the marine catch and by-catch of Yukon River salmon. Although the situation has improved considerably over recent years, ongoing monitoring and reporting on salmon by-catch in BSAI and GOA groundfish fisheries is imperative in ensuring that interception of Yukon River stocks continues to be minimized.



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## 9. SHARED STEWARDSHIP ARRANGMENTS

Stewardship refers to the care, supervision or management of something, especially the careful and responsible management of something entrusted to one's care.<sup>4</sup> In the context of fisheries management, stewardship is often considered in terms of “shared stewardship”, whereby First Nations, fishery participants and other interests are effectively involved in fisheries management decision-making processes at appropriate levels, contributing specialized knowledge and experience, and sharing in accountability for outcomes.

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

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

Consultation and engagement with First Nations is central to DFO's approach to fisheries management (including the development of management strategies described within this 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 *Fisheries Act* Section 35 rights (established or potential).

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 during the pre-season, in-season or post-season planning and reporting processes.

### 9.1 Consultative Processes

The development of decision guidelines and specific management measures involves consultation with various First Nation government representatives, groups, individuals as well as coordinated efforts through the SSC. In the Yukon, consultative processes have been established for some time, particularly through implementation of First Nation Final Agreements. International consultation

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<sup>4</sup> As defined in the Atlantic Fisheries Policy Review (AFPR)

has been established through the YRSA and the YRP. The consultative processes for these and other initiatives are described below.

### *9.1.1 Yukon Salmon Sub-Committee*

The SSC is a public advisory body established under Chapter 16 of the UFA. The mandate of the SSC is to provide for the public input into matters related to salmon through their authority to make official recommendations to the Minister of Fisheries and Oceans and Yukon First Nations. These recommendations, although focusing on salmon harvest management, may pertain to legislation, research, policies, and programs.

The members of the SSC come from all parts of the Yukon and are comprised of both First Nation and non-First Nation people. The composition of the ten-member Committee is laid out in the UFA and is carefully structured to ensure diversity and balance. SSC members consist of Yukon Fish and Wildlife Board appointees, nominees from Fisheries and Oceans Canada and the First Nations of the Alsek, Porcupine, and Yukon River drainage basins. As per section 16.7.17.13 of Yukon First Nation Final Agreements, SSC members must constitute the majority of the Canadian section of the Yukon River Panel established under the YRSA (Pacific Salmon Treaty).

The SSC established the Yukon River and Porcupine River working groups to gather input and comment on matters related to salmon. Participants in the working groups may include First Nation representatives, commercial, domestic and recreational fishers, Renewable Resource Council members, selected members of the SSC and technical staff from Fisheries and Oceans Canada. Additionally, community and public meetings are convened annually by the SSC to discuss run outlooks, present an allocation framework and decision matrix, and receive public input. The results of these efforts is an official recommendation from the SSC to DFO on the allocation of total allowable catch as outlined in s 16.10.1, 16.10.2 and s 16.7.17.12 (f) of the UFA.

### *9.1.2 Yukon River Panel*

The YRP was established pursuant to the YRSA and consists of six Canadian members and six United States members. Each party is responsible for the appointment of its members. As per section 16.7.17.13 of Yukon First Nation Final Agreements, SSC members must constitute the majority of the Canadian section of the YRP.

To implement the YRSA, the YRP may make recommendations to the management agencies regarding various topics including: conservation, restoration, rebuilding and management of salmon stocks originating in the Yukon River in Canada; the coordination of management plans and actions of the Yukon River fisheries that affect Canadian-origin salmon stocks; and projects to be funded under the REF.

The YRP is supported by the JTC which prepares and reviews post-season summaries, stock status, escapement goal analyses, research project reports including Chinook size trend analyses, research



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planning initiatives, and restoration and enhancement proposals. The YRP meetings include reports or updates from JTC sub-committees, working groups and individuals including genetics sub-committee, escapement goal working groups, salmon size sub-committee, *Ichthyophonus* sub-committee, Chinook salmon size trend analyses, salmon by-catch, and the JTC technical evaluation of the REF proposals.

### *9.1.3 First Nation Aboriginal Fisheries Strategy Consultations*

Consultations relating to the AFS occur throughout the year with Yukon First Nation's that have not yet concluded Final Agreements. The DFO AFS Coordinator generally arranged these meetings and results of these consultations are contained within DFO/First Nation Fisheries Agreements. The Agreements may contain details pertaining to fisheries activities and programs occurring in First Nation traditional territories such as communications, management of First Nation fisheries, stock assessment, habitat and enhancement programs, enforcement protocols and communal licences. The AFS agreement documents, as well as records of consultation sessions and progress on action items, are maintained by the AFS Coordinator.



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## 10. COMPLIANCE PLAN

### 10.1 Conservation and Protection Program Description

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

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

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

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

### 10.2 Compliance Program Delivery

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

- Maintain and develop relationships with First Nations communities, recreational groups and commercial interests through dialogue, education and shared stewardship.
- Intelligence-led investigations may specifically target repeat and more serious offenders for increased effectiveness of enforcement effort. Illegal sales of salmon will continue to be a regional priority.
- Prioritize enforcement efforts on measures directed towards conservation objectives.
- Fish habitat protection remains a key focus of fishery officer efforts coordinated regionally by the Fisheries Protection Program.
- Utilize 'Integrated Risk Management' to ensure fishery officer efforts are focused and directed at problems of highest risk.
- Continue high profile fishery officer presence through patrols by vehicle, vessel and aircraft to detect and deter violators.



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- Support traceability initiatives within the salmon fishery to enhance accountability. Monitor and verify catches and offloads of salmon to ensure accurate and timely catch reporting and accounting, including coverage of Dual Fishing opportunities.
- Priorities and direct compliance efforts where there is a risk to salmon stocks of concern.
- Use of enhanced surveillance techniques, and new available technology as well as covert surveillance techniques as a means to detect violations and gather evidence in fisheries of concern.
- Patrols during open timed fisheries to increase intelligence gathering, build relationships with stake holders and ensure compliance to licence conditions.
- Inspect fish processors, cold storage facilities, restaurants and retail outlets for compliant product.
- Maintain a violation reporting 24-hour hotline to facilitate the reporting of violations.
- Continue to promote 'Restorative Justice' principles in all fisheries.

### 10.3 Consultation

C&P works closely within the Fisheries and Aquaculture Management sector to ensure that fishery 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.

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

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

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 Fisheries Protection Program staff. This public feedback is critical in identifying issues of concern and providing accurate feedback on emerging issues.

### 10.4 Compliance Strategy

In 2015, specific objectives for the salmon fishery will be to focus compliance management efforts on:



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- Maintaining enhanced coverage both on in-river and land based approaches by undertaking vessel, vehicle, and air patrols;
- Curtailing illegal sales through a program designed to improve traceability of catch (improved catch monitoring and plant / storage verification);
- Balancing close time patrols with random open time patrols;
- Working with stakeholders to improve regulatory compliance;
- Enforcing daily limits, non-retention and compliance with closed area restrictions in the recreational fishery;
- Maintaining or increasing efforts to protect Yukon salmon stocks with priority to those stocks of concern such as Chinook salmon;
- Increasing Fishery Officer efforts to protect other salmon stocks of concern through implementation of area-specific project management enforcement plans;
- Monitoring and auditing catches, effort and offloads/landings of salmon during fisheries to ensure timely and accurate catch and effort reporting.

The management of Pacific salmon and salmon fishery compliance continues to be a high priority for 2015. In order to balance multiple program demands, C&P applies a risk-based integrated work planning process at the Regional and Area levels to establish annual operational priorities that address the highest risks to sustainability. 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. Resource utilization is dependent on availability of program funding. C&P cannot be effective without the commitment of all salmon fishers and the fishing industry to the conservation of this valuable resource.



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## 11. APPENDIX 1: RUN OUTLOOKS - 2015

### 11.1 Canadian-Origin Yukon River Chinook Salmon Run Outlook for 2015

The total run size of Canadian-origin upper Yukon<sup>5</sup> River Chinook salmon in 2015 is anticipated to be below average with a pre-season outlook range of 59,000 to 70,000 fish (Table 1, Appendix 1). Chinook salmon spawning escapements in 2009 and 2010, the brood years producing the age-6 and age-5 fish returning in 2015, were 65,278 and 32,009 fish respectively, which were above and well-below average escapements respectively.

Pre-season forecasts have been adjusted in recent years to take into account performance of these models in the current low productivity environment. The unadjusted pre-season forecasts of the 2015 run size of Canadian-origin Chinook salmon are 96,083 (based on the spawner-recruit (SR) model) and 103,701 fish (based on the sibling model). Due to the lower productivity experienced in recent years, observed run sizes were approximately 39% lower than the preseason forecast based on the SR model, 33% lower than the forecast based on the sibling model, and 36% lower based on a combination of the two (using an 8 year time period). To account for the observed change in productivity, model projections have been adjusted by the recent 8 year model performance. The resulting adjusted preseason outlook range for Canadian origin Chinook salmon is 59,000 to 70,000 fish. It is important to note that neither model incorporates environmental variables such as oceanic or freshwater conditions.

In the past 8 years, odd-year runs (2007, 2009, and 2011) have tended to materialize better than even-year runs, due to returns of a stronger age-6 component. The 2013 run, however, was one of the lowest Chinook salmon runs on record and had a weaker age-5 component than anticipated. In 2014, the age-6 component (siblings to age-5 fish in 2013) was also weak, but there was a strong return of age-5 fish, resulting in a larger run size than in 2013. The sibling model predicts a proportionally stronger representation of age-6 fish in 2015. These outlooks suggest that the 2015 Canadian-origin upper Yukon River Chinook salmon run may be similar to 2014, but will still be below average (average run size for 2000–2014 was 83,000 fish).

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<sup>5</sup> The Upper Yukon River is defined as the Canadian portion of the Yukon River drainage excluding the Porcupine River drainage.



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Appendix Table 1. Pre-season upper Yukon River Chinook salmon outlooks for 2000 to 2015 and the observed run sizes for 2000 to 2014.

Year	Expected Run Size (Pre-season)					Estimated Run Size (Post-season)	Performance of Pre-season Outlook Models
	S/R	Sibling	Avg. (S/R & Sib.)	Adjusted S/R *	Adjusted Sib. *		
2000	127,784	85,889	107,000			53,000	2.02
2001	126,641	51,082	89,000			86,000	1.03
2002	113,759	107,496	111,000			82,000	1.35
2003	116,948	109,577	113,000			150,000	0.75
2004	123,469	124,326	124,000			117,000	1.06
2005	121,764	117,860	120,000			124,000	0.97
2006	115,995	123,132	120,000			119,000	1.01
2007	118,557	139,934	129,000			88,000	1.47
2008	111,551	122,435	117,000			63,000	1.77
2009	98,172	103,541	101,000			87,000	1.16
2010	109,797	116,346	113,000			60,000	1.88
2011	102,831	113,323	108,000			72,000	1.50
2012	106,090	87,167	98,000	73,000	54,000	48,000	2.00
2013	109,984	79,160	95,000	72,000	49,000	37,000	2.57
2014	100,159	53,287	77,000	61,000	32,000	65,000	1.18
2015	96,083	103,701	100,000	59,000	70,000		
Average 2000–2014	113,567	102,304	108,000			83,000	1.45

*Notes:* Run size is estimated post-season as the border passage estimate plus the Alaska harvest of Canadian-origin Chinook salmon. Border passage estimates incorporate: radiotelemetry data (2002–2004); the mainstem Yukon River sonar at Eagle estimates (2005–2014); and the relationship between telemetry/sonar to aerial surveys for 2000 and 2001. Harvest estimates are determined using genetic sampling estimates (and historically, scale pattern analysis) and total Alaska harvest data. The average of the pre-season spawner/recruit (S/R) and sibling run sizes, and the post-season run sizes are rounded to nearest thousand. \*Since 2012, adjusted outlooks have been calculated by applying recent average model performance to each model.

## 11.2 Canadian-Origin Mainstem Yukon River Fall Chum Salmon Outlook for 2015

The outlook for the 2015 Canadian-origin mainstem Yukon River fall chum salmon run is for an above average run of 236,000 to 294,000 fish. The average estimated Canadian-origin mainstem Yukon River fall chum salmon run size for 1998–2014 was approximately 215,000 fish (Table 2, Appendix 1).

Appendix Table 2. Pre-season Canadian-origin mainstem Yukon River fall chum salmon outlooks for 1998 to 2015 and observed run sizes for 1998–2014.

Year	Expected Run Size (Pre-season)	Estimated Run Size (Post-season)	Performance of Pre-season Outlook
1998	198,000	70,000	2.83
1999	336,000	116,000	2.90
2000	334,000	66,000	5.06
2001	245,000	49,000	5.00
2002	144,000	113,000	1.27
2003	145,000	182,000	0.80
2004	147,000	193,000	0.76
2005	126,000	558,000	0.23
2006	126,000	330,000	0.38
2007	147,000	347,000	0.42
2008	229,000	269,000	0.85
2009	195,000	128,000	1.52
2010	172,000	143,000	1.20
2011	184,000	326,000	0.56
2012	273,000	238,000	1.15
2013	257,000	303,000	0.85
2014	230,000	223,000	1.03
2015	265,000		
Average (1998–2014)	205,000	215,000	1.58

*Note:* Run sizes are rounded to nearest thousand. The 2009 through 2014 pre-season expected run sizes are the midpoint of the outlook range.

In past years there has been a degree of uncertainty associated with the upper Yukon River fall chum salmon run projections due to unexpected run failures within the 1998–2002 period, followed by improved productivity and higher runs observed within the 2003–2007 period. For example, the 1998 outlook of 198,000 overestimated the run size by a factor of 2.83, or 183% above the actual run size. Weakness in fall chum salmon runs prior to 2003 may have resulted more from reduced productivity in the marine environment rather than low levels of parental escapement. A notable development that added to the uncertainty and complexity of both the 2009 and 2010 preseason outlooks was high parent spawning escapements which were well above levels previously observed. For example, the 2005 escapement of approximately 437,500 fall chum salmon was the highest observed within the 1982 to 2010 period, while the 2006 and 2007 escapements were the fourth and third highest observed, respectively. Returns from the high spawning escapements of 2005 to 2007 were observed between 2008 and 2011, which has assisted in maintaining run strength.

In 2015, in-season assessment programs will be relied upon to determine run strength and appropriate management actions to ensure conservation and harvest sharing objectives are achieved. Since 2002, Upper Yukon fall chum salmon pre-season outlooks have been based on Stock/Recruit models, which incorporate escapement and the subsequent associated adult return by age data. Annual runs have been reconstructed using mark–recapture and recent sonar data, and assumed contributions to U.S. catches. Genetic stock identification data (i.e., mixed stock analyses) projects have been initiated using R&E funding to analyze some of the U.S. fisheries to assist in determining the proportion of Canadian-origin stocks in the harvest, this has corroborated some longstanding

assumptions and should allow a more accurate estimation of the proportion of Canadian-origin fall chum salmon run harvested in U.S. fisheries.

### 11.3 Canadian-Origin Porcupine River Fall Chum Salmon Outlook for 2015

For the Canadian portion of the drainage, the majority of fall chum salmon production in the Porcupine River originates from the Fishing Branch River. Conservation concerns for the Fishing Branch River fall chum salmon run arose in the late 1990s and were heightened in 2000 when the count through the Fishing Branch River weir was only 5,057 fish, the lowest recorded escapement for the system. Run sizes improved somewhat between 2001 and 2012 when weir counts ranged from a low of 13,085 in 2011 to a high of 119,058 fish in 2005. Recent Fishing Branch River fall chum salmon runs have been weak, with the lower bound of the spawning escapement goal range only being achieved in 4 of the past 8 years. The spawning escapement of chum salmon to the Fishing Branch River in 2014 was 7,304 – one of the lowest returns on record (escapement to the Porcupine River was approximately 15,825). Given recent failure to achieve escapement goals range over multiple years and a poor pre-season outlook, a conservative approach to management of chum salmon stocks on the Porcupine River will likely be required.

The 2015 outlook range for the Fishing Branch River portion of the Porcupine River is from 14,000 to 26,000 (midpoint 20,000) fall chum salmon. This range is based on a number of assumptions:

1. The estimates of Fishing Branch River escapement derived from sonar and radio telemetry in 2014 and 2013 were accurate.
2. The average age proportions of returns from Fishing Branch River fall chum salmon, as estimated from weir and test fishing samples, are assumed to describe the age proportions of returns of brood years contributing to the 2015 run.
3. The Alaska harvest of Fishing Branch River fall chum salmon was equivalent to 30% of the basin-wide fall chum harvest times the proportion of the Fishing Branch River escapement out of the total Canadian escapement (Fishing Branch River plus upper Yukon River fall chum salmon).
4. The apparent level of productivity (R/S) estimated for the 2010 brood year will apply to the subsequent brood years (2011 and 2012) contributing to the 2015 run.
5. Additionally, for the upper end of the range, 80% of the Porcupine River fall chum salmon spawning escapement upstream of Old Crow is assumed to have returned to Fishing Branch River in 2013 and 2014.
6. Historic stock recruitment relationships, if known, for the Fishing Branch River portion of the drainage-wide stock will accurately describe the return from the 2011 spawning escapement.

The 2015 outlook range is the estimated number of fall chum salmon that are anticipate to return to the Yukon River, bound for the Fishing Branch River. The ultimate of chum salmon that fish reaching the Fishing Branch River will be influenced by interception in U.S. downstream fisheries. Although it has been challenging to accurately estimate the U.S. harvest rate (and catch) of upper



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Porcupine River chum salmon stocks, advances in stock analyses may improve this situation in the future. Given the outlook, it is prudent to enter the 2015 season with the expectation that in-season assessment programs will determine the run strength and appropriate management actions will be taken to ensure conservation and harvest sharing objectives are achieved.

As was observed with the upper Yukon River fall chum salmon stocks, the 2014 postseason estimates of the upper Porcupine River fall chum salmon run sizes were consistently below preseason outlooks throughout the 1998–2002 period (Appendix Table 3). For example, the 1998 pre-season forecast of 112,000 overestimated the actual run size by a factor of 4.48. Given this situation, a conservative approach to the management of Porcupine River Canadian-origin chum salmon stocks is warranted in 2015 in order to sustain the health of future returns.

Appendix Table 3. Preseason Canadian-origin Porcupine River fall chum salmon outlooks for 1998 to 2015 and observed run sizes for 1998–2014.

Year	Expected Run Size (Pre-season)	Estimated Run Size (Post-season)	Performance of Preseason Outlook
1998	112,000	25,000	4.48
1999	124,000	24,000	5.17
2000	150,000	13,000	11.54
2001	101,000	33,000	3.06
2002	41,000	19,000	2.16
2003	29,000	46,000	0.63
2004	22,000	32,000	0.69
2005	48,000	186,000	0.26
2006	54,000	48,000	1.13
2007	80,000	50,000	1.6
2008	78,000	30,000	2.6
2009	49,000	40,000	1.23
2010	43,000	20,000	2.15
2011	37,000	28,000	1.32
2012	55,000	50,000	1.1
2013	52,000	39,000 (52,000) <sup>a</sup>	-
2014	46,000	13,000 (24,000) <sup>a</sup>	-
2015	17,000		
Average (1998–2013)	67,000	42,000	2.61

*Note:* Run sizes are rounded to nearest one thousand. The 2009 through 2014 preseason expected run sizes are the average of an outlook range. The Fishing Branch River weir monitored what is believed to be the dominant spawning stock within the Porcupine River drainage, and these escapement estimates are the basis for the preseason and postseason run size estimates.

<sup>a</sup> Run size estimates for 2013 and 2014 were based on Old Crow sonar counts and proportion of tag recoveries. Numbers in parentheses are the upper Porcupine River sonar based estimates for 2013 and 2014. Outlook performances are not included assessment methods compared with previous years.



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## 12. APPENDIX 2: PERFORMANCE REVIEW

At the conclusion of each season, members of the Canada / U.S. JTC meet to review the fishing season and prepare an annual report which contains a description and results of fishing activities, management strategies, total run size, historical catch, and escapement information for Canadian-origin salmon stocks designated by the YRSA . The “*Yukon River Salmon 2014 Season Review and 2015 Outlook*” is available through the YRP’s website at: <http://yukonriverpanel.com/salmon/wp-content/uploads/2009/03/rir3a201501.pdf>.

Performance of 2015 fisheries and management measures in both Canada and the U.S. are assessed based on harvest data submitted by subsistence, recreational, commercial and domestic fisheries. For the Canadian portion of the Yukon River watershed, recreational catch information is collected via the Yukon Salmon Conservation Catch Card while First Nation fisheries provide harvest monitoring data through monitoring completed by individual First Nations. Current First Nation harvest monitoring programs evolved from the 1996 to 2002 Yukon River Drainage Basin Harvest Study. DFO continues to work collaboratively with First Nations and stakeholders to review existing and/or develop new performance indicators that could be included as part of the subsistence fishery performance/evaluation criteria.

### 12.1 2014 Post-Season Review

#### Canadian-Origin Yukon River Chinook Season Overview for 2014

The following run reconstruction is based on data from the Eagle sonar program which was the agreed methodology for estimating border escapement and spawning escapement in 2014, preliminary US catch data apportioned by preliminary stock ID data, and Canadian catch data. The spawning escapement goal range for Canadian-origin Chinook salmon in 2014 was 42,500 to 55,000 (Appendix Table 4).

Appendix Table 4. 2014 Canadian-origin Yukon River Chinook salmon run reconstruction compared to pre-season expectations.

Run Component	Expected-Lower	Expected-Upper	Actual
Total Canadian-origin run	32,000	61,000	64,773
U.S. TAC (Cdn. origin) @ 77% MP*	0	14,245	/
U.S. Catch (Cdn. origin)	/	/	1,342
Border Passage	32,000	46,755	63,431
Cdn. TAC @ 23% MP*	0	4,255	/
Cdn. First Nation Harvest	/	/	<100
Cdn. Rec. & domestic Harvest	/	/	0
Cdn. Commercial Harvest	/	/	0
Cdn. Test Fishery	/	/	0
Spawning Escapement	42,500	55,000	63,331

\* MP – Mid-point of Total Allowable Catch Share defined in the Yukon River Salmon Agreement.



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## Canadian-Origin Yukon River Mainstem Fall Chum Season Overview for 2014

The following assessment summarized in Appendix Table 5 is based on data from the Eagle sonar program as well as US and Canadian harvest data. The spawning escapement goal range for 2014 was 70,000 – 104,000 fall chum salmon.

Appendix Table 5. 2014 Canadian-origin Yukon River mainstem chum salmon run reconstruction compared to pre-season expectations.

Run Component	Expected-Lower	Expected-Upper	Actual
Total Canadian-origin run	200,000	260,000	184,000
U.S. TAC (Cdn. origin) @ 68%	70,452	106,080	/
U.S. Catch (Cdn. origin)	/	/	24,706
Border Passage	129,549	153,920	159,846
Cdn. TAC @ 32%	33,154	49,920	/
Cdn. First Nation Harvest	/	4,000	546
Cdn. Domestic Harvest	/	/	19
Cdn. Commercial Harvest	/	/	2,485
Cdn. Test Fishery	/	/	0
Spawning Escapement	70,000	104,000	156,796

The 2014 Canadian-origin Yukon River mainstem chum run was approximately 8% below the lower end of the pre-season forecast range. Despite the lower than anticipated return, both Canadian and U.S. harvests were well below total allowable catch allocations with unharvested fish escaping fisheries to spawn. The number of fish that spawned was estimated to have exceeded the upper end of the escapement goal range of 104,000 by 51%.

### 12.2 Conservation and Protection Branch Compliance Review

Post-season reviews are conducted within C&P, DFO Stock Assessment, Fishery Management and Treaties sectors, as well as with the SSC, RRC's, First Nations, and/or other groups in order to evaluate whether enforcement priorities were met and whether various enforcement activities were effective. Overall compliance rates for each area and fishery can be calculated in order to assist in developing priority areas for enforcement in subsequent seasons.

## 13. APPENDIX 3: SPAWNING STOCK STATUS

### 13.1 Chinook Salmon

Major utilization of Yukon River Chinook salmon occurs throughout the drainage in First Nation subsistence, commercial, domestic, and recreational fisheries located in the Yukon Territory and in Alaska. It is recognized that a certain degree of incidental harvest (by-catch) occurs in groundfish fisheries in the North Pacific Ocean and Bering Sea, and in U.S. marine and coastal fisheries along the Aleutian Islands and in Norton Sound. The by-catch of Yukon River Chinook salmon in the Bering Sea Alaskan Islands and North Pacific groundfish fisheries have decreased significantly in recent years.

Through the 1980s, Chinook escapements in the Canadian section of the Yukon River drainage were in a state of decline. A plan to prevent further declines, while formulating rebuilding plans, was developed jointly in the Canada/U.S. Yukon River salmon negotiations and adopted as part of the *Interim Yukon River Salmon Agreement* (IYRSA), which was signed in February 1995. In this plan, a stabilization spawning escapement goal of 18,000 Canadian-origin upper Yukon Chinook was established for the period 1990 through 1995. A target escapement goal range of 33,000 to 43,000 Chinook salmon was also agreed to for rebuilt runs.

In accordance with the IYRSA, the parties were tasked with developing a Chinook rebuilding plan and providing recommendations regarding the implementation of such a plan after the 1995 season. In April 1996, the Panel agreed to implement an upper Yukon Chinook rebuilding plan by establishing a revised interim minimum escapement target of >28,000 Chinook salmon for 1996 through 2002. In 2003, the escapement target was 25,000 Chinook salmon, but was to be increased to 28,000 in the event a U.S. commercial fishery was initiated. In 2004, the escapement target for Canadian-origin upper Yukon Chinook salmon was >28,000 Chinook salmon. If the run was sufficiently strong, the escapement target could range up to 38,000 Chinook salmon, although the Panel did not describe what constituted a “strong run”. In 2005 and 2006, the escapement target for Canadian-origin upper Yukon Chinook salmon remained unchanged at >28,000 Chinook salmon as the run was not yet considered to be rebuilt. The arrangement for 2007 was consistent with the *Yukon River Salmon Agreement*. Since the 2007 run was deemed to be rebuilt (since the primary brood year escapements achieved the escapement goal range for rebuilt stocks), the long-term escapement target of 33,000 to 43,000 was in effect. In 2008 and 2009, the escapement goal was changed to >45,000 upper Yukon Chinook salmon to make it consistent with the new method of assessing border escapement and spawning escapement, i.e. sonar. For 2015, the IMEG range of 42,500 to 55,000 Canadian-origin Chinook salmon was renewed.

Total returns of Chinook salmon to the Canadian portion of the upper Yukon drainage (excluding the Porcupine) were estimated by Fisheries and Oceans Canada from a mark-recapture program which operated from 1982 through 2008 (with the exception of 1984). In 2005, Canada and the U.S. jointly participated in the Eagle sonar project and this project ran concurrently with the mark-



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recapture program from 2005 through 2008. In 2009, the mark-recapture program ended and Eagle sonar became the sole method for determining border escapement. Border escapement, also referred to as border passage, is determined by subtracting the US catches in the Eagle area that occur upstream of the sonar site from the Eagle sonar estimate. During the period of overlap when both the mark-recapture and Eagle sonar programs were conducted, it was discovered that the mark-recapture estimates for Chinook salmon were significantly lower than the sonar-derived estimates. The comparative data are summarized in Appendix Table 6.

Appendix Table 6. Example of preliminary comparison of sonar-derived estimates of upper Yukon Chinook salmon border escapement and mark-recapture based estimates: 2005-2008.

	Border Escapement	
	Sonar-derived estimate	Mark-recapture estimate
2005	81,527	42,245
2006	71,691	36,748
2007	39,697	22,120
2008	37,029	14,666

Although the causes in the discrepancies have not yet been determined, the JTC developed new estimates of border escapement and total run size back to 1982 after examining and correlating historical datasets of radio telemetry, aerial survey and sonar data.

Based on the new data-set the following trends have been observed. The total run size of upper Yukon Chinook salmon remained at relatively high levels between 1980 and 1997, averaging about 153,000 fish and ranging from 111,400 (1984) to 184,000 (1996). There appears to have been a major shift towards lower productivity after 1997. The most recent 10-year average run size (2003 to 2014) has decreased to approximately 83,000. In recent years, both Canada and the U.S have implemented efforts to respond to lower than anticipated returns by striving to achieve escapement goals through reducing overall harvests. Appendix Table 7 summarizes the annual escapement goals and actual estimates for both Canadian-origin upper Yukon Chinook and chum salmon.



Appendix Table 7. Spawning escapement estimates for upper Yukon Chinook and fall chum salmon vs. annual escapement goals: 2002 to 2014.

Year	Upper Yukon Chinook			Upper Yukon Chum			Porcupine Chum	
	Escapement Goal	Assessment Method	Spawning Esc.	Escapement Goal	Assessment Method	Spawning Esc.	Fishing Branch Esc. Goal	Fishing Br. Esc.
2002	>28,000	M-R*	42,359	>60,000	M-R	98,679	50-120,000	13,600
2003	>25,000-28,000	M-R*	80,594	>65,000	M-R	143,133	>15,000	29,713
2004	>28,000	M-R*	48,469	>65,000	M-R	154,080	>13,000	20,417
2005	>28,000	M-R*	67,985	>65,000	M-R	437,498	>24,000	119,058
2006	>28,000	M-R*	62,630	>80,000	M-R	220,898	>28,000	30,954
2007	33,000-43,000	M-R*	34,904	>80,000	M-R	236,987	>34,000	32,150
2008	>45,000	S	33,883	>80,000	S	167,898	22,000-49,000	19,086
2009	>45,000	S	65,278	>80,000	S	93,626	22,000-49,000	25,828
2010	42,500-55,000	S	32,014	70,000-104,000	S	118,272	22,000-49,000	15,773
2011	42,500-55,000	S	46,307	70,000-104,000	S	205,566	22,000-49,000	13,085
2012	42,500-55,000	S	32,656	70,000-104,000	S	137,662	22,000-49,000	22,399
2013	42,500-55,000	S	28,669	70,000-104,000	S	200,262	22,000-49,000	25,376 <sup>a</sup>
2014	42,500-55,000	S	63,331	70,000-104,000	S	156,796	22,000-49,000	7,304 <sup>a</sup>

Assessment Method: M-R = mark-recapture; values in this table denoted with \* were revised post sonar implementation; S = based on Eagle sonar minus catch upstream.

<sup>a</sup> Fishing Branch River weir did not operate. Escapement to Fishing Branch was estimated based on counts at on the Porcupine River near Old Crown minus Old Crow harvest multiplied by the proportion of radio tagged fish that were relocated in the Fishing Branch.

## 13.2 Fall Chum Salmon

As with Yukon River Chinook salmon, fall chum salmon are the target of numerous fisheries located throughout the river and in approach areas in marine waters. For example, in addition to the U.S. in-river harvest, significant catches of Yukon-origin fall Chum salmon are believed to occur in U.S. fisheries along the Aleutian Islands chain in some years, particularly near False Pass. Throughout the 1980s, Canadian fall chum escapements appeared to be depressed. In the YRSA, Canada and the U.S. agreed to rebuild the fall chum spawning escapements to more than 80,000 fish in the upper Yukon and to the 50,000-120,000 range in the Fishing Branch River. The annual spawning escapement goals are summarized in Appendix Table 7 along with the final estimates of actual escapement.

## 14. APPENDIX 4: LANDINGS AND MARKETS

### 14.1 Landings

In recent years, Canadian harvest of Yukon River Chinook salmon has largely been driven by annual run abundance. Since 2007, the primary harvest of Chinook salmon has occurred through Aboriginal subsistence fisheries, although in most years the extent of these fisheries has been limited due to concerns over achieving sufficient spawning escapement. Canadian harvest of Chinook salmon in Yukon River fisheries since 1993 is summarized in Appendix Table 8.

Appendix Table 8. Canadian harvest of Yukon River Chinook salmon: 1993 to 2014.

Year	Yukon River Mainstem					Porcupine River		Canadian Total
	Aboriginal	Commercial	Recreational	Domestic	Test Fishery	Total	Aboriginal	
1993	5,576	10,350	300	243		16,469	142	16,611
1994	8,069	12,028	300	373		20,770	428	21,198
1995	7,942	11,146	700	300		20,088	796	20,884
1996	8,451	10,164	790	141		19,546	66	19,612
1997	8,888	5,311	1,230	288		15,717	811	16,528
1998	4,687	390	Closed	24	737	5,838	99	5,937
1999	8,804	3,160	177	213		12,354	114	12,468
2000	4,068	Closed	Closed	Closed	761	4,829	50	4,879
2001	7,421	1,351	146	89	767	9,774	370	10,144
2002	7,139	708	128	59	1,036	9,070	188	9,258
2003	6,121	2,672	275	115	263	9,446	173	9,619
2004	6,483	3,785	423	88	167	10,946	292	11,238
2005	6,376	4,066	436	99		10,977	394	11,371
2006	5,757	2,332	606	63		8,758	314	9,072
2007	4,175	Closed	Closed	Closed	617	4,794*	300	5,094
2008	2,885	Closed	Closed	Closed	513	3,399*	314	3,713
2009	3,791	364	125	17		4,297	461	4,758
2010	2,455	Closed	Closed	Closed		2,456*	250	2,706
2011	4,550	Closed	40	Closed		4,594*	290	4,884
2012	2,000	Closed	Closed	Closed		2,000	200	2,200
2013	1,902	Closed	Closed	Closed		1,904*	242	2,146
2014	100 <sup>a</sup>	Closed	Closed	Closed		100	unavailable	100

\* Totals include any incidental harvest. <sup>a</sup> Data are preliminary.

Harvest of fall chum salmon in Canadian Yukon River fisheries since 1993 are summarized in Appendix Table 9. Although abundance and resulting harvest levels have fluctuated in recent years, market conditions have had the greatest effect on commercial harvest.

Appendix Table 9. Canadian harvest of Yukon River fall chum salmon: 1993 to 2014.

Year	Yukon River Mainstem				Porcupine River	Canadian Total
	Aboriginal	Commercial	Domestic	Total	Aboriginal	
1993	4,660	7,762	0	12,422	1,668	14,090
1993	5,319	30,035	0	35,354	2,654	38,008
1995	1,099	39,012	0	40,111	5,489	45,600
1996	1,260	20,069	0	21,329	3,025	24,354
1997	1,238	8,068	0	9,306	6,294	15,600
1998	1,795	Closed	Closed	1,795	6,159	7,954
1999	3,234	10,402	0	13,636	6,000	19,636
2000	2,927	1,319	0	4,246	5,000	9,246
2001	3,077	2,198	3	5,278	4,594	9,872
2002	3,167	3,065	0	6,232	1,860	8,092
2003	1,493	9,030	0	10,523	382	10,905
2004	2,180	7,365	0	9,545	205	9,750
2005	2,035	11,931	13	13,979	4,593	18,572
2006	2,521	4,096	0	6,617	5,179	11,796
2007	2,221	7,109	0	9,330	4,500	13,830
2008	2,068	4,062	0	6,130	3,436	9,566
2009	820	293	0	1,113	898	2,011
2010	1,523	2,186	0	3,709	2,078	5,787
2011	1,000	5,312	0	6,312	1,851	8,163
2012	700	3,205	0	3,905	3,118	7,023
2013	500	3,369	18	3,887	2,283	6,170
2014	546 <sup>a</sup>	2,485 <sup>a</sup>	19	3,050	1,983 <sup>a</sup>	5,033

<sup>a</sup> Data are preliminary.

Historically the majority of harvest of Canadian-origin Yukon River salmon occurs in Alaskan subsistence and commercial fisheries. For Chinook salmon, ADF&G estimates the catch of Canadian-origin Chinook salmon by Alaskan fishers through genetic stock analyses. On average, approximately 50% of Chinook salmon harvested in the lower Yukon River (in U.S. waters) were Canadian-origin fish.

## 14.2 Markets for Commercial Fish

The Han Fish Plant in Dawson City began operation in 1981 and became the largest Canadian market for commercially caught Yukon salmon. Products included fresh/frozen Chinook and fall Chum salmon as well as roe. Some experimentation with smoked products also occurred however due to a number of factors (primarily lack of sustained harvest opportunities for commercial fisheries) the plant has not operated since 1996. The lack of a major fish processor in Dawson City has had an overall negative effect on the commercial viability of the fishery and this partially explains the decrease in commercial harvests of Chinook and fall chum salmon since 1997 (Appendix Tables 8 and 9).



## 15. APPENDIX 5: FISHERY PLANS

At the recommendation of the SSC, the (Canadian) Yukon River Chinook Salmon Decision Matrix has been revised to reflect the escapement goal range defined by the YRP pursuant to the YRSA. In addition, to improve the likelihood that conservation objectives will be achieved, a mid-point management target of 48,750 will be used in 2015 to guide in-season management decisions. Salmon fishing opportunities in Canada will be determined based on in-season assessments of run strength. As in previous years, Canadian decision matrices developed for mainstem and Porcupine (Fishing Branch) River chum salmon stocks will be employed to determine management actions.

### 15.1 First Nation Fishery

Once conservation (spawning) requirements are achieved, constitutionally protected First Nation subsistence fishery (for food, social and ceremonial purposes) are provided priority allocation in management processes. Prior to reducing or removing the total allowable catch allocation available for First Nation subsistence fisheries, all other targeted salmon fisheries (commercial, recreational, and domestic) will be closed or have catch limits varied to zero.

In preparation for the season, meetings with the SSC and the general public were held to discuss the 2015 pre-season forecast and possible management scenarios. In addition, DFO met in a government-to-government forum with Yukon First Nations on June 2, followed by a series of individual and joint (SSC) engagements with Yukon First Nations and RRCs. Recommendations based on the approaches discussed at these meetings were used to develop the 2015 plan.

Based on the poor pre-season outlook and in consideration of the uncertainty associated with pre-season forecasts, there is some uncertainty that the Canadian-origin Chinook salmon escapement goal range (42,500 – 55,000) may not be achieved. A poor pre-season forecast in combination with the failure to achieve minimum escapement targets in 5 of the past 8 years has created considerable concern over the long-term health of Canadian-origin Yukon River Chinook salmon stocks. Pre-season discussions with the YRP, the SSC, Yukon First Nations and members of the public confirmed the interest in adopting a conservative approach to management in 2015. Following consultations with Yukon First Nations, commercial, domestic and recreational fishery participants, as well as members of the public, the SSC has recommended a conservative management approach be adopted for the 2015 season.

Two changes contribute to a greater likelihood of achieving a sufficient number of Chinook salmon to spawning areas in Canada: 1) the in-season fishery management decision matrix for Yukon River Chinook salmon in Canada has been revised to align with the escapement objectives identified by the YRP, and 2) the use of a management target situated in the mid-point of the escapement goal range. Given the poor pre-season outlook, an in-season assessment of run strength (based on the Eagle sonar project) will be required to determine if abundance will be sufficient to achieve spawning escapement in advance of initiating fisheries in Canada. Consistent with this approach, the allocation of allowable harvest of Chinook salmon through commercial, domestic and sport fisheries



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will be varied to 0, while the total allowable catch allocation for First Nation subsistence fisheries will be confirmed once a reliable in-season assessment of Canadian-origin Chinook salmon abundance is generated.

To ensure that the delay of the Total Allowable Catch allocation of Chinook salmon to First Nation subsistence fisheries is implemented only to the extent reasonably necessary to achieve the conservation objective, DFO will closely monitor the return of Chinook salmon into Canada via the Eagle sonar assessment program to determine an in-season estimate as early as possible. Given the run timing anticipated in 2015, it is likely that the Canadian-origin Chinook salmon international border passage estimate will be confirmed with a reasonable degree of confidence on or before July 17, 2015.

Effective June 17, 2015, Fisheries and Oceans Canada and the Yukon Salmon Sub-Committee will be hosting weekly conference calls to provide Yukon First Nations with information on the return of Chinook salmon into Canada. The call will also provide the opportunity to discuss any changes the management strategy, should the return of Chinook salmon improve in-season.

For mainstem Canadian-origin fall chum salmon, opportunities for full First Nation subsistence fisheries are anticipated.

Recognising that the lower end (minimum) of the spawning escapement goal range has not been achieved on the Fishing Branch River in 4 of the past 8 seasons, coupled with the 2015 pre-season outlook range of 14,000 to 26,000 (very poor) and recommendations received from the Yukon Salmon Sub-Committee, the Total Allowable Catch allocated to First Nation subsistence fisheries may require restriction in 2015 in order to achieve minimum spawning escapement requirements.

To promote the participation of First Nations in the administration and management of fisheries within respective traditional territories, Fisheries and Oceans Canada will continue to develop co-management initiatives with “Non Final Treaty” Yukon First Nations through the Department’s AFS program. One of the primary avenues for accomplishing this is through the negotiation of annual Project Funding Agreements. In addition, management objectives are achieved through the development of Enforcement Protocols and the issuance of Communal Fishing Licences. Although communal licences are developed to fit the particular circumstances of each First Nation and reflect Final Agreement provisions, where they are in place, they all must be consistent with the principles set out constitutionally and associated Supreme Court rulings.

## 15.2 Recreational Fishery Plan

Due to the poor pre-season forecast for Yukon River Chinook salmon, no recreational harvest opportunities are anticipated in 2015. Effective mid-June, the permitted retention of Chinook salmon will be varied to 0. Area-specific or regional angling closures may also be implemented to provide protection for spawning salmon during sensitive periods.



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Although an abundance of fall chum salmon is anticipated, participation in this fishery has been limited due to timing (late in the year) and difficulty in accessing fishing areas.

DFO fishery officers and Yukon government conservation officers will conduct in-season monitoring of the recreational fisheries through random enforcement patrols. All anglers fishing for salmon must have a valid Yukon Angling Licence as well as a Salmon Catch Card. A Regulation Summary is provided out when licences are issued and includes information on area-specific closures, hook sizes and other fishing gear limitations that must be adhered to when fishing for salmon. Anglers are advised to consult the *Yukon Territory Fishery Regulations* for further details (<http://lois.justice.gc.ca/en/showtdm/cr/C.R.C.-c.854>). All recreational salmon anglers are reminded that the completed Salmon Catch Card must be returned to Fisheries and Oceans Canada by November 30.

### 15.3 Domestic Fishery Plan

No domestic fishery opportunities for Chinook salmon are anticipated in 2015. An anticipated abundance of mainstem fall chum salmon is likely to provide for harvest opportunities for domestic fisheries. Openings will likely be planned to coincide with commercial fishery openings. When openings are provided, fishers will be required to report catches, tag recovery and associated data within eight hours after the closure of each fishery. Information can be mailed in to the Fisheries and Oceans Canada office in Whitehorse, or telephoned to the toll free number: 1-877-salmon2 (1-877-725-6662). Further information on reporting requirements can be received by contacting Fisheries and Oceans Canada. DFO fishery officers will conduct monitoring of the domestic fishery.

### 15.4 Commercial Fishery Plan

No directed commercial harvest opportunities for Yukon River Chinook salmon are anticipated in 2015.

An abundance of mainstem chum salmon is anticipated to provide harvest opportunities for commercial fisheries. Weekly fishing times will be based on in-season assessments of run strength and run timing, escapement projections and the status of the cumulative catch relative to the Total Allowable Catch. Therefore, week-to-week adjustments in fishing time should be expected. DFO will endeavor to announce weekly fishing times 48 hours prior to the proposed opening date however announcements of extensions and emergency closures may be made on shorter notice.

Announcements of openings/closures will be made in the following ways:

- a) Fisheries and Oceans Canada's fishery notification system (<http://www-ops2.pac.dfo-mpo.gc.ca/fns-sap/index-eng.cfm>)
- b) Through Public Notices faxed to RRCs, Yukon Environment and/or other community offices;



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- c) Through weekly fisheries and stock status teleconference calls hosted by DFO starting June 17)
- d) Via telephone through the toll free salmon information line: 1-877-salmon2 (1-877-725-6662).

DFO fishery officers and stock assessment personnel will conduct monitoring of commercial fishing activities. There is an increasing responsibility for commercial fishers to accurately document catches and report this information weekly. These responsibilities will be clearly outlined in conditions attached to commercial licences. Gear allowances will remain unchanged from previous years and as described in the *Yukon Territory Fishery Regulations*.

Commercial fishers must keep records of daily catch and tag recovery data, tabulated on forms provided by Fisheries and Oceans Canada. Within eight hours of the closure of each weekly fishing period, fishers will be required to report this information by:

- a. Phoning in their daily catch and tag recovery information to the Fisheries and Oceans Canada toll free catch line: 1-877-salmon2 (1-877-725-6662). Phoned-in information shall include:
  - The name of the fisher;
  - The catch of each species per day broken down by numbers of males and females;
  - The number of tags recovered from each species each day broken down by tag colour.
- b. And, fishers are also required to mail their information no later than 10 business days after a weekly fishery closure to: Fisheries and Oceans Canada, Suite 100 – 419 Range Road, Whitehorse, Yukon. Y1A 3V1.



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## 16. APPENDIX 6: MAPS OF FISHING AREAS

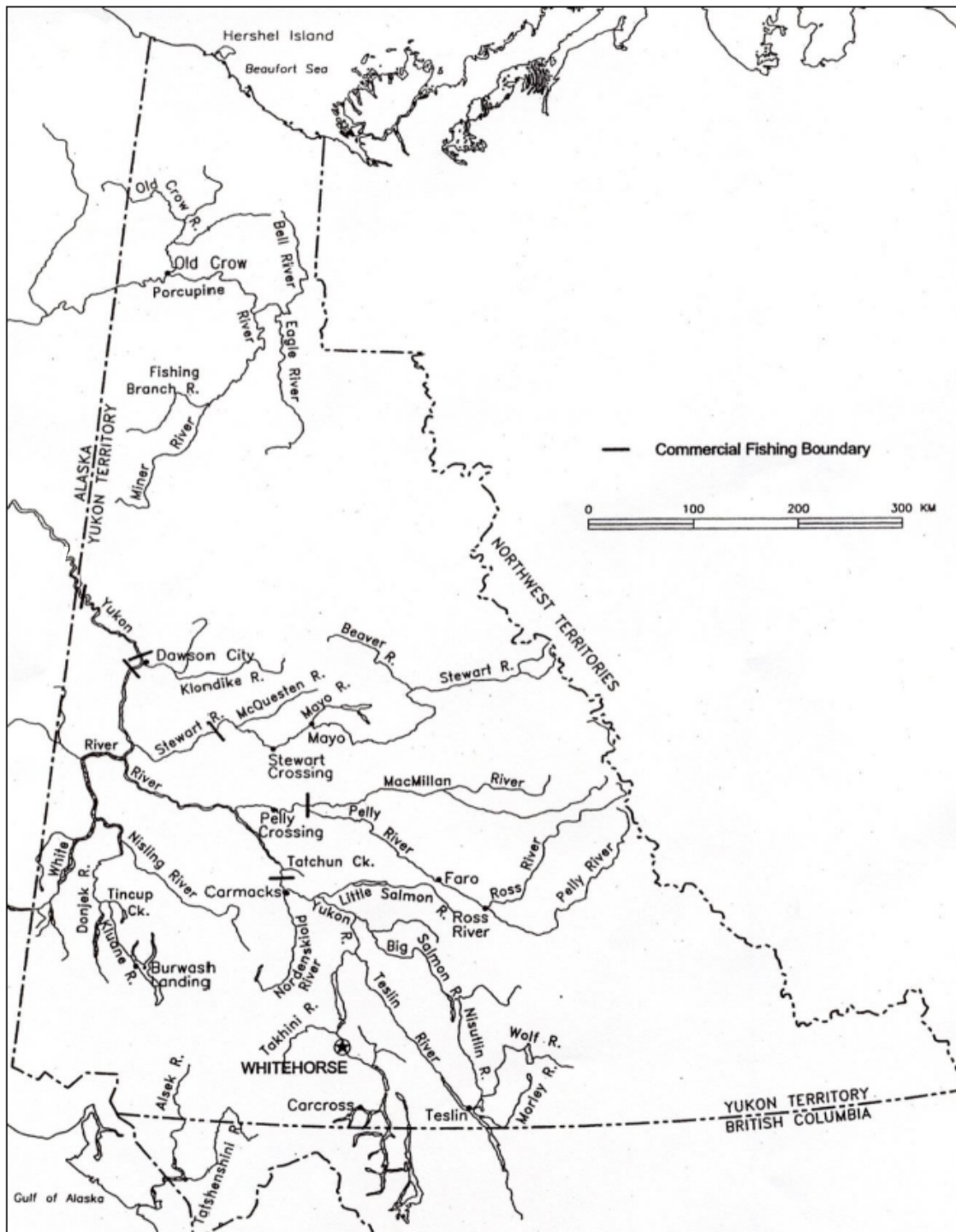


Figure 1. Yukon River drainage in Canada (dark bars delineate commercial fishing zones).



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## 17. APPENDIX 7: LEGISLATION

The following Acts, Regulations and Agreements inform the management of Yukon River salmon:

- *Fisheries Act*
- *Pacific Salmon Treaty – Yukon River Salmon Agreement*
- Yukon First Nation Final and Self-Government Agreements
- *Yukon Territory Fishery Regulations* (pursuant to *Fisheries Act*)
- *Fishery (General) Regulations*
- *Aboriginal Communal Fishing Licence Regulations*
- *Management of Contaminated Fisheries Regulations*



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## 18. APPENDIX 8: GLOSSARY

Aboriginal Traditional Knowledge (ATK) or Traditional Ecological Knowledge (TEK): Knowledge that is held by, and unique to Aboriginal peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual and political spheres of the Aboriginal knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines.

Abundance: Number of individuals in a stock or a population.

Age Composition: Proportion of individuals of different ages in a stock or in the catches.

Anadromous: An anadromous species, such as salmon, spends most of its life at sea but returns to fresh water grounds to spawn in the river it comes from.

By-catch: The unintentional catch of one species when the target is another.

Catch per Unit Effort (CPUE): The amount caught for a given fishing effort. Ex: tons of shrimp per tow, kilograms of fish per hundred longline hooks.

Communal Commercial Licence: Licence issued to Aboriginal organizations pursuant to the *Aboriginal Communal Fishing Licences Regulations* for participation in the general commercial fishery.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): Committee of experts that assess and designate which wild species are in some danger of disappearing from Canada.

Discards: Portion of a catch thrown back into the water after they are caught in fishing gear.

Ecosystem-Based Management: Taking into account of species interactions and the interdependencies between species and their habitats when making resource management decisions.

Escapement: Reference to salmon - the number of fish escaping the fishery and reaching the spawning grounds.

Fishing Effort: Quantity of effort using a given fishing gear over a given period of time.

Fixed Gear: A type of fishing gear that is set in a stationary position. These include traps, weirs, gillnets, longlines and handlines.

Food, Social and Ceremonial (FSC): A fishery conducted by Aboriginal groups for food, social and ceremonial purposes.



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Gillnet: Fishing gear: netting with weights on the bottom and floats at the top used to catch fish. Gillnets can be set at different depths and are anchored to the seabed.

Maximum Sustainable Yield (MSY): Largest average catch that can continuously be taken from a stock.

Mesh Size: Size of the mesh of a net. Different fisheries have different minimum mesh size regulation.

Otolith: Structure of the inner ear of fish, made of calcium carbonate. Also called "ear bone" or "ear stone". Otoliths are used to determine the age of fish: annual rings can be observed and counted. Daily increments are visible as well on larval otoliths.

Population: Group of individuals of the same species, forming a breeding unit, and sharing a habitat.

Precautionary Approach: Set of agreed cost-effective measures and actions, including future courses of action, which ensures prudent foresight, reduces or avoids risk to the resource, the environment, and the people, to the extent possible, taking explicitly into account existing uncertainties and the potential consequences of being wrong.

Quota: Portion of the total allowable catch that a unit such as vessel class, country, etc. is permitted to take from a stock in a given period of time.

Recruitment: Amount of individuals becoming part of the exploitable stock (e.g., that can be caught in a fishery).

Research Survey: Survey at sea, on a research vessel, allowing scientists to obtain information on the abundance and distribution of various species and/or collect oceanographic data. For example may be a bottom trawl survey, plankton survey, or hydroacoustic survey.

SARA: The *Species at Risk Act* is a federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides the legal protection of wildlife species and the conservation of their biological diversity.

Spawner: Sexually mature individual.

Spawning Stock: Sexually mature individuals in a stock.

Stock: Describes a population of individuals of one species found in a particular area, and is used as a unit for fisheries management. Ex: NAFO area 4R herring.



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Stock Assessment: Scientific evaluation of the status of a species belonging to a same stock within a particular area in a given time period.

Total Allowable Catch (TAC): The amount of catch that may be taken from a stock.

Traditional Ecological Knowledge (TEK): A cumulative body of knowledge and beliefs handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.

Tonne: Metric tonne, which is 1000kg or 2204.6lbs.

Year-class: Individuals of a same stock born in a particular year. Also called "cohort".



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## 19. APPENDIX 9: ACRONYMS

ABM	Abundance-Based Management
ADF&G	Alaska Department of Fish and Game
AFS	Aboriginal Fisheries Strategy
ATP	Allocation Transfer Program
BASIS	Bering-Aleutian Salmon International Survey
BNA	Basic Needs Allocations
Border Escapement	The number of adult, upstream migrating salmon that escape all U.S. fisheries and reach the Canada/U.S. border.
C&P	Conservation and Protection unit
COSEWIC	Committee On the Status of Endangered Wildlife In Canada
CWT	Coded-wire tag. A small metal tag inserted into the nose of a juvenile salmon (usually hatchery stock) prior to release or migration to the ocean. The tag has encoded information that indicates the origin and year of release of the fish.
CU	Conservation Unit as identified in the Wild Salmon Policy
CYFN	Council for Yukon First Nations
DFO	Fisheries and Oceans Canada
FN	First Nation
FSC	Food, social and ceremonial
GSI	Genetic Stock Identification
IFMP	Integrated Fisheries Management Plan
IMEG	Interim Management Escapement Goal
IYRSA	<i>Interim Yukon River Salmon Agreement</i>
JTC	Joint Technical Committee of the Yukon River U.S./Canada Panel
MRP - Mark – Recapture Program	A stock assessment program that has a primary objective of estimating the size of populations. It usually involves live-capturing fish, marking or tagging them and releasing them back into the water at one location. At a second location, attempts are made to recapture both tagged and untagged fish. Tag and recapture data are used to generate population estimates.
NMFS	National Marine Fisheries Service (U.S.)
PSARC	Pacific Scientific Advice Review Committee
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
REF	Restoration and Enhancement Fund as per the <i>Yukon River Salmon Agreement</i>
R/S	Return per spawner: the average number of salmon produced from one spawning salmon
RCMP	Royal Canadian Mounted Police
RRC	Renewable Resources Council as per the UFA
SARA	Species at Risk Act



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SEP	Salmon Enhancement Program
SPA	Scale Pattern Analysis: different freshwater rearing conditions may be reflected in different growth rates that can create varying/unique scale patterns that allow general point of origin assessments to be made.
Spawning Escapement	The number of adult salmon that escape all fisheries and return to the spawning grounds.
S/R	Stock/Recruitment
SSC	Yukon Salmon Sub-Committee
Subsistence Fishery	A fishery that fills a need for food purposes. In Canada, it is not to be confused with the aboriginal fishery, which is restricted to First Nation members. In Alaska, the subsistence fishery involves both aboriginal and non-aboriginal Alaskan residents.
TAC	Total Allowable Catch: the amount of fish that can be harvested after accounting for a specified spawning escapement target.
UFA	<i>Umbrella Final Agreement</i> of the Yukon First Nations Land Claims
USF&WS	United States Fish and Wildlife Service
WSP	<i>Wild Salmon Policy</i>
YRP	<i>Yukon River Panel</i>
YRSA	<i>Yukon River Salmon Agreement</i>
YSCCC	Yukon Salmon Conservation Catch Card



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